GTE Operations Support Incorporated

Basking Ridge, New Jersey

Groundwater Remedial Investigation Report

Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Voluntary Cleanup Program -Site No. V00089-1

January 2011

Prepared By:

Malcolm Pirnie, Inc.

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January 31, 2011

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Division of Environmental Remediation
Remedial Bureau A, 11th Floor
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Re: Groundwater Remedial Investigation Report
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York
Site No. V00089-1

Dear Mr. DeCandia:

Enclosed please find one copy and two additional CDs of the Groundwater Remedial Investigation Report for the former Sylvania Electric Products Incorporated facility in Hicksville, New York.

Sincerely,

Jean Agostinelli
Vice President – Controller

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Acronyms Used in the Report

ADT	Aquifer Drilling & Testing
AEC	Atomic Energy Commission
ASP	Analytical Services Protocol
bgs	Below Ground Surface
cis-DCE	Cis-1,2-Dichloroethene
CD	Compact Disk
COPC	Chemical of Potential Concern
CMT	Continuous Multi-Channel Tubing
CSM	Conceptual Site Model
CT&E	CT&E Environmental Drilling, Inc.
CVOC	Chlorinated Volatile Organic Compounds
1,1-DCA	1,1-Dichloroethane
1,1-DCE	1,1-Dichloroethene
1,2-DCB	1,2-Dichlorobenzene
DER	Division of Environmental Regulation
DQO	Data Quality Objective
DUSR	Data Usability Summary Report
ELAP	Environmental Laboratory Approval Program
EVS	Environmental Visualization System
ft/d	Feet Per Day
GCDR	Golf Course Driving Range
GI	General Instrument
gpd/ft^2	Gallons Per Day Per Square Foot
gpm	Gallons Per Minute
~~GTEOSI~~	~~GTE Operations Support Incorporated~~
ID	Inside Diameter
IDW	Investigation Derived Waste
IK	Index of Hydraulic Conductivity
MCL	Maximum Contaminant Level
MDA	Minimum Detectable Activity
mg/Kg	Milligram Per Kilogram
mg/L	Milligram Per Liter
msl	Mean Sea Level
NTU	Nephelometric Turbidity Units
NCDPW	Nassau County Department of Public Works

NYCRR	New York Code of Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOL	New York State Department of Labor
PCE	Tetrachloroethene
POTW	Publically Owned Treatment Works
PRD	PRD Electronics, Inc.
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
SPDES	State Pollution Discharge Elimination System
SEI	Stone Environmental, Inc
STL	Severn Trent Laboratory
TA	Test America
TCE	Trichloroethene
ug/Kg	Micrograms Per Kilogram
ug/L	Micrograms Per Liter
USEPA	United States Environmental Protection Agency
USGS	United States Geologic Survey
USACE	United States Army Corps of Engineers
VA	Voluntary Agreement
VC	Vinyl Chloride
VOC	Volatile Organic Compound

Executive Summary

Under the New York State Department of Environmental Conservation (NYSDEC) Voluntary Cleanup Program, Malcolm Pirnie, Inc. on behalf of GTE Operations Support Incorporated (GTEOSI) conducted a multi-phase Groundwater Remedial Investigation (RI) to characterize the nature and extent of Chlorinated Volatile Organic Compounds (CVOCs), metals, and radionuclides in groundwater at the former Sylvania Electric Products Incorporated (Sylvania) nuclear fuel element research and production facility (Site) located at what is now 70, 100, and 140 Cantiague Rock Road in Hicksville, Town of Oyster Bay, Nassau County, New York.

Groundwater sampling in support of the Groundwater RI was conducted on-Site and at surrounding properties including Nassau County Department of Public Works (NCDPW) property to the north, the former General Instruments site (GI) to the south, Nassau County Golf Course Driving Range (GCDR) to the east, Crown Lift to the southeast, the King Kullen property to the south inclusive of the New York Blood Bank/formerly PRD Electronics (PRD), and Waste Management. Groundwater samples were also collected at properties further south of the Site owned by Winter Brothers (formerly Island/Allied Waste); 550 Realty Associates; Stop & Shop; New York State Office of Parks, Recreation and Historic Preservation; and various properties owned by the Town of Oyster Bay.

To provide a more complete dataset and a more complete depiction of the potential groundwater impacts at and down-gradient of the Site, groundwater quality data generated by Vishay GSI, Inc. (formerly known as General Instruments), the NYSDEC, and the United States Army Corps of Engineers (USACE) are also included in this report. These data include groundwater quality data collected during the drilling of profile borings and monitoring of wells installed by GI, groundwater quality data collected from monitoring wells by the USACE (Spring 2010), and groundwater quality data collected during the drilling of Profile borings and monitoring of Continuous Multi-Chamber Tubing (CMT) ports by the NYSDEC (Multi-Site Characterization -Cantiague Rock Road and Groundwater Sampling at Anchor Lith Kem Ko Site).

Potential source areas containing Tetrachloroethene (PCE), nickel, and radionuclides have been identified on-Site. Very low concentrations of Trichloroethene (TCE), which are the result of reductive dechlorination of PCE, also were detected in the source areas. Potential source areas containing PCE, TCE, 1,2-Dichloroethene (DCE) and 1,2-Dichlorobenzene (1,2-DCB) have also

been identified off-Site, although identifying the locations of off-Site contamination sources was not within the scope of this RI.

Groundwater flow is generally to the south with a slight southwesterly component. As groundwater moves south, it migrates vertically downward, deeper into the aquifer, due to the addition of local recharge from precipitation. This migration causes dissolved chemicals to move deeper in the aquifer with distance down-gradient from its source. The groundwater flow direction was determined from potentiometric surface maps drawn using synoptic water level measurements and confirmed by the distribution of 1,2-DCB that was released from the only source areas in the vicinity, at GI.

Reductive dechlorination has only a nominal affect on PCE released from the Site. Given the reduction-oxidation potential and amount of oxygen in the aquifer and the lack of a carbon food source in the vicinity of the Site, PCE and TCE found in soil at the Site generally do not degrade in the aquifer under the Site. Dilution, dispersion, adsorption, and volatilization likely have minor effects on the fate and transport of CVOCs associated with the Site or otherwise found in the area. Groundwater impacts on Long Island tend to be long and narrow; therefore, dispersive effects tend to be minimal. Little attenuation of CVOCs will occur at the Site as a result of adsorption because of the low total organic carbon content of the aquifer. While volatilization of CVOCs will occur at the Site where the groundwater containing CVOCs is at the water table and in contact with soil gas, volatilization of CVOCs will not occur as the contaminants migrate south and are pushed deeper into the aquifer by recharge.

With the Conceptual Site Model (CSM) as defined above in mind, CVOCs impacting groundwater at the Site migrate south, beneath CVOCs released at more southern locations. CVOCs from the Site appear to have migrated as far south as Old Country Road, but uncertainty remains regarding the southern extent of Site impacts in groundwater as impacts from other off-site sources confound the interpretation of sampling data in this area.

The evaluation of the on-Site soil data shows that nickel impacted soil in an area south of the 100 Building has likely contributed to nickel concentrations in underlying groundwater. However, the extent of the nickel in groundwater is limited, extending from the area south of the 100 Building to the southern property boundary of the 70 Property.

The evaluation of the on-Site soil data show that uranium impacted soil remain in isolated areas at depth and beneath buildings. Isolated areas were identified at depth east of the 140 Building, south of the 100 Building, and beneath the 70, 100 and 140 Buildings. The on-Site soil data also show that some residual

thorium impacted soil remains beneath and south of the 100 Building and beneath the 140 Building. Reports describing the residual impacted soil can be found at the public repository[1]. Groundwater results show that one radionuclide (uranium) was detected in groundwater samples above 27 pico Curies per Liter (pCi/L) (equivalent to the United States Environmental Protection Agency (USEPA) Maximum Contaminant Level (MCL) of 30 ug/L) east of the 140 Building and on the GCDR. Groundwater samples collected from off-Site monitoring wells confirm off-Site groundwater is not impacted with uranium or thorium indicating that neither contaminant is mobile (URS and Envirocon, Inc., 2006).

A qualitative exposure assessment was completed to evaluate whether fish and wildlife resources may be impacted by, and humans exposed to, Site-related chemicals. The Fish and Wildlife Resources Impact Analysis (FWRIA) confirmed that no fish or wildlife resources exist on the Site or in the vicinity of the Site. Exposure to Site-related Chemicals of Potential Concern (COPC) is not expected because contamination is confined to sub-surface soils and groundwater, and groundwater does not discharge to surface water in the vicinity of the Site. The nearest New York State classified surface water body is over 4 miles down-gradient from the Site. In accordance with Section 3.10.1 and Appendix 3C of the DER-10 guidance, no further FWRIA is required.

The qualitative human health exposure assessment evaluated the potential for human exposure to Site-related chemicals, based on current or future uses of the Site, in the absence of additional remediation. While all chemicals detected in environmental media were evaluated for on-Site and off-Site workers and future off-Site residents, focus was placed on Site related chemicals (PCE, TCE, nickel, and radionuclides) detected in groundwater at and down-gradient of the Site. Groundwater impacts at the water table on-Site may represent a future exposure pathway for indoor air; but rainfall recharge overlying the deeper off-Site impacts will render this pathway incomplete for off-Site receptors. In addition, groundwater containing mobile CVOCs within the capture zone of a public water

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Region 1 Office, SUNY Campus
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supply well may represent a future exposure pathway if the concentrations of COPCs exceed existing wellhead treatment capabilities.

1. Introduction and Background

1.1. Introduction

Under the NYSDEC Voluntary Cleanup Program, Malcolm Pirnie, Inc. on behalf of GTEOSI conducted a Groundwater RI to characterize the nature and extent of CVOCs, nickel, and radionuclides in groundwater at, around and in a generally southern direction from the Site located at 70, 100, and 140 Cantiague Rock Road in Hicksville, Nassau County, New York on behalf of GTEOSI (Figure 1-1).

The Groundwater RI was completed in accordance with a Voluntary Agreement (VA) with the NYSDEC. GTEOSI entered into two VAs with the NYSDEC to investigate and remediate soils and groundwater at the Site. The first agreement signed in April 1999 focused on soil and groundwater investigation activities. A subsequent investigation of on-Site soils identified concentrations of Uranium-238 (U-238), Uranium-234 (U-234), Thorium-232 (Th-232), PCE, TCE and nickel above background concentrations. The second agreement signed in January 2003 focused on the remediation of on-Site soils and established soil cleanup levels for these constituents. Soil remediation was completed between 2003 and 2004.

Groundwater sampling was conducted on-Site and at surrounding properties, including: NCDPW property to the north; the former GI to the south; GCDR to the east; Crown Lift to the southeast; the King Kullen property to the south inclusive of the New York Blood Bank/formerly PRD; and Waste Management (Figure 1-2). Groundwater samples were also collected at properties located further to the south of the Site owned by Winter Brothers (formerly Island/Allied Waste); 550 Realty Associates; Stop & Shop; New York State Office or Parks, Recreation and Historic Preservation; and various properties owned by the Town of Oyster Bay (Figure 1-2).

To provide a more complete dataset and a more complete depiction of the potential groundwater impacts at and down-gradient of the Site, groundwater quality data generated by GI, the NYSDEC, and the USACE are also included in this report. These data include groundwater quality data collected during the drilling of borings and monitoring of wells by GI, groundwater quality data collected from monitoring wells by the USACE (Spring 2010), and groundwater quality data collected during the drilling of borings and installation and sampling of multi-port wells by the NYSDEC (Multi-Site Characterization - Cantiague Rock Road and Groundwater Sampling at the Anchor Lith Kem Ko Site).

Soil data showing residual (post soil remediation) soil impacts collected by GTEOSI and the USACE also is presented in this report to identify and correlate potential on-Site source areas with groundwater impacts on-Site and down-gradient of the Site.

1.2. Objectives and Scope of Work

1.2.1. Objectives

The objectives of the Groundwater RI are:

- to characterize on-Site source areas of PCE, TCE (present as a result of reductive dechlorination of PCE), nickel, uranium, and thorium that could potentially impact groundwater based on the results of previous studies;
- to determine the nature and extent of PCE, TCE, nickel, uranium and thorium impacts in groundwater at and down-gradient of the Site; and
- to evaluate the potential for human exposure and environmental impacts from site related impacts.

1.2.2. Scope of Work

To meet these objectives, GTEOSI conducted a multi-phase Groundwater RI that included:

- Collecting and analyzing groundwater samples from 12 on-Site monitoring wells. The first round of groundwater samples was collected in October 2002 and the second round of groundwater samples was collected in March 2003. A round of synoptic water levels was measured prior to each groundwater sampling event. Groundwater samples were labeled and immediately placed on ice and sent to Severn Trent Laboratory, Inc. (STL) (now Test America, TA) in Earth City, Missouri following standard chain-of-custody procedures and analyzed for:
  - CVOCs by USEPA Method 5030 and Method 8260B;
  - Select metals (nickel, chromium, copper, beryllium, and thallium) by USEPA Method 3010A;
  - Hexavalent chromium by USEPA Method 7196A;

- Gamma Spectroscopy by Method Department of Energy (DOE) Environmental Measurements Laboratory (EML) (HASL 300) Ga-01-R Modified (MOD);
- Isotopic thorium and uranium by Method alpha spectrometry NAS/DOE 3050, and 3004 RP;
- Radium-226, radium-228, and gross alpha - gas flow proportional counting by Methods 9315 MOD, 9320 MOD, 9310 MOD; and
- Technetium-99 - liquid scintillation by Method DOE TC-02-RC MOD.

- Collecting and analyzing depth-discrete groundwater samples at approximate 10-foot vertical intervals from 67 on-Site and off-Site locations using the Waterloo Profiler® (Profiler) from October 2002 to May 2009. The groundwater samples were analyzed at an on-Site laboratory by Stone Environmental Inc. (SEI) for selected CVOCs and inorganic chemicals listed in Table 1-1.

  Ten percent of the groundwater samples collected were labeled and immediately placed on ice and sent to TA in Earth City, Missouri following standard chain-of-custody procedures and analysis for:

  - CVOCs by USEPA Method 8260B
  - Chloride by USEPA Method 300.0A
  - Metals by USEPA Method 6010B
  - 1,4-Dioxane by USEPA Method 8270C (isotopic dilution)
  - Alpha Spec (U-234, U-235, and U-238) by DOE-A-01-R
  - Alpha Spec (Th-228, Th-230, and Th-232) by DOE-A-01-R
  - Radium-226 by USEPA Method 9315
  - Radium-228 by USEPA Method 9320

- Collecting and analyzing groundwater samples from four off-Site sentinel wells in November 2007. Groundwater samples were labeled and immediately placed on ice and sent to TA (formerly STL) in Earth City, Missouri following standard chain-of-custody procedures for CVOC analyses by USEPA Method 5030 and Method 8260B.

- Collecting groundwater samples (149 total) from the following wells: seven GTEOSI on-Site monitoring wells, four GTEOSI off-Site sentinel wells; 36 GI on-Site and off-Site monitoring wells; 61 USACE on-Site and off-Site monitoring wells; and six NYSDEC (associated with Anchor Chemical) off-Site Continuous Multi-Channel Tubing (CMT) multi-port wells (41 ports) in May and June 2010. GTEOSI led the groundwater sampling of monitoring wells owned by GTEOSI, GI, and the NYSDEC associated with the Anchor Chemical site. The USACE led the collection of groundwater samples from the USACE monitoring wells with GTEOSI oversight. GTEOSI also collected split groundwater samples from all of the USACE monitoring wells for VOC analysis and collected split groundwater samples from 10 percent of the USACE monitoring wells for the remaining analyses (excluding CVOCs) listed below. Groundwater samples were labeled and immediately placed on ice and sent to TA in Earth City, Missouri following standard chain-of-custody procedures and analysis for:
  - CVOCs by USEPA Method 8260B;
  - Metals by USEPA Method 6010B;
  - Chloride by USEPA Method 9056;
  - 1,4-Dioxane by USEPA Method 8270C (isotopic dilution);
  - Alpha Spec (U-234, U-235, and U-238) by DOE-A-01-R;
  - Alpha Spec (Th-228, Th-230, and Th-232) by DOE-A-01-R;
  - Radium-226 by USEPA Method 9315; and
  - Radium-228 by USEPA Method 9320.
- Measuring one round of synoptic water levels in 153 monitoring wells/CMT ports in May 2010;
- Collecting groundwater samples from seven monitoring wells in November 2010. Groundwater samples were labeled and immediately placed on ice and sent to TA in Earth City, Missouri following standard chain-of-custody procedures and analysis for Nickel by USEPA Method 6010B;
- Reviewing and summarizing available published literature that describes the geology and hydrogeology of Long Island; and

- Plotting and analyzing the water quality data, water level data, geologic log data, and hydraulic conductivity (IK) data to develop a conceptual site model and conduct qualitative exposure assessment.

Severn Trent Laboratory/Test America is a full-service New York State Department of Health (NYSDOH) and Environmental Laboratory Approval Program (ELAP) certified laboratory. Test America reported the results in accordance with NYSDEC Analytical Services Protocol (ASP) 2000, Category B deliverables. Figure 1-3 shows the locations of the on-Site and off-Site monitoring wells installed by GTEOSI, GI, USACE and the NYSDEC, and Figure 1-4 shows the locations of the Profiles drilled by GTEOSI, GI and the NYSDEC.

1.3. NYSDEC Standards, Criteria, and Guidance

NYSDEC regulations, 6 NYSCRR Part 375, require that Standards, Criteria, and Guidance (SCGs) are identified and that remedial actions conform with SCGs unless "good cause exists why conformity should be dispensed with." Standards and Criteria are defined as cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, or location. Guidance includes non-promulgated criteria and guidelines that are not legal requirements.

The principle SCGs applicable to the site are listed below:

- 6 New York Code, Rules and Regulations (NYCRR) Part 375 – Environmental Remediation Programs, including the Inactive Hazardous Waste Disposal Site Remedial Program
- NYSDEC Division of Environmental Remediation (DER) policy, DER-10: Technical Guidance for Site Investigation and Remediation
- 6 NYCRR Part 700-705, Water Quality Regulations for Surface Water and Groundwater

Background concentrations of PCE, TCE, nickel, uranium and thorium are used in conjunction with SCGs to define the nature and extent of groundwater impacts in areas where potential groundwater impacts from the Site may have comingled with groundwater impacts from other source areas.

1.4. Site Description

The Site is located in Hicksville, Town of Oyster Bay, Nassau County, New York northeast of the intersection of Cantiague Rock Road and West John Street

(Figure 1-1). The Site includes what is now three lots referred to as the 70 Property, 100 Property, and 140 Property. Approximately 95 percent of the 10.5-acre Site has been either paved or occupied by buildings.

Located on the southern portion of the Site, the 70 Property now consists of a one-story brick building, approximately 79,210-square feet (ft^2) in size. The portion of the lot not occupied by the building is paved and used for parking and storage. The western portion of the building contains the only remaining original building from the former Sylvania facility (historically called Building #4).

The 100 Property is centrally located on the Site and consists of a fenced area enclosing a two-story building (80,100 ft^2) and paved parking lots.

The 140 Property is located on the northern-most portion of the Site immediately south of the NCDPW. This property encompasses a one-story building (approximately 54,500 ft^2) formerly used for office and industrial purposes. In addition to the building, the remaining portions of the property are paved with the exception of a small area on the east side, abutting the GCDR.

1.5. Site History and Background

1.5.1. Former Nuclear Fuel Fabricating Operations

In 1947, the New York Operations Office (NYOO) of the Atomic Energy Commission (AEC) contracted with Sylvania to initiate a metallurgical research and development program seeking to improve the reliability of nuclear fuel elements. This work was conducted at Sylvania's facility in Bayside, New York. On December 10, 1951, the NYOO entered into a letter Contract No. AT (30-1)-1293 with Sylvania, and asked the company to build a pilot plant to continue its nuclear research and development activities.

In March 1952, Sylvania purchased land in Hicksville, New York to house the pilot plant. The Hicksville Site was obtained by Sylvania at the request of the AEC, and the pilot plant was built to government specifications, for the sole purpose of studying and then manufacturing canned uranium slugs and fuel elements, first for the AEC Hanford plutonium production reactor, and subsequently for the AEC's Savannah River plutonium and tritium production reactors. While these lands have now been subdivided into three lots known as 70, 100, and 140 Cantiague Rock Road, they were all involved in Sylvania's operations. Most of the contract activities took place on what are now known as the 140 and 100 Properties (the 140 and 100 Properties). Sylvania began pilot plant operations at Hicksville in August 1952. Access to the Site, and to some individual buildings, was strictly limited by fencing and other controls specified by

AEC. A fully detailed government contract (retroactive to December 1951) was executed on August 10, 1953, and Contract 1293 continued in that form, with numerous modifications until September 1965.

The federal government provided all of the raw nuclear materials; wrote the classified and unclassified specifications for the various fuel elements and plant operations; retained ownership of the final nuclear products and waste products; and generally monitored, directed, and controlled the work at the Site. The federal government also paid for all property renovations and security measures such as fencing and provided either the funds for the purchase of necessary equipment, chemicals, and materials for contract execution, or provided those items in kind. No other contract, licensed, or commercial operations of any kind could take place at the Site without the AEC's permission.

From 1952 to 1965, Sylvania conducted nuclear metallurgical research and development and production work for AEC and other federal entities. The research work quickly converted to full production of natural and then enriched fuel elements and targets for AEC nuclear weapons reactors when the pilot plant became operational.

The vast majority of the nuclear work at the Site was conducted pursuant to Contract 1293 and various modifications to that Contract. By January 1953, the pilot plant was producing uranium fuel elements for use in the AEC's production reactor operated by General Electric in Hanford, Washington. Contract 1293 eventually also covered the pressure bonding and canning of cast and extruded uranium-aluminum fuel elements.

In July 1954, after several months of testing, Sylvania began producing enriched uranium fuel elements for use in the plutonium and tritium production reactors at the Savannah River Site (SRP) in South Carolina, an AEC defense nuclear facility operated by DuPont de Nemours and Company. By 1955, Savannah River Operations Office (SROO) considered the Hicksville plant to be part of its fundamental production chain, strictly comparable, for example, to the federal fuel facility designated as the 300 area at Savannah River. Sylvania would continue producing fuel elements for the Savannah River reactor for the next eleven years. During this time, the Hicksville contract facilities basically were devoted to the production of fuel elements for use in the reactors producing plutonium and tritium at Savannah River. Savannah River itself was essential to producing a nuclear deterrence capability to counter the efforts of the Soviet Union. Starting in November 1955, the AEC allowed Sylvania to perform other government work. Under this agreement, Sylvania produced Mark VII-A nuclear

fuel cores in cooperation with the Oak Ridge and Fernald Operations Offices for use in the Savannah River plutonium production reactor.

During the life of Contract 1293, Sylvania processed between six and seven thousand tons total of natural uranium slugs and Mark II, Mark IV, Mark V-B, Mark V-E, Mark XIII, and Mark VII elements for use in Savannah River's plutonium and tritium production reactors. For example, historical records show that in 1957 alone, Sylvania manufactured almost half a million Mark VII uranium fuel elements, 57,750 Mark VIII enriched fuel elements, and 10,000 Mark II enriched fuel elements. The SROO retained ownership of these products and their residues and the resulting nuclear waste, and continued to exercise oversight of the contract work at the Site through 1965. Production for Sylvania's contract operations primarily took place in Building 1 and most of Building 2, which were located on the 140 and 100 Properties, respectively (Figure 1-5). Sylvania's contract operations also used Building 6 (for solvent and oil storage), Building 7 (as a pump house), and Building 8 (for burning and chemical processing). Contract liquid wastes were disposed of in sumps located on 140 and 100 Properties and intermittently in a sump located adjacent to Building 4 on the present site of 70 Cantiague Rock Road (the 70 Property). The government supplied Sylvania with all the uranium (and later thorium) necessary for operations. There were at least two chlorinated solvent vapor degreasers for use in Hicksville's contract operations. Most notably, Sylvania used PCE in its Contract 1293 fuel fabrication. Existing historical government documents show that between 6,000 and 7,500 tons (U.S.) of natural and enriched uranium slugs, fuel elements, and targets were processed at the Site under the 1293 Contract for AEC's nuclear weapons production reactors at Hanford and Savannah River.

In late 1956, the AEC issued Sylvania its first source material license and a license to possess a small amount of "special nuclear material" *(i.e.,* enriched uranium) at the Hicksville Site to allow Sylvania to perform nuclear-related work beyond the terms of its Contract 1293. In April 1957, it issued license SNM-82 and Sylvania built a new 25,000 square foot building (referred to as Building 4) for its licensed projects; the facilities were operational by early 1959. Production for Sylvania's licensed work took place mainly in Building 4, which was located on the 70 Property. Some special melting operations; however, took place in one segregated room in Building 2. The licensed operation also used Building 10 (for storage) and Building 12 (for isostatic pressing).

The quantity of Special Nuclear Material (SNM) handled under licenses at the 70 property at any one time was strictly limited compared to the amounts of both enriched and natural uranium processed daily under the 1293 Contract. No licensed work was performed by Sylvania at the parcel now designated as 100

Cantiague Rock Road, nor was any meaningful amount of licensed work performed at the parcel now designated as 140 Cantiague Rock Road.

The licensed work was performed primarily for the federal government, including processing fuel elements for the National Laboratories, NASA, and for other federal agencies, as well as for other prime contractors to the AEC at nuclear weapons plants, such as DuPont. All of these activities were in support of federal programs, as was the licensed work conducted for President Eisenhower's Atoms for Peace program pursuant to the Atomic Energy Act of 1954, and were part of the nation's early atomic energy programs. The licensed operation, largely confined to the 70 property, processed about 2,800 kilograms of highly enriched uranium (3.09 tons US), and 6,000 kilograms (6.61 tons US) of SNM overall, through March 1964. Governmental work constituted the majority of the licensed work that took place at the Site, conversely; work that was undertaken for purely private commercial purposes was only a very small fraction of the "licensed" work.

While the contract operations' monthly output of fuel elements was measured in the tens of thousands, the licensed facility's monthly output was measured usually in the hundreds, and sometimes only in the tens, of fuel elements. Based upon surviving records, the total throughput of materials under the AEC licenses was about six tons in eight years, while the throughput of materials under Contract 1293 was between six and seven thousand tons over thirteen years.

1.5.2. Radiological Surveys and Restoration of Buildings and Property

Sylvania ceased contract operations in early 1965. In September 1965, the AEC informed Sylvania that it would establish and implement standards for decontaminating the Site to a level that would make it fit for unrestricted use. The AEC issued Modification 42 to Contract 1293, which provided for additional work, including decontamination, during the 120-day period commencing October 1, 1965.

The AEC "requested and authorized" execution of a subcontract with Isotopes Inc. to perform the decontamination work for the area. Isotopes Inc. conducted radiation surveys of Buildings 1, 2, 7, and 8 and either decontaminated the surfaces of those buildings and the equipment inside within acceptable limits or removed them for off-site disposal. Isotopes Inc. also surveyed the concrete, asphalt, and soil surrounding the Contract 1293 buildings. Isotopes Inc. identified high levels of radiation compared to acceptable background levels. Based on this finding, Isotopes Inc. removed four inches of topsoil from limited areas of the grounds for off-site disposal.

In January 1966, Isotopes Inc. presented Sylvania and the AEC with a report that included a Certificate of Decontamination. Based on the Isotopes report, in February 1966, New York State declared that "the former AEC Facilities at the above address is [sic] hereby declared fit for use as other than a radiation installation and you are hereby deemed to have complied with Industrial Code Rule 38-29."

In April 1966, the AEC sent its own inspector to conduct a limited survey of the Contract 1293 area to confirm that it had been adequately decontaminated by Isotope. The inspector's first survey readings indicated radioactivity above the surface standards set by the AEC. In response, the AEC made at least 200 separate survey measurements of the contract buildings. In May 1966, the AEC concluded that "the buildings are now clean and within acceptable radioactivity limits." In June 1966, the AEC informed Sylvania that the contract portion of the Hicksville facility was fully decontaminated. Sylvania sold the property that had housed its contract operation, now referred to as the 140 and 100 Properties, in March 1967.

In April 1966, after license operations ceased, the AEC set decontamination levels for the licensed portion of the Hicksville facility. In October 1966, Sylvania hired Atcor, Inc., to decontaminate the remaining licensed portion of the Site. In January 1967, Atcor performed the decontamination and issued a report on its work to Sylvania and the AEC. Over the next two months, the AEC and New York State jointly inspected the Site. In early February 1967, New York State declared that "building #4 of your former commercial facility is hereby released and declared fit for non-radioactive use and you are hereby deemed to have complied with Industrial Code Rule 38-29." This release excluded one sump – "pending the further analysis of soil samples" – and a portion of Building 2 – pending "further decontamination and subsequent surveys." Later that same month, following additional work to address the concerns raised and a second inspection by the AEC and New York State, New York State declared that the remaining portions of the Site, "which were excluded in our prior release are hereby found to be fit for non-radioactive use and to have complied with New York State Industrial Code Rule 38-29."

In April 1967, the AEC determined that the entire facility had been fully decontaminated. At Sylvania's request, the AEC removed Hicksville from Sylvania's Special Nuclear Material License, finding that "we have concluded that, due to the insignificance of the contamination which might be present in this particular instance, no hazard to health and safety is involved and no license would be required for any persons possessing or occupying the Hicksville, New York facilities."

During August 1967, at the request of New York State, Atcor took additional soil samples from a sump on the site of the licensed operations and reported that all concentrations were less than 0.05 percent uranium. In September 1967, based on these samples New York State reaffirmed its previous findings that "your property on Cantiague Road in Hicksville is hereby deemed fit for non-radioactive use." The State then cancelled Sylvania's registrations relating to the Hicksville facility. Sylvania did not use nuclear materials at the Site again.

Sylvania continued to own the site of its former licensed operations, now referred to as the 70 Property, for another five years. It used part of the property itself as a laboratory that performed metallurgical coating work, and leased another portion of the property to a commercial tenant.

In August 1972, Sylvania sold the 70 Property to Dewiant Corporation. In October 1973, the AEC's Division of Waste Management (DWM) asked the AEC's operations offices to identify all former contract facilities under their control and to state whether these sites had been adequately decontaminated. The next month, the SROO responded that the "cleanup is considered adequate and no further action is planned."

In early 1979, at the request of NYSDEC, the United States Department of Energy's (USDOE), which had by this point assumed responsibility for the now-defunct AEC's contracts, dispatched a Radiological Assistance Program (RAP) team to inspect the site of the former facility in Hicksville. The DOE'S inspection found radioactive contamination in surface and subsurface soil on the site of the former Hicksville facility's contract operations ranging from 38 to 1,362 pCi/g. The concentration of the uranium found at the Site by the USDOE was approximately eight times greater than that for which a Nuclear Regulatory Commission (NRC) license was required in 1979. However, there is no information indicating that any of the governmental agencies notified GTE, Sylvania, its successors, the current owners or occupants or any other private entity about these findings.

In the 1980s, the DOE, acting through its FUSRAP, again addressed the question of whether the former facility in Hicksville was currently contaminated. By late 1987, the facility appeared on a list of sites that had been "eliminated from FUSRAP consideration." Based upon information prepared by the DOE, the DOE inaccurately believed that the government work at the site had been adequately remediated when the facility was closed.

In 1994 and 1995, the USDOE Oak Ridge National Laboratory conducted reviews of the Site's decommissioning documents from the 1960s, as part of the NRC's review of retired licenses in the United States. Based on those reviews, in 1996, the NRC conducted soil radiation surveys of the 140 Property. These

surveys identified radiological exposure rates in excess of the NRC criteria for unrestricted use. In a letter dated March 21, 1997, New York State Department of Labor (NYSDOL) reaffirmed that the inside of Building #4, the original Sylvania building on the 70 Property used for licensed operations, had no radioactivity levels above background (NYSDOL 1997).

1.6. Previous Investigations

Phase I Soil Remediation Report Former Sylvania Electric Products Incorporated Facility Hicksville, New York (December 2006)

This report documents the soil remediation (Phase I) at the Site. During this soil remediation, a total of 194,733,449 pounds (approximately 97,000 tons) of soil was excavated and shipped from the Site for proper disposal. Because the uranium was generally found in veins, clean soil was necessarily removed during the Phase I soil remediation to access and remove the veins of radiological material. Isolated areas of soil containing residual amounts of uranium above Site cleanup levels [50 pCi/g for U-234 and 50 pCi/g for U-238] remain at depth or under buildings at the Site. Some residual soil containing Th-232, PCE, TCE, and nickel above their respective Site cleanup level also remains at depth or under buildings at the Site. Throughout the investigation and remediation, thousands of soil samples were collected for the delineation of potential soil impacts. The data that characterizes the residual contamination has been used to identify potential groundwater source areas in later sections of this report.

Groundwater Investigation Report, Former Sylvania Electric Product Incorporated Facility, Hicksville, New York, Voluntary Cleanup Program, Site No. V00089-1 (March 2003)

GTEOSI completed its Groundwater RI in multi-phases. The first phase of the groundwater investigation included the completion of 15 groundwater Profiles and the installation of 12 monitoring wells. Groundwater samples were collected at approximate 10-foot vertical intervals from the Profile borings and analyzed for selected CVOCs including PCE and TCE and selected inorganic parameters. Two rounds of groundwater samples were collected from the 12 monitoring wells and analyzed for CVOCs including PCE and TCE, metals, and radionuclides. In addition, water levels were measured from the monitoring wells to determine the groundwater flow direction.

Groundwater Interpretation Report, Former Sylvania Electric Product Incorporated Facility, Hicksville, New York, Voluntary Cleanup Program, Site No. V00089-1 (July 2005) and Groundwater Investigation Report,

Former Sylvania Electric Product Incorporated Facility, Hicksville, New York, Voluntary Cleanup Program, Site No. V00089-1 (January 2007)

The next phase of the groundwater investigation included the completion of 40 Profile locations. Groundwater samples were collected from the Profile borings at approximate 10-foot vertical intervals down to a maximum depth of 505 feet, from the Profile borings and analyzed for selected CVOCs including PCE and TCE and selected inorganic parameters. The data from this phase of the RI was combined with the data from the previous phase of the investigation and summarized in these reports.

Data Report P102, P104, P110, P112, P113 and P114, Former Sylvania Electric Products Incorporated Facility, Hicksville, New York, Voluntary Cleanup Program, Site No. V00089-1 (January 2008)

The next phase of the groundwater investigation included the completion of six Profile locations. Groundwater samples were collected from the profile borings at approximate 10-foot vertical intervals down to a maximum depth of 524 feet, from the Profile borings and analyzed for selected CVOCs including PCE and TCE and selected inorganic parameters. The on-Site analytical laboratory data, geologic logs, and the results of ten percent split samples analyzed at an off-Site laboratory were presented in this report.

Data Report P103, P107 and P108, Former Sylvania Electric Products Incorporated Facility, Hicksville, New York, Voluntary Cleanup Program, Site No. V00089-1 (February 2008)

The next phase of the groundwater investigation included the completion of three Profile locations. Groundwater samples were collected from the profile borings at approximate 10-foot vertical intervals down to a maximum depth of 394 feet, from the Profile borings and analyzed for selected CVOCs including PCE and TCE and selected inorganic parameters. The on-Site analytical laboratory data, geologic logs, and the results of ten percent split samples analyzed at an off-Site laboratory were presented in this report

Data Report P118, MWP110-335, MWP110-440, MWP114-170, AND MWP114-290, Former Sylvania Electric Products Incorporated Facility, Hicksville, New York, Voluntary Cleanup Program, Site No. V00089-1 (April 2008)

The next phase of the groundwater investigation included the completion of one Profile location. Groundwater samples were collected from the profile borings at approximate 10-foot vertical intervals down to a maximum depth of 581 feet, from the Profile borings and analyzed for selected CVOCs including PCE and TCE

and selected inorganic parameters. The on-Site analytical laboratory data, geologic logs, and the results of ten percent split samples analyzed at an off-Site laboratory were presented in this report. In addition, groundwater samples were collected from four monitoring wells and analyzed at an off-Site laboratory for CVOCs. The results of the groundwater monitoring well sampling were also presented in this report.

Data Report P119 and P120, Former Sylvania Electric Products Incorporated Facility, Hicksville, New York, Voluntary Cleanup Program, Site No. V00089-1 (November 2009)

The next phase of the groundwater investigation included the completion of two Profile locations. Groundwater samples were collected from the profile borings at approximate 10-foot vertical intervals down to a maximum depth of 481 feet, from the Profile borings and analyzed for selected CVOCs including PCE and TCE and selected inorganic parameters. The on-Site analytical laboratory data, geologic logs, and the results of ten percent split samples analyzed at an off-Site laboratory were presented in this report.

1.7. Remedial Investigation Report Content

This report is organized into eight sections with supporting tables and figures and a series of appendices which include supporting documentation and Data Usability Summary Reports (DUSRs). Each section of text is briefly described below.

Section ES – EXECUTIVE SUMMARY

Section 1.0 – INTRODUCTION AND BACKGROUND, presents the objective, SCGs, Site description, Site history and background, and the organization of the report.

Section 2.0 – REMEDIAL INVESTIGATION ACTIVITIES, presents the methods and procedures used to collect the groundwater data presented in this report.

Section 3.0 – PHYSICAL CHARACTERISTICS OF THE STUDY AREA, presents a summary of the geology and hydrogeology on both a regional and local scale using published information and data collected during the Groundwater RI.

Section 4.0 – DISTRIBUTION OF GROUNDWATER IMPACTS, presents an identification of potential on-Site source areas and a description of the nature and extent of PCE, TCE, nickel, uranium and thorium in groundwater.

Section 5.0 – FATE AND TRANSPORT, presents an interpretation of the behavior of the PCE and TCE in groundwater.

Section 6.0 – QUALITATIVE EXPOSURE ASSESSMENT, presents and discusses potential exposure pathways to PCE, TCE, nickel, uranium, and thorium.

Section 7.0 – DISCUSSION OF FINDINGS, presents a discussion of the major findings of the report.

Section 8.0 – REFERENCES, presents a list of references used in this report.

2. Remedial Investigation Activities

This section describes the methods and procedures used to collect the data needed to achieve the objectives outlined in Section 1.2. The groundwater investigation was conducted in accordance with the Groundwater Investigation Work Plan (URS, 2002a Work Plan). The data was collected according to the Quality Assurance and Quality Control (QA/QC) objectives outlined in the Quality Assurance Project Plan (QAPP) (URS, 2002a Work Plan).

2.1. Drilling and Sampling Using the Waterloo Profiler®

All of the borings were drilled by either CT&E Environmental Drilling Division of West Creek, New Jersey (CT&E) or Aquifer Drilling & Testing, Inc. (ADT) of New Hyde Park, New York. CT&E and ADT are both licensed by the State of New York. The Waterloo Profiler® was operated by SEI of Montpelier, Vermont.

The initial 15 Profiles (P-1 through P-14 and P-16) were drilled using 4¼-inch inside diameter (ID) hollow stem augers from October to December 2002. The hollow stem augers were initially drilled to approximately 70 feet below ground surface (bgs) or within 10 feet of the water table. Either a conventional auger drilling rig specially outfitted with a hydraulic hammer or a 6610 DT GeoProbe® advanced the Profiler ahead of the augers into undisturbed saturated soil to collect the groundwater samples. Sampling was continued until the Profiler could not advance any further in the formation at which time the Profiler equipment was removed from the borehole and the borehole was drilled to within 10 feet of the next sample depth. This process of alternately drilling and sampling with the Profiler continued until the final depth was reached.

The Profiles completed from April 2003 to May 2009 (Table 2-1) were drilled using a mud rotary drilling rig so groundwater samples could be collected at greater depths. The boreholes were initially drilled with 3-inch ID steel casing to approximately 70 feet bgs or within 10 feet of the water table. The drill rig was outfitted with a hydraulic Geoprobe® hammer to advance the Profiler ahead of the casing into undisturbed soil to collect the groundwater samples. Sampling was continued until the Profiler could not advance in the formation at which time the Profiler equipment was removed from the borehole and the borehole was drilled to within 10 feet of the next sample depth. The process of alternately drilling and sampling with the Profiler continued until the final depth was reached. Geologists logged each hole based on drill cuttings to document stratigraphy. A summary of the Profiles is included in Table 2-1. The geologic logs for these Profiles are included in Appendix A

The index of IK and drive penetration rates were recorded as the Profiler was advanced into the unconsolidated sediments. The IK is a relative hydraulic conductivity value calculated by analyzing the ratio of injection rate of distilled water into the formation and the injection pressure. The flow and pressure were measured using an electronic pressure transducer and flow meter at the ground surface as distilled water was pumped into the formation during Profiler advancement. A mobile profiling truck equipped with appropriate software was used to calculate and record corrected head (measured pressure minus head loss due to friction) values, drive penetration rate, and IK data. The index was plotted versus depth in real time using a computer interface. The IK data provided an indication of the zones of relatively high and low hydraulic conductivity. IK data and drive rates are included as plots on the geologic logs (Appendix A).

Groundwater samples were collected for on-Site laboratory analysis at approximately 10-foot vertical intervals following the equilibration of field parameters. The samples were collected using a nitrogen gas-drive pump. Compressed nitrogen was used to lift the groundwater from the Profiler tip through stainless steel tubing into the in-line sample containers. The in-line sample containers can hold up to four 40 milliliter (ml) vials connected in series using stainless steel tubing and specifically designed stainless steel CVOC vial holders. This system was designed to mitigate losses of CVOCs by ensuring that no exposure to the atmosphere occurred while the samples were collected. A description of the Profiler is located in Appendix B.

2.2. Monitoring Well Installation

Four sentinel monitoring wells (MWP-110-335, MWP-110-440, MWP-114-170, and MWP-114-290) were installed in 2007 as part of this groundwater investigation. Each well was drilled with the mud rotary drilling rig to the final depth based on information collected from nearby Profiles. The screen intervals for monitoring wells MWP-110-335 and MWP-110-440 were selected based on water quality information collected from Profile P-110. Similarly, the screen intervals for monitoring wells MWP-114-170 and MWP-114-290 were selected based on water quality information collected from Profile P-114.

The monitoring wells were installed between August and October 2007 in the Town of Oyster Bay Park between Arrow Lane and Abbot Lane. The borings were drilled using the mud rotary method. At each well location, a 13-inch diameter boring was drilled through the unsaturated overburden to a depth between 76 and 79 feet bgs. Eight-inch diameter schedule 40 polyvinyl chloride (PVC) surface casing was then lowered into the borehole. Cement-bentonite grout was tremied from the bottom of the annular space to ground surface to

secure the surface casing to the ground. After waiting 24 hours for the grout to set, an 8-inch diameter borehole was drilled to the final depth. The 4-inch diameter well was constructed with 10 feet of Schedule 80 (0.02 inch or 20 slot) slotted PVC well screen, sufficient Schedule 80 PVC riser to reach ground surface, and a two- or four-foot sump. Silica sand (No. 1) was placed around the screen from the bottom of the annular space to two to six feet above the top of the well screen. A 10 foot bentonite slurry seal was tremied above the filter pack. Cement bentonite (90%/10%) grout was tremied from the top of the bentonite slurry seal to within four feet of ground surface. Each well was finished with a 9-inch diameter flush mount curb box that was cemented from 4-feet below ground surface to ground surface with a 4-foot square cement apron and locking vented well cap. Well construction details are provided in Appendix C.

2.3. Well Development

Each monitoring well was developed by pumping groundwater with a submersible pump to remove fine-grained material from the well, sand pack, and surrounding formation. The wells were also developed by turning the pump on and off which causes water to move in and out of the well screen. Well development continued for three to nine hours or until the pH, specific conductance, and temperature stabilized within 10 percent and the turbidity was less than 50 Nephelometric Turbidity Units (NTUs).

2.4. Groundwater Sampling

Groundwater samples were collected from monitoring wells using the USEPA Region II Low-Flow Groundwater Sampling Protocol (Appendix D). A QED or Marschalk bladder pump with dedicated polyethylene tubing was used to pump groundwater from each monitoring well to a flow-through cell which measured dissolved oxygen, pH, specific conductance, turbidity, salinity, oxidation reduction potential, and temperature. Groundwater samples were collected after stabilization of field parameters. Groundwater sampling logs are provided in Appendix E. The equipment used to sample the monitoring wells was decontaminated between sample locations by running a detergent and water solution through the pump followed by a deionized water rinse.

Groundwater samples were also collected from CMT wells using a modified version of the USEPA Region II Low-Flow Groundwater Sampling Protocol. These CMT wells each have seven depth discrete sample intervals or ports. A stainless steel micro double valve gas driven pump with Teflon™ tubing was used to pump groundwater from each CMT port to a flow through cell which measured dissolved oxygen, pH, specific conductance, turbidity, salinity, oxidation reduction potential, and temperature. Groundwater samples were

collected after the stabilization of field parameters. Groundwater sampling logs are provided in Appendix E. This sampling method deviates from the USEPA Region II Low-Flow Groundwater Sampling Protocol in that there was no maximum drawdown limitation used during this sampling method as water level measurements are not collected because of space limitations. The equipment used to sample the monitoring wells was decontaminated between sample locations by running a detergent and water solution through the pump followed by a deionized water rinse.

2.5. Synoptic Water Level Measurements

A synoptic round of water levels was measured on May 25, 2010. Water level elevations were measured in 153 monitoring wells/CMT ports. Prior to the round of measurements, the water level meters were calibrated by measuring the depth to water in the same well with each meter and noting the water level measurements on a calibration field log. The water level in each well was measured by removing the well cap, monitoring headspace with a photoionization detector (PID), and lowering the water level probe into the well until the audible alarm sounded. The depth to groundwater was measured to the nearest 0.01 foot from the top of the well casing. The PID reading and water level measurement were noted on the field form along with the well ID, date, and time.

2.6. Surveying

The location and elevation of the Profiles were surveyed by Destiny Resources, Inc. and Rybinski Land Surveying in groups after drilling. In addition, Rybinski Land Surveying recently (August 2010) resurveyed the location and elevation of the GTEOSI, GI, USACE, and NYSDEC (associated with Anchor Chemical) monitoring wells.

2.7. Decommissioning

Profile locations were decommissioned by filling the borehole with a bentonite/cement grout (96% cement/4% bentonite by weight) mixture using the tremie method. In addition, five on-Site monitoring wells (designated MW-01, MW-02, MW-05, MW-06, and MW-07) were decommissioned (April 5, 2003) prior to implementing soil remediation activities. ADT decommissioned each monitoring well by filling the well screen with clean silica sand filter material and filling the well casing with bentonite/cement grout (96% cement/4% bentonite by weight) using the tremie method. The top of each well and protective casing was not removed during decommissioning, as is traditionally done, but was removed during subsequent soil excavation activities.

2.8. Decontamination

The back of the drilling rig, rods, tooling, Profile sampling equipment, and any other equipment coming in contact with the boring was decontaminated between each hole by steam cleaning. A decontamination pad was constructed and used to collect the decontamination water. Decontamination water was collected in 55-gallon steel drums and later pumped into an on-Site storage tank for future testing and appropriate disposal. All of the decontamination water was transferred into drums and disposed of as investigation derived waste (IDW).

2.9. Investigation Derived Waste

Drill cuttings generated during drilling and profiling activities were placed in labeled 55-gallon drums and transported to a drum storage area. Cuttings generated from Profiles drilled on-Site were scanned for the presence of radiation. Drill cuttings that exceeded background radiation concentrations remained on-Site and were later disposed of with the soil generated during the soil remediation program. Drill cuttings that did not exceed background concentrations were characterized and disposed of in accordance with federal, state, and local regulations.

Decontamination fluids, well development water, and groundwater sampling purge water were stored in 55-gallon drums or an on-Site Baker Tank. Drums were labeled and transported to a drum storage area. The contents of the drums and Baker Tank were characterized and disposed of in accordance with federal, state, and local regulations.

3. Physical Characteristics of the Study Area

3.1. Setting

3.1.1. Physiography and Topography

The Site is located near the northern margin of the Atlantic Coastal Plain physiographic province. The province is characterized by complexly inter-bedded sand, silt, and clay. The subsurface in the vicinity of the Site is comprised of unconsolidated sedimentary formations ranging in age from Cretaceous to Pleistocene that form a southwestward dipping wedge that thickens toward the southern shoreline of Long Island (USGS, 1999).

The topography in the vicinity of the Site is relatively flat, resulting mainly from the advance and retreat of the ice sheets of the Wisconsin aged glacier during the Pleistocene, which last retreated about 15,000 years ago. The roughly east-west trending ridge that forms the spine of Long Island, located to the north of the Site, is an accumulation of glacial till that represents the southernmost terminus of the glacier and represents the highest elevations in this area (Buxton and Shernoff, 1999). South of the moraine, in the vicinity of the Site, the ground surface dips gently southward from the moraine to the ocean at the south shore of Long Island. Based on Site survey information, elevations at the Site range from approximately 140 to 145 feet above mean sea level (msl).

3.1.2. Surface Water

The terminal moraine represents a major surface water divide. Precipitation falling on land surface to the south of the moraine will drain to the Atlantic Ocean. Precipitation falling on land surface to the north of the moraine will drain to Long Island Sound. There are no streams or other permanent surface water features at or in the vicinity of the Site. The majority of the Site is either covered by buildings or paved surfaces, although some pavement has been removed during excavation for remediation activities. However, storm water from building roofs or runoff is diverted to dry wells or infiltration basins on the Site.

3.1.3. Climate and Precipitation

Based on records from the National Climatic Data Center (www.noaa.gov), the average annual precipitation in Hicksville, New York is approximately 44 inches per year. The climate in the region is typical of the northeast region with mild summers and moderately cold winters.

3.2. Geology

3.2.1. Geology Introduction

This section presents the geology and hydrogeology in the area to put the local conditions into perspective within the larger regional geologic and hydrogeologic framework. The data in this Section is based on published data from Cartwright (2002), Misut and Feldman (1996), Smolensky and Feldman (1995), Isbister (1966), Perlmutter and Geraghty (1963), Fuller (1914), Fenneman (1938), various USGS reports and Site-specific data collected during the Groundwater RI.

3.2.2. Regional Geology

The Site is located in the Atlantic Coastal Plain physiographic province. This region is bordered to the south and east by the Atlantic Ocean and to the north and west by the Piedmont and New England physiographic provinces (Fenneman, 1938). Four distinct geologic units lie beneath the Site, including glacial deposits composed of the Ronkonkoma and/or Harbor Hill glacial outwash (Upper Glacial), the Magothy Formation and Matawan Group (Magothy), a clay member of the Raritan Formation (Raritan Clay), and the Lloyd Sand Member of the Raritan Formation (Lloyd). Only two of these units (Upper Glacial and Magothy) were encountered during this investigation and are described below. A stratigraphic column of the geology of Nassau County is shown on Figure 3-1. A generalized hydrogeologic cross-section is shown on Figure 3-2.

The Ronkonkoma ice sheet deposited a mantle of glacial drift on the Cretaceous, Pliocene, and early Pleistocene deposits. The drift ranges from unstratified till to stratified outwash and mainly occurs in three forms; basal drift, terminal moraine, and an outwash plain. South of the Ronkonkoma moraine is a relatively flat outwash plain that generally extends from the center of Long Island to the south shore. It is composed of well-rounded coarse-grained sand and gravel.

The Harbor Hill drift covers most of northern Nassau County and consists of outwash and till. Outwash deposits of the Harbor Hill ice sheet often thinly cover and are generally indistinguishable from the Ronkonkoma outwash from the Ronkonkoma moraine to the south shore of Long Island. Its surface is generally irregular and it includes numerous kettles, depressions, and small hills.

Glacial outwash from the Ronkonkoma and/or Harbor Hill glacial advances was encountered at the Site and make-up the Upper Glacial layer. The material is predominantly brown, medium to coarse-grained sand with minor amounts of fine sand and silt. The glacial outwash extends from ground surface to an unknown

depth as the transition between the Upper Glacial and Magothy is not distinct but presumed to occur before 75 feet bgs based on published literature (Isbister 1966). A surficial geologic map of the area showing the geologic units at land surface is presented as Figure 3-3.

The Magothy deposits are undifferentiated and lie unconformably on the Raritan Clay. The Magothy, like the Lloyd Sands and Raritan Clay, are early Cretaceous deposits of continental origin and are mostly deltaic quartzose very fine to coarse-grained sand and silty sand with interbedded silt and clay. The Magothy ranges in thickness from zero at its northern limit to more than 800 feet in southeastern Nassau County. The Magothy's upper surface slopes to the southeast and ranges from 200 feet above mean sea level (msl) to more than 350 feet below msl. The Magothy commonly has a 25- to 50-foot thick coarse sand and gravel layer at its base (Isbister, 1966).

3.2.3. Site Specific Geology

During the Groundwater RI conducted at the site, the Magothy was encountered from at least 75 feet bgs (the transition from the Upper Glacial to the Magothy is presumed to be less than 75 feet bgs) to as deep as 532 feet bgs. A review of the drilling data and geologic logs show that the Magothy is predominantly composed of brown, fine to medium-grained sand with some silty sand, silt, and clay lenses. While no significant silt and clay lenses were encountered in the Profiles upgradient of the Site, silt and clay lenses were encountered beneath and down-gradient of the Site.

A significant silt and clay lens was encountered in P-27 and P-C (-100 to -150 feet msl), and P-D (-150 to -200 msl) at the down-gradient boundary of the Site. A second significant silt and clay lens was detected along West John Street. This second silt and clay lens extends from P-38 to P-58 between -70 and -120 msl. There is insufficient information to determine if the northern silt and clay unit extends further to the east from the identified borings or if the second referenced silt and clay lens is connected to the silt and clay lens encountered at the down-gradient Site boundary (P-27, P-C, and P-D) between -100 and -150 msl.

Numerous discontinuous silt and clay lenses were encountered in deeper portions of the borings along West John Street. Numerous discontinuous thin silt and clay lenses were also encountered at the P-55, P-44, P-43, and P-42 transect, which is located just north of the railroad tracks. The silt and clay lenses were detected from +40 feet msl to the bottom of the borings.

3.3. Hydrogeology

3.3.1. Regional Hydrogeologic Setting

Although groundwater recharge takes place across most of the land surface of Long Island, it occurs most prominently in Nassau County along the morainal area to the north of the Site, which serves as not only a deep recharge zone but also as a groundwater divide (Figure 3-4). In general, groundwater moves away from the recharge area along the east-west trending central spine of the island and flows to the north and south toward the coastal areas. The regional groundwater flow direction in the Magothy aquifer can be inferred from the 1997 potentiometric surface map provided by the US Geological Survey (Busciolano, et al, 1998) presented as Figure 3-4. Based on the potentiometric surface of the Magothy aquifer as presented on this figure, the groundwater flow direction at and down-gradient of the Site is to the south with slight a southwesterly component.

Groundwater in the shallow portions of the Magothy Aquifer in the vicinity of the Site is unconfined. However, interbedded and overlapping lenses of silt and clay, located throughout the Magothy cause horizontal conductivity values to be larger than vertical values by factors ranging from approximately 36:1 to 120:1. These lenses and discontinuous layers cause a confining effect with depth (Isbister, 1966 and Reilly et al., 1983) such that the deeper portions of the aquifer respond hydraulically as a partially confined aquifer.

The storativity of the Magothy ranges from water table conditions (0.25) to confined conditions (0.0006) depending on the location and depth (Reilly et al. 1983). Hydraulic conductivity estimates for the Magothy Formation based on aquifer tests of permeable portions of the aquifer range from approximately 200 gallons per day per square foot (gpd/ft^2) to as much as 1,100 gpd/ft^2 with an average of approximately 500 gpd/ft^2, or approximately 27 feet per day (ft/d) to 150 ft/d with an average of approximately 67 ft/d (Isbister, 1966). Variations in the horizontal and vertical hydraulic conductivity can occur locally due to the presence of lower or higher permeability materials such as silts, clays, or gravels. More recent studies have generally assumed average values of hydraulic conductivity for the Magothy Formation to be in the range of 35 to 90 ft/d (Cartwright, 2002; Misut and Feldman, 1996; Smolensky and Feldman, 1995). The horizontal hydraulic gradient in shallow portions of the Magothy can range from 0.0001 to 0.001 feet per foot; however, the hydraulic gradient can be affected by hydraulic stresses such as local pumping, recharge basins, and remediation systems (Busciolano, et al, 1998).

3.3.2. Site Hydrogeology

The Site is located approximately one mile south of the regional groundwater divide. Groundwater in this area of Long Island migrates vertically downward due to recharge from precipitation. The amount of vertical movement will be greatest near the groundwater divide. Several miles away from the divide, the vertical movement decreases as the groundwater flow moves horizontally through the aquifer system. Nearer to the southern coastline groundwater flow patterns rise in the aquifer as flow converges on the discharge zone at the coast.

In the vicinity of the Site, recharge from precipitation causes downward vertical migration of groundwater and dissolved contaminants as groundwater flows beneath and down-gradient from the Site. This overlying recharge causes a dissolved COPCs to move vertically downward away from the water table as groundwater flows downward, as shown in a conceptual model of groundwater flow on Figure 3-5. This concept has been observed in many other areas of Nassau County (Weaver, et al., 1999).

Depth to groundwater (water table) at the Site is currently approximately 59 to 60 feet bgs (82 to 83 ft msl) (May 2010). Water levels collected from the synoptic round of measurements from 153 GTEOSI, GI, USACE, and NYSDEC wells/CMT ports (May 2010) were used to draw potentiometric surface maps and infer the groundwater flow direction at and down-gradient of the Site. Each water level measurement was subtracted from a corresponding measuring point elevation established for each well/CMT port during a recent survey conducted by a New York State licensed surveyor. The resultant water level elevations are listed in Table 3-1.

The depth to water at the Site has risen over 14 feet from 2002 to 2010. Water level elevations calculated in GTEOSI monitoring wells in December 2002 were ~~compared to the water level elevation calculated in GTEOSI monitoring wells in~~ May 2010. The results show that the average water level elevation in the GTEOSI monitoring wells (MW-3, MW-4, MW-8, MW-9, MW-10, MW-11, and MW-12) was 67.88 in December 2003. The average water level elevation in the same GTEOSI monitoring wells was 82.11 in May 2010. This shows that the water table has risen over 14 feet from December 2003 to May 2010 at the Site.

Figures 3-6, 3-7, and 3-8 depict the potentiometric surface using the three groupings of wells as shown on Tables 3-2, 3-3, and 3-4. Figure 3-6 (Table 3-2) shows the direction of groundwater flow in the shallow zone at and close to the Site is moving south with an average horizontal gradient of 0.001 feet per foot. Figure 3-7 (Table 3-3) shows the direction of groundwater flow in the intermediate zone is moving south with an average horizontal gradient of 0.001

feet per foot and Figure 3-8 (Table 3-4) shows the direction of groundwater movement in the deep zone is south with a southwest component and an average horizontal gradient of 0.001 feet per foot.

The direction of groundwater flow in the portion of the aquifer located down-gradient from the Site can also be evaluated using the distribution of 1,2-DCB; a chemical whose only known source area(s) are located on the former GI property south of the Site. Figure 3-9 shows the distribution of 1,2-DCB based on data collected during the 2010 comprehensive groundwater sampling event and from GTEOSI Profiles, GI Profiles (LP and WP), and data collected during historical GI groundwater sampling events. The data on this figure shows that 1,2-DCB is migrating predominantly to the south, with a slight southwest component. This data in combination with regional and Site-specific potentiometric surface maps provide multiple lines of evidence that the groundwater flow direction down-gradient of the Site is generally to the south.

With an understanding of the influences on the groundwater movement on Long Island, a composite potentiometric surface map was prepared using water level elevations from wells that reflect the vertical movement of groundwater as it migrates south. Water level elevations measured in shallow wells from the Site to West John Street, in intermediate wells from West John Street to Duffy Street, and deep wells from Duffy Street to the sentinel wells were used to map the potentiometric surface and evaluate the direction of groundwater flow in a sloping horizon that is consistent with the movement of 1,2-DCB (Table 3-5). The composite potentiometric surface map showing the direction of groundwater flow is shown on Figure 3-10 (Table 3-5). The results show that the inferred direction of groundwater flow is consistent with the mass movement of 1,2-DCB.

3.3.3. Local Influences on Groundwater Flow Direction

Industrial Wells

The direction of groundwater flow may have been affected historically by the pumping of three industrial wells that existed in close proximity to the Site (Appendix F). These wells include GI Well (N-6860) and PRD Wells (N-6202 and N9341). In addition, one diffusion well (N-6947D) located at GI also may have affected groundwater flow in close proximity to the Site. Available records on the GI Well (N-6860) show the well was installed in 1960, was approximately 96 feet deep, and was permitted to pump 150 gallons per minute (gpm). Available records also show that between 1960 and 1967, up to 150 gpm of water was pumped from N-6860 and used as non-contact cooling water. From 1960 to 1966 this water was discharged to diffusion well N-6947D. In 1967, this water was discharged to a recharge basin located on the northern portion of the former

GI's property. Given the well's proximity to the Site, these wells likely affected the direction of groundwater flow beneath GI and the southern portions of the Site when they were in operation.

PRD also had two industrial wells at its site that may have affected historical groundwater flow. Well Completion Reports for PRD Wells N-6202 and N-9341 show N-6202 was installed in November 1957 and N-9341 was installed in 1978 as a replacement for N-6202. N-6202 was 265 feet deep and was permitted to pump groundwater at 200 gpm. N-9341 was designed in a similar manner, was 264 feet deep, and was permitted to pump groundwater at 200 gpm. Reportedly, the water from these wells was used by PRD as non-contact cooling water and discharged into the recharge basin on the PRD property. The NCDOH required that this well be closed in 1982. A State Pollution Discharge Elimination System (SPDES) engineering report documenting the discharge at PRD is included as Appendix G.

Numerous other industrial wells that are in close proximity to the Site may also have had an influence on local groundwater flow. Figure 3-11 shows the location of these industrial wells and Table 3-6 lists each industrial well with their reported permitted pumping rates, if available. A well completion report for each well is included in Appendix F, if available.

GI and PRD Electronics Recharge Basins

Numerous industrial recharge basins that exist in the area may have locally affected the direction of groundwater flow. There were four recharge basins at the Site, one at GI, and one at PRD Electronics (Figure 1-5 and 3-11).

In 1964, GI constructed a recharge basin on the north side of the site to receive wastewater discharge from the newly constructed treatment plant designed to treat hydrogen fluoride and hexavalent chromium. Records show that not long after construction, the treatment and discharge systems were overloaded and partially treated and untreated industrial wastewater was discharged to the recharge basin resulting in NYSDEC permit violations. According to the plant's manufacturing processes documented in an H2M Engineering Report (H2M, 1971), partially treated and untreated industrial wastewater that was discharged to the recharge basins could have contained fluoride, hexavalent chromium, various acids, and degreasing solvents. The exact volume of contaminated and uncontaminated (non-contact cooling water and potentially minor portions of available storm water) water that was discharged to the recharge basin each year is unknown; however, records show that the treatment plant was originally designed (1964) to treat up to 3,500 gallons per day (gpd) or 2.4 gpm. In subsequent years additional manufacturing facilities were added to the site

resulting in an increased volume of industrial wastewater being discharged to the recharge basin. By 1971, up to 415,000 gpd (288 gpm) of treated or partially treated industrial wastewater and non-contact cooling water was discharged to the recharge basin. Up to 150 gpm of the 288 gpm was non-contact cooling water that was originally discharged to a frequently clogged diffusion well (N-6947D). Furthermore, approximately 20 gpm of water from the groundwater remediation system that operated from 1982 to 1985 was also discharged into the recharge basin. In 1982, all industrial wastewater was discharge to a Publicly Owned Treat Works (POTW), but the groundwater remediation system and the non-contact cooling water continued to be discharged to the recharge basin. The recharge basin ceased to exist after 1984 (Hart, 1985).

One recharge basin also existed at PRD Electronics and received up to 200 gpm of air conditioning cooling water from 1970 to 1988. An aerial photograph of this area taken in 1962 shows the presence of a recharge basin; therefore, air conditioning cooling water may have been discharged to this recharge basin as early as 1962.

Remediation Systems

There are three soil and groundwater remediation systems that likely affected the direction of groundwater flow near the Site. The first consists of a groundwater remediation system at the NCDPW, which operated from 1982 to 1996. The system included the extraction of groundwater from shallow portions of the Magothy aquifer at pumping rates that ranged from 80 to 210 gpm (Figure 1-2). The water was treated and discharged to the recharge basin at West John Street and Kuhl Lane. The purpose of this groundwater remediation system was to remediate groundwater containing gasoline and No. 2 fuel oil that was released at the NCDPW site. This groundwater remediation system likely had a local influence on groundwater movement.

The second remediation system, which includes unsaturated soil and shallow groundwater remediation at GI may currently have or have had an influence on local groundwater movement. A groundwater pump and treat remediation system operated in Area A from 1982 to 1985, extracted groundwater at 20 gpm from the shallow portions of the Magothy aquifer, and discharged the partially treated groundwater to an on-site recharge basin. In addition, Soil Vapor Extraction (SVE) systems were installed at GI in Area A, B, and C (Figure 3-12). These SVE systems could also have influenced local groundwater movement since an SVE system reduces the atmospheric pressure on the water table causing it to rise. The SVE system in Area A was installed in 1997 and continues

today. The SVE system in Area B operated from 1997 to 2002 and the SVE system in Area C operated from 1997 to 2001.

GI installed three UVB wells just north and west of the Nassau County Recharge Basin (#128) that is down-gradient of their site (Figure 3-11). UVB Well No. 1 was installed in June 2003 while UVB Wells Nos. 2 and 3 were installed in June 2004. Each well had a maximum pumping/injection rate of 70 gpm. GI stopped operating the UVB wells in May 2009. During the period of operation, the UVB wells could have had an influence on local groundwater movement.

4. Distribution of Groundwater Impacts

4.1. Potential Source Areas

4.1.1. GTEOSI Source Areas

Potential sources areas containing PCE, TCE (present as a result of the reductive dechlorination of PCE), nickel, and radionuclides (uranium and thorium) have been identified on-Site as described below.

- PCE was detected in the unsaturated soil at the 100 Property beneath and east of the 100 Building at concentrations that exceed the Site-specific NYSDEC Soil Cleanup Objective of 1.82 mg/Kg as per the Soil Remediation Program Work Plan (URS, et al, 2003) (Figure 4-1). A few isolated soil samples collected south of 100 Building and on the 70 and 140 Property also contained PCE at concentrations that exceed the Site-specific NYSDEC Soil Cleanup Objective.

- As a result of the reductive dechlorination of PCE, TCE was detected in the unsaturated soil beneath, immediately south, and east of the 100 Building (at the same locations as the PCE) at concentrations that exceed the Site-specific NYSDEC Soil Cleanup Objective of 0.70 mg/Kg as per the Soil Remediation Program Work Plan (URS, et al, 2003) (Figure 4-2).

- Nickel was detected in unsaturated soil at the 100 Property south of the 100 Building at concentrations that exceed the Site-specific NYSDEC Soil Cleanup Objective of 560 mg/Kg as per the Soil Remediation Program Work Plan (URS, et al, 2003) (Figure 4-3). A few isolated soil samples collected beneath the 100 Building and on the 140 Property also contained nickel at concentrations that exceed the Site-specific NYSDEC Soil Cleanup Objective.

- Uranium was detected in unsaturated soil; beneath and east of the 140 Building, beneath and south of the 100 Building, and beneath and north of the 70 Building at concentrations that exceed the Site-specific NYSDEC Soil Cleanup Objective of U-234 = 50pCi/G, U-238=50 pCi/G, or total Uranium = 100 pCi/G as per the Soil Remediation Program Work Plan (URS, et al, 2003) (Figure 4-4).

- Thorium was detected at isolated locations in unsaturated soil beneath and south of the 100 Building and beneath the 140 Building at

concentrations that exceed the Site-specific NYSDEC Soil Cleanup Objective of Th-232 of 3.4 pCi/G per the Soil Remediation Program Work Plan (URS, et al, 2003) (Figure 4-5).

4.1.2. GI Source Areas

Potential source areas also have been identified to the south (down-gradient) of the Site at the former GI property as described below (Stearns & Wheeler, 1992).

- PCE, TCE, 1,2-DCE and 1,2-DCB impacts have been identified (associated with the former 2,000-gallon solvent storage tank) on the north side of the former GI property including the former discharge basin/waste lagoon designated by GI as Area A.
- PCE, TCE, and 1,2-DCB impacts have also been identified on the southwest side of the former GI property (associated with the former 1,000-gallon solvent storage tank) designated by GI as Area B
- PCE and TCE impacts have been identified (associated with the tunnel sump) on the east side of the former GI property designated by GI as Area C.

These potential source areas are shown on Figure 3-12. The former discharge waste basin/lagoon can be seen on the aerial photograph on Figure 4-6.

4.1.3. Nearby Source Areas

The various sampling results, as well as sampling results at the Plant V Well make it clear that there are a number of off-site sources of PCE and TCE in the area. It is not the purpose of this report to discuss the numerous potential sites. NYSDEC is believed to be investigating potential off-site sources in the area.

4.2. Groundwater Investigation

The Triad Approach was used as a process to guide the Groundwater RI through a series of iterative phases where data was collected to define the nature and extent of potential impacts using real-time methodologies (www.triadcentral.org). The data was compared to the CSM, reviewed to refine the CSM and identify potential data gaps, and used to develop a scope of work to fill those data gaps and manage potential uncertainty. The Triad Approach used at the Site has three components including: systematic planning, dynamic work strategies, and real-time measurement systems. Each component is described in greater detail below.

Systematic Planning – A CSM was developed at the start of the project based on published literature and past experience with regional hydrogeology and with the fate and transport of CVOCs, nickel, and uranium in this area of Long Island.

Dynamic Work Strategies – Real-time hydrophysical and chemical data were routinely compared to the CSM, evaluated as part of a data gap analysis, and used to identify additional data needs required to define the nature and extent of CVOCs. The process allowed for the revision and refinement of the CSM.

Real-Time Measurement Systems – The Waterloo Profiler was used to collect depth-discrete groundwater samples. These samples were analyzed at an on-Site laboratory to create a real-time measurement system that allowed for on-Site data analysis.

The use of the Triad Approach including the use of dynamic work strategies and real-time measurement technologies allowed the data collection programs and field activities to adapt to site conditions and be adjusted based on real-time analytical results.

4.2.1. Sources of Data

This Groundwater RI presents data from multiple sources of information to define the nature and extent of Site-related groundwater impacts and to provide limited information regarding groundwater impacts associated with other contaminant sources. The sources of data include:

GTEOSI – Analytical results for groundwater collected from Profiles and monitoring wells (CVOCs, metals, and radionuclides). The GTEOSI Profile and groundwater monitoring well water quality data can be found in Tables 4-2, 4-3, and 4-4;

GI – Analytical results for groundwater collected from Profiles (CVOCs). The GI Profile water quality data and quality control documentation can be found in site investigation reports prepared by GI's consultants (WSP Engineering of New York, P. C. 2010); and

USACE – Analytical results for groundwater collected from groundwater monitoring wells (CVOCs, metals, and radionuclides). The USACE groundwater monitoring well quality data can be found in Tables 4-2, 4-3, and 4-4.

The water quality data used to define the nature and extent of groundwater impacts in this report has been generated from the sources listed above. The comprehensive data set includes a large suite of analytes for thousands of groundwater samples collected from on-Site and off-Site locations, including over 1,750 groundwater samples collected from GTEOSI on-Site and off-Site Profiles, more than 300 groundwater samples collected from GI Profiles, and groundwater samples collected from 149 monitoring wells/CMT ports.

4.2.2. GTEOSI Profile Data

4.2.2.1. Data Quality Objectives

Data Quality Objectives (DQOs) are developed and implemented to ensure that the quality of the data is legally and scientifically defensible and capable of fulfilling its intended use. The DQOs of the on-Site and off-Site groundwater analysis that was collected in real-time using the Triad approach included a requirement for the data to be of sufficient quality to define the nature and extent of Site related groundwater impacts. This objective was achieved by analyzing the groundwater samples in an on-Site analytical laboratory set up and operated by SEI using typical off-Site laboratory Standard Operating Procedures (SOPs) and protocols (Appendix H). As a type of data validation/data evaluation, 10 percent of the Profile groundwater samples were split and sent to an off-Site laboratory (TA) and analyzed for CVOCs by Method 8260B using SW-846 methods and CLP procedures. A comparison of the groundwater sample results from the on-Site and off-Site laboratory (Figure 4-7) shows consistency between the two datasets (r^2 >98% for PCE, r^2.92 % for TCE, and r^2.97% for cis-DCE) and confirms that both groundwater quality results are suitable for delineating groundwater impacts to the SCGs and background concentrations of COPCs.

4.2.2.2. Profile and Monitoring Well Data Comparison

The analysis of the groundwater samples collected from Profiles correlates with the analysis of groundwater samples collected from monitoring wells. This was evaluated by comparing PCE and TCE concentrations in groundwater samples collected from Profiles and corresponding monitoring wells (e.g., Profile P-110 at 350 feet vs. Monitoring Well MW-P110-355) as shown in Table 4-1. The data on Table 4-1 show that there is a high degree of similarity between the concentration of PCE and TCE in groundwater samples collected from Profiles and the corresponding monitoring wells. The data on this table show that the concentration of PCE and TCE in groundwater samples collected from monitoring wells is generally lower than the concentration of PCE and TCE in groundwater samples collected from Profiles. This difference is expected as the groundwater samples from Profiles are collected from discrete intervals (a few inches to one to two feet), while the groundwater samples from monitoring wells

are collected from much larger 10-foot vertical intervals. Thus, while Profile concentrations are typically greater than monitoring well corresponding concentrations (a fact that must be considered in any analysis based on Profile data), groundwater samples collected from Profiles are generally representative of aquifer conditions and suitable for delineating groundwater impacts to the SCGs and background concentrations of COPCs.

The GTEOSI on-Site laboratory data is included in Appendix I.

4.2.3. Groundwater Monitoring Well Data

In addition to the Profile data, one comprehensive round of groundwater samples was collected from 149 monitoring wells and CMT ports between March and May 2010. Groundwater samples were collected from the monitoring wells listed in Section 1.2. During this event, GTEOSI led activities associated with the collection of groundwater samples from the monitoring wells owned by GTEOSI, GI, and the NYSDEC CMT multi-port wells associated with the Anchor Chemical site. The USACE led activities associated with the collection of groundwater samples from the USACE monitoring wells with GTEOSI oversight. In addition to collecting samples from the aforementioned wells, GTEOSI also collected groundwater samples from the USACE monitoring wells (100 percent for VOC analysis and 10 percent for the remaining analytes listed in Section 2.1). The groundwater samples collected by GTEOSI were sent to TA following chain-of-custody procedures and analyzed for the parameters listed in Section 1.2. The groundwater samples collected by the USACE were analyzed for the following parameters:

- CVOCs by USEPA Method 8260B;
- Metals by Method 6010B;
- Alpha Spec (U-234, U-235, and U-238) by DOE-A-01-R;
- Alpha Spec (Th-228, Th-230, and Th-232) by DOE-A-01-R;
- Radium-226 by Method 9315; and
- Radium-228 by Method 9320.

The GTEOSI water quality data was evaluated according to the quality assurance and quality control objectives outlined in the QAPP (URS, 2002 Work Plan). This evaluation focused on determining whether the data met the quality assurance objectives for each DQO. The results of the evaluation were summarized in DUSRs that describe whether the data met Site-specific criteria for data quality

and use (Appendix J). In general, the DUSR reports show that the data are usable and individual data are appropriately qualified where needed.

4.3. Nature and Extent of Groundwater Impacts

The groundwater quality data were initially evaluated to determine if the data met quality assurance and quality control objectives. Depictions of Profile data, taking into account the nature and extent of available data, were then generated using Environmental Visualization System (EVS) software. Interpolation was performed using an inverse distance weighting algorithm, and the resulting two-dimensional and three-dimensional depictions were cropped to the edges of the data domain. The interpretation took into account the regional and local geology and hydrogeology along with research conducted in order to identify potential local influences on groundwater flow, including recharge basins; municipal, industrial, and remediation wells; and other remediation system in close proximity to the Site. Finally, the results were graphically displayed on plan view, side view, and cross-section maps (Figures 4-8 through 4-11).

4.3.1. Potential Impacts to Groundwater - GTEOSI

4.3.1.1. Volatile Organic Compounds

The nature and extent of groundwater impacts from potential sources areas at the Site and up-gradient/down-gradient/cross-gradient of the Site were evaluated using the groundwater Profile data (Appendix I) and groundwater monitoring well data from the spring 2010 sampling event (Table 4-2). The results show that the source areas of PCE as shown on Figure 4-1 are impacting the underlying groundwater (Figure 4-8). A review of the on-Site groundwater data will show that the source area east of the 100 Building is the largest source area of CVOC on-Site and is contributing the most CVOC mass to groundwater under the Site. Most of the other potential source areas shown on Figure 4-1 are under the 70, 100, and 140 Buildings and therefore not contributing significant CVOC mass to groundwater as they are covered by an impervious surface that prevents water from migrating through the areas and creating impacts to groundwater.

The groundwater impacts associated with source areas were characterized by reviewing water samples collected at the water table immediately under the identified source areas. For example, impacts associated with the source area located east of the 100 Building at the Site were characterized using groundwater collected from MW-22. For each sample, the concentration of each ethene (i.e., PCE, TCE, DCE, and VC) found in a particular groundwater sample was multiplied by the particular ethene's respective molar mass and divided by the total number of moles of ethene found in the sample. This analysis established

the molar fraction of each ethene for the particular groundwater sample. Using this analysis, groundwater impacts in MW-22 were found to contain 94 percent PCE and six percent TCE (molar fraction). Groundwater impacts associated with other, less significant, on-Site source areas also were estimated by calculating the molar fraction of ethenes collected from monitoring wells (MW-03, MW-04, MW-08, MW-09, MW-10, MW-11, MW-12, MW-22S, MW-24S, MW-28S, MW-29S, MW-32D, MW-33D, MW-33S, MW-39S, MW-44S, MW-52D, MW-53S). These samples were found to contain 97.9 percent PCE, 1.6 percent TCE, and 0.5 percent DCE (average molar fraction).

The area containing potential groundwater impacts from source areas on the GTEOSI property as shown on Figure 4-9 was inferred from the molar fraction of PCE in each groundwater sample collected from monitoring wells and Profiles (Appendix I and K) in conjunction with an understanding of groundwater flow and mass transport at and in the vicinity of the Site. The groundwater results show that after reaching the water table at the Site, PCE alone or in combination with low concentrations of TCE, resulting from the reductive dechlorination of PCE, migrate south and move deeper into the aquifer with groundwater flow.

Some of the PCE and TCE from the source area east of the 100 Building has migrated beneath the CVOCs that were released from GI (including PCE, TCE, and 1,2-DCB). This is consistent with the CSM shown on Figure 3-5 and is shown on Figure 4-9 and Figure 4-10 where some of the PCE from the Site is migrating beneath the 1,2-DCB from GI.

Non-Site Related VOCs

1,1,1-Trichloroethane (1,1,1-TCA), 1,1-Dichloroethene (1,1-DCE), and chloroform were detected above their respective NYSDEC GA Groundwater Standard in groundwater samples collected during the spring 2010 sampling event. 1,1,1-TCA was detected in groundwater samples collected from intermediate depth on-Site monitoring wells (MW-30I and MW-30D). Additionally, 1,1-DCE was detected in groundwater samples collected from intermediate depth on-Site monitoring well (MW-30I). Given the depth of these wells, these compounds are from an up-gradient source. Chloroform was detected in groundwater collected from monitoring wells MW-18I, MW-20I, MW-22I, MW-28I, MW-42I, MW-43S, and MW-55S. The fact that these monitoring wells lie in the northeast corner of the Site suggests the chloroform also is from an upgradient source.

4.3.1.2. Metals

Groundwater samples collected during the spring 2010 sampling event were also analyzed for the Target Analyte List of metals (Table 4-3). The results show that iron, manganese, potassium, magnesium, sodium, and nickel were detected in samples collected from on-Site monitoring wells and off-Site monitoring wells that have been identified to potentially contain Site related groundwater impacts (W-16-148, W-31-95, W-19-110, W-19-150, W-26-270, W-30-285, and MW-P110-440) at concentrations that exceed the NYSDEC GA Groundwater Standard. Iron, manganese, potassium, and magnesium are naturally occurring metals in groundwater on Long Island and are not attributable to anthropogenic sources at the Site. Sodium was detected at concentrations that exceeded the NYSDEC GA Groundwater standard in numerous groundwater samples collected from on-Site and off-Site monitoring wells. The source of the sodium is believed to be the NCDPW salt pile located to the north of the Site. Chromium was detected in one groundwater sample (W-31-95) above the NYSDEC GA Groundwater Standard. The detection of chromium is attributed to GI as three of five groundwater samples that contained chromium above the NYSDEC GA Groundwater Standard were collected from shallow monitoring wells at GI (W-2-70, W-10-120, and W-12-120).

Nickel

Groundwater samples collected during the comprehensive spring 2010 sampling event were analyzed for nickel according to the NYSDEC Technical and Administrative Guidance Memorandum #4015 using total nickel concentrations for groundwater samples that had a turbidity less than 50 NTUs and dissolved nickel for groundwater samples that had a turbidity greater than 50 NTUs. Filtered groundwater samples were also collected from monitoring wells (owned by GTEOSI, GI and the NYSDEC) that contained groundwater with less than 50 NTUs and analyzed for metals to confirm the dissolved concentration of nickel. Groundwater samples were also collected from selected (MW-8, MW-23S, MW-26I, MW-27S, MW-31D, MW-44S, and MW-50I) monitoring wells in November 2010 and analyzed for total and dissolved nickel.

The results on Figure 4-11 and in Table 4-3 show that groundwater is impacted by nickel above the NYSDEC GA Groundwater Standard south of the 100 Building; however, nickel impacts to groundwater are limited in aerial extent. The extent of the nickel impacted groundwater is limited from the source area south of the 100 Building to an area slightly south of the southern boundary of the 70 Property.

4.3.1.3. Radionuclides

Groundwater samples collected during the comprehensive spring 2010 sampling event were analyzed for radionuclides per methods described in Section 1.2. The results (Table 4-4 and Figure 4-12) show that only uranium was detected above 27 pCi/L (interpreted to be equal to the USEPA MCL of 30 ug/L) in on-Site groundwater samples. The elevated uranium levels were detected east of the 140 Building and on the GCDR; however, the uranium is not mobile. Uranium mobility at the Site is limited as evidenced by the fact that the areas impacted by uranium are small isolated areas, limited in aerial extent and no off-Site uranium impacts have been identified (Figure 4-12).

4.3.2. Potential Impacts to Groundwater – Other Source Areas

The nature and extent of CVOCs were evaluated using the groundwater Profile data (Appendix I) and groundwater monitoring well data from the spring 2010 sampling event (Table 4-2). Pie diagrams (Figure 4-9) were used to characterize the groundwater impacts at the GI property. Groundwater impacted by Source Area A at GI (W-1-75 and W-1-120) can be characterized to contain cis-DCE (average molar fractions = 58 percent) and TCE (average molar fractions = 30 percent) and lesser amounts of PCE (average molar fractions = 10 percent). Groundwater down-gradient of the source area contains highly variable molar fractions of cis-DCE and TCE showing there were multiple source areas, source or sources that were variable over time, and/or variability in reductive dechlorination as the CVOCs migrated south.

The pie diagrams presented on Figure 4-9 show the distribution of TCE, cis-1,2-DCE, PCE and VC down-gradient of GI. Groundwater containing high but varying molar fractions of TCE and cis-DCE with relatively low molar fractions of PCE are present in the groundwater down-gradient of GI. VC was detected in five groundwater samples at concentrations above the NYSDEC GA Groundwater Standard. All of the wells containing VC are at or down-gradient of GI (W-1-75, W-20-160, W-25-188, W-27-240, and, W-27-285). The pie diagrams also show the distribution of 1,2-DCB in groundwater at and south of the GI site. The area containing potential groundwater impacts from GI can be inferred from Figure 4-9 from the distribution of 1,2-DCB and molar fractions of PCE along with higher concentrations of TCE in each groundwater sample collected from monitoring wells and Profiles (Appendix I and K) in conjunction with an understanding of groundwater flow and mass transport at and in the vicinity of the Site.

In addition to the potential groundwater impacts from PCE and associated degradation compounds from known source areas at GI and GTEOSI, the

following observations and interpretations regarding groundwater impacts can be inferred on Figure 4-9:

- Groundwater containing high molar fractions of TCE to the east of GI and to the west of GTEOSI groundwater impacts as shown on Figure 4-9 is from unknown source areas.

- Groundwater containing a majority of TCE on the east side of the groundwater impacts potentially coming from GTEOSI is from multiple source areas. Groundwater containing a majority of TCE detected at 170 feet bgs in MW-114 is from a source area that is closer to the detected impacts than the groundwater containing a majority of TCE that was detected deeper at 450 feet bgs in the sentinel well (S-1-450).

- Groundwater containing a majority of TCE on the west side of the impacted groundwater potentially attributed to GI is from multiple source areas. Groundwater containing a majority of TCE detected at 80 feet bgs in monitoring well WP-07 is from a source area that is closer to the detected impacts than the groundwater containing a majority of TCE that was detected much deeper at 325 and 385 feet bgs in monitoring wells W-37-325 and W-37-385.

Aside from PCE and its degradation compounds, other VOCs were detected in groundwater samples down and side gradient of the Site collected during the spring 2010 sampling event in exceedance of applicable NYSDEC GA Groundwater Standards. These compounds that do not appear to have originated from the Site, include 1,1,1-TCA), 1,1-Dichloroethane (1,1-DCA), 1,1-Dichlorethene (1,1-DCE), chloroform, carbon tetrachloride, and ethylbenzene.

- 1,1,1-TCA was detected in groundwater collected from off-Site monitoring wells W-37-385, PW-03-03, PW-06-03, and MW-P114-290.

- 1,1-DCA was detected in groundwater collected from MW-114-170R and MW-114-290 at concentrations exceeding the NYSDEC GA Groundwater Standard indicating a source areas east of GTEOSI.

- 1,1-DCE was detected in groundwater collected from W-24-260, W-37-325, W-37-385, MW-110-335, MW-P114-290 at concentrations exceeding the NYSDEC GA Groundwater Standard indicating a source area other than GTEOSI.

- Carbon tetrachloride was detected in groundwater collected from three monitoring wells (W-36-390, W-37-325, and W-37-385) at concentrations

exceeding the NYSDEC GA Groundwater Standard. The location and depths of these monitoring wells suggest that the source is either GI or a source area to the west of the GI property.

- Ethylbenzene was detected in groundwater collected from W-10-75 at concentrations exceeding the NYSDEC GA Groundwater Standard indicating a source at GI.

These COPCs, based on their location with respect to groundwater flow patterns, are attributed to off-Site sources.

4.3.2.1. Metals

Groundwater samples collected during the spring 2010 sampling event were analyzed for the Target Analyte List of metals (Table 4-3). The results show that iron, manganese, potassium, sodium, cadmium, and chromium were detected at concentrations that exceed the NYSDEC GA Groundwater Standards in groundwater samples collected from off-Site monitoring wells that have been interpreted to not contain impacts from GTEOSI. Iron, manganese, and potassium are naturally occurring metals and are not attributable to anthropogenic sources. Sodium was detected at concentrations that exceeded the NYSDEC GA Groundwater Standard in numerous groundwater samples collected from on-Site and off-Site monitoring wells. This zone of elevated sodium is attributed to the NCDPW salt pile located north of the Site. Chromium was detected in groundwater samples collected from W-02-70, W-10-120, W-12-120, W-31-95, AND W-36-448 above the NYSDEC GA Groundwater Standards. The detection of chromium is attributed to GI as three of five groundwater samples that contained chromium above the NYSDEC GA Groundwater Standard were collected from shallow monitoring wells at the GI property (W-2-70, W-10-120, and W-12-120). Finally, cadmium was detected in a groundwater sample collected from monitoring well W-32-110. The cadmium is likely from GI as this well is located on the west side of the property.

5. Fate and Transport

This section presents the processes that can affect the migration and concentration of CVOCs in groundwater. The biological mechanism that affects dissolved-phase CVOCs at the Site is reductive dechlorination. The physical mechanisms that affect the concentrations of dissolved-phase CVOCs as they migrate through the aquifer include dilution through recharge, dispersion, adsorption, and volatilization.

5.1. Reductive Dechlorination

Reductive dechlorination of CVOCs (i.e., PCE and TCE), is a process that degrades PCE, TCE, DCE, and VC through a series of steps to an end product of ethene. Reductive dechlorination results in the removal of chlorine atoms from the CVOC molecules such that PCE is dechlorinated to form TCE, which can be subsequently dechlorinated to DCE, VC, and, ultimately, ethene. Figure 5-1 shows the potential reductive dechlorination process of CVOCs in the groundwater at the Site.

Reductive dechlorination is a process by which microorganisms replace a chlorine atom on a CVOC molecule with a hydrogen atom (Morrison, 2000). For the dehalogenating process to take place, there must be a sufficient carbon source (other than the chlorinated compounds), such as a hydrocarbon product release, in the aquifer to feed the anaerobic microbial community utilizing electron receptors producing an aerobic environment. However, if the geochemical conditions are not ideal for reductive dechlorination, reductive dechlorination may terminate after removal of only some of the chlorine atoms.

In addition to the presence of microorganisms, the process of reductive dechlorination is dependent on the geochemical conditions in the subsurface. Electron acceptors (CVOCs), electron donors (sulfate, nitrate, iron, or methane), a reducing environment (low reduction-oxidation potential conditions), and a carbon source (hydrocarbons, acids, ketones, aldehydes, or alcohols), are all needed for reductive dechlorination to occur. An anaerobic or reducing environment is indicated when dissolved oxygen (DO) concentrations are less than 0.5 milligrams per liter (mg/L). A reducing environment is indicated by an oxidation-reduction potential (ORP) of less than 50 millivolts (mV) (USEPA, 1998).

5.2. Dilution

The concentration of CVOCs will decrease over time as a result of dilution. Dilution can be caused by mixing with precipitation infiltrating into the aquifer.

5.3. Dispersion, Adsorption, and Volatilization

Dispersion, adsorption, and volatilization can affect the fate and transport of CVOCs in the groundwater. Dispersion is the physical process of mixing along a groundwater flow path resulting from differences in path length and flow velocity. This mixing will result in lower contaminant concentrations as the contaminant mass mixes with uncontaminated groundwater. Dispersion occurs vertically as well as parallel and perpendicular to the direction of ground-water flow.

Adsorption is the attraction and adhesion of a layer of any substance from an aqueous solution to the solid surface with which it is in contact. Adsorption of a contaminant to the aquifer matrix results in an apparent decrease in contaminant mass because dissolved contamination is removed from the aqueous phase.

Volatilization is the process by which contaminants are removed from groundwater and are transferred to the vapor phase (soil gas) at the water table. Volatilization is controlled by the chemical's Henry's Law constant and occurs at the interface of groundwater and soil.

5.4. Summary

Reductive dechlorination has only a nominal affect on PCE released from the Site. Given the reduction-oxidation potential and amount of oxygen in the aquifer (Appendix E) and the lack of a carbon food source in the vicinity of the Site, PCE and TCE found in soil at the Site generally do not degrade in the aquifer under the Site. Dilution, dispersion, adsorption, and volatilization likely have minor effects on the fate and transport of CVOCs associated with the Site or otherwise found in the area. Groundwater impacts on Long Island tend to be long and narrow; therefore, dispersive effects tend to be minimal. Little attenuation of CVOCs will occur at the Site as a result of adsorption because of the low total organic carbon content of the aquifer (Schwarzenbach et al, 1993). While volatilization of CVOCs will occur at the Site where the groundwater containing CVOCs is at the water table and in contact with soil gas, volatilization of CVOCs will not occur as the contaminants migrate south and are pushed deeper into the aquifer by recharge.

6. Qualitative Exposure Assessment

The qualitative exposure assessment (QEA) contained herein follows current DER-10 guidance effective June 2010 and includes assessment of both fish and wildlife resources and human health. The overall purpose of the QEA is to evaluate whether fish and wildlife resources may be impacted by, or humans may be exposed to Site-related chemicals. Following a brief overview of Site and RI information relevant to this QEA, the methodology and findings of the fish and wildlife resources impact analysis (FWRIA) and a human health exposure assessment are presented.

As discussed further in the secions below, no fish and wildlife impacts were determined and no further wildlife analysis is required. Human exposure to volatile COPC in indoor air in existing or newly constructed buildings above shallow groundwater impacted with Site-related volatile chemicals was identified as a possible exposure pathway on-Site and in limited areas immediately adjacent to the Site and further off-Site. However, this possible exposure pathway is likely very limited off-Site due to the limited areal extent of Site-related volatile COPC in shallow groundwater underlying off-Site locations. Human exposure to COPC in groundwater surrounding water supply wells down-gradient from the Site was idenfiied as a possible exposure pathway if concentrations were to exceed current treatment capacity. The relationship between Site releases and these southern areas of groundwater impacts has not been determined due to commingling with contamination emanating from other source areas in the vicinity of the Site.

6.1. Demographics

The estimated population of Hicksville, New York based on a 2006-2008 community study was 43,460 (U.S. Census Bureau, 2010). The population was 74.3 percent white, 12.3 percent African American, 4.4 percent Asian, and 0.8 percent American Indian and Alaska Native. The median household income was $82,231 (in 2008 inflation-adjusted dollars) and 67.1 percent of occupied housing units are owner occupied.

Hicksville is located on a major commuter rail line and is considered a major transportation hub. As shown on Figure 6-1, between 50 and 60 percent of the land area within Hicksville is residential. However, the Site is located in a predominantly industrial area.

6.2. Environmental Media of Concern

Several multi-media investigations have been completed at and in the vicinity of the Site since 1999. The investigation and remediation of on-Site soil has been the focus of previous investigations. The focus of this RI, and therefore the primary focus and environmental medium of concern for this QEA, is groundwater. The water quality results from two types of groundwater samples (monitoring wells and depth-discrete profiles) were used in this QEA. A comprehensive round of groundwater samples were collected from 149 on-Site and off-Site monitoring wells in the Spring of 2010. These groundwater samples were analyzed for the parameters listed in Section 1.2. Several of these monitoring wells were re-sampled for nickel in November 2010. Groundwater samples were also collected at 10-foot depth-discrete intervals from 67 on-Site and off-Site profile borings (October 2002 and May 2009). These groundwater samples were analyzed for the parameters listed in Section 1.2. In addition, depth-discrete groundwater samples from 11 GI profile borings and 6 NYSDEC borings were also used in this RI (September 2006 to March 2008). Select groundwater data were evaluated in this QEA, as discussed further in a subsequent section.

6.3. Fish and Wildlife Resources Impact Analysis

The objectives of the FWRIA are to characterize environmental resources on and in the vicinity of the Site and identify actual or potential impacts to those resources from Site-related chemicals. Since most of the Site is covered by buildings and pavement, there are no fish and wildlife resources on the Site. There is no surface water body present on or in the vicinity of the Site and groundwater impacted by Site-related chemicals does not discharge to surface water. As noted previously and shown on Figure 6-2, the nearest New York State classified surface water body is over 4 miles down-gradient from the Site. Given the absence of fish and wildlife resources on and in the vicinity of the Site, and in accordance with Section 3.10.1 and Appendix 3C of the DER-10 guidance, no further analysis is required.

6.4. Human Health Exposure Assessment

The object of the human health exposure assessment is to qualitatively evaluate whether humans may potentially be exposed to Site-related chemicals, currently or in the future, in the absence of additional remediation at the Site. This assessment is comprised of the following three components:

- An exposure assessment in which actual and/or potential chemical release mechanisms and environmental migration pathways are

considered and possible exposure pathways and routes of exposure are identified for potentially exposed human populations.

- A data evaluation in which groundwater data from prior investigations are evaluated and COPC identified for use in this human health exposure assessment.

- An exposure characterization in which the potential for exposure to the COPC is qualitatively evaluated and possible measures to eliminate/mitigate possible unacceptable exposures are discussed.

6.4.1. Exposure Assessment

The objective of the exposure assessment is to analyze the type of and potential for human exposure to the Site-related COPC that are present in, or migrating from, the environmental medium of concern: groundwater. The exposure assessment considers human populations with a potential for current or future exposure to groundwater contamination and an analysis of the possible pathways and routes by which exposure to such contaminants may occur.

The exposure assessment follows the conceptual site exposure model (CSEM), presented on Figure 6-3. The CSEM is a graphic illustration of exposure pathways from on-Site sources, through release mechanisms, to exposure routes. It considers current and potential future conditions and surrounding land uses. Consistent with the format suggested in Appendix 3B of the DER-10 guidance, potentially complete and incomplete exposure pathways are summarized in Table 6-1.

6.4.1.1. Points of Human Exposure

There are no potable or industrial water supply wells on the Site. Industrial wells in the vicinity of the Site are discussed in Section 3.0. The nearest down-gradient industrial well, located on the GI property, was abandoned sometime before 1971. Two additional wells, associated with the former PRD facility were located approximately 1,100 and 1,400 feet southwest of the Site. One was abandoned in the late 1970s and the second was abandoned in the early 1980s. Several other industrial wells associated with Preferred Sand & Stone, Trans Mix, and Certified Industries are located approximately 2,200 to 2,500 feet southeast of the Site. It is uncertain how these wells were used (e.g., air conditioning, diffusion, non-contact cooling) or whether they are still in service, but such wells were typically used for air conditioning purposes. Regardless of the status, it is unlikely that these wells are used in a capacity that would facilitate human exposure to groundwater.

There are two sets of municipal water supply wells that are alleged to be located down-gradient of the Site, as shown on Figure 6-4. The Hicksville Water District Plant No. 5 wells are located approximately 1.5 miles south of the Site. The Bowling Green Water District wells are located approximately 1.5 miles southwest of the Site. Based on the interpretation of groundwater flow and mass transport described in Sections 4.0 and 5.0, only Hicksville Water District Plant No. 5 could be a potential receptor for Site-related chemicals. As described previously, due to the comingling of groundwater contamination impacts, it is difficult to determine if Site-related chemicals have reached Hicksville Water District Plant No. 5. However, potable water could become a point of human exposure if future investigations indicate that Site-related chemicals impact the Hicksville Water District Plant No. 5 wells and concentrations of COPCs exceed existing wellhead treatment capabilities.

Site-related volatile chemicals in groundwater at the water table may volatilize, migrate through the vadose zone, and enter indoor air in occupied buildings through building foundations and/or preferential pathways (e.g., utility connections). This phenomenon is influenced by a variety of meteorological, hydrogeological, and building conditions and operations, each with considerable temporal and spatial variation. Commercial, industrial or residential buildings located over groundwater impacts located on or near the water table, therefore pose potential points of current or future human exposure.

Passive emissions of Site-related volatile chemicals in subsurface vapors to outdoor air, if it were to occur, would rapidly disperse and become dilute upon release. Therefore inhalation of outdoor air by workers, residents, and construction/utility workers during excavation activities (e.g., for construction or utility installation, maintenance, or repair) are considered incomplete exposure pathways.

~~Lastly, as noted in the FWRIA, there is no surface water body present on or in~~ the vicinity of the Site and groundwater impacted by Site-related chemicals does not discharge to surface water.the water table is located approximately 59-60 feet bgs and groundwater impacted by Site-related chemicals is not expected to discharge to surface water. Therefore, direct contact with shallow groundwater by construction/utility workers during excavation activities and direct contact with surface water by recreational users are considered incomplete exposure pathways.

6.4.1.2. Potentially-Exposed Populations and Potentially Complete Exposure Pathways

Potentially exposed populations were identified based on the points of human exposure and the current, likely, and hypothetical future land uses on the Site, in the vicinity of the Site, and above the down-gradient extent of groundwater impacted by Site-related chemicals attributed to the on-Site source areas. A complete exposure pathway generally comprises the following five elements, all of which must be present for the pathway to be regarded as complete:

- A source and mechanism of chemical release;
- Environmental media and transport mechanisms;
- A contact point with an affected environmental medium;
- A receptor population; and
- A route of exposure (i.e., ingestion, dermal contact, inhalation) at the contact point.

An exposure pathway is considered incomplete, and there is no potential for exposure, if any of the elements are missing, either currently or in the future.

The following exposure pathways were identified as potentially complete for each potentially-exposed population, as depicted on Figure 6-3 and in Table 6-1.

Current/Future Scenario

The current/future scenario considers current conditions that may continue in the future, in the absence of additional remediation. The following potentially complete exposure pathways may exist for the indicated potentially-exposed populations:

- Limited off-Site workers who may work in buildings overlying groundwater impacted with Site-related volatile chemicals at the water table could be exposed via inhalation to these chemicals in indoor air as a result of subsurface vapor intrusion.

Future Scenario

The future scenario considers conditions that may exist in the future, in the absence of additional remediation. The following potentially complete exposure

pathways may exist in the future for the indicated potentially-exposed populations:

- On-Site workers who may work in buildings overlying groundwater impacted with Site-related volatile chemicals at the water table could be exposed via inhalation to these chemicals in indoor air as a result of subsurface vapor intrusion.
- On-Site and limited off-Site residents who may live in buildings overlying groundwater impacted with Site-related volatile chemicals at the water table could be exposed via inhalation to these chemicals in indoor air as a result of subsurface vapor intrusion.
- Residents and workers who could be exposed to Site-related chemicals in potable water via ingestion, dermal contact, and inhalation, in the event that groundwater containing these chemicals impacts down-gradient municipal water supply wells.

6.4.2. Data Evaluation

The objective of a data evaluation is to compile analytical data for each environmental medium of concern that are relevant to the assessment and to select site-related COPC for the assessment. COPC in groundwater were selected based on comparison of detected chemical concentrations of Site-related chemicals (i.e., PCE, TCE, nickel, and uranium) to applicable New York State regulatory standards and guidance values, where available.

The following sub-sections describe the data evaluated in this assessment and identify Site-related COPC in groundwater. Data summary tables, organized to facilitate the data evaluation, present the screening criteria used to select COPC, as discussed below.

Groundwater quality data collected in the spring of 2010 and November 2010 for this Groundwater RI from monitoring wells located both on the Site and on surrounding properties were evaluated. Only data from select monitoring wells located on-Site and down-gradient of the Site identified to have impacts consistent with the chemical characteristics of GTEOSI-related releases and in aquifer locations and depths consistent with flowpaths from GTEOSI source locations were summarized. Monitoring well data showing characteristics similar to those of GTEOSI impacts may be related in whole or in part to other contamination sources depending on the location of the impact with respect to known or suspected source locations and the patterns of groundwater flow in the

vicinity. The selected monitoring wells are listed in Table 6-2 and shown on Figure 1-3.

Also evaluated in this Groundwater RI are groundwater quality data from profile borings located both on-Site and on surrounding properties. Again, only data from profile borings and depth-discrete sampling intervals on-Site and down-gradient of the Site identified to have impacts characteristic of GTEOSI were summarized. Monitoring well data showing characteristics similar to those of GTEOSI impacts may be related in whole or in part to other contamination sources depending on the location of the impact with respect to known or suspected source locations and the patterns of groundwater flow in the vicinity. The selected profile borings (and, where appropriate, the sampling intervals) are listed in Table 6-3 and shown on Figure 1-4.

The data from the monitoring wells and profiles are summarized separately for all depths, and for shallow depths only. Monitoring wells screened at less than 90 feet were considered shallow. The first depth-discrete sampling interval in each profile, generally between 60 and 80 feet bgs, was considered shallow.

All Depths

To evaluate the future potable water use scenario, COPC were selected by comparing the maximum detected chemical concentrations in on-Site and down-gradient/side gradient groundwater samples at all depths to New York State Water Quality Standards for "Class GA" groundwater promulgated in 6 NYCRR Part 703 and standards and guidance values from *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*, NYSDEC Technical & Operational Guidance Series (TOGS) 1.1.1, (NYSDEC, 1998, including the April 2000, and June 2004 Addenda). "Class GA" water is considered a source of drinking water.

A summary of the selected groundwater quality data from monitoring wells at all depths, including frequency of detection and range of detected concentrations, and appropriate groundwater screening concentrations, is presented in Table 6-4. As indicated in Table 6-4, PCE and TCE were selected as COPC for the Site.

A summary of the groundwater quality data from the profile borings at all depths, including frequency of detection and range of detected concentrations, and appropriate screening concentrations, is presented in Table 6-5. As indicated in Table 6-5, the profile data support the selection of PCE and TCE as COPC for the Site.

Shallow Depths

Groundwater quality data from monitoring wells screened across or at the top of the water table were summarized to facilitate evaluation of the potential for subsurface vapor intrusion to indoor air.

New York State does not have standards, guidance values, or other criteria to evaluate VOC concentrations in groundwater protective of subsurface vapor intrusion. Instead, the *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* (NYSDOH, 2006) recommends evaluation of soil gas data in conjunction with indoor and outdoor air data. Therefore, Site-related volatile chemicals were selected as COPC based solely on detection in shallow groundwater. A summary of groundwater quality data from water table monitoring wells, including frequency of detection and range of detected chemical concentrations, is presented in Table 6-6.

As indicated in Table 6-6, PCE and TCE were selected as COPC for the Site.

A summary of groundwater quality data from shallow intervals within the profile borings, including frequency of detection and range of detected chemical concentrations is shown in Table 6-7. As indicated in Table 6-7, the profile data support the selection of PCE and TCE as COPC for the Site.

6.4.3. Exposure Characterization

The exposure characterization presents a qualitative evaluation of the potential for human exposure to the COPC in groundwater. Considerations for eliminating or mitigating potentially unacceptable exposures are also briefly discussed.

6.4.3.1. Current/Future Scenario

The only potentially complete current exposure pathway is for limited off-Site workers who may work in buildings that overlie shallow groundwater containing Site-related volatile COPC. This potentially complete exposure pathway could continue into the future.

Limited off-site workers might be exposed to volatile COPC in indoor air as a result of subsurface vapor intrusion from shallow groundwater. As shown in Tables 6-6 and 6-7, PCE and TCE were detected in shallow groundwater.

Based on the monitoring well and profile data selected as characteristic of GTEOSI impacts, PCE was detected in shallow groundwater at the following locations and concentrations:

- On-Site – 16 monitoring wells (0.61 to 1,800 ug/L) and 11 profiles (7 to 32,000 ug/L) and
- Off-Site/Down-Gradient - eight monitoring wells (0.13 to 870 ug/L) and eight profiles (0.13 to 22,000 ug/L).

However, as stated previously, data showing characteristics similar to those of GTEOSI impacts may be related in whole or in part to other contamination sources.

Further down-gradient of the Site, PCE was not detected or detected at much lower concentrations (e.g., 0.88 to 4 ug/L).

TCE was detected in shallow groundwater at the following locations and concentrations:

- On-Site – three monitoring wells (0.48 to 91 ug/L) and nine profiles (1 to 67 ug/L) and
- Off-Site/Down-Gradient – two monitoring wells (3.2 to 4.6 ug/L) and three profiles (57 - 200 ug/L).

Again, data showing characteristics similar to those of GTEOSI impacts may be related in whole or in part to other contamination sources.

Further down-gradient to the east of the Site, TCE was not detected in shallow groundwater or detected at much lower concentrations (2.2 to 9 ug/L).

Due to the limited areal extent of Site-related PCE and TCE in groundwater underlying off-Site locations, the potential for off-Site worker exposure to these chemicals in indoor air as a result of subsurface vapor intrusion from groundwater at the water table is likely very limited. As noted earlier, vapor intrusion is influenced by a variety of meteorological, hydrogeological, and building conditions and operations, each with considerable spatial and temporal variation. In addition, Site-related volatile COPC continue to migrate vertically downward in groundwater, in part due to the contribution of groundwater recharge.

6.4.3.2. Future Scenario - Subsurface Vapor Intrusion Pathway

Potentially complete exposure pathways in the future could include on-Site workers, on-Site residents, and off-Site residents who may work or live in buildings that overlie shallow groundwater containing Site-related COPC. These receptors could be exposed to volatile COPC in indoor air as a result of subsurface vapor intrusion from shallow groundwater. As shown in Tables 6-6 and 6-7, PCE and TCE were detected in shallow groundwater.

On-Site Workers and On-Site Residents: As indicated above, the highest detected concentrations of PCE in shallow groundwater occurred mostly in samples from monitoring wells and profile borings on the Site. However, TCE was detected less frequently and at lower concentrations in samples from shallow monitoring wells and profile borings on the Site.

Off-Site Residents: Unless a current industrial property located close to the Site is redeveloped for residential use, it is unlikely that off-Site resident exposure to Site-related volatile COPC in indoor air as a result of vapor intrusion from shallow groundwater would occur due to the limited areal extent of PCE and TCE in shallow groundwater underlying off-Site locations. Additionally, Site-related volatile COPC continue to migrate vertically downward in groundwater, in part due to the contribution of groundwater recharge.

6.4.3.3. Future Scenario - Potable Water Use Pathway

In the event that groundwater containing Site-related COPC impacts migrates to the Hicksville Water District Plant No. 5 water supply wells, complete exposure pathways could exist for potable water users, both residents and workers, via ingestion, dermal contact, and inhalation.

As shown in Figure 4-9, PCE and TCE were detected in groundwater at and down-gradient of the Site at concentrations exceeding the NYSDEC Class GA standards. Nickel and uranium were detected in groundwater at the Site at concentrations exceeding the NYSDEC Class GA standards, however, as discussed previously, they are not mobile in groundwater and, as shown on Figures 4-11 and 4-12, the areal extent of the contamination is limited. As shown on Figure 4-12, the areal extent of uranium in groundwater is limited to an area east of the 140 Building and a small area on the GCDR.

Therefore, residents and workers could be exposed in the future to Site-related PCE and TCE in groundwater reaching the Hicksville Water District Plant No. 5 municipal water supply wells to an extent that exceeds the capacity of the current control equipment already in use at their wells.

6.4.4. Eliminating/Mitigating Exposures

Any potential current or future exposures associated with subsurface vapor intrusion to indoor air could be mitigated through use of a sub-slab depressurization system and, for new construction, a vapor barrier. Future exposures associated with potable water use could be eliminated by ensuring the groundwater impacted by Site-related COPC is not used as a potable supply or groundwater containing Site-related COPC does not impact down-gradient municipal water supply wells. Alternatively, well-head treatment could continue to be used to mitigate such exposure.

7. Discussion of Findings

This Section provides a discussion of the findings of the report.

7.1. Source Areas

7.1.1. On-Site Source Areas

- PCE was detected in the unsaturated soil beneath and east of the 100 Building at concentrations that exceed the Site-specific NYSDEC Soil Cleanup Objective of 1.82 mg/Kg as per the Soil Remediation Program Work Plan (URS, et al, 2003) (Figure 4-1). A few isolated soil samples collected to the south of 100 Building and on the 70 and 140 Property also contained PCE at concentrations that exceed the Site-specific NYSDEC Soil Cleanup Objective.

- As a result of limited reductive dechlorination of PCE, TCE was detected in the unsaturated soil beneath, immediately south, and east of the 100 Building (at the same locations as the PCE) at concentrations that exceed the Site-specific NYSDEC Soil Cleanup Objective of 0.70 mg/Kg as per the Soil Remediation Program Work Plan (URS, et al, 2003) (Figure 4-2).

- Nickel was detected in unsaturated soil south of the 100 Building at concentrations that exceed the Site-specific NYSDEC Soil Cleanup Objective of 560 mg/Kg as per the Soil Remediation Program Work Plan (URS, et al, 2003) (Figure 4-3). A few isolated soil samples collected on the 140 Property also contained nickel at concentrations that exceed the Site-specific NYSDEC Soil Cleanup Objective.

- Uranium was detected in unsaturated soil beneath and east of the 140 Building, beneath and south of the 100 Building, and beneath and north of the 70 Building at concentrations that exceed the Site-specific NYSDEC Soil Cleanup Objective of U-234 = 50 pCi/G, U-238 = 50 pCi/G, or total Uranium = 100 pCi/G as per the Soil Remediation Program Work Plan (URS, et al, 2003) (Figure 4-4).

- Thorium was detected at isolated locations in unsaturated soil beneath and south of the 100 Building and beneath the 140 Building at concentrations that exceed the Site-specific NYSDEC Soil Cleanup Objective of Th-232 of 3.4 pCi/G per the Soil Remediation Program Work Plan (URS, et al, 2003) (Figure 4-5).

7.1.2. Off-Site Source Areas

- Sources of PCE, TCE, cis-1,2-DCE, and/or 1,2 -DCB exists in Area A, B, and C at the GI property. A potential source of PCE exists in the northwest corner of the GI property.

- Other sources of CVOCs exist upgradient, cross-gradient, and down-gradient of the Site.

7.2. Groundwater Flow

- Groundwater flow is generally to the south with a slight southwesterly component. The groundwater flow direction is depicted on potentiometric surface maps generated using synoptic water level data collected during the spring 2010 water sampling event and confirmed with the distribution of 1,2-DCB that was released only from source areas at GI.

7.3. Groundwater Impacts

- PCE impacts identified at the south and east side of the 100 Building and east of the 140 Building have migrated in groundwater to the south. Some of the CVOCs identified east of the 100 Building have migrated beneath the CVOCs including 1,2-DCB that were released from GI. Uncertainty remains regarding the southern extent of Site impacts in groundwater, particularly where such impacts potentially comingle with contamination from other sources.

- A source of nickel was detected in unsaturated soil south of the 100 Building and east of the 140 Building. While sampling results indicate that groundwater in this location was impacted by nickel, the nickel is limited in areal extent from the source area south of the 100 Building to the southern property boundary of the 70 Property. Due to physical and chemical properties that limit migration of nickel, Site related nickel concentrations in groundwater do not extend off-Site.

- Groundwater results show that one radionuclide (uranium) was detected in groundwater samples above the USEPA MCL east of the 140 Building and on the GCDR. The elevated concentrations of uranium are not mobile. Numerous groundwater samples collected from off-Site monitoring wells confirm off-Site groundwater is not impacted with uranium.

7.4. Exposure Assessment

- The qualitative exposure assessment evaluated whether fish and wildlife resources may be impacted by and humans exposed to Site-related chemicals. The FWRIA identified that no fish and wildlife resources exist on the Site and in the vicinity of the Site. Groundwater, the environmental medium of concern, does not discharge to surface water as the nearest New York State classified surface water body is over 4 miles down-gradient from the Site. In accordance with Section 3.10.1 and Appendix 3C of the DER-10 guidance, no further FWRIA is required.

- The human health exposure assessment evaluated whether humans may be potentially exposed to Site-related chemicals, currently or in the future, in the absence of additional remediation at the Site. The assessment focused on Site-related chemicals detected in groundwater at and down-gradient of the Site: PCE, TCE, nickel, and radionuclides.

- Current and/or future off-Site and on-Site receptors could be exposed to PCE and PCE degradation products in indoor air as a result of subsurface vapor intrusion from shallow groundwater. However, due to the limited areal extent of PCE and TCE in off-Site locations, the potential for exposure by off-Site receptors is likely limited. Off-Site residents would only be exposed in the event current industrial property located close to the Site is redeveloped for residential use. Further migration of groundwater containing Site-related COPC could change the geographic locations where these COPC occur in groundwater at the water table. In general, however, as groundwater migrates vertically downward and as recharge occurs, the potentially impacted groundwater is likely to continue to move downward from the water table rendering the soil gas and indoor air pathways incomplete.

- In the unlikely event that the Site is redeveloped for residential use, on-Site residents could be exposed to PCE and PCE degradation products in indoor air as a result of subsurface vapor intrusion from shallow groundwater. The highest detected concentrations of PCE in shallow groundwater occurred mostly in samples from monitoring wells and profile borings on the Site. However, TCE was detected less frequently in shallow groundwater beneath the Site.

- In the event that groundwater containing Site-related COPC impacts down-gradient water supply wells, residents and workers could be exposed to PCE and PCE degradation products at concentrations above screening concentrations. However, the nickel and uranium in

groundwater are limited in areal extent and the uranium concentrations are believed to be associated with particulate material in the samples.

- While transport of Site-related COPC is in a southerly direction, uncertainty regarding the down-gradient extent of Site-related COPC does not support a conclusion that a pathway to the water supply wells south of the Site is complete. In addition, treatment that has been and continues to be implemented for the water supply wells down-gradient from the Site would effectively preclude human exposure to Site-related COPC.

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INDEPENDENT ENVIRONMENTAL
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Tables

GREEN SEAL

Table 1-1
Stone Environmental On-Site Mobile Lab Analyte List
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, NY

Volatile Organic Compounds				
Vinyl Chloride	Freon 113 [1]	1,1,1-Trichloroethane [1]	Toluene [1]	1,3-Dichlorobenzene [1]
t-Dichloroethene	Freon 123 [1]	1,1,1,2-Tetrachloroethane	Chlorobenzene [1]	1,4-Dichlorobenzene [1]
c-Dichloroethene	Freon 123A [1]	Carbon Tetrachloride [2]	Ethylbenzene [1]	1,2-Dichlorobenzene [1]
Trichloroethene	1,1-Dichloroethene [1]	Benzene [1]	m,p-Xylene [1]	
Tetrachloroethene	1,1-Dichloroethane [1]	1,2-Dichlorothane [1]	o-Xylene [1]	
Inorganics				
Fe+2	Fe, Total	Ammonia	Chloride	Chlorine, Total

Notes:

[1] Included in analyte list since 2003

[2] Included in analyte list since 2007

Table 2-1
Summary of Profile Borings
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Profile No.	Coordinates[1] Easting	Northing	Ground Surface Elevation[2] (feet msl)	Total Depth[3] (feet)	Completion Date	Completed By
P-01	1109362.48	219694.723	144.49	301.2	October 22, 2002	GTEOSI
P-02	1109363.842	219548.4472	144.25	302.1	December 5, 2002	GTEOSI
P-03	1109185.51	219555.8889	143.20	302.4	November 21, 2002	GTEOSI
P-04	1108984.588	219266.0862	142.24	277.9	November 2, 2002	GTEOSI
P-05	1109132.000	219238.000	144.29	299.0	November 2, 2002	GTEOSI
P-06	1109257.342	219272.302	143.19	291.5	November 18, 2002	GTEOSI
P-07	1108771.317	219705.132	144.53	301.0	December 4, 2002	GTEOSI
P-08	1108868.061	219607.3175	144.09	302.6	December 7, 2002	GTEOSI
P-09	1109287.869	219067.2908	141.57	272.6	November 17, 2002	GTEOSI
P-10	1109116.954	219018.0155	140.97	264.5	November 5, 2002	GTEOSI
P-11	1108884.79	218981.7998	140.92	281.1	November 5, 2002	GTEOSI
P-12	1109351.645	219442.812	142.95	297.1	November 20, 2002	GTEOSI
P-13	1108781.007	218850.6076	140.27	267.3	December 11, 2002	GTEOSI
P-14	1109083.566	218892.9212	140.46	244.8	December 10, 2002	GTEOSI
P-15	1109334.383	218969.5158	141.87	339.1	June 2, 2003	GTEOSI
P-16	1109496.669	219113.288	138.67	251.0	December 11, 2003	GTEOSI
P-17	1109652.683	219160.0884	138.24	223.1	April 27, 2003	GTEOSI
P-18	1108635.281	219222.802	144.19	350.3	October 10, 2003	GTEOSI
P-20	1109383.181	218330.004	139.04	476.7	August 13, 2003	GTEOSI
P-23	1108837.344	218760.732	141.29	347.4	July 1, 2003	GTEOSI
P-24	1108733.3	219515.3463	145.04	297.3	June 19, 2003	GTEOSI
P-25	1108770.447	219228.933	143.58	379.2	July 14, 2003	GTEOSI
P-26	1108813.236	219747.9255	146.51	295.9	May 20, 2003	GTEOSI
P-27	1108754.516	218911.6514	142.37	277.0	May 8, 2003	GTEOSI
P-28	1109409.24	219276.7126	138.07	247.0	May 6, 2003	GTEOSI
P-29	1109570.222	218060.69	136.23	410.7	September 23, 2003	GTEOSI
P-30	1109694.036	218038.906	136.24	406.6	October 8, 2003	GTEOSI
P-31	1109462.939	219947.929	144.50	451.4	January 24, 2004	GTEOSI
P-32	1109680.071	220165.212	144.50	488.9	February 19, 2004	GTEOSI
P-33	1109215.124	219760.079	144.50	481.1	December 15, 2003	GTEOSI
P-34	1108914.216	219755.471	144.50	401.6	December 3, 2003	GTEOSI
P-35	1108875.098	219260.134	143.73	347.2	July 14, 2003	GTEOSI
P-36	1109112.749	218268.157	138.97	475.2	August 26, 2003	GTEOSI
P-37	1108899.186	218216.137	135.96	394.5	August 27, 2003	GTEOSI
P-38	1108551.017	218137.975	137.98	400.2	September 24, 2003	GTEOSI
P-42	1109284.357	217414.043	132.82	434.5	July 30, 2003	GTEOSI
P-43	1109128.7	217358.394	133.09	334.2	September 24, 2003	GTEOSI
P-44	1108919.754	217307.335	132.55	356.1	September 10, 2003	GTEOSI
P-45	1109013.997	218255.135	138.28	366.4	August 13, 2003	GTEOSI
P-46	1109248.157	218312.738	138.73	498.1	September 8, 2003	GTEOSI
P-47	1108648.573	218175.915	138.14	397.0	September 11, 2003	GTEOSI
P-49	1109184.559	217813.92	137.72	463.2	October 30, 2003	GTEOSI
P-50	1109058.328	217799.057	138.52	439.9	October 29, 2003	GTEOSI
P-51	1108927.109	217769.922	138.91	381.8	October 30, 2003	GTEOSI
P-52	1109311.303	217849.967	137.59	483.4	November 20, 2003	GTEOSI
P-53	1109244.927	217621.744	131.75	504.8	December 12, 2003	GTEOSI
P-54	1108925.171	217599.451	136.37	437.1	November 18, 2003	GTEOSI
P-55	1108526.844	217166.32	132.75	474.4	February 6, 2004	GTEOSI
P-56	1109481.27	219363.303	143.00	388.6	January 29, 2004	GTEOSI
P-58	1109299.34	218320.287	138.74	471.4	November 12, 2003	GTEOSI

Table 2-1
Summary of Profile Borings
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Profile No.	Coordinates[1] Easting	Northing	Ground Surface Elevation[2] (feet msl)	Total Depth[3] (feet)	Completion Date	Completed By
P-C	1108813.651	218926.6042	141.62	394.5	June 18, 2003	GTEOSI
P-D	1108956.525	218972.2755	142.39	352.0	June 4, 2003	GTEOSI
P-E	1109181.765	218898.9588	141.05	332.9	May 23, 2003	GTEOSI
P-F	1109393.297	219123.3833	140.47	166.5	May 2, 2003	GTEOSI
P-H	1108871.135	218775.132	141.36	396.5	July 27, 2003	GTEOSI
P-102	1109556.543	216732.7592	120.00	474.3	February 21, 2007	GTEOSI
P-103	1109082.413	219321.565	137.96	404.2	April 28, 2005	GTEOSI
P-104	1109616.752	215831.1814	120.00	489.4	March 20, 2007	GTEOSI
P-107	1109326.043	219607.272	147.80	391.5	May 25, 2005	GTEOSI
P-108	1109342.223	219376.417	147.01	394.3	May 2, 2005	GTEOSI
P-110	1109439.7	213710.2066	119.24	513.4	July 3, 2007	GTEOSI
P-112	1110086.568	215720.1428	120.00	434.3	May 20, 2007	GTEOSI
P-113	1110824.819	215639.8946	120.00	379.9	May 7, 2007	GTEOSI
P-114	1110432.994	213880.8214	119.83	523.9	July 28, 2007	GTEOSI
P-118	1109487.495	212385.5778	120.00	580.7	November 16, 2007	GTEOSI
P-119	1109819	216842	120.00	408.3	April 16, 2009	GTEOSI
P-120	1109738	215090	120.00	481.3	May 13, 2009	GTEOSI
WP-01	1108208.53	215610.31	123.29	399	June 7, 2007	GI
WP-02	1108858.9	215751.15	113.22	416	June 28, 2007	GI
WP-03	1108817.93	214728.07	119.65	453	July 26, 2007	GI
WP-04	1108240.26	213833.32	117.88	493	August 21, 2007	GI
WP-05	1109098.209	214058.59	120.28	490	September 12, 2007	GI
WP-06	1107755.02	213759.08	99.82	473	October 2, 2007	GI
WP-07	1107552.431	215596.878	124.49	427	March 18, 2008	GI
LP-01	1108217.498	217983.443	135.80	380	October 22, 2007	GI
LP-02	1107557.911	217244.918	136.61	402	February 26, 2008	GI
LP-03	1108036.581	216153.568	129.10	399	February 1, 2008	GI
LP-04	1108784.325	217225.171	132.42	379	November 6, 2007	GI
CRR-01	1108399.793	218658.2756	141.00	211	September 28, 2006	NYSDEC
CRR-02	1108639.002	218453.5556	140.00	202	October 3, 2006	NYSDEC
CRR-03	1108111.281	218905.8315	142.00	202	October 4, 2006	NYSDEC
CRR-04	1108739.409	220228.0498	148.00	183	September 26, 2007	NYSDEC
CRR-05	1108597.891	220038.8428	147.00	214	September 28, 2007	NYSDEC
CRR-06	1108283.614	220121.5065	147.50	204	October 2, 2007	NYSDEC

1=NAD83
2=NAVD88
3=Depth of Deepest Groundwater Sample

Table 3-1
Groundwater Elevations
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, NY

Well ID	Date	Time (Eastern Standard Time)	Measuring Point Northing[1]	Measuring Point Easting[1]	Measuring Point Elevation[2] (feet above MSL)	Document MP (LSD or TOC)[3]	MP above (+) or below (-) LSD (Ft)[4]	Measured Depth to Water (DTW) (FT)	Water Level Meter Serial Number	Water Level Correction (feet)	Corrected Depth to Water (feet)	Water Level Elevation (feet above MSL)
GTEOSI												
MW-3	5/25/2010	1735	219002.76	1108996.06	141.12	TOC	-0.33	59.00	01-1200	0.00	59.00	82.12
MW-4	5/25/2010	1146	219031.11	1109103.06	140.73	TOC	-0.47	58.63	01-1200	0.00	58.63	82.10
MW-8	5/25/2010	1137	219009.41	1109060.39	140.91	TOC	-0.40	58.84	01-1200	0.00	58.84	82.07
MW-9	5/25/2010	1157	219036.42	1109195.54	141.58	TOC	-0.38	59.48	01-1200	0.00	59.48	82.10
MW-10	5/25/2010	1202	219039.36	1109218.76	141.47	TOC	-0.50	59.36	01-1200	0.00	59.36	82.11
MW-11	5/25/2010	1246	219079.07	1109296.90	141.77	TOC	-0.27	59.62	01-1200	0.00	59.62	82.15
MW-12	5/25/2010	1207	219057.73	1109301.31	142.28	TOC	-0.55	60.16	01-1200	0.00	60.16	82.12
MW-P110-355	5/25/2010	1142	213717.02	1109434.84	118.71	TOC	-0.61	44.25	01-2988[1]	-0.01	44.24	74.47
MW-P110-440	5/25/2010	1145	213702.57	1109439.01	118.91	TOC	-0.37	45.50	01-2988[1]	-0.01	45.49	73.42
MW-P114-170	5/25/2010	1215	213920.33	1110463.49	120.03	TOC	-0.34	44.60	01-2988[1]	-0.01	44.59	75.44
MW-P114-290	5/25/2010	1211	213904.34	1110454.96	119.9	TOC	-0.32	45.22	01-2988[1]	-0.01	45.21	74.69
GI Wells												
W-01-120	5/25/2010	1705	218839.34	1109099.30	139.33	TOC	-0.42	57.39	01-2988[1]	-0.01	57.38	81.95
W-01-75	5/26/2010	0830	218830.11	1109106.86	139.8	TOC	-2.61	55.34	01-1200	0.00	55.34	84.46
W-02-70	5/25/2010	1655	218772.64	1109070.18	139.25	TOC	-0.70	57.39	01-2988[1]	-0.01	57.38	81.87
W-03-112	5/25/2010	1715	218992.41	1109071.12	140.71	TOC	-0.40	58.80	01-2988[1]	-0.01	58.79	81.92
W-03-72	5/25/2010	1721	218985.21	1109072.29	140.88	TOC	-0.48	58.64	01-2988[1]	-0.01	58.63	82.25
W-05-78	5/25/2010	1617	218404.23	1108995.96	141.01	TOC	1.24	59.50	01-2988[1]	-0.01	59.49	81.52
W-06-79	5/25/2010	1608	218428.26	1109179.60	140.39	TOC	0.79	58.84	01-2988[1]	-0.01	58.83	81.56
W-08-71	5/25/2010	1707	219039.93	1109322.09	141.25	TOC	-0.31	59.18	01-2988[1]	-0.01	59.17	82.08
W-10-120	5/25/2010	1630	218376.12	1108814.76	138.52	TOC	-0.17	57.76	01-2988[1]	-0.01	57.75	80.77
W-10-71	5/25/2010	1625	218388.54	1108813.29	139.27	TOC	-0.99	57.03	01-2988[1]	-0.01	57.02	82.25
W-10-70	5/25/2010	1603	218492.38	1109241.73	139.13	TOC	-0.38	57.53	01-2988[1]	-0.01	57.52	81.61
W-12-120	5/25/2010	1600	218463.12	1109381.53	138.28	TOC	-0.22	56.97	01-2988[1]	-0.01	56.96	81.32
W-12-70	5/25/2010	1557	218463.84	1109389.05	138.56	TOC	-0.55	56.66	01-2988[1]	-0.01	56.65	81.91
W-14-150	5/25/2010	1702	218837.64	1109108.59	139.65	TOC	-0.82	57.72	01-2988[1]	-0.01	57.71	81.94
W-15-168	5/25/2010	1035	218200.94	1108867.25	134.37	TOC	-0.40	53.11	01-2988[1]	-0.01	53.10	81.27
W-16-148	5/25/2010	1010	218248.07	1109205.06	139.55	TOC	+2.56	58.19	01-2988[1]	-0.01	58.18	81.37
W-18-150	5/25/2010	0945	217372.48	1109179.95	135.87	TOC	+2.93	55.48	01-2988[1]	-0.01	55.47	80.40
W-19-110	5/25/2010	0950	217398.97	1109278.95	133.98	TOC	+2.29	53.56	01-2988[1]	-0.01	53.55	80.43
W-19-150	5/25/2010	0954	217398.93	1109278.77	134.09	TOC	+2.40	53.70	01-2988[1]	-0.01	53.69	80.40
W-20-120	5/25/2010	0930	217306.05	1109013.64	134.27	TOC	+2.26	53.92	01-2988[1]	-0.01	53.91	80.36

Table 3-1
Groundwater Elevations
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, NY

Well ID	Date	Time (Eastern Standard Time)	Measuring Point Northing[1]	Measuring Point Easting[1]	Measuring Point Elevation[2] (feet above MSL)	Document MP (LSD or TOC)[3]	MP above (+) or below (-) LSD (Ft)[4]	Measured Depth to Water (DTW) (FT)	Water Level Meter Serial Number	Water Level Correction (feet)	Corrected Depth to Water (feet)	Water Level Elevation (feet above MSL)
W-20-160	5/25/2010	0934	217306.17	1109014.01	134.42	TOC	+2.41	54.23	01-2988[1]	-0.01	54.22	80.20
W-22-95	5/25/2010	1613	218441.85	1109091.54	139.46	TOC	-0.16	57.90	01-2988[1]	-0.01	57.89	81.57
W-23-110	5/25/2010	1022	217819.01	1108789.41	134.21	TOC	-0.24	53.27	01-2988[1]	-0.01	53.26	80.95
W-24-260	5/25/2010	0844	217532.01	1108435.95	133.11	TOC	-0.54	53.14	01-2988[1]	-0.01	53.13	79.98
W-25-150	5/25/2010	0835	217162.46	1108555.28	131.15	TOC	-0.85	51.23	01-2988[1]	-0.01	51.22	79.93
W-25-188	5/25/2010	0833	217162.72	1108554.98	131.34	TOC	-0.65	51.51	01-2988[1]	-0.01	51.50	79.84
W-26-270	5/25/2010	0915	216618.46	1109374.25	119.91	TOC	-0.35	40.86	01-2988[1]	-0.01	40.85	79.06
W-27-240	5/25/2010	0853	216474.81	1108928.53	124.46	TOC	-0.45	45.50	01-2988[1]	-0.01	45.49	78.97
W-27-285	5/25/2010	0858	216475.64	1108932.98	123.64	TOC	-1.02	45.00	01-2988[1]	-0.01	44.99	78.65
W-30-285	5/25/2010	0910	216536.61	1109150.83	122.99	TOC	-0.80	43.94	01-2988[1]	-0.01	43.93	79.06
W-31-95	5/25/2010	1753	218256.87	1109258.27	138.94	TOC	+1.79	57.57	01-2988[1]	-0.01	57.56	81.38
W-32-110	5/25/2010	1647	218699.33	1108849.47	139.37	TOC	-0.35	57.55	01-2988[1]	-0.01	57.54	81.83
W-34-285	5/25/2010	0939	217344.71	1109122.27	134.56	TOC	+2.30	54.91	01-2988[1]	-0.01	54.90	79.66
W-36-390	5/25/2010	1125	213889.49	1108271.23	117.65	TOC	-0.35	43.92	01-2988[1]	-0.01	43.91	73.74
W-36-448	5/25/2010	1130	213889.45	1108271.54	117.65	TOC	-0.38	43.61	01-2988[1]	-0.01	43.60	74.05
W-37-325	5/25/2010	1053	215594.50	1107539.94	124	TOC	-0.38	46.95	01-1200	0.00	46.95	77.05
W-37-385	5/25/2010	1057	215594.31	1107539.90	124.01	TOC	-0.38	47.21	01-1200	0.00	47.21	76.80
S-1-325	5/25/2010	1200	213800.45	1109869.93	119.98	TOC	-0.22	45.71	01-2988[1]	-0.01	45.70	74.28
S-1-450	5/25/2010	1203	213800.77	1109870.04	119.93	TOC	-0.25	46.18	01-2988[1]	-0.01	46.17	73.76
Anchor CMT Wells												
PW-02-01	5/25/2010	1235	218052.98	1109640.14	134.45	TOC	-0.59	53.17	00000000907[2]	+0.02	53.19	81.26
PW-02-02	5/25/2010	1753	218052.98	1109640.14	134.45	TOC	-0.59	53.19	00000000907[2]	+0.02	53.21	81.24
PW-02-03	5/25/2010	1239	218052.98	1109640.14	134.45	TOC	-0.59	53.20	00000000907[2]	+0.02	53.22	81.23
PW-02-04	5/25/2010	1241	218052.98	1109640.14	134.45	TOC	-0.59	53.20	00000000907[2]	+0.02	53.22	81.23
PW-02-05	5/25/2010	1243	218052.98	1109640.14	134.45	TOC	-0.59	53.22	00000000907[2]	+0.02	53.24	81.21
PW-02-06	5/25/2010	1233	218052.98	1109640.14	134.45	TOC	-0.59	53.32	00000000907[2]	+0.02	53.34	81.11
PW-02-07	5/25/2010	1245	218052.98	1109640.14	134.45	TOC	0.79	53.33	00000000907[2]	+0.02	53.35	81.10
PW-03-01	5/25/2010	1250	218036.53	1109746.24	134.18	TOC	-0.62	53.02	00000000907[2]	+0.02	53.04	81.14
PW-03-02	5/25/2010	1252	218036.53	1109746.24	134.18	TOC	-0.62	53.04	00000000907[2]	+0.02	53.06	81.12
PW-03-03	5/25/2010	1254	218036.53	1109746.24	134.18	TOC	-0.62	53.05	00000000907[2]	+0.02	53.07	81.11
PW-03-04	5/25/2010	1256	218036.53	1109746.24	134.18	TOC	-0.62	53.08	00000000907[2]	+0.02	53.10	81.08
PW-03-05	5/25/2010	1258	218036.53	1109746.24	134.18	TOC	-0.62	53.07	00000000907[2]	+0.02	53.09	81.09
PW-03-06	5/25/2010	1300	218036.53	1109746.24	134.18	TOC	-0.62	53.08	00000000907[2]	+0.02	53.10	81.08

Table 3-1
Groundwater Elevations
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, NY

Well ID	Date	Time (Eastern Standard Time)	Measuring Point Northing[1]	Measuring Point Easting[1]	Measuring Point Elevation[2] (feet above MSL)	Document MP (LSD or TOC)[3]	MP above (+) or below (-) LSD (Ft)[4]	Measured Depth to Water (DTW) (FT)	Water Level Meter Serial Number	Water Level Correction (feet)	Corrected Depth to Water (feet)	Water Level Elevation (feet above MSL)
PW-03-07	5/25/2010	1302	218036.53	1109746.24	134.18	TOC	-0.62	53.14	00000000907[2]	+0.02	53.16	81.02
PW-04-01	5/25/2010	1457	218107.17	1109958.49	130.72	TOC	-0.40	49.48	00000000907[2]	+0.02	49.50	81.22
PW-04-02	5/25/2010	1458	218107.17	1109958.49	130.72	TOC	-0.40	49.47	00000000907[2]	+0.02	49.49	81.23
PW-04-03	5/25/2010	1459	218107.17	1109958.49	130.72	TOC	-0.40	49.49	00000000907[2]	+0.02	49.51	81.21
PW-04-04	5/25/2010	1501	218107.17	1109958.49	130.72	TOC	-0.40	49.52	00000000907[2]	+0.02	49.54	81.18
PW-04-05	5/25/2010	1503	218107.17	1109958.49	130.72	TOC	-0.40	49.55	00000000907[2]	+0.02	49.57	81.15
PW-04-06	5/25/2010	1505	218107.17	1109958.49	130.72	TOC	-0.40	49.57	00000000907[2]	+0.02	49.59	81.13
PW-04-07	5/25/2010	1507	218107.17	1109958.49	130.72	TOC	-0.40	49.53	00000000907[2]	+0.02	49.55	81.17
PW-05-01	5/25/2010	1433	217670.32	1109481.43	132.43	TOC	-0.56	51.84	00000000907[2]	+0.02	51.86	80.57
PW-05-02	5/25/2010	1753	217670.32	1109481.43	132.43	TOC	-0.56	51.86	00000000907[2]	+0.02	51.88	80.55
PW-05-03	5/25/2010	1439	217670.32	1109481.43	132.43	TOC	-0.56	51.88	00000000907[2]	+0.02	51.90	80.53
PW-05-04	5/25/2010	1444	217670.32	1109481.43	132.43	TOC	-0.56	51.84	00000000907[2]	+0.02	51.86	80.57
PW-05-05	5/25/2010	1446	217670.32	1109481.43	132.43	TOC	-0.56	51.86	00000000907[2]	+0.02	51.88	80.55
PW-05-06	5/25/2010	1448	217670.32	1109481.43	132.43	TOC	-0.56	51.07	00000000907[2]	+0.02	51.09	81.34
PW-05-07	5/25/2010	1450	217670.32	1109481.43	132.43	TOC	0.79	51.37	00000000907[2]	+0.02	51.39	81.04
PW-06-01	5/25/2010	1415	217610.45	1109694.83	132.1	TOC	-1.06	61.82	00000000907[2]	+0.02	61.84	70.26
PW-06-02	5/25/2010	1417	217610.45	1109694.83	132.1	TOC	-1.06	51.44	00000000907[2]	+0.02	51.46	80.64
PW-06-03	5/25/2010	1419	217610.45	1109694.83	132.1	TOC	-1.06	51.43	00000000907[2]	+0.02	51.45	80.65
PW-06-04	5/25/2010	1421	217610.45	1109694.83	132.1	TOC	-1.06	51.48	00000000907[2]	+0.02	51.50	80.60
PW-06-05	5/25/2010	1423	217610.45	1109694.83	132.1	TOC	-1.06	51.45	00000000907[2]	+0.02	51.47	80.63
PW-06-06	5/25/2010	1426	217610.45	1109694.83	132.1	TOC	-1.06	51.48	00000000907[2]	+0.02	51.50	80.60
PW-06-07	5/25/2010	1428	217610.45	1109694.83	132.1	TOC	-1.06	51.21	00000000907[2]	+0.02	51.23	80.87
PW-07-01	5/25/2010	1512	217856.59	1109922.09	129.11	TOC	-0.44	48.31	00000000907[2]	+0.02	48.33	80.78
PW-07-02	5/25/2010	1514	217856.59	1109922.09	129.11	TOC	-0.44	48.30	00000000907[2]	+0.02	48.32	80.79
PW-07-03	5/25/2010	1516	217856.59	1109922.09	129.11	TOC	-0.44	48.37	00000000907[2]	+0.02	48.39	80.72
PW-07-04	5/25/2010	1518	217856.59	1109922.09	129.11	TOC	-0.44	48.40	00000000907[2]	+0.02	48.42	80.69
PW-07-05	5/25/2010	1520	217856.59	1109922.09	129.11	TOC	-0.44	48.42	00000000907[2]	+0.02	48.44	80.67
PW-07-06	5/25/2010	1522	217856.59	1109922.09	129.11	TOC	-0.44	48.70	00000000907[2]	+0.02	48.72	80.39
PW-07-07	5/25/2010	1524	217856.59	1109922.09	129.11	TOC	-0.44	48.68	00000000907[2]	+0.02	48.70	80.41
KC COE FUSRAP Wells												
MW-13D	5/25/2010	1715	219754.58	1108775.11	145.42	TOC	-0.36	62.79	01-1200	0.00	62.79	82.63
MW-13S	5/25/2010	1753	219755.81	1108764.46	145.3	TOC	-0.46	62.66	01-1200	0.00	62.66	82.64
MW-14D	5/25/2010	1725	219828.19	1109083.22	144.29	TOC	-0.46	61.72	01-1200	0.00	61.72	82.57

Table 3-1
Groundwater Elevations
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, NY

Well ID	Date	Time (Eastern Standard Time)	Measuring Point Northing[1]	Measuring Point Easting[1]	Measuring Point Elevation[2] (feet above MSL)	Document MP (LSD or TOC)[3]	MP above (+) or below (-) LSD (Ft)[4]	Measured Depth to Water (DTW) (FT)	Water Level Meter Serial Number	Water Level Correction (feet)	Corrected Depth to Water (feet)	Water Level Elevation (feet above MSL)
MW-14DD	5/25/2010	1722	219846.10	1109088.99	144.04	TOC	-0.50	61.65	01-1200	0.00	61.65	82.39
MW-14S	5/25/2010	1727	219812.98	1109078.70	144.39	TOC	-0.45	61.79	01-1200	0.00	61.79	82.60
MW-15D	5/25/2010	1706	219760.98	1109357.20	144.14	TOC	-0.48	61.48	01-1200	0.00	61.48	82.66
MW-15DD	5/25/2010	1702	219742.81	1109354.66	144.24	TOC	0.79	61.95	01-1200	0.00	61.95	82.29
MW-15S	5/25/2010	1710	219751.76	1109340.84	144.18	TOC	-0.43	61.62	01-1200	0.00	61.62	82.56
MW-16D	5/25/2010	0950	220170.22	1109648.11	144.72	TOC	-0.55	61.76	01-1200	0.00	61.76	82.96
MW-16S	5/25/2010	0955	220169.77	1109630.96	145.52	TOC	-0.43	62.35	01-1200	0.00	62.35	83.17
MW-17S	5/25/2010	1753	219668.79	1108969.28	144.48	TOC	-0.39	61.96	01-2988[1]	-0.01	61.95	82.53
MW-18I	5/25/2010	1505	219610.04	1109338.61	144.16	TOC	-0.40	61.66	01-1200	0.00	61.66	82.50
MW-18S	5/25/2010	1500	219623.98	1109344.50	144.01	TOC	-0.51	61.51	01-1200	0.00	61.51	82.50
MW-19D	5/25/2010	1444	219606.48	1108952.25	143.18	TOC	-0.52	60.63	01-1200	0.00	60.63	82.55
MW-19S	5/25/2010	1451	219606.67	1108964.58	143.27	TOC	-0.43	60.76	01-1200	0.00	60.76	82.51
MW-20D	5/25/2010	1528	219561.48	1109312.83	144.01	TOC	-0.44	60.54	01-1200	0.00	60.54	83.47
MW-20I	5/25/2010	1530	219552.35	1109310.52	144.13	TOC	-0.41	61.68	01-1200	0.00	61.68	82.45
MW-20S	5/25/2010	1521	219567.86	1109323.36	143.89	TOC	-0.57	61.43	01-1200	0.00	61.43	82.46
MW-21D	5/25/2010	1429	219484.07	1108737.14	143.16	TOC	-0.53	60.71	01-1200	0.00	60.71	82.45
MW-21I	5/25/2010	1432	219472.33	1108731.62	143.26	TOC	-0.58	60.82	01-1200	0.00	60.82	82.44
MW-21S	5/25/2010	1437	219472.05	1108742.07	143.16	TOC	-0.57	60.70	01-1200	0.00	60.70	82.46
MW-22D	5/25/2010	1605	219392.39	1109334.39	144.17	TOC	-0.50	62.31	01-1200	0.00	62.31	81.86
MW-22I	5/25/2010	1603	219399.95	1109338.68	144.29	TOC	-0.40	61.93	01-1200	0.00	61.93	82.36
MW-22S	5/25/2010	1610	219412.43	1109340.10	144.21	TOC	-0.43	61.80	01-1200	0.00	61.80	82.41
MW-23D	5/25/2010	1320	219265.64	1108976.29	141.66	TOC	-0.68	59.69	01-1200	0.00	59.69	81.97
MW-23I	5/25/2010	1329	219256.48	1108976.54	141.75	TOC	-0.43	59.47	01-1200	0.00	59.47	82.28
MW-23S	5/25/2010	1323	219265.09	1108968.58	141.94	TOC	-0.44	59.61	01-1200	0.00	59.61	82.33
MW-24D	5/25/2010	1745	219337.08	1109085.13	145.66	TOC	+3.00	63.65	01-1200	0.00	63.65	82.01
MW-24S	5/25/2010	1748	219336.90	1109094.78	142.43	TOC	-0.48	60.04	01-1200	0.00	60.04	82.39
MW-25D	5/25/2010	1417	219227.63	1108769.75	142.16	TOC	-0.40	60.14	01-1200	0.00	60.14	82.02
MW-25I	5/25/2010	1753	219219.53	1108770.39	142	TOC	-0.46	59.78	01-1200	0.00	59.78	82.22
MW-25S	5/25/2010	1421	219236.75	1108768.63	142.15	TOC	-0.47	59.84	01-1200	0.00	59.84	82.31
MW-26D	5/25/2010	1345	219260.25	1108868.37	142.1	TOC	-0.49	59.81	01-1200	0.00	59.81	82.29
MW-26I	5/25/2010	1349	219265.30	1108864.44	142.4	TOC	-0.36	60.05	01-1200	0.00	60.05	82.35
MW-27D	5/25/2010	1304	219240.84	1109105.77	141.64	TOC	-0.52	59.70	01-1200	0.00	59.70	81.94
MW-27I	5/25/2010	1300	219240.51	1109097.44	141.53	TOC	0.79	59.36	01-1200	0.00	59.36	82.17

Table 3-1
Groundwater Elevations
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, NY

Well ID	Date	Time (Eastern Standard Time)	Measuring Point Northing[1]	Measuring Point Easting[1]	Measuring Point Elevation[2] (feet above MSL)	Document MP (LSD or TOC)[3]	MP above (+) or below (-) LSD (Ft)[4]	Measured Depth to Water (DTW) (FT)	Water Level Meter Serial Number	Water Level Correction (feet)	Corrected Depth to Water (feet)	Water Level Elevation (feet above MSL)
MW-27S	5/25/2010	1310	219236.67	1109092.07	141.66	TOC	-0.49	59.38	01-1200	0.00	59.38	82.28
MW-28D	5/25/2010	1620	219275.31	1109273.99	147.3	TOC	+2.38	64.97	01-1200	0.00	64.97	82.33
MW-28I	5/25/2010	1630	219263.60	1109270.16	147.25	TOC	+2.26	64.98	01-1200	0.00	64.98	82.27
MW-28S	5/25/2010	1625	219267.08	1109279.72	144.59	TOC	-0.50	62.32	01-1200	0.00	62.32	82.27
MW-30D	5/25/2010	1048	218955.84	1108779.60	140.96	TOC	-0.34	59.38	01-1200	0.00	59.38	81.58
MW-30I	5/25/2010	1042	218958.16	1108787.67	140.92	TOC	-0.39	58.88	01-1200	0.00	58.88	82.04
MW-30S	5/25/2010	1055	218953.99	1108771.74	140.91	TOC	-0.37	58.86	01-1200	0.00	58.86	82.05
MW-31D	5/25/2010	1123	218996.58	1108997.26	140.91	TOC	-0.45	59.39	01-1200	0.00	59.39	81.52
MW-31I	5/25/2010	1119	218998.56	1109004.30	140.99	TOC	-0.46	58.90	01-1200	0.00	58.90	82.09
MW-32D	5/25/2010	1241	219079.80	1109291.05	141.24	TOC	-0.48	59.72	01-1200	0.00	59.72	81.52
MW-33D	5/25/2010	0902	219265.89	1109481.07	135.56	TOC	-0.42	53.85	01-1200	0.00	53.85	81.71
MW-33S	5/25/2010	0856	219259.46	1109471.56	135.84	TOC	-0.50	53.60	01-1200	0.00	53.60	82.24
MW-34D	5/25/2010	0915	219167.75	1109702.65	136.59	TOC	-0.42	54.42	01-1200	0.00	54.42	82.17
MW-34S	5/25/2010	0920	219165.60	1109692.72	136.76	TOC	-0.43	54.60	01-1200	0.00	54.60	82.16
MW-39S	5/25/2010	1110	218962.25	1108815.90	141.05	TOC	-0.56	58.98	01-1200	0.00	58.98	82.07
MW-41S	5/25/2010	1540	219576.13	1109279.36	143.62	TOC	-0.55	60.16	01-1200	0.00	60.16	83.46
MW-42I	5/25/2010	1515	219570.81	1109383.96	143.8	TOC	-0.46	61.34	01-1200	0.00	61.34	82.46
MW-43S	5/25/2010	1550	219515.52	1109327.65	144.03	TOC	-0.35	61.59	01-1200	0.00	61.59	82.44
MW-44S	5/25/2010	1650	219302.78	1108970.41	142.85	TOC	-0.45	60.47	01-1200	0.00	60.47	82.38
MW-49S	5/25/2010	1645	219338.60	1108812.55	143.98	TOC	-0.40	61.56	01-1200	0.00	61.56	82.42
MW-50I	5/25/2010	1325	219197.64	1108903.78	141.71	TOC	-0.44	59.44	01-1200	0.00	59.44	82.27
MW-51I	2/25/2010	1145	219015.32	1109094.89	140.52	TOC	-0.47	58.45	01-1200	0.00	58.45	82.07
MW-52D	2/25/2010	1753	219148.36	1109567.12	137.07	TOC	-0.50	55.48	01-1200	0.00	55.48	81.59
MW-53S	2/25/2010	0935	219129.66	1109462.22	137.21	TOC	-0.56	55.04	01-1200	0.00	55.04	82.17
MW-55I	2/25/2010	0850	219559.76	1109452.50	136.65	TOC	-0.41	54.20	01-1200	0.00	54.20	82.45

Notes:
1 NAD83
2 NAVD 88
3 Water levels measured with this probe were corrected by -0.01 feet as per the Water Level Meter Calibration completed before the start of the water level measurements.
4 Water levels measured with this probe were corrected by +0.02 feet as per the Water Level Meter Calibration completed before the start of the water level measurements.

Table 3-2
Water Level Elevation in Shallow Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Well No.	Screen Interval (feet below gs)	Coordinates[1] Easting	Coordinates[1] Northing	Measuring Point Elevation[2] (feet msl)	Depth to Water (feet below MP)	Water Level Elevation (feet msl)
MW-03	58-78	1108996.06	219002.76	141.12	59.00	82.12
MW-04	58-78	1109103.06	219031.11	140.73	58.63	82.10
MW-09	72-82	1109195.54	219036.42	141.58	59.48	82.10
MW-11	71-81	1109296.90	219079.07	141.77	59.62	82.15
MW-14S	70-80	1109078.70	219812.98	144.39	61.79	82.60
MW-15S	70-80	1109340.84	219751.76	144.18	61.62	82.56
MW-16S	70-80	1109630.96	220169.77	145.52	62.35	83.17
MW-17S	65-75	1108969.28	219668.79	144.48	61.95	82.53
MW-18S	62-72	1109344.50	219623.98	144.01	61.51	82.50
MW-19S	70-80	1108964.58	219606.67	143.27	60.76	82.51
MW-20S	70-80	1109323.36	219567.86	143.89	61.43	82.46
MW-21S	70-80	1108742.07	219472.05	143.16	60.70	82.46
MW-22S	70-80	1109340.10	219412.43	144.21	61.80	82.41
MW-23S	90-100	1108968.58	219265.09	141.94	59.61	82.33
MW-24S	70-80	1109094.78	219336.90	142.43	60.04	82.39
MW-25S	105-115	1108768.63	219236.75	142.15	59.84	82.31
MW-26S	110-120	1108864.44	219265.30	142.40	60.05	82.35
MW-27S	80-90	1109092.07	219236.67	141.66	59.38	82.28
MW-28S		1109279.72	219267.08	144.59	62.32	82.27
MW-29S	66-76	1109090.05	219105.98	142.33	62.32	80.01
MW-30S	90-100	1108771.74	218953.99	140.91	58.86	82.05
MW-33S	65-75	1109471.56	219259.46	135.84	53.60	82.24
MW-34S	65-75	1109692.72	219165.60	136.76	54.60	82.16
MW-39S	76-86	1108815.90	218962.25	141.05	58.98	82.07
MW-43S	65-75	1109327.65	219515.52	144.03	61.59	82.44
MW-44S	65-75	1108970.41	219302.78	142.85	60.47	82.38
MW-49S	100-110	1108812.55	219338.60	143.98	61.56	82.42
MW-53S	70-80	1109462.22	219129.66	137.21	55.04	82.17
MW-55S	85-95	1109452.50	219559.76	136.65	54.20	82.45
W-02-70	60-70	1109070.18	218772.64	139.25	57.38	81.87
W-03-72	62-72	1109072.29	218985.21	140.71	58.63	82.08
W-05-78	68-78	1108995.96	218404.23	141.01	59.49	81.52
W-06-79	69-79	1109179.60	218428.26	140.39	58.83	81.56
W-08-71	61-71	1109322.09	219039.93	141.25	59.17	82.08
W-10-71	61-71	1108813.29	218388.54	138.52	57.02	81.50
W-12-70	60-70	1109389.05	218463.84	138.28	56.65	81.63
W-19-110	100-110	1109278.95	217398.97	133.98	53.55	80.43
W-20-120	100-110	1109013.64	217306.05	134.27	53.91	80.36
W-22-95	85-95	1109091.54	218441.85	139.46	57.89	81.57
W-31-95	85-95	1109258.27	218256.87	138.94	57.56	81.38
W-23-110	100-110	1108789.41	217819.01	134.21	53.26	80.95
W-32-110	100-110	1108849.47	218699.33	139.37	57.54	81.83
PW-02-01	71-73	1109640.14	218052.98	134.45	53.19	81.26
PW-03-01	70-72	1109746.24	218036.53	134.18	53.04	81.14
PW-04-01	71-73	1109958.49	218107.17	130.72	49.50	81.22
PW-05-01	68.5-70.5	1109481.43	217670.32	132.43	51.86	80.57
PW-06-02	90-92	1109694.83	217610.45	132.10	51.46	80.64
PW-07-01	70-72	1109922.09	217856.59	129.11	48.33	80.78

1 NAD83
2 NAVD88
MP=Measuring Point

Table 3-3
Water Level Elevation in Intermediate Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Well No.	Screen Interval (feet below gs)	Coordinates[1] Easting	Northing	Measuring Point Elevation[2] (feet msl)	Depth to Water (feet below MP)	Water Level Elevation (feet msl)
MW-08	120-130	1109060.39	219009.41	140.91	58.84	82.07
MW-10	120-130	1109218.76	219039.36	141.47	59.36	82.11
MW-12	120-130	1109301.31	219057.73	142.28	60.16	82.12
MW-20I	140-150	1109310.52	219552.35	144.13	61.68	82.45
MW-21I	170-180	1108731.62	219472.33	143.26	60.82	82.44
MW-22I	140-150	1109338.68	219399.95	144.29	61.93	82.36
MW-23I	170-180	1108976.54	219256.48	141.75	59.47	82.28
MW-28I	149-159	1109270.16	219263.60	147.25	64.98	82.27
MW-30I	230-240	1108779.60	218955.84	140.96	59.38	82.05
MW-31I	180-190	1109004.30	218998.56	140.99	58.90	82.09
MW-42I	140-150	1109383.96	219570.81	143.80	61.34	82.46
MW-50I	120-130	1108903.78	219197.64	141.71	59.44	82.27
MW-51I	130-140	1109094.89	219015.32	140.52	58.45	82.07
W-14-150	140-150	1109108.59	218837.64	139.65	57.71	81.94
W-16-148	138-148	1109205.06	218248.07	139.55	58.18	81.37
W-15-168	158-168	1108867.25	218200.94	134.37	53.10	81.27
PW-02-06	146-148	1109640.14	218052.98	134.45	53.34	81.11
PW-03-06	145-147	1109746.24	218036.53	134.18	53.10	81.08
PW-04-06	146-148	1109958.49	218107.17	130.72	49.59	81.13
PW-05-04	143-145	1109481.43	217670.32	132.43	51.86	80.57
PW-06-04	150-152	1109694.83	217610.45	132.10	51.50	80.60
PW-07-04	145-147	1109922.09	217856.59	129.11	48.42	80.69
W-18-150	140-150	1109179.95	217372.48	135.87	55.47	80.40
W-19-150	140-150	1109278.77	217398.93	134.09	53.69	80.40
W-20-160	150-160	1109014.01	217306.17	134.42	54.22	80.20
W-25-150	140-150	1108555.28	217162.46	131.15	51.22	79.93
W-27-240	210-240	1108928.53	216474.81	124.46	45.49	78.97

1 NAD83
2 NAVD88
MP=Measureing Point

Table 3-4
Water Level Elevation in Deep Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Well No.	Screen Interval (feet below gs)	Coordinates[1] Easting	Coordinates[1] Northing	Measuring Point Elevation[2] (feet msl)	Depth to Water (feet below MP)	Water Level Elevation (feet msl)
MW-13	290-300	1108775.11	219754.58	145.42	62.79	82.63
MW-14	294-304	1109083.22	219828.19	144.29	61.72	82.57
MW-15	300-310	1109357.20	219760.98	144.14	61.48	82.66
MW-16	280-290	1109648.11	220170.22	144.72	61.76	82.96
MW-19	296-306	1108952.25	219606.48	143.18	60.63	82.55
MW-21	300-310	1108737.14	219484.07	143.16	60.71	82.45
MW-23	330-340	1108976.29	219265.64	141.66	59.69	81.97
MW-25	230-240	1108770.39	219219.53	142.00	59.78	82.22
MW-26	266-276	1108868.37	219260.25	142.10	59.81	82.29
MW-27	280-290	1109105.77	219240.84	141.64	59.36	82.28
MW-28	277-287	1109273.99	219275.31	147.30	64.97	82.33
MW-30	330-340	1108787.67	218958.16	140.92	58.88	82.07
MW-31	320-330	1108997.26	218996.58	140.91	59.39	81.52
MW-32	295-305	1109291.05	219079.80	141.24	59.72	81.52
MW-34	270-280	1109702.65	219167.75	136.59	54.42	82.17
MW-52	275-285	1109567.12	219148.36	137.07	55.48	81.59
W-24	250-260	1108435.95	217532.01	133.11	53.13	79.98
W-26	260-270	1109374.25	216618.46	119.91	40.85	79.06
W-27	275-285	1108932.98	216475.64	123.64	44.99	78.65
W-34	275-285	1109122.27	217344.71	134.56	54.90	79.66
W-30	275-285	1109150.83	216536.61	122.99	43.93	79.06
W-37	285-325	1107539.94	215594.50	124.00	46.95	77.05
S-1	285-325	1109869.93	213800.45	119.98	45.70	74.28
MW-P110	345-355	1109434.84	213717.02	118.71	44.24	74.47
MW-P114	280-290	1110454.96	213904.34	119.90	45.21	74.69

1 NAD83
2 NAVD88
MP=Measureing Point

Table 3-5
Water Level Elevation in Monitoring Wells used to Draw Composite Water Bearing Zone Map
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Well No.	Screen Interval (feet below gs)	Coordinates[1] Easting	Northing	Land Surface Elevation[2] (feet msl)	Depth to Water (feet below MP)	Water Level Elevation (msl)
Shallow						
MW-13S	70-80	1108764.46	219755.81	145.30	62.66	82.64
MW-14S	70-80	1109078.70	219812.98	144.39	61.79	82.60
MW-15S	70-80	1109340.84	219751.76	144.18	61.62	82.56
MW-16S	70-80	1109630.96	220169.77	145.52	62.35	83.17
MW-17S	65-75	1108969.28	219668.79	144.48	61.95	82.53
MW-18S	62-72	1109344.50	219623.98	144.01	61.51	82.50
MW-19S	70-80	1108964.58	219606.67	143.27	60.76	82.51
MW-20S	70-80	1109323.36	219567.86	143.89	61.43	82.46
MW-21S	70-80	1108742.07	219472.05	143.16	60.70	82.46
MW-22S	70-80	1109340.10	219412.43	144.21	61.80	82.41
MW-23S	90-100	1108968.58	219265.09	141.94	59.61	82.33
MW-24S	70-80	1109094.78	219336.90	142.43	60.04	82.39
MW-25S	105-115	1108768.63	219236.75	142.15	59.84	82.31
MW-26S	110-120	1108864.44	219265.30	142.40	60.05	82.35
MW-27S	80-90	1109092.07	219236.67	141.66	59.38	82.28
MW-30S	90-100	1108771.74	218953.99	140.91	58.86	82.05
MW-33S	65-75	1109471.56	219259.46	135.84	53.60	82.24
MW-34S	65-75	1109692.72	219165.60	136.76	54.60	82.16
MW-39S	76-86	1108815.90	218962.25	141.05	58.98	82.07
MW-43S	65-75	1109327.65	219515.52	144.03	61.59	82.44
MW-44S	65-75	1108970.41	219302.78	142.85	60.47	82.38
MW-49S	100-110	1108812.55	219338.60	143.98	61.56	82.42
MW-53S	70-80	1109462.22	219129.66	137.21	55.04	82.17
MW-55S	85-95	1109452.50	219559.76	136.65	54.20	82.45
MW-04	58-78	1109103.06	219031.11	140.73	58.63	82.10
MW-03	58-78	1108996.06	219002.76	141.12	59.00	82.12
MW-09	72-82	1109195.54	219036.42	141.58	59.48	82.10
MW-11	71-81	1109296.90	219079.07	141.77	59.62	82.15
W-02-70	60-70	1109070.18	218772.64	139.25	57.38	81.87
W-03-112	102-112	1109071.12	218992.41	140.88	58.79	82.09
W-05-78	68-78	1108995.96	218404.23	141.01	59.49	81.52
W-06-79	69-79	1109179.60	218428.26	140.39	58.83	81.56
W-08-71	61-71	1109322.09	219039.93	141.25	59.17	82.08
W-10-71	61-71	1108813.29	218388.54	138.52	57.02	81.50
W-12-70	60-70	1109389.05	218463.84	138.28	56.65	81.63
W-22-95	85-95	1109091.54	218441.85	139.46	57.89	81.57
W-31-95	85-95	1109258.27	218256.87	138.94	57.56	81.38
W-32-110	100-110	1108849.47	218699.33	139.37	57.54	81.83
PW-04-04	116-118	1109958.49	218107.17	130.72	49.54	81.18
PW-02-04	116-118	1109640.14	218052.98	134.45	53.22	81.23
Intermediate						
PW-03-05	130-132	1109746.24	218036.53	134.18	53.09	81.09
PW-05-04	143-145	1109481.43	217670.32	132.43	51.86	80.57
PW-06-05	166-168	1109694.83	217610.45	132.10	51.47	80.63
PW-07-03	120-122	1109922.09	217856.59	129.11	48.39	80.72
W-18-150	140-150	1109179.95	217372.48	135.87	55.47	80.40
W-19-150	140-150	1109278.77	217398.93	134.09	53.69	80.40
W-20-160	150-160	1109014.01	217306.17	134.42	54.22	80.20
W-25-188	178-188	1108554.98	217162.72	131.34	51.50	79.84
W-27-240	210-240	1108928.53	216474.81	124.46	45.49	78.97
Deep						
W-37-325	285-325	1107539.94	215594.50	124.00	46.95	77.05
S-1-325	285-325	1109869.93	213800.45	119.98	45.70	74.28
MW-P110-440	345-355	1109439.01	213702.57	118.91	45.49	73.42
MW-P114-290	280-290	1110454.96	213904.34	119.90	45.21	74.69

Note: The Depth to Water Measurements have been corrected as shown on Table 3-1
1 NAD83
2 NAVD88
MP=Measureing Point

Table 3-6
Industrial Well Summary
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Well No.	Owner	Date Installed	Date Abandoned	Diameter (inches)	Total Depth (ft)	Screen Length (ft)	Max Permitted Pumping Rate (gpm)	Specific Capacity (gpm/ft)	Available Drawdown (ft)
N-6860	GI	1960	Pre-1971	8	96.33	10.00	NA	10	29.33
N-6202	PRD	1957	Replaced by N-9341	8	265.00	28.00	NA	17.50	170.00
N-9341	PRD	1978	NA	8	264.00	29.00	200.00	28.60	176.00
N--6237	Efco Real	1957	NA	4	101.50	8.00	NA	4.58	32.00
N-4113	PS&S Co	1952	NA	4	NA	NA	NA	NA	NA
N-4431	PS&S Co	1954	Common with N-4413	4	30	21.00	NA	11.0	15.08
N-4114[1]	PS&S Co	1953	NA	6	30.58	10.92	NA	14.70	16.00
N-4115[1]	PS&S Co	1953	NA	6	30.67	10.92	NA	15.50	16.25
N-4116[1]	PS&S Co	1953	NA	6	30.58	10.92	NA	18.80	16.00
N-4117[1]	PS&S Co	1953	NA	6	30.92	10.92	NA	11.30	15
N-3991	NA	NA	NA	NA	NA	NA	NA	NA	NA
N-5333	Trans Mix[2]	1955	NA	4	55.83	5.75	NA	7.50	35.67
N-8807	Certified Industries	1971	NA	8	140.00	31.00	NA	9.00	NA

[1] Depth below surface noted as bottom of gravel pit
[2] PS&S Co.- Preferred Sand & Stone Company & Trans Mix in same area
NA = Not Available

Table 4-1
Groundwater Quality Data from Profiles and Corresponding Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

	Profile Sample/Date		Trichloroethene Concentration (ug/L)		Tetrachloroethene Concentration (ug/L)		Well Sample/Date	
			Profile	Well	Profile	Well		
GTEOSI	P110-350.2	Jun-07	400	240	26	4.5	MWP-110-355	Nov-07
	P110-429.4	Jun-07	23	21	480	420	MWP-110-440	Nov-07
	P110-439.3	Jun-07	28	23	210	420	MWP-110-440	Nov-07
	P114-161.5	Jul-07	970	420	22	6.7	MWP-114-170	Nov-07
	P114-169.7	Jul-07	630	420	18	6.7	MWP-114-170	Nov-07
	P114-280.0	Jul-07	140	55	10	1.8	MWP-114-290	Nov-07
	P114-289.8	Jul-07	77	55	4	1.8	MWP-114-290	Nov-07
General Instruments	WP-04-353	Aug-07	2800	1800	130	150	W-36-390	Mar-09
	WP-04-363	Aug-07	2600	1800	120	150	W-36-390	Mar-09
	WP-04-373	Aug-07	2000	1800	98	150	W-36-390	Mar-09
	WP-04-380	Aug-07	1700	1800	91	150	W-36-390	Mar-09
	WP-04-390	Aug-07	1400	1800	70	150	W-36-390	Mar-09
	WP-04-423	Aug-07	750	350	87	120	W-36-448	Mar-09
	WP-04-444	Aug-07	290	350	100	120	W-36-448	Mar-09
	WP-07-284	Mar-08	360	1500	55	180	W-37-325	Mar-09
	WP-07-290	Mar-08	1300	1500	130	180	W-37-325	Mar-09
	WP-07-301	Mar-08	1400	1500	120	180	W-37-325	Mar-09
	WP-07-313	Mar-08	1200	1500	260	180	W-37-325	Mar-09
	WP-07-320	Mar-08	500	1500	120	180	W-37-325	Mar-09
	WP-07-353	Mar-08	360	210	120	110	W-37-385	Mar-09
	WP-07-360	Mar-08	520	210	190	110	W-37-385	Mar-09
	WP-07-373	Mar-08	150	210	83	110	W-37-385	Mar-09
	WP-07-380	Mar-08	54	210	62	110	W-37-385	Mar-09

Table 4-2
Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	Sample ID and Analytical Result (ug/L)																		
		MW-03	MW-04	MW-08	MW-09	MW-10	MW-11	MW-12	MW-13D	MW-13S	MW-14D	MW-14DD	MW-14S	MW-15D	MW-15DD	MW-15S	MW-16D	MW-16S	MW-17S	MW-18I	MW-18S
		04/06/10	04/07/10	04/06/10	04/08/10	04/08/10	04/07/10	04/07/10	04/02/10	03/24/10	03/23/10	03/22/10	03/22/10	03/23/10	03/23/10	03/23/10	04/07/10	04/07/10	03/23/10	03/31/10	04/01/10
1,1,1,2-Tetrachloroethane	5	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	5	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	0.43 J	1 U	1 U	1 U	1 U	1 U	0.74 J	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	5	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	5	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	0.55 J	1 U	1 U	1 U	1 U	1 U	1.1	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	0.34 J	1 U	1 U	1 U	1 U	1 U	0.48 J	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	3	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	0.6	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	3	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	3	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dioxane (Method 8260)	NA	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1,4-Dioxane (Method 8270)	NA	1.9	1 U	0.19 J	1 U	1 U	1 U	0.18 J	--	--	--	--	--	--	--	--	--	--	--	--	1 U
2-Butanone	50	10 U	91 U	10 U	110 U	400 U	110 U	40 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone*	50	10 U	91 U	10 U	110 U	400 U	110 U	40 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (MIBK)	NA	10 U	91 U	10 U	110 U	400 U	110 U	40 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone*	50	10 U	91 U	10 U	110 U	400 U	110 U	40 U	10 U	10 U	10 U	3.5 J	10 U	10 U	10 U	10 U	10 U	2.7 J	10 U	10 U	10 UJ
Benzene	1	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane*	50	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform*	50	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	0.97 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ
Bromomethane	5	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ
Carbon disulfide	NA	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U
Carbon tetrachloride	5	1 UJ	9.1 UJ	1 UJ	11 UJ	40 UJ	11 UJ	4 UJ	1 UJ	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U
Chlorobenzene	5	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 UJ	1 UJ	1 U	1 U	1 UJ	1 UJ	1 UJ	1 U	1 U	1 UJ	1 U	1 UJ
Chloroform	7	1 U	9.1 U	1 U	11 U	40 U	11 U	9.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3.6	1 U	0.48 J	1 U	14	0.97 J
Chloromethane	NA	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	0.37 J	1 UJ	1 UJ	1 U	1 U	1 UJ	1 UJ	1 UJ	1 U	1 U	1 UJ	1 U	1 U
cis-1,2-Dichloroethene	5	1.3	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene**	0.4	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene chloride	5	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	5	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	39	330	10	420	1400	420	150 J	0.36 J	1 U	1 U	1 U	1 U	1 U	1 U	0.2 J	0.23 J	1 U	1.3	1 U	1.9
Toluene	5	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	5	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene**	0.4	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	5	1.7	2.6 J	0.91 J	11 U	40 U	11 U	2.2 J	1 U	1 U	0.42 J	1 U	1 U	1 U	1 U	1 U	1.9	1 U	1 U	1 U	1 U
Vinyl chloride	2	1 U	9.1 U	1 U	11 U	40 U	11 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	NA	2 U	18 U	2 U	22 U	80 U	22 U	8 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U

=above applicable standard or MCL

* Guidance Value

**Sum of these compounds can not exceed 0.4 ug/L.

NA= not applicable

--=Not Analyzed

"B" Associated with a result if the compound was also identified in the corresponding method blank.

"E" This flag identifies compounds whose concentrations exceed the calibration range of the instrument for the specific analysis; data qualified with an "E" are qualitative only and not reliable for quantitative purposes. All results qualified with an "E" were required to be re-analyzed using an applicable dilution and re-reported.

"D" This flag identifies compounds whose concentration is from a secondary dilution analysis.

"U" The compound was analyzed for, but was not detected above the reporting limit.

"J" The compound was positively identified; the associated numerical value is the approximate concentration of the compound in the sample.

"N" The analysis indicates the presence of a compound for which there is presumptive evidence to make a "tentative identification".

"NJ" The analysis indicates the presence of a compound that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

"UJ" The compound was not detected above the reporting limit. However, the reporting limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the compound in the sample.

R" The sample result is "rejected" due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The result is unusable. The presence or absence of the compound cannot be verified.

Table 4-2
Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	Sample ID and Analytical Result (ug/L)																				
		MW-19D	MW-19S	MW-20D	MW-20I	MW-20S	MW-21D	MW-21I	MW-21S	MW-22D	MW-22I	MW-22S	MW-23D	MW-23I	MW-23S	MW-24D	MW-24S	MW-25D	MW-25I	MW-25S	MW-26D	MW-26I
		03/31/10	03/24/10	04/05/10	04/01/10	04/01/10	03/24/10	03/24/10	03/24/10	04/01/10	04/01/10	03/31/10	03/31/10	03/29/10	03/29/10	03/31/10	03/31/10	03/31/10	03/31/10	03/31/10	03/29/10	03/31/10
1,1,1,2-Tetrachloroethane	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	1 U	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	5	1.2	1 U	1 U	1 U	1 U	0.25 J	0.43 J	1 U	1 U	1 U	62 U	0.66 J	1 U	1 U	1.9	1.4 U	1 U	0.88 J	0.88 J	1	1 U
1,1,2,2-Tetrachloroethane	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	1 U	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	1 U	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	5	1.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	1.1	0.25 J	1 U	2.6	1.4 U	1 U	1 U	1 U	1.2	1 U
1,1-Dichloroethene	5	1.2	1 U	1 U	1 U	1 U	0.21 J	1 U	1 U	1 U	1 U	62 U	0.64 J	1 U	1 U	1.8	1.4 U	1 U	0.77 J	0.92 J	1	1 U
1,2-Dichlorobenzene	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	1 U	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	0.6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	1 U	1 U	1 U	0.21 J	1.4 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	1 U	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	1 U	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	1 U	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U
1,4-Dioxane (Method 8260)	NA	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1,4-Dioxane (Method 8270)	NA	--	--	--	--	1 U	--	--	--	--	--	1 U	--	--	--	--	--	--	--	--	--	--
2-Butanone	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	620 U	10 U	0.97 J	10 U	10 U	14 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone*	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	620 U	10 U	10 U	10 U	10 U	14 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (MIBK)	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	620 U	10 U	10 U	10 U	10 U	14 U	10 U	10 U	10 U	10 U	10 U
Acetone*	50	10 U	10 U	10 U	10 UJ	10 UJ	10 U	10 U	0.74 J	10 U	10 U	620 U	10 UJ	10 U	10 U	10 UJ	14 UJ	10 UJ	10 UJ	10 UJ	10 U	10 UJ
Benzene	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	0.33 J	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane*	50	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	1 U	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U
Bromoform*	50	1 UJ	1 U	1 U	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	62 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1.4 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Bromomethane	5	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	62 U	1 UJ	1 U	1 U	1 UJ	1.4 UJ	1 UJ	1 UJ	1 UJ	1 U	1 UJ
Carbon disulfide	NA	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	0.61 J	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	1 U	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	1 U	1 U	0.21 J	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5	1 U	1 UJ	1 U	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	62 U	1 UJ	1 U	1 U	1 UJ	1.4 UJ	1 UJ	1 UJ	1 UJ	1 U	1 UJ
Chloroform	7	1 U	1 U	2	9.9	0.57 J	1 U	1 U	1 U	3	16	62 U	0.43 J	1 U	1 U	0.18 J	1.4 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	NA	1 U	1 J	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ	62 U	0.17 J	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	1 U	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene**	0.4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	1 U	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	1 U	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U
Methylene chloride	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	1 U	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U
Styrene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	1 U	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	0.64 J	0.61 J	0.26 J	1 U	5.1	0.4 J	1 U	1 U	4.4	1 U	1800	2	0.32 J	0.66 J	1.6	31	0.25 J	1 U	1 U	1.1	0.19 J
Toluene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	1 U	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	1 U	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene**	0.4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	1 U	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	5	2.6	1 U	1 U	1 U	1 U	0.47 J	1 U	1 U	1 U	1 U	91	0.89 J	0.34 J	1 U	7.4	1.4 U	1 U	1 U	1 U	2.2	1 U
Vinyl chloride	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	62 U	1 U	1 U	1 U	1 U	1.4 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	NA	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	120 U	2 U	2 U	2 U	2 U	2.9 U	2 U	2 U	2 U	2 U	2 U

* Guidance Value

**Sum of these compounds can not exceed 0.4 ug/L.

NA= not applicable

--=Not Analyzed

Table 4-2
Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	Sample ID and Analytical Result (ug/L)																				
		MW-27D	MW-27S	MW-28D	MW-28I	MW-28S	MW-29S	MW-30D	MW-30I	MW-30S	MW-31D	MW-31I	MW-32D	MW-33D	MW-33S	MW-34D	MW-34S	MW-39S	MW-41S	MW-42I	MW-43S	MW-44S	MW-49S
		04/02/10	04/07/10	03/31/10	03/31/10	03/31/10	03/23/10	04/01/10	04/02/10	04/01/10	04/01/10	04/01/10	03/23/10	04/02/10	04/02/10	04/05/10	04/05/10	03/24/10	03/31/10	04/01/10	04/01/10	04/01/10	03/31/10
1,1,1,2-Tetrachloroethane	5	1 U	1 U	1 U	1 U	11 U	11 U	1 U	2.2 U	1 U	1.4 U	1 U	1 U	2.5 U	3.3 U	1 U	1 U	33 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	5	2	1 U	1 U	1 U	11 U	11 U	6.4	72	1 U	1.4 U	1.4	1 U	2.5 U	3.3 U	0.3 J	1 U	33 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	5	1 U	1 U	1 U	1 U	11 U	11 U	1 U	2.2 U	1 U	1.4 U	1 U	1 U	2.5 U	3.3 U	1 U	1 U	33 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1	1 U	1 U	1 U	1 U	11 U	11 U	1 U	2.5	1 U	1.4 U	1 U	1 U	2.5 U	3.3 U	1 U	1 U	33 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	5	2	1 U	1 U	1 U	11 U	11 U	0.27 J	2.5	1 U	1.4 U	0.4 J	1 U	2.5 U	3.3 U	0.57 J	1 U	33 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5	1.3	1 U	1 U	1 U	11 U	11 U	3.8	48	1 U	1.4 U	0.86 J	1 U	2.5 U	3.3 U	0.22 J	1 U	33 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	3	1 U	1 U	1 U	1 U	11 U	11 U	1 U	2.2 U	1 U	1.4 U	1 U	1 U	2.5 U	3.3 U	1 U	1 U	33 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	0.6	1 U	1 U	1 U	1 U	11 U	11 U	1 U	1 J	1 U	1.4 U	1 U	1 U	2.5 U	3.3 U	1 U	1 U	33 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1	1 U	1 U	1 U	1 U	11 U	11 U	1 U	2.2 U	1 U	1.4 U	1 U	1 U	2.5 U	3.3 U	1 U	1 U	33 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	3	1 U	1 U	1 U	1 U	11 U	11 U	1 U	2.2 U	1 U	1.4 U	1 U	1 U	2.5 U	3.3 U	1 U	1 U	33 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	3	1 U	1 U	1 U	1 U	11 U	11 U	1 U	2.2 U	1 U	1.4 U	1 U	1 U	2.5 U	3.3 U	1 U	1 U	33 U	1 U	1 U	1 U	1 U	1 U
1,4-Dioxane (Method 8260)	NA	R	R	R	R	R	R	R	R	R	2100 J	R	R	R	R	R	R	R	R	R	R	R	R
1,4-Dioxane (Method 8270)	NA	--	--	--	--	1 U	--	--	--	--	--	--	--	--	1 U	--	--	--	--	0.22 J	1 U	--	--
2-Butanone	50	10 U	10 U	10 U	10 U	110 U	110 U	10 U	22 U	10 U	14 U	10 U	10 U	25 U	33 U	10 U	10 U	330 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone*	50	10 U	10 U	10 U	10 U	110 U	110 U	10 U	22 U	10 U	14 U	10 U	10 U	25 U	33 U	10 U	10 U	330 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (MIBK)	NA	10 U	10 U	10 U	10 U	110 U	110 U	10 U	22 U	10 U	14 U	10 U	10 U	25 U	33 U	10 U	10 U	330 U	10 U	10 U	10 U	10 U	10 U
Acetone*	50	10 U	2.6 J	10 U	10 UJ	110 UJ	110 U	10 U	22 U	10 U	14 U	10 U	10 U	25 U	33 U	10 U	10 U	330 U	10 UJ	10 UJ	10 UJ	10 U	10 UJ
Benzene	1	1 U	1 U	1 U	1 U	11 U	11 U	1 U	2.2 U	1 U	1.4 U	1 U	1 U	2.5 U	3.3 U	1 U	1 U	33 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane*	50	1 U	1 U	1 U	1 U	11 U	11 U	1 U	2.2 U	1 U	1.4 U	1 U	1 U	2.5 U	3.3 U	1 U	1 U	33 U	1 U	1 U	1 U	1 U	1 U
Bromoform*	50	1 U	1 U	1 U	1 UJ	11 UJ	11 U	1 U	2.2 U	1 U	1.4 U	1 U	1 U	2.5 U	3.3 U	1 U	1 U	33 U	1 UJ	1 UJ	1 UJ	1 U	1 UJ
Bromomethane	5	1 U	1 U	1 U	1 UJ	11 UJ	11 U	1 U	2.2 U	1 U	1.4 U	1 U	1 U	2.5 U	3.3 U	1 U	1 U	33 U	1 UJ	1 UJ	1 UJ	1 U	1 UJ
Carbon disulfide	NA	1 U	1 U	1 U	1 U	11 U	11 U	1 U	2.2 U	1 U	1.4 U	1 U	1 U	2.5 U	3.3 U	1 U	1 U	33 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	1 UJ	1 UJ	1 U	1 U	11 U	11 U	1 UJ	2.2 UJ	1 U	1.4 U	1 UJ	1 U	2.5 UJ	3.3 UJ	1 UJ	1 UJ	33 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	5	1 U	1 U	1 U	1 U	11 U	11 U	1 U	2.2 U	1 U	1.4 U	1 U	1 U	2.5 U	3.3 U	1 U	1 U	33 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5	1 U	1 U	1 UJ	1 UJ	11 UJ	11 UJ	1 U	2.2 U	1 UJ	1.3 UJ	1 U	1 UJ	2.5 U	3.3 U	1 U	1 U	33 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Chloroform	7	0.2 J	1 U	3.1	11	2.1 J	11 U	1 U	2.2 U	1 U	1.4 U	1 U	1.3	2.5 U	3.3 U	0.29 J	1 U	33 U	0.39 J	18	7	1 U	1 U
Chloromethane	NA	1 U	1 U	1 UJ	1 U	11 U	11 UJ	1 U	2.2 U	1 UJ	1.4 UJ	1 U	1 UJ	2.5 U	3.3 U	1 U	1 U	33 UJ	1 U	1 U	1 U	1 UJ	1 U
cis-1,2-Dichloroethene	5	1 U	1 U	1 U	1 U	11 U	4.5 J	0.21 J	3.8	1 U	1.4 U	1 U	1 U	0.59 J	3.3 U	1 U	1 U	33 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene**	0.4	1 U	1 U	1 U	1 U	11 U	11 U	1 U	2.2 U	1 U	1.4 U	1 U	1 U	2.5 U	3.3 U	1 U	1 U	33 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	1 U	1 U	1 U	1 U	11 U	11 U	1 U	2.2 U	1 U	1.4 U	1 U	1 U	2.5 U	3.3 U	1 U	1 U	33 U	1 U	1 U	1 U	1 U	1 U
Methylene chloride	5	1 U	1 U	1 U	1 U	11 U	11 U	1 U	2.2 U	1 U	1.4 U	1 U	1 U	2.5 U	3.3 U	1 U	1 U	33 U	1 U	1 U	1 U	1 U	1 U
Styrene	5	1 U	1 U	1 U	1 U	11 U	11 U	1 U	2.2 U	1 U	1.4 U	1 U	1 U	2.5 U	3.3 U	1 U	1 U	33 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	1.2	6.1	6.7	3.3	320	320	0.32 J	1.2 J	1.1	1.4 U	0.82 J	23	87	120	2.1	1 U	870	7.2	1 U	8.6	40	1 U
Toluene	5	1 U	1 U	1 U	0.44 J	11 U	11 U	1 U	2.2 U	1 U	1.4 U	1 U	1 U	2.5 U	3.3 U	1 U	1 U	33 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	5	1 U	1 U	1 U	1 U	11 U	11 U	1 U	2.2 U	1 U	1.4 U	1 U	1 U	2.5 U	3.3 U	1 U	1 U	33 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene**	0.4	1 U	1 U	1 U	1 U	11 U	11 U	1 U	2.2 U	1 U	1.4 U	1 U	1 U	2.5 U	3.3 U	1 U	1 U	33 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	5	8.5	1 U	0.51 J	1 U	11 U	11 U	1.1	39	1 U	1.4 U	3.2	0.78 J	2.5 U	3.3 U	1 U	1 U	33 U	1 U	1 U	1 U	0.48 J	1 U
Vinyl chloride	2	1 U	1 U	1 U	1 U	11 U	11 U	1 U	2.2 U	1 U	1.4 U	1 U	1 U	2.5 U	3.3 U	1 U	1 U	33 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	NA	2 U	2 U	2 U	2 U	22 U	22 U	2 U	4.4 U	2 U	2.9 U	2 U	2 U	5 U	6.7 U	2 U	2 U	67 U	2 U	2 U	2 U	2 U	2 U

* Guidance Value

**Sum of these compounds can not exceed 0.4 ug/L.

NA= not applicable

--=Not Analyzed

Table 4-2
Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	Sample ID and Analytical Result (ug/L)																		
		MW-50I	MW-51I	MW-52D	MW-53S	MW-55S	MW-P110-355	MW-P110-440	MW-P114-170R	MW-P114-290	PW-02-01	PW-02-02	PW-02-03	PW-02-04	PW-02-05	PW-02-06	PW-02-07	PW-03-01	PW-03-02	PW-03-03	PW-03-04
		03/31/10	04/01/10	04/05/10	04/05/10	04/07/10	04/12/10	04/13/10	04/08/10	04/09/10	04/15/10	04/15/10	04/16/10	05/03/10	05/03/10	05/04/10	05/05/10	04/16/10	04/13/10	04/14/10	04/13/10
1,1,1,2-Tetrachloroethane	5	1 U	1 U	2.5 U	25 U	1 U	10 U	40 U	14 U	1.7 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	5	0.33 J	1 U	2.5 U	25 U	1 U	4.2 J	40 U	14 U	8.8	1 U	1.3	4.5	0.23 J	1 U	1 U	1 U	0.64 J	2.8	5.7	0.41 J
1,1,2,2-Tetrachloroethane	5	1 U	1 U	2.5 U	25 U	1 U	10 U	40 U	14 U	1.7 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1	1 U	1 U	2.5 U	25 U	1 U	10 U	40 U	14 U	1.7 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	5	1 U	1 U	2.5 U	25 U	1 U	10 U	40 U	5 J	20	1 U	0.69 J	2	1 U	1 U	1 U	1 U	0.33 J	2.2	2.3	1 U
1,1-Dichloroethene	5	0.34 J	1 U	2.5 U	25 U	1 U	7.6 J	40 U	2.6 J	14	1 U	0.28 J	0.81 J	1 U	1 U	1 U	1 U	1 U	0.52 J	1.1	1 U
1,2-Dichlorobenzene	3	1 U	1 U	2.5 U	25 U	1 U	10 U	40 U	14 U	1.7 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	R
1,2-Dichloroethane	0.6	1 U	1 U	2.5 U	25 U	1 U	10 U	40 U	5 J	1.7 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1	1 U	1 U	2.5 U	25 U	1 U	10 U	40 U	14 U	1.7 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	3	1 U	1 U	2.5 U	25 U	1 U	10 U	40 U	14 U	1.7 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	R
1,4-Dichlorobenzene	3	1 U	1 U	2.5 U	25 U	1 U	10 U	40 U	14 U	1.7 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	R
1,4-Dioxane (Method 8260)	NA	R	R	R	R	R	R	R	--	R	R	R	R	R	R	R	R	R	R	R	R
1,4-Dioxane (Method 8270)	NA	--	--	--	--	--	14	2.1	5.1	9.8	1 U	0.44 J	2.1	0.08 J	1 U	1 U	0.34 J	1 U	0.1 J	0.12 J	0.07 J
2-Butanone	50	10 U	10 U	25 U	250 U	10 U	100 U	400 U	140 U	17 U	10 UJ	10 U	10 UJ	R	R	R	R	10 U	10 U	10 U	10 U
2-Hexanone*	50	10 U	10 U	25 U	250 U	10 U	100 U	400 U	140 U	17 U	10 U	10 U	10 U	5 UJ	5 UJ	5 UJ	5 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (MIBK)	NA	10 U	10 U	25 U	250 U	10 U	100 U	400 U	140 U	17 U	10 U	10 U	10 U	5 U	5 U	5 U	5 U	10 U	10 U	10 U	10 U
Acetone*	50	10 UJ	10 U	25 U	250 U	10 U	100 U	400 U	140 U	17 U	10 U	10 U	10 U	2 U	2 U	2 U	2 U	10 U	10 U	10 U	10 U
Benzene	1	1 U	1 U	2.5 U	25 U	1 U	10 U	40 U	14 U	1.7 U	1 U	1 U	1 U	1 U	1 U	0.091 J	0.11 J	1 U	1 U	1 U	0.4 J
Bromodichloromethane*	50	1 U	1 U	2.5 U	25 U	1 U	10 U	40 U	14 U	1.7 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform*	50	1 UJ	1 U	2.5 U	25 U	1 U	10 UJ	40 UJ	14 UJ	1.7 UJ	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 UJ	1 UJ
Bromomethane	5	1 UJ	1 U	2.5 U	25 U	1 U	10 U	40 U	14 U	1.7 U	1 U	1 U	1 U	2 UJ	2 UJ	2 UJ	2 U	1 UJ	1 U	1 U	1 U
Carbon disulfide	NA	1 U	1 U	2.5 U	25 U	1 U	10 U	40 U	14 U	1.7 U	1 U	1 U	1 U	1 UJ	1 UJ	1 UJ	1 U	1 UJ	1 U	1 U	1 U
Carbon tetrachloride	5	1 U	1 U	2.5 UJ	25 UJ	1 UJ	4.1 J	40 U	14 U	1.7 U	1 U	1 U	1 U	1 U	1 U	1 U	0.21 J	1 U	1 U	1 U	1 U
Chlorobenzene	5	1 U	1 U	2.5 U	25 U	1 U	10 U	40 U	14 U	0.34 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	R
Chloroethane	5	1 UJ	1 UJ	2.5 U	25 U	1 U	10 U	40 U	14 U	1.7 U	1 U	1 U	1 U	2 U	2 U	2 U	2 U	1 UJ	1 U	1 U	1 U
Chloroform	7	1 U	1 U	2.5 U	25 U	19	10 U	40 U	14 U	1.7 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	NA	1 U	1 UJ	2.5 U	25 U	1 U	10 U	40 U	14 U	1.7 U	1 U	1 U	1 U	0.2 J	2 U	2 U	2 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	5	1 U	1 U	2.5 U	25 U	1 U	19	40 U	72	14	1 U	1 U	1 U	1 U	1 U	1 U	0.91 J	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene**	0.4	1 U	1 U	2.5 U	25 U	1 U	10 UJ	40 UJ	14 U	1.7 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 UJ
Ethylbenzene	5	1 U	1 U	2.5 U	25 U	1 U	10 U	40 U	14 U	1.7 U	1 U	1 U	1 U	1 U	1 U	1 U	0.12 J	1 U	1 U	1 U	R
Methylene chloride	5	1 U	1 U	2.5 U	25 U	1 U	10 U	40 U	14 U	1.7 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	5	1 U	1 U	2.5 U	25 U	1 U	10 U	40 U	14 U	1.7 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	R
Tetrachloroethene	5	1 U	1.3	93	870	1 U	140	1200	14	6.4	1 U	1 U	1 U	1 U	1 U	0.93 J	86	1 U	1 U	1 U	1 U
Toluene	5	0.26 J	1 U	0.57 J	25 U	1 U	10 U	40 U	14 U	1.7 U	0.59 J	1 U	1 U	1 U	0.098 J	0.32 J	0.57 J	1 U	1 U	1 U	2.4 J
trans-1,2-Dichloroethene	5	1 U	1 U	2.5 U	25 U	1 U	10 U	40 U	14 U	1.7 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene**	0.4	1 U	1 U	2.5 U	25 U	1 U	10 U	40 U	14 U	1.7 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	5	0.48 J	1 U	2.5 U	25 U	1 U	300	16 J	430	44	1 U	1 U	1 U	1 U	1 U	1 U	2.1	1 U	1 U	1 U	1 U
Vinyl chloride	2	1 U	1 U	2.5 U	25 U	1 U	10 U	40 U	14 U	1.7 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	NA	2 U	2 U	5 U	50 U	2 U	20 U	80 U	29 U	3.3 U	2 U	2 U	2 U	1 U	1 U	0.27 J	0.66 J	2 U	2 U	2 U	0.78 J

* Guidance Value

**Sum of these compounds can not exceed 0.4 ug/L.

NA= not applicable

--=Not Analyzed

Table 4-2
Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	Sample ID and Analytical Result (ug/L)																					
		PW-03-05	PW-03-06	PW-03-07	PW-04-01	PW-04-02	PW-04-03	PW-04-04	PW-04-05	PW-04-06	PW-04-07	PW-05-01	PW-05-02	PW-05-03	PW-05-04	PW-05-05	PW-05-06	PW-05-07	PW-06-02	PW-06-03	PW-06-04	PW-06-05	PW-06-06
		04/12/10	04/16/10	04/14/10	05/07/10	05/06/10	05/06/10	05/06/10	05/07/10	05/07/10	05/10/10	05/12/10	05/05/10	05/04/10	05/05/10	05/05/10	05/12/10	05/06/10	05/22/10	05/23/10	05/22/10	05/23/10	05/22/10
1,1,1,2-Tetrachloroethane	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	5	1 U	1 U	1 U	0.66 J	0.13 J	1 U	1 U	1 U	1 U	0.31 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	4.3	6.4	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	5	1 U	1 U	1 U	0.22 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3	3.8	1 U	1 U	1 U
1,1-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.1	4.1	1 U	1 U	1 U
1,2-Dichlorobenzene	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	0.6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dioxane (Method 8260)	NA	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1,4-Dioxane (Method 8270)	NA	1.1 U	1 U	0.32 J	4.4	1.5	0.32 J	0.03 J	1 U	1 U	2	1 U	0.16 J	0.06 J	0.05 J	0.12 J	1 U	1 U	0.39 J	7.2 J	0.5 UJ	0.5 UJ	0.12 J
2-Butanone	50	10 U	10 U	10 U	R	R	R	R	R	R	R	R	1.9 J	R	R	R	R	R	10 U	10 U	10 U	10 U	10 U
2-Hexanone*	50	10 U	10 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	3.2 J	5 U	5 U	5 U	5 U	5 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (MIBK)	NA	10 U	10 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	10 U	10 U	10 U	10 U
Acetone*	50	10 U	10 U	10 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	7.8 U	2 U	2 U	2 U	2 U	2 U	10 U	10 U	10 U	10 U	10 U
Benzene	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.078 J	0.33 J	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane*	50	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform*	50	1 UJ	1 UJ	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Bromomethane	5	1 U	1 UJ	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 UJ	2 U	2 U	2 U	2 U	2 UJ	2 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	NA	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.36 J	1 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5	1 U	1 UJ	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	1 U	1 U	1 U	1 U	1 U
Chloroform	7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	NA	1 U	1 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	5	1 U	1 U	2.7	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene**	0.4	1 UJ	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.1 J	1 U	1 U	1 U	1 U	1 U
Methylene chloride	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	0.22 J	0.24 J	3.6	1 U	1 U	1 U	1 U	1 U	2	0.76 J	1 U	0.12 J	1 U	1 U	6.5 J	0.5 J	37 J	0.2 J	1 U	1.8	1.5	4.8
Toluene	5	1 U	1 U	0.57 J	1 U	1 U	0.3 J	1 U	1 U	0.33 J	0.16 J	1 U	1 U	1 U	0.12 J	0.38 J	0.27 J	1.4	1 U	1 U	0.29 J	0.26 J	0.41 J
trans-1,2-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene**	0.4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Trichloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.35 J	1 U	0.84 J	1 U	1 U	1 U
Vinyl chloride	2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	NA	2 U	2 U	0.65 J	1 U	1 U	0.5 J	1 U	1 U	0.2 J	1 U	1 U	1 U	1 U	1 U	0.45 J	0.19 J	0.46 J	2 U	2 U	2 U	2 U	0.38 J

* Guidance Value

**Sum of these compounds can not exceed 0.4 ug/L.

NA= not applicable

--=Not Analyzed

Table 4-2
Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	Sample ID and Analytical Result (ug/L)																		
		PW-06-07	PW-07-01	PW-07-02	PW-07-03	PW-07-04	PW-07-05	PW-07-06	PW-07-07	S-1-325	S-1-450	W-01-120	W-01-75	W-02-70	W-03-112	W-03-72	W-05-78	W-06-79	W-08-71	W-10-120	W-10-71
		05/22/10	05/12/10	05/10/10	05/10/10	05/11/10	05/12/10	05/13/10	05/11/10	05/04/10	05/04/10	04/19/10	04/19/10	04/20/10	04/19/10	04/19/10	04/20/10	04/20/10	04/19/10	04/20/10	04/20/10
1,1,1,2-Tetrachloroethane	5	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	10 U	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
1,1,1-Trichloroethane	5	2.5 U	2.3	1 U	0.21 J	1 U	1 U	1 U	1 U	0.8 J	0.38 J	2.5 U	10 U	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
1,1,2,2-Tetrachloroethane	5	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	10 U	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
1,1,2-Trichloroethane	1	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	10 U	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
1,1-Dichloroethane	5	2.5 U	2.4	1 U	0.11 J	1 U	0.18 J	1 U	1 U	0.27 J	1 U	2.5 U	10 U	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
1,1-Dichloroethene	5	2.5 U	4.1	1 U	1 U	1 U	1 U	1 U	1 U	0.83 J	0.42 J	2.5 U	10 U	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
1,2-Dichlorobenzene	3	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	320	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
1,2-Dichloroethane	0.6	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	10 U	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
1,2-Dichloropropane	1	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	10 U	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
1,3-Dichlorobenzene	3	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	10 U	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
1,4-Dichlorobenzene	3	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	7.6 J	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
1,4-Dioxane (Method 8260)	NA	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
1,4-Dioxane (Method 8270)	NA	0.22 J	2.4	0.1 J	0.13 J	1.1 U	1 U	1 U	1.1 U	1.1	0.6 J	1 U	1 U	1 U	1 U	1 U	1 U	1.1	1 U	1 U	1 U
2-Butanone	50	25 U	1.1 J	R	R	R	R	R	R	R	R	25 U	100 U	10 U	33 U	17 U	10 U	R	14 U	10 U	20 U
2-Hexanone*	50	25 U	0.71 J	5 U	5 U	5 U	5 U	5 U	5 U	5 UJ	5 UJ	25 U	100 U	10 U	33 U	17 U	10 U	5 U	14 U	10 U	20 U
4-Methyl-2-pentanone (MIBK)	NA	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	25 U	100 U	10 U	33 U	17 U	10 U	5 U	14 U	10 U	20 U
Acetone*	50	25 U	21	2 U	2 U	2 UJ	2 U	3.9 U	2 U	2 U	2 U	25 U	100 U	10 U	33 U	17 U	10 U	2 U	14 U	10 U	20 U
Benzene	1	2.5 U	1 U	1 U	1 U	0.24 J	0.1 J	0.11 J	1 U	0.05 J	1 U	2.5 U	10 U	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
Bromodichloromethane*	50	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	10 U	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
Bromoform*	50	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 UJ	10 UJ	1 UJ	3.3 UJ	1.7 UJ	1 UJ	1 U	1.4 UJ	1 UJ	2 UJ
Bromomethane	5	2.5 U	2 UJ	2 U	2 U	2 U	2 UJ	2 UJ	2 U	2 UJ	2 UJ	2.5 UJ	10 UJ	1 UJ	3.3 UJ	1.7 UJ	1 UJ	2 UJ	1.4 UJ	1 UJ	2 UJ
Carbon disulfide	NA	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 UJ	2.5 UJ	10 UJ	1 UJ	3.3 UJ	1.7 UJ	1 UJ	1 UJ	1.4 UJ	1 UJ	2 UJ
Carbon tetrachloride	5	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5	3	2.5 U	10 U	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
Chlorobenzene	5	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	25	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
Chloroethane	5	2.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2.5 UJ	10 UJ	1 UJ	3.3 UJ	1.7 UJ	1 UJ	2 UJ	1.4 UJ	1 UJ	2 UJ
Chloroform	7	2.5 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	2.5 U	10 U	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
Chloromethane	NA	2.5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2.5 U	10 U	1 U	3.3 U	1.7 U	1 U	2 U	1.4 U	1 U	2 U
cis-1,2-Dichloroethene	5	2.5 U	0.31 J	1 U	1 U	1 U	0.22 J	1 U	1 U	0.91 J	12	73	100	1.2	3.3 U	2.7	0.31 J	1 U	1.4 U	1 U	2 U
cis-1,3-Dichloropropene**	0.4	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	10 U	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
Ethylbenzene	5	2.5 U	1 U	1 U	1 U	0.11 J	1 U	1 U	1 U	1 U	1 U	2.5 U	61	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
Methylene chloride	5	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	10 U	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
Styrene	5	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	10 U	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
Tetrachloroethene	5	75	0.88 J	1 U	1 U	1 U	1.1	0.37 J	0.53 J	6.1	24	4.5	100	27	84	52	8.7	0.13 J	41	29	30
Toluene	5	0.43 J	0.07 J	0.15 J	1 U	0.86 J	0.37 J	0.38 J	0.34 J	0.21 J	1 U	2.5 U	10 U	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
trans-1,2-Dichloroethene	5	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.46 J	10 U	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
trans-1,3-Dichloropropene**	0.4	2.5 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	10 U	1 U	3.3 U	1.7 U	1 U	1 U	1.4 U	1 U	2 U
Trichloroethene	5	1.1 J	2.2	1 U	1 U	1 U	4.6	1 U	0.23 J	22	92	10	240	4.6	4.4	3.2	27	1 U	1.4 U	1 U	62
Vinyl chloride	2	2.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5 U	9.4 J	1 U	3.3 U	1.7 U	1 U	1 UJ	1.4 U	1 U	2 U
Xylenes (total)	NA	5 U	1 U	0.12 J	1 U	0.53 J	0.19 J	0.26 J	1 U	0.12 J	1 U	5 U	130	2 U	6.7 U	3.3 U	2 U	1 U	2.9 U	2 U	4 U

* Guidance Value

**Sum of these compounds can not exceed 0.4 ug/L.

NA= not applicable

--=Not Analyzed

Table 4-2
Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	Sample ID and Analytical Result (ug/L)																				
		W-11-70	W-12-120	W-12-70	W-14-150	W-16-148	W-19-110	W-19-150	W-20-120	W-20-160	W-22-95	W-23-110	W-24-260	W-25-150	W-25-188	W-26-270	W-27-240	W-27-285	W-30-285	W-31-95	W-32-110	W-36-390	W-36-448
		04/21/10	04/21/10	04/21/10	04/19/10	04/22/10	04/22/10	04/22/10	04/23/10	04/23/10	04/21/10	04/22/10	04/27/10	04/27/10	04/27/10	04/27/10	04/28/10	04/28/10	04/28/10	04/21/10	04/20/10	04/29/10	04/29/10
1,1,1,2-Tetrachloroethane	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	5.7 U	1 U	1 UJ
1,1,1-Trichloroethane	5	1 U	1 U	1 U	2.1	1 U	1 U	1 U	0.42 J	1 U	1 U	2 U	1 U	1 U	5 U	1 U	0.34 J	1	1 U	1 U	5.7 U	100 U	0.69 J
1,1,2,2-Tetrachloroethane	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	5.7 U	1 U	1 UJ
1,1,2-Trichloroethane	1	1 U	1 U	1 U	1 U	1 U	1 U	0.24 J	1 U	1 U	1 U	2 U	1 U	1 U	5 U	1 U	1 U	0.46 J	1 U	1 U	5.7 U	100 U	1 UJ
1,1-Dichloroethane	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3.3	1.2	1 U	2 U	1.6	1 U	5 U	1 U	0.6 J	1.3	1 U	1 U	5.7 U	100 U	0.54 J
1,1-Dichloroethene	5	1 U	1 U	1 U	1.8	1 U	1 U	0.32 J	0.61 J	2.2	1 U	2 U	6.7	1 U	1.1 J	1 U	3.7	3.6	1 U	1 U	5.7 U	100 U	1.4 J
1,2-Dichlorobenzene	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.6	110 J	2.2	2 U	2.1	20	76 J	1 U	4.6	60	1 U	1 U	5.7 U	1 U	1 UJ
1,2-Dichloroethane	0.6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	5.7 U	1 U	1 UJ
1,2-Dichloropropane	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	5.7 U	100 U	1 UJ
1,3-Dichlorobenzene	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	0.28 J	0.81 J	1 U	1 U	1 U	1 U	1 U	5.7 U	100 U	1 UJ
1,4-Dichlorobenzene	3	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1.5	1 U	2 U	1 U	0.89 J	3.6 J	1 U	1 U	1 U	1 U	1 U	5.7 U	100 U	1 UJ
1,4-Dioxane (Method 8260)	NA	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	23 J	R
1,4-Dioxane (Method 8270)	NA	0.81 J	1 U	1 U	0.72 J	1 U	1 U	1 U	0.79 J	0.44 J	1 UJ	1 U	5	0.41 J	0.65 J	0.19 J	2.2	1.4	0.14 J	1 U	12	28 J	2.4 J
2-Butanone	50	R	R	R	10 U	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	57 U	500 U	R
2-Hexanone*	50	5 U	5 U	5 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U	25 U	5 U	5 U	5 U	5 UJ	5 U	57 U	5 UJ	5 J
4-Methyl-2-pentanone (MIBK)	NA	5 U	5 U	5 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U	25 U	5 U	5 U	5 U	5 U	5 U	57 U	5 U	5 UJ
Acetone*	50	2 U	2 U	2 U	10 U	2 U	2 U	2 U	2 U	2 U	2 U	4 U	2 U	2 U	10 U	2 U	2 U	2 U	2 U	2 U	57 U	6.3 U	2 UJ
Benzene	1	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	0.13 J	1 U	5 U	1 U	1 U	0.054 J	1 U	1 U	5.7 U	100 U	0.047 J
Bromodichloromethane*	50	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	5.7 U	1 U	1 UJ
Bromoform*	50	1 U	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	5.7 UJ	1 U	1 UJ
Bromomethane	5	2 UJ	2 UJ	2 UJ	1 UJ	2 UJ	2 UJ	2 UJ	2 U	2 U	2 UJ	4 U	2 U	2 U	10 U	2 U	2 U	2 U	2 U	2 UJ	5.7 UJ	2 U	2 UJ
Carbon disulfide	NA	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 U	1 U	1 J	2 U	1 U	1 U	5 U	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	5.7 UJ	100 U	1 UJ
Carbon tetrachloride	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U	5 U	1 U	0.088 J	1 U	1 U	1 U	5.7 U	65	5.1 J
Chlorobenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	0.26 J	4.6 J	1 U	1 U	1 U	1 U	1 U	5.7 U	100 U	1 UJ
Chloroethane	5	2 UJ	2 UJ	2 UJ	1 UJ	2 UJ	2 UJ	2 UJ	2 U	2 U	2 UJ	4 U	2 U	2 U	10 U	2 U	0.44 J	2 U	2 U	2 UJ	5.7 UJ	2 U	2 UJ
Chloroform	7	1 U	1 U	1 U	1 U	4.4 U	1 U	15 U	1 U	1 U	1 U	2 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	5.7 U	8.1 U	1 UJ
Chloromethane	NA	2 U	2 U	2 U	1 U	2 U	2 U	2 U	2 U	2 U	2 U	4 U	2 U	2 U	10 U	2 U	2 U	2 U	0.28 U	2 U	5.7 U	2 U	2 UJ
cis-1,2-Dichloroethene	5	1 U	1 U	1 U	0.37 J	2.1	1 U	39	8	24	4.7	0.73 J	43	27	33	0.44 J	57	750	1 U	1 U	5.7 U	1100 J	66
cis-1,3-Dichloropropene**	0.4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	5.7 U	1 U	1 UJ
Ethylbenzene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	5.7 U	1 U	1 UJ
Methylene chloride	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	5.7 U	1 U	1 UJ
Styrene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	5.7 U	1 U	1 UJ
Tetrachloroethene	5	0.44 J	0.77 J	0.14 J	4.5	210	15	400	52 J	110 J	160	2 J	9.6	7 J	17 J	10	23	660	0.63 J	0.56 J	170	110	59
Toluene	5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	0.14 J	1 U	5 U	1 U	1 U	1 U	1 U	1 U	5.7 U	1 U	1 UJ
trans-1,2-Dichloroethene	5	1 U	1 U	1 U	1 U	1 U	1 U	0.24 J	1 U	0.56 J	1 U	2 U	0.24 J	1 U	5 U	1 U	0.63 J	9.9	1 U	1 U	5.7 U	100 U	0.19 J
trans-1,3-Dichloropropene**	0.4	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	5.7 U	1 U	1 UJ
Trichloroethene	5	1 U	1 U	1 U	7	4.3	1 U	44	25	40	29	2.9	40 J	32	16	1 U	88	280 D	1 U	1 U	3.2 J	1900 J	230
Vinyl chloride	2	1 UJ	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 UJ	0.19 J	15	1 UJ	2 U	1 U	0.12 J	14	1 U	13	84	1 U	1 UJ	5.7 U	100 U	1 UJ
Xylenes (total)	NA	1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U	5 U	1 U	1 U	0.84 J	1 U	1 U	11 U	1 U	1 UJ

* Guidance Value

**Sum of these compounds can not exceed 0.4 ug/L.

NA= not applicable

--=Not Analyzed

Table 4-2
Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	Sample ID and Analytical Result (ug/L)	
		W-37-325	W-37-385
		04/29/10	04/29/10
1,1,1,2-Tetrachloroethane	5	1 U	1 U
1,1,1-Trichloroethane	5	2.5	57
1,1,2,2-Tetrachloroethane	5	1 U	1 U
1,1,2-Trichloroethane	1	0.34 J	1.3
1,1-Dichloroethane	5	1.3	3.2
1,1-Dichloroethene	5	31	110
1,2-Dichlorobenzene	3	1 U	1 U
1,2-Dichloroethane	0.6	1 U	1 U
1,2-Dichloropropane	1	1 U	0.18 J
1,3-Dichlorobenzene	3	1 U	1 U
1,4-Dichlorobenzene	3	1 U	1 U
1,4-Dioxane (Method 8260)	NA	32 J	60 J
1,4-Dioxane (Method 8270)	NA	29	49
2-Butanone	50	R	R
2-Hexanone*	50	5 U	5 U
4-Methyl-2-pentanone (MIBK)	NA	5 U	5 U
Acetone*	50	2 U	2 U
Benzene	1	0.1 J	0.062 J
Bromodichloromethane*	50	1 U	1 U
Bromoform*	50	1 U	1 U
Bromomethane	5	2 U	2 U
Carbon disulfide	NA	1 UJ	1 UJ
Carbon tetrachloride	5	97	24
Chlorobenzene	5	1 U	1 U
Chloroethane	5	2 U	2 U
Chloroform	7	110	81
Chloromethane	NA	2 U	2 U
cis-1,2-Dichloroethene	5	16	5.8
cis-1,3-Dichloropropene**	0.4	1 U	1 U
Ethylbenzene	5	1 U	1 U
Methylene chloride	5	1 U	1 U
Styrene	5	1 U	1 U
Tetrachloroethene	5	110	80
Toluene	5	1 U	1 U
trans-1,2-Dichloroethene	5	1 U	1 U
trans-1,3-Dichloropropene**	0.4	1 U	1 U
Trichloroethene	5	1000 J	380
Vinyl chloride	2	1 U	1 U
Xylenes (total)	NA	1 U	1 U

* Guidance Value

**Sum of these compounds can not exceed 0.4 ug/L.

NA= not applicable

--=Not Analyzed

Table 4-3
Metals in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	MW-03 total (ug/L)	MW-03 dissolved (ug/L)	MW-04 total (ug/L)	MW-04 dissolved (ug/L)	MW-08 total (ug/L)	MW-08 total (ug/L)	MW-08 dissolved (ug/L)	MW-08 dissolved (ug/L)	MW-09 total (ug/L)	MW-09 dissolved (ug/L)	MW-10 total (ug/L)	MW-10 dissolved (ug/L)	MW-11 total (ug/L)	MW-11 dissolved (ug/L)	MW-12 total (ug/L)
		4/6/2010	4/6/2010	4/7/2010	4/7/2010	4/6/2010	11/16/2010	4/6/2010	11/16/2010	4/8/2010	4/8/2010	4/8/2010	4/8/2010	4/7/2010	4/7/2010	4/7/2010
Aluminum	NA	612	244 U	325	202 U	200 U	--	200 U	--	103 B	200 U	587	572	200 U	200 U	87.6 B
Antimony	3	10 U	10 U	10 U	10 U	10 U	--	10 U	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Arsenic	25	10 U	10 U	10 U	10 U	10 U	--	10 U	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Barium	1000	32.5 B	31.2 B	28.3 B	28.6 B	41.9 B	--	41.4 B	--	43.9 B	41.8 B	74.6	73.5	63.5	59.3	50 U
Beryllium	3	5 U	5 U	5 U	5 U	5 U	--	5 U	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	5	5 U	5 U	5 U	5 U	5 U	--	5 U	--	5 U	5 U	5 U	1.1 B	5 U	5 U	5 U
Calcium	NA	7000	6840	12000	12100	7220	--	6980	--	7080	6710	28600	28700	14800	14100	12000
Chromium	50	10 U	10 U	10 U	10 U	10 U	--	10 U	--	10 U	10 U	17.5	16.3	10 U	10 U	10 U
Chloride	NA	17.6	--	4.6	--	27.4	--	--	--	3.1	--	22.7	--	9.4	--	96.2
Cobalt	NA	50 U	50 U	4.5 B	50 U	50 U	--	50 U	--	50 U	50 U	7 B	6.2 B	50 U	50 U	50 U
Copper	200	25 U	25 U	9.7 B	6.8 B	25 U	--	25 U	--	25 U	25 U	7.4 B	7 B	25 U	25 U	25 U
Iron*	300	101	202	126	100 U	122	--	100 U	--	32.4 B	100 U	326	100 U	82.6 B	100 U	79.4 B
Lead	25	1.5 B	10 U	10 U	10 U	10 U	--	10 U	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Magnesium	35000	1640	1600	2570	2560	1410	--	1360	--	395 B	388 B	3930	4000	1730	1640	1510
Manganese*	300	14.7 B	15 U	38.1	4.2 B	7 B	--	4.3 B	--	8.2 B	7.8 B	82	72.9	24.4	16.1	12.2 B
Mercury	0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	0.2 U	--	0.2 U	0.2 U	0.2 U	0.017 B	0.2 U	0.2 U	0.2 U
Nickel	100	40 U	40 U	40 U	40 U	112	397	107	380	40 U	40 U	41.8	41.2	14.2 B	40 U	40 U
Potassium	10	5000 U	5000 UJ	5000 U	5000 UJ	5000 U	r	5000 UJ	--	5000 U	5000 U	5070	5270 J	5000 U	5000 UJ	5000 U
Selenium	10	15 U	15 U	15 U	15 U	15 U	--	15 U	--	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Silver	50	10 U	10 U	10 U	10 U	10 U	--	10 U	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Sodium	20000	25100 B	25900	8960	8890	45000	--	44200	--	2590	2500	20400	19700	4990	4820	85700
Thallium	0.5	20 U	20 U	20 U	20 U	20 U	--	20 U	--	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Vanadium	2000	50 U	50 U	50 U	50 U	50 U	--	50 U	--	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Zinc	200	20 U	13.3 B	131	114	20 U	--	9.4 B	--	20 U	9.6 B	33.1 U	33.4	20 U	8.3 B	20 U

--=Not Analyzed

=above applicable staandards or MCL

* The NYSDEC GA groundwater standard is 300 ug/L for the combined concentration of iron and manganese

"B" Indicates an estimated value or a value below the established reporting limit but above the method detection limit.

"E" Serial dilution percent difference is not within limits

"U" The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

"J" The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

"UJ" The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

"R" The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

Table 4-3
Metals in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	MW-12 dissolved (ug/L) 4/7/2010	MW-13D total (ug/L) 4/2/2010	MW-13S total (ug/L) 3/24/2010	MW-14D total (ug/L) 3/23/2010	MW-14DD total (ug/L) 3/22/2010	MW-14S total (ug/L) 3/22/2010	MW-15D total (ug/L) 3/23/2010	MW-15DD total (ug/L) 3/23/2010	MW-15S total (ug/L) 3/23/2010	MW-16D dissolved (ug/L) 4/7/2010	MW-16S total (ug/L) 4/7/2010	MW-17S total (ug/L) 3/23/2010	MW-18I total (ug/L) 3/31/2010	MW-18S total (ug/L) 4/1/2010	MW-19D total (ug/L) 3/31/2010
Aluminum	NA	200 U	19.6 U	61.4 J	1910	521	200 U	19.6 U	200 U	200 U	200 U	51.8 J	200 U	36.9 J	400 U	71.3 J
Antimony	3	10 U	0.1 U	0.1 U	2 U	0.1	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	20 U	0.1 U
Arsenic	25	10 U	1 U	0.075 U	1 U	1 U	1 U	1 U	0.075 U	0.075 U	1 U	0.16 J	1 U	1 U	10 U	1 U
Barium	1000	50 U	18.5 J	89.4	24 J	20.5	9.5 J	15 J	10.7 J	39.1 J	40.5 J	35.5 J	40.5 J	164 J	77.3	118 J
Beryllium	3	5 U	0.048 U	0.19 J	0.05 J	0.11 J	0.052 J	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	5 U	0.048 U
Cadmium	5	5 U	0.083 U	0.52 J	0.18 J	0.14 J	0.083 U	0.083 U	0.12 J	0.27 J	0.083 U	0.11 J	0.083 U	0.13 J	5 U	0.083 U
Calcium	NA	11700	6750	31600	10800	14800	8330	11300	7080	25000	18600	11000	5000 U	14300	185000 J	12100
Chromium	50	10 U	0.097 U	0.1 J	0.097 U	7.2	0.097 U	0.097 U	0.31 J	0.51 J	0.5 J	0.38 J	0.47 J	0.097 UJ	20 U	0.25 J
Chloride	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	53.5	--
Cobalt	NA	50 U	0.029 U	2.4 J	2.4 J	1.5 J	0.029 UJ	2.7 J	0.43 J	0.029 UJ	0.87 J	0.52 J	3 J	3 J	50 U	0.029 U
Copper	200	25 U	25 U	25 U	25 U	25 U	0.75 U	25 U	25 U	0.75 U	25 U	25 U	25 U	0.75 U	11.3 B	0.75 U
Iron*	300	100 U	154	100 U	369	381	100 U	100 U	100 U	100 U	27.4 J	701	4000	190	100 U	1190
Lead	25	10 U	1 U	1 U	1	1.2	1 U	1 U	1 U	0.068 J	1 U	1 U	1 U	1 UJ	20 U	1 U
Magnesium	35000	1500	1860	6610	3620 J	4010 J	4060 J	3700 J	2120 J	5960	5000 U	1900 J	405 J	3930 J	37500	3470 J
Manganese*	300	15 U	12.9 J	117 J	32.3	63.7	11.3	28.2	23.8	55.7	21.1	736 J	929	142 J	12.4 B	22.6 J
Mercury	0.7	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.2 U	0.1 U
Nickel	100	40 U	0.66 J	3.9 J	5 U	5 U	0.068 U	5 U	5 U	5 U	1.4 J	1.4 J	5 U	9.9	3	2.8 J
Potassium	10	5000 UJ	5000 U	5000 U	5000 U	5070	5000 U	5000 U	5000 U	11100	5000 U	5000 U	5000 U	5000 U	5000 B	5000 U
Selenium	10	15 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 UJ	4.2 U	4.2 U	4.2 U	30 U	4.2 U
Silver	50	10 U	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U	20 U	0.069 U
Sodium	20000	82400	7640	179000	29500	19800	73600	15700	8510	491000	19000	13300	17800	191000	36200	32400
Thallium	0.5	20 U	0.036 J	0.15 J	0.085 J	0.12 J	0.043 J	0.068 J	0.1 J	0.12 J	0.036 J	0.071 J	0.045 J	0.12 J	40 U	0.045 J
Vanadium	2000	50 U	1.2 U	1.2 U	2.2 J	1.2 U	1.2 U	1.2	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	50 U	1.2 U
Zinc	200	9.8 B	8.5 J	11.6 J	9.7 J	52.5 J	1.1 U	8.3 J	3 J	3 J	6.5 J	4 J	3.5 J	60 U	20 U	5.5 J

Table 4-3
Metals in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	MW-19S total (ug/L)	MW-20D total (ug/L)	MW-20I total (ug/L)	MW-20S total (ug/L)	MW-21D total (ug/L)	MW-21I dissolved (ug/L)	MW-21S total (ug/L)	MW-22D total (ug/L)	MW-22I total (ug/L)	MW-22S total (ug/L)	MW-23D total (ug/L)	MW-23I total (ug/L)	MW-23S total (ug/L)	MW-23S total (ug/L)	MW-23S dissolved (ug/L)
		3/24/2010	4/5/2010	4/1/2010	4/1/2010	3/24/2010	3/24/2010	3/24/2010	4/1/2010	4/1/2010	3/31/2010	3/31/2010	3/29/2010	3/29/2010	11/15/2010	11/15/2010
Aluminum	NA	19.6 U	200 U	44.2 J	200 U	24.1 J	672	19.6 U	81.7 J	24.3 J	200 U	89.7 J	308	43.5 J	--	--
Antimony	3	0.1 U	2 U	0.1 U	10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	10 U	0.11 J	0.1 U	0.1 U	--	--
Arsenic	25	1 U	0.075 U	0.075 U	10 U	1 U	1 U	1 U	1 U	0.075 U	10 U	1.1	0.82 J	0.075 U	--	--
Barium	1000	23.5 J	75.8 J	90.3 J	60.7	148 J	89 J	31.5 J	15 J	188 J	62.2	35.7 J	109 J	27.3 J	--	--
Beryllium	3	0.048 U	0.048 U	0.048 U	5 U	0.048 U	2.8	0.048 U	0.048 U	0.048 U	5 U	0.048 U	0.051 J	0.048 U	--	--
Cadmium	5	0.17 J	0.083 U	0.083 U	5 U	0.083 U	0.47 J	0.083 U	0.083 U	0.15 J	1.9 B	0.083 U	0.083 U	0.083 U	--	--
Calcium	NA	7310	22200	10700	133000 J	18600	25100	18100	16300	19000	37900 J	16800	20200	7810	--	--
Chromium	50	0.097 U	1.4 J	0.097 UJ	10 U	0.097 U	1.2 J	0.097 U	0.097 UJ	0.097 UJ	10 U	0.96 J	2 J	0.097 U	--	--
Chloride	NA	--	--	--	33.2	--	--	--	--	--	18.4	--	--	--	--	--
Cobalt	NA	1.2 J	0.029 UJ	0.4 J	50 U	0.029 U	1.9 J	0.21 J	0.07 J	0.26 J	7.7 B	2.1 J	1.6 J	0.029 U	--	--
Copper	200	25 U	25 U	0.75 U	25 U	25 U	25 U	25 U	0.75 U	0.75 U	25 U	4.2 J	0.8 J	0.75 U	--	--
Iron*	300	208	87 J	367	100 U	233	1410	3480	107	20.3 J	1030	1980	765	49.8 J	--	--
Lead	25	1 U	1 U	1 UJ	10 U	1 U	1 U	1 U	1 UJ	1 UJ	10 U	1 U	1 U	1 U	--	--
Magnesium	35000	1240 J	5930	2660 J	26600	5630	6490	2210 J	5150	5460	5530	2710 J	3650 J	1680 J	--	--
Manganese*	300	70.3 J	9.3 J	59.7 J	266	11 J	225 J	535 J	27.5 J	248 J	584	171 J	191 J	35.7 J	--	--
Mercury	0.7	0.1 U	0.1 U	0.1 U	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.2 U	0.1 U	0.1 U	0.1 U	--	--
Nickel	100	5	0.35 J	2.3 J	40 U	0.59 J	5 J	3.4 J	4.9 J	3.1 J	19 B	4.6 J	11.6	2240	1500	1550
Potassium	10	5000 U	5000 U	5000 U	7100	5000 U	5000 U	5000 U	5000 U	5000 U	2410 B	5960	5000 U	5000 U	--	--
Selenium	10	4.2 U	4.2 U	4.2 U	15 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	15 U	4.2 U	4.2 U	4.2 U	--	--
Silver	50	0.069 U	5 U	0.069 U	10 U	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U	10 U	0.069 U	0.069 U	0.069 U	--	--
Sodium	20000	5080	455000	224000	113000	27400	144000	14300	338000	160000	27600	87700	75400	7630	--	--
Thallium	0.5	0.042 J	0.086 J	0.051 J	20 U	0.029 J	0.11 J	0.027 U	0.11 J	0.085 J	20 U	0.027 U	0.096 J	0.059 J	--	--
Vanadium	2000	1.2 U	1.2 U	1.2 U	50 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	50 U	1.2 U	1.2 U	1.2 U	--	--
Zinc	200	21.4 J	6.2 J	60 U	20 U	6.1 J	39.2 J	1.9 J	60 U	60 U	20 U	60 U	69.2	60 U	--	--

Table 4-3
Metals in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	MW-24D total (ug/L) 3/31/2010	MW-24S total (ug/L) 3/31/2010	MW-25D total (ug/L) 3/31/2010	MW-25I total (ug/L) 3/31/2010	MW-25S total (ug/L) 3/31/2010	MW-26D total (ug/L) 3/29/2010	MW-26I total (ug/L) 3/31/2010	MW-26I total (ug/L) 11/15/2010	MW-26I dissolved (ug/L) 11/15/2010	MW-27D total (ug/L) 4/2/2010	MW-27S total (ug/L) 4/7/2010	MW-27S total (ug/L) 11/15/2010	MW-27S dissolved (ug/L) 11/15/2010	MW-28D dissolved (ug/L) 3/31/2010	MW-28I total (ug/L) 3/31/2010
Aluminum	NA	37.6 J	19.6 U	31.6 J	25.3 J	25.4 J	19.6 U	19.6 U	--	--	328	31.7 J	--	--	R	664
Antimony	3	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	--	--	0.1 U	0.1 U	--	--	0.31 J	0.1 U
Arsenic	25	1 U	1 U	1 U	1 U	1 U	1 U	1 U	--	--	0.9 J	0.17 J	--	--	1	5.8
Barium	1000	21.8 J	42.7 J	155 J	196 J	144 J	142 J	133 J	--	--	13.8 J	18.3 J	--	--	25.9 J	8.2 J
Beryllium	3	0.048 U	0.048 U	0.048 U	0.06 J	0.081 J	0.054 J	0.048 U	--	--	0.051 J	0.048 U	--	--	0.14 J	0.049 J
Cadmium	5	0.083 U	0.083 U	0.083 U	0.083 U	0.083 U	0.083 U	0.083 U	--	--	0.083 U	0.083 U	--	--	0.083 U	0.083 U
Calcium	NA	8590	13100	22600	17700	15600	14600	8630	--	--	8490	9160	--	--	5000 U	9160
Chromium	50	0.097 U	0.097 U	0.097 U	0.097 U	0.097 U	0.097 U	0.097 U	--	--	2.3 J	0.4 J	--	--	2.3 J	1.2 J
Chloride	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cobalt	NA	0.029 U	0.029 U	0.37 J	0.029 U	0.029 U	0.029 U	5.7	--	--	0.029 UJ	10 J	--	--	R	0.029 U
Copper	200	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	0.75 U	--	--	25 J	25 U	--	--	5.6 J	0.75 U
Iron*	300	71.4 J	23.3 J	471	19.4 J	27.8 J	33 J	107	--	--	1460	99 J	--	--	1100	954
Lead	25	1 U	1 U	1 U	1 U	1 U	1 U	1 U	--	--	1 U	1 U	--	--	R	1 U
Magnesium	35000	2420 J	1800 J	7040	6150	3480 J	4260 J	1880 J	--	--	5000 U	1490 J	--	--	1040 J	2640 J
Manganese*	300	10.5 J	12.2 J	42 J	197 J	198 J	31.4 J	632 J	--	--	17 J	626 J	--	--	61.4	10.7 J
Mercury	0.7	0.2 U	0.1 U	0.1 U	0.2 U	0.1 U	0.1 U	0.1 U	--	--	0.2 U	0.1 U	--	--	0.1 U	0.1 U
Nickel	100	0.64 J	89.1	3.7 J	4.1 J	62.9	5.2	193	190	189	1.2 J	108	79.1	80	6.5 J	0.24 J
Potassium	10	5000 U	5000 U	6590	6490	5000 U	5000 U	5000 U	--	--	5000 U	5840	--	--	1480 J	5000 U
Selenium	10	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	--	--	4.2 U	4.2 U	--	--	4.2 U	4.2 U
Silver	50	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U	0.069 U	--	--	0.069 U	0.069 U	--	--	5 U	0.069 U
Sodium	20000	17900	6670	162000	70500	38600	26800	64300	--	--	16700	8290	--	--	337000	120000
Thallium	0.5	0.038 J	0.041 J	0.096 J	0.13 J	0.094 J	0.051 J	0.19 J	--	--	0.066 J	0.098 J	--	--	0.092 J	0.053 J
Vanadium	2000	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	4 J	1.2 U	--	--	5.2 J	5.1 J
Zinc	200	60 U	60 U	60 U	60 U	60 U	60 U	60 U	--	--	8.7 J	6.5 J	--	--	12.7 J	60 U

Table 4-3
Metals in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	MW-28S total (ug/L)	MW-29S total (ug/L)	MW-30D total (ug/L)	MW-30I total (ug/L)	MW-30S total (ug/L)	MW-31D total (ug/L)	MW-31D total (ug/L)	MW-31D dissolved (ug/L)	MW-31I total (ug/L)	MW-32D dissolved (ug/L)	MW-33D total (ug/L)	MW-33S total (ug/L)	MW-34D dissolved (ug/L)	MW-34S total (ug/L)	MW-39S total (ug/L)
		3/31/2010	3/23/2010	4/1/2010	4/2/2010	4/1/2010	4/1/2010	11/15/2010	11/15/2010	4/1/2010	3/23/2010	4/2/2010	4/2/2010	4/5/2010	4/5/2010	3/24/2010
Aluminum	NA	200 U	19.6 U	38.5 J	200 U	455	683	--	--	91.8 J	116 J	414	461	206	200 U	152 J
Antimony	3	10 U	2 U	0.1 U	0.1 U	0.1 U	0.1 U	--	--	0.1 U	2 U	2 U	10 U	0.1 U	0.1 U	0.1 U
Arsenic	25	10 U	1 U	1 U	0.24 J	1 U	1 U	--	--	1 U	1 U	0.45 J	10 U	2.4	0.1 J	0.075 U
Barium	1000	20.8 B	50.1 J	127 J	129 J	45 J	91.9 J	--	--	42.2 J	51.3 J	36.2 J	16.1 B	8 J	38.7 J	67.5 J
Beryllium	3	5 U	0.048 U	0.048 U	0.048 U	0.56 J	0.18 J	--	--	0.048 U	0.074 J	0.048 U	5 U	0.048 U	0.048 U	0.11 J
Cadmium	5	2.3 B	0.16 J	0.083 U	0.44 J	0.083 U	0.083 U	--	--	0.083 U	0.083 U	0.15 J	5 U	0.083 U	0.21 J	0.083 J
Calcium	NA	29600 J	37400	24800	27000	11100	18300	--	--	22000	25600	10800	4840	17400	5440	8030
Chromium	50	10 U	0.097 U	0.097 UJ	0.63 J	0.097 UJ	0.36 J	--	--	0.097 UJ	0.097 U	3.1 J	10 U	1.1 J	0.52 J	0.097 U
Chloride	NA	44.6	--	--	--	--	--	--	--	--	--	--	3.9	--	--	--
Cobalt	NA	50 U	5.6 J	2.8 J	0.029 UJ	0.029 U	57.8	--	--	0.029 U	6.7 J	6 J	7.2 B	0.029 U	4.9 J	0.029 U
Copper	200	25 U	25 U	0.75 U	25 U	0.75 U	0.75 U	--	--	0.75 U	2.6 J	25 U	25 U	25 U	25 U	25 U
Iron*	300	373	3090	2990	60.4 J	44.1 J	898	--	--	117	168	1460	107	146	147	100 U
Lead	25	10 U	1 U	1 UJ	1 U	1 UJ	2.2 J	--	--	1 UJ	1 U	2.4	1.4 B	1 U	1 U	1 U
Magnesium	35000	3480	6460	7310	7540	1660 J	3700 J	--	--	6130	7800	5000 U	700 B	5000 U	5000 U	1650 J
Manganese*	300	27.3	90.2	289 J	99.9 J	20.6 J	1710 J	--	--	54.9 J	18.5	56 J	259	1 U	661 J	8.8 J
Mercury	0.7	0.2 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	--	--	0.1 U	0.1 U	0.1 U	0.2 U	0.1 U	0.1 U	0.1 U
Nickel	100	40 U	40.6	10.3	0.47 J	6.2	472	431	402	4.2 J	10.8 J	10.8	40 U	0.068 U	2 J	1.7 J
Potassium	10	5000 U	5000 U	5000 U	7350	5000 U	5000 U	--	--	5000 U	5000 U	5000 U	3170 B	17100	5000 U	5000 U
Selenium	10	15 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2	--	--	4.2 U	4.2 U	4.2 U	15 U	5.2 J	4.2 U	4.2 U
Silver	50	10 U	0.069 U	0.069 U	0.069 U	0.069 U	0.069	--	--	0.069 U	0.069 U	0.069 U	10 U	0.069 U	0.069 U	0.069 U
Sodium	20000	40500	47400	122000	64100	5000 U	372000	--	--	65400	338000	152000	4350	31900	6150	21000
Thallium	0.5	20 U	0.12 J	0.07 J	0.044 J	0.031 J	0.15 J	--	--	0.069 J	0.035 J	0.074 J	20 U	0.05 J	0.059 J	0.04 J
Vanadium	2000	50 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	--	--	1.2 U	1.9 J	2 J	50 U	3.3 J	1.2 U	1.2 U
Zinc	200	20 U	135	18.2 J	3.5 J	8.5 J	28.8 J	--	--	5 J	32.4 J	23.9 J	25.9 U	3 J	3.1 J	10.5 J

Table 4-3
Metals in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	MW-41S total (ug/L)	MW-42I total (ug/L)	MW-43S total (ug/L)	MW-44S total (ug/L)	MW-44S total (ug/L)	MW-44S dissolved (ug/L)	MW-49S total (ug/L)	MW-50I total (ug/L)	MW-51I total (ug/L)	MW-51I total (ug/L)	MW-51I dissolved (ug/L)	MW-52D total (ug/L)	MW-53S total (ug/L)	MW-55S total (ug/L)
		3/31/2010	4/1/2010	4/1/2010	4/1/2010	11/16/2010	11/16/2010	3/31/2010	3/31/2010	4/1/2010	11/16/2010	11/16/2010	4/5/2010	4/5/2010	4/7/2010
Aluminum	NA	19.6 U	291	200 U	19.6 U	--	--	28 J	103 J	200 U	--	--	268	200 U	63.6 J
Antimony	3	0.1 U	10 U	10 U	0.1 U	--	--	0.1 U	0.18 J	0.1 U	--	--	2 U	0.1 U	2 U
Arsenic	25	1 U	10 U	10 U	1 U	--	--	1 U	1 U	1.3	--	--	0.89 J	0.075 U	0.28 J
Barium	1000	56.8 J	108	55.6	72.9 J	--	--	37.2 J	123 J	36.5 J	--	--	14.4 J	14.9 J	106 J
Beryllium	3	0.048 U	5 U	5 U	0.048 U	--	--	0.048 U	0.049 J	0.048 U	--	--	0.048 U	0.16 J	0.048 U
Cadmium	5	0.083 U	1.5 B	5 U	0.083 U	--	--	0.097 J	0.083 U	0.083 U	--	--	0.092 J	0.12 J	0.24 J
Calcium	NA	62300	14100 J	88100 J	42500	--	--	8140	10600	9290	--	--	11300	9670	17400
Chromium	50	0.097 UJ	10 U	10 U	0.097 UJ	--	--	0.097 U	0.097 U	1.5 J	--	--	2.5 J	0.31 J	1.2 J
Chloride	NA	--	174	59.6	--	--	--	--	--	--	--	--	--	--	--
Cobalt	NA	0.029 U	4.6 B	50 U	0.91 J	--	--	3.6 J	4.2 J	3.2 J	--	--	0.88 J	11.3 J	17.4 J
Copper	200	0.75 U	25 U	25 U	0.75 U	--	--	0.75 U	0.75 U	0.75 U	--	--	25 U	25 U	25 U
Iron*	300	67.8 J	618	100 U	22.5 J	--	--	245 J	732	100 U	--	--	734	125	754
Lead	25	1 UJ	10 U	10 U	1 UJ	--	--	1 U	1 U	1 UJ	--	--	1 U	1 U	1 U
Magnesium	35000	10000	3680	17600	4560 J	--	--	1390 J	3020 J	1740 J	--	--	1820 J	5000 U	2850 J
Manganese*	300	189 J	210	143	380 J	--	--	784 J	510 J	21.7 J	--	--	39 J	567 J	1450 J
Mercury	0.7	0.1 U	0.2 U	0.2 U	0.1 U	--	--	0.1 U	0.1 U	0.1 U	--	--	0.2 U	0.2 U	0.1 U
Nickel	100	5.2	40 U	40 U	1350	1260	1290	5.4	152	15.6	328	343	3.9 J	16.8	16.4
Potassium	10	5000 U	2270 B	5000 U	5000 U	--	--	5000 U	5000 U	5000 U	--	--	5000 U	5000 U	5000 U
Selenium	10	4.2 U	15 U	15 U	4.2 U	--	--	4.2 U	4.2 U	4.2 U	--	--	4.2 U	4.2 U	4.2 U
Silver	50	0.069 U	10 U	10 U	0.069 U	--	--	0.069 U	0.069 U	0.069 U	--	--	0.069 U	0.069 U	0.069 U
Sodium	20000	24700	131000	62200	42800	--	--	5000 U	66800	66100	--	--	28600	5900	108000
Thallium	0.5	0.055 J	20 U	20 U	0.042 J	--	--	0.046 J	0.15 J	0.33 J	--	--	0.062 J	0.11 J	0.18 J
Vanadium	2000	1.2 U	50 U	50 U	1.2 U	--	--	1.2 U	1.2 U	1.2 U	--	--	3.3 J	1.2 U	1.2 U
Zinc	200	6.5 J	20 U	20 U	4.7 J	--	--	60 U	60 U	60 U	--	--	5.7 J	8.9 J	4.5 J

Table 4-3
Metals in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	MW-P110-355 total (ug/L)	MW-P110-355 dissolved (ug/L)	MW-P110-440 total (ug/L)	MW-P110-440 dissolved (ug/L)	MW-P114-170R total (ug/L)	MW-P114-170R dissolved (ug/L)	MW-P114-290 total (ug/L)	MW-P114-290 dissolved (ug/L)	PW-02-01 total (ug/L)	PW-02-01 dissolved (ug/L)	PW-02-02 total (ug/L)	PW-02-02 dissolved (ug/L)
		4/12/2010	4/12/2010	4/13/2010	4/13/2010	4/8/2010	4/8/2010	4/9/2010	4/9/2010	4/15/2010	4/15/2010	4/15/2010	4/15/2010
Aluminum	NA	557	200 U	200 U	200 U	238	200 U	430	200 U	200 U	200 U	83.9 B	200 U
Antimony	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Arsenic	25	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U
Barium	1000	44.6 B	38.9 B	43.6 B	42.8 B	68.6	67.6	44.8 B	44 B	70.6	66.3	65.2	69
Beryllium	3	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Calcium	NA	14200	13300	31800	31200	22800	22900	19000	19900	15500	13700	12800	13500
Chromium	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloride	NA	27.2	--	28.7	--	50.9	--	36.7	--	37.8	--	37.9	--
Cobalt	NA	50 U	50 U	5.4 B	5 B	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Copper	200	25 U	25 U	8.8 B	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Iron*	300	458	100 U	100 U	100 U	340	100 U	693	68.1 B	41.4 B	100 U	47.1 B	100 U
Lead	25	3 B	10 U	10 U	2.7 B	10 U	10 U	5.2 B	1.8 B	10 U	10 U	10 U	10 U
Magnesium	35000	4260	4000	9630	9470	8550	8650	6830	7140	2800	2470	2320	2460
Manganese*	300	957	869	168	164	91.9	58.6	107	110	15 U	15 U	15 U	15 U
Mercury	0.7	0.018 B	0.2 U	0.036 B	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 J	0.2 U	0.2 U
Nickel	100	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Potassium	10	5000 U	5000 U	5000 U	5000 UJ	11600 U	14200 UJ	31700	34200 J	5000 U	5000 U	5000 U	5000 UJ
Selenium	10	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	2.9 B	15 U	15 U
Silver	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Sodium	20000	32800	32000	27700	27700	56900	55800	45600	46100	21800	20300	15100	15700
Thallium	0.5	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Vanadium	2000	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Zinc	200	50.6 U	45.6 U	128 U	115 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U

Table 4-3
Metals in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	PW-02-03 total (ug/L)	PW-02-03 dissolved (ug/L)	PW-02-04 total (ug/L)	PW-02-04 dissolved (ug/L)	PW-02-05 total (ug/L)	PW-02-05 dissolved (ug/L)	PW-02-06 total (ug/L)	PW-02-06 dissolved (ug/L)	PW-02-07 total (ug/L)	PW-02-07 dissolved (ug/L)	PW-03-01 total (ug/L)	PW-03-01 dissolved (ug/L)	PW-03-02 total (ug/L)	PW-03-02 dissolved (ug/L)	PW-03-03 total (ug/L)
		4/16/2010	4/16/2010	5/3/2010	5/3/2010	5/3/2010	5/3/2010	5/4/2010	5/4/2010	5/5/2010	5/5/2010	4/16/2010	4/16/2010	4/13/2010	4/13/2010	4/14/2010
Aluminum	NA	200 U	200 U	200 U	200 U	228	200 U	293	200 U	200 U	200 U	200 U	200 U	200 U	200 U	200 U
Antimony	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Arsenic	25	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Barium	1000	163	160	143	147	62.8	62.1	78.7	76.8	41.4 B	42.6 B	39.9 B	38.6 B	129	129	127
Beryllium	3	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Calcium	NA	16800	15700	33400	34500	16000	15800	14800	14300	12600	12600	10500	9730	21100	21200	19000
Chromium	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloride	NA	120	--	165	--	41.7	--	44.6	--	30	--	21.3	--	81.5	--	103
Cobalt	NA	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	41.9 B	42.4 B	50 U
Copper	200	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Iron*	300	57 B	100 U	169	104	253	100 U	306	100 U	91.1 B	67.1 B	100 U	100 U	1780	1640	100 U
Lead	25	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Magnesium	35000	3250	3000	4580	4730	1880	1830	4460	4300	4400	4390	1670	1540	2150	2200	3010
Manganese*	300	131	130	142	148	9.2 B	8.9 B	56.1	52.3	9 B	8.7 B	15 U	3.7 B	573	579	49.4
Mercury	0.7	0.021 B	0.2 U	0.2 U	0.2 U	0.2 U	0.63 J	0.045 B	0.2 U	0.06 B	0.2 U	0.2 U	0.2 U	0.022 B	0.2 U	0.023 B
Nickel	100	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	13.8 B	14.5 B	40 U
Potassium	10	5000 U	5000 U	1900 B	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	7090 U	6650 U	19500	16900 J	7650 U
Selenium	10	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Silver	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Sodium	20000	81800	78300	82500	84400	28600	29300	26000	25500	29200	29900	18100	17100	44100	42600	52200
Thallium	0.5	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Vanadium	2000	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Zinc	200	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	76.8 U	72.3 U	20.9 U

Table 4-3
Metals in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	PW-03-03 dissolved (ug/L) 4/14/2010	PW-03-04 total (ug/L) 4/13/2010	PW-03-04 dissolved (ug/L) 4/13/2010	PW-03-05 total (ug/L) 4/12/2010	PW-03-05 dissolved (ug/L) 4/12/2010	PW-03-06 total (ug/L) 4/16/2010	PW-03-06 dissolved (ug/L) 4/16/2010	PW-03-07 total (ug/L) 4/14/2010	PW-03-07 dissolved (ug/L) 4/14/2010	PW-04-01 total (ug/L) 5/7/2010	PW-04-01 dissolved (ug/L) 5/7/2010	PW-04-02 total (ug/L) 5/6/2010	PW-04-02 dissolved (ug/L) 5/6/2010	PW-04-03 total (ug/L) 5/6/2010	PW-04-03 dissolved (ug/L) 5/6/2010
Aluminum	NA	200 U	--	200 U	200 U	200 U	161 B	200 U	416 U	200 U	262	200 U	200 U	200 U	200 U	200 U
Antimony	3	10 U	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Arsenic	25	10 U	--	10 U	10 U	10 U	10 U	10 U	2.2 B	10 U	10 U	2.8 B	10 U	10 U	10 U	10 U
Barium	1000	129	--	52.7	37.9 B	36.1 B	52.4	49.4 B	31.6 B	29.9 B	128	120	152	148	75.1	79.4
Beryllium	3	5 U	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	5	5 U	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Calcium	NA	19600	--	11600	9440	9180	11700	10600	11300	11200	13100	12900	22000	21500	10700	11300
Chromium	50	10 U	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloride	NA	--	44.2	--	28.8	--	27.4	--	38.3	--	78.5	--	123	--	36.8	--
Cobalt	NA	50 U	--	5.8 B	50 U	50 U	4.2 B	4.4 B	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Copper	200	25 U	--	25 U	25 U	25 U	16.8 B	25 U	25 U	25 U	5.5 B	25 U	25 U	25 U	25 U	25 U
Iron*	300	100 U	--	221	29.6 B	100 U	245	100 U	4250	3680	689	100 U	91.4 B	100 U	100 U	100 U
Lead	25	10 U	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	1.8 B	10 U	10 U	10 U	10 U	10 U
Magnesium	35000	3140	--	1540	1510	1510	2690	2420	3400	3400	2440	2260	4940	4850	1540	1610
Manganese*	300	51	--	58.7	4.7 B	5 B	27.3	24.5	38.7	35.6	6.5 B	7.8 B	6.5 B	7 B	7.6 B	7.8 B
Mercury	0.7	0.2 U	--	0.2 U	0.2 U	0.2 U	0.077 B	0.2 U	0.025 B	0.2 U	0.029 B	0.062 B	0.2 U	0.2 U	0.082 B	0.2 U
Nickel	100	40 U	--	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Potassium	10	5000 UJ	--	5000 UJ	5000 U	5000 U	5000 U	5000 U	3700 BU	5000 UJ	8890 J	8070	2110 B	5000 U	2870 BJ	5000 U
Selenium	10	15 U	--	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Silver	50	10 U	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Sodium	20000	50100	--	39200	24600	25500	22500	21200	23200	22000	46100	46600	62900	63700	24400	26100
Thallium	0.5	20 U	--	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Vanadium	2000	50 U	--	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Zinc	200	20.9 U	--	31.6 U	20 U	20 U	23.1 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U

Table 4-3
Metals in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	PW-04-04 total (ug/L)	PW-04-04 dissolved (ug/L)	PW-04-05 total (ug/L)	PW-04-05 dissolved (ug/L)	PW-04-06 total (ug/L)	PW-04-06 dissolved (ug/L)	PW-04-07 total (ug/L)	PW-04-07 dissolved (ug/L)	PW-05-01 total (ug/L)	PW-05-01 dissolved (ug/L)	PW-05-02 total (ug/L)	PW-05-02 dissolved (ug/L)	PW-05-03 total (ug/L)	PW-05-03 dissolved (ug/L)	PW-05-04 total (ug/L)
		5/6/2010	5/6/2010	5/7/2010	5/7/2010	5/7/2010	5/7/2010	5/10/2010	5/10/2010	5/12/2010	5/12/2010	5/5/2010	5/5/2010	5/4/2010	5/4/2010	5/5/2010
Aluminum	NA	200 U	200 U	110 B	200 U	129 B	200 U	200 U	200 U	200 U	200 U	196 B	105 B	144 B	200 U	442 J
Antimony	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Arsenic	25	10 U	10 U	2.4 B	10 U	10 U	10 U	10 U	10 U	4.7 U	10 U	10 U	10 U	10 U	10 U	10 U
Barium	1000	39.8 B	40.1 B	37.4 B	36.3 B	80.2	78.9	106	113	66.1	63.8	118	108	158	159	19.2 B
Beryllium	3	5 U	5 U	1.6 B	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	5	5 U	5 U	1.6 B	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Calcium	NA	7030	7050	8220	7950	16500	16100	11800	12300	6320	6240	14800	14200	19300	19200	8150
Chromium	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloride	NA	33.8	--	65.5	--	96.9	--	99.9	--	24.8	--	80.8	--	132	--	5.1
Cobalt	NA	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	7.6 B
Copper	200	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Iron*	300	61 B	100 U	480	207	138	100 U	48.8 B	100 U	188	100 U	214	90.6 B	161	77.3 B	384
Lead	25	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Magnesium	35000	1670	1690	1510	1440	1590	1510	2030	2120	1590	1580	2690	2550	3090	3110	1390
Manganese*	300	7.2 B	3.9 B	96.3	85.5	6.7 B	5.5 B	5.5 B	5.3 B	12.3 B	15 U	5.5 B	5.5 B	28.9	28.6	2380
Mercury	0.7	0.025 B	0.2 U	0.063 B	0.2 U	0.2 U	0.2 U	0.2 U	0.037 B	0.2 U	0.2 U	0.038 B	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	69.8
Potassium	10	5000 U	5000 U	5000 UJ	5000 U	5000 U	1700 B	6590 J	7310	5000 U	5000 U	3100 B	5800	2630 B	1660 B	5000 U
Selenium	10	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Silver	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Sodium	20000	28600	29400	43400	42800	53500	52400	47700	51200	26900	26700	42200	40200	77300	75200	6530
Thallium	0.5	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Vanadium	2000	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Zinc	200	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	8 B	5.9 B	20 U	20 U	20 U	20 U	21.3 U

Table 4-3
Metals in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	PW-05-04 dissolved (ug/L) 5/5/2010	PW-05-05 total (ug/L) 5/5/2010	PW-05-05 dissolved (ug/L) 5/5/2010	PW-05-06 total (ug/L) 5/12/2010	PW-05-06 dissolved (ug/L) 5/12/2010	PW-05-07 total (ug/L) 5/6/2010	PW-05-07 dissolved (ug/L) 5/6/2010	PW-06-02 total (ug/L) 5/22/2010	PW-06-02 dissolved (ug/L) 5/22/2010	PW-06-03 total (ug/L) 5/23/2010	PW-06-03 dissolved (ug/L) 5/23/2010	PW-06-04 total (ug/L) 5/22/2010	PW-06-04 dissolved (ug/L) 5/22/2010	PW-06-05 total (ug/L) 5/23/2010	PW-06-05 dissolved (ug/L) 5/23/2010
Aluminum	NA	200 U	171 B	200 U	--	252	--	200 U	200 U	200 U	726	200 U	179 B	200 U	888	200 U
Antimony	3	10 U	10 U	10 U	--	10 U	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Arsenic	25	10 U	10 U	10 U	--	10 U	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Barium	1000	18 B	162	165	--	50 U	--	47.9 B	118	115	102	92	100	96.8	67.6	64.2
Beryllium	3	5 U	5 U	5 U	--	5 U	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	5	5 U	5 U	5 U	--	5 U	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Calcium	NA	8050	17700	18300	--	380 B	--	17800	21200	20700	16100	15600	13800	13200	12300	12100
Chromium	50	10 U	10 U	10 U	--	10 U	--	10 U	10 U	10 U	5.9 B	10 U	10 U	10 U	10 U	10 U
Chloride	NA	--	59.4	--	6	--	54.9	--	83.1	--	37.7	--	40.4	--	34.5	--
Cobalt	NA	7.2 B	50 U	50 U	--	50 U	--	7.2 B	50 U	50 U	50 U	50 U	4.3 B	4 B	8.5 B	7.9 B
Copper	200	25 U	25 U	25 U	--	25 U	--	25 U	25 U	25 U	14.7 B	25 U	25 U	25 U	25 U	25 U
Iron*	300	97.3 B	288	69.7 B	--	774	--	735	52.6 B	100 U	1110	278	384	41.1 B	2210	1260
Lead	25	10 U	10 U	10 U	--	10 U	--	10 U	10 U	10 U	1.8 B	10 U	10 U	10 U	10 U	10 U
Magnesium	35000	1370	2410	2450	--	1000 U	--	6180	2890	2830	6720	6460	4700	4550	4490	4420
Manganese*	300	2360	7120	7320	--	15 U	--	37	234	229	5.3 B	4 B	17.8	15.1	35	29.1
Mercury	0.7	0.2 U	0.06 B	0.2 U	--	0.2 U	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	67.8	254	258	--	40 U	--	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Potassium	10	5000 U	5000 U	1750 B	--	5000 U	--	5000 U	5000 U	5000 U	5000 U	5000 UJ	5000 U	5000 UJ	5000 U	5000 UJ
Selenium	10	15 U	15 U	15 U	--	15 U	--	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Silver	50	10 U	10 U	10 U	--	10 U	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Sodium	20000	6320	31800	32500	--	16200	--	32100	38000	36700	22300	22000	25900	25500	21000	21200
Thallium	0.5	20 U	20 U	20 U	--	20 U	--	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Vanadium	2000	50 U	50 U	50 U	--	50 U	--	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Zinc	200	20.9 U	23.8 U	21.4 U	--	20 U	--	50.2	20 U	20 U	21.6 U	20 U	26.9 U	21.8 U	26.2 U	25 U

Table 4-3
Metals in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	PW-06-06 total (ug/L)	PW-06-06 dissolved (ug/L)	PW-06-07 total (ug/L)	PW-06-07 dissolved (ug/L)	PW-07-01 total (ug/L)	PW-07-01 dissolved (ug/L)	PW-07-02 total (ug/L)	PW-07-02 dissolved (ug/L)	PW-07-03 total (ug/L)	PW-07-03 dissolved (ug/L)	PW-07-04 total (ug/L)	PW-07-04 dissolved (ug/L)	PW-07-05 total (ug/L)	PW-07-05 dissolved (ug/L)	PW-07-06 total (ug/L)
		5/22/2010	5/22/2010	5/22/2010	5/22/2010	5/12/2010	5/12/2010	5/10/2010	5/10/2010	5/10/2010	5/10/2010	5/11/2010	5/11/2010	5/12/2010	5/12/2010	5/13/2010
Aluminum	NA	374	200 U	--	200 U	200 U	200 U	200 U	200 U	200 U	200 U	85.9 B	200 U	200 U	200 U	200 U
Antimony	3	10 U	10 U	--	10 U	4.7 BU	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Arsenic	25	10 U	10 U	--	10 U	4.9 BU	3.8 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Barium	1000	83.5	83	--	34.3 B	89.9	90.4	53.2	55.4	62.5	63.6	33.2 B	33 B	44.4 B	42.9 B	23.1 B
Beryllium	3	5 U	5 U	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	5	5 U	5 U	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Calcium	NA	13400	13400	--	12100	24400	24400	9970	9960	11100	11300	5320	5280	14600	14000	5530
Chromium	50	10 U	10 U	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloride	NA	33.5	--	44.6	--	88.6	--	31.9	--	36.6	--	36	--	51.7	--	82.6
Cobalt	NA	11.8 B	11.3 B	--	50 U	22.4 B	22.1 B	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Copper	200	25 U	25 U	--	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Iron*	300	2440	2130	--	2240	9640	9260	100 U	100 U	42 B	100 U	95.1 B	100 U	179	100 U	757
Lead	25	10 U	10 U	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Magnesium	35000	5100	5130	--	4160	9240	9250	1300	1290	2680	2760	954 B	960 B	4600	4410	1760
Manganese*	300	19.2	16.2	--	27.6	388	378	18.3	18.2	5.4 B	5.7 B	15 U	15 U	15 U	15 U	8.8 B
Mercury	0.7	0.2 U	0.2 U	--	0.2 U	0.2 U	0.2 U	0.033 B	0.035 B	0.2 U	0.022 B	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	40 U	40 U	--	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Potassium	10	5000 U	5000 UJ	--	5000 U	4650 B	5000 U	5000 UJ	2140 B	5000 UJ	5000 U	5000 UJ	5000 U	5000 U	5000 U	2040 B
Selenium	10	15 U	15 U	--	15 U	4.6 BU	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Silver	50	10 U	10 U	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Sodium	20000	28000	28200	--	28900	21700	21900	24200	24100	29700	30200	32700	32700	21700	20800	50600
Thallium	0.5	20 U	20 U	--	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Vanadium	2000	50 U	50 U	--	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Zinc	200	36 U	31.3 U	--	20 U	12.1 B	11.8 B	20 U	20 U	20 U	20 U	20 U	20 U	7.8 B	7.8 B	11.1 B

Table 4-3
Metals in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	PW-07-06 dissolved (ug/L) 5/13/2010	PW-07-07 total (ug/L) 5/11/2010	PW-07-07 dissolved (ug/L) 5/11/2010	S-1-325 total (ug/L) 5/4/2010	S-1-325 dissolved (ug/L) 5/4/2010	S-1-450 total (ug/L) 5/4/2010	S-1-450 dissolved (ug/L) 5/4/2010	W-01-120 total (ug/L) 4/19/2010	W-01-120 dissolved (ug/L) 4/19/2010	W-01-75 total (ug/L) 4/19/2010	W-01-75 dissolved (ug/L) 4/19/2010	W-02-70 total (ug/L) 4/20/2010	W-02-70 dissolved (ug/L) 4/20/2010	W-03-112 total (ug/L) 4/19/2010	W-03-112 dissolved (ug/L) 4/19/2010
Aluminum	NA	200 U	200 U	200 U	200 U	200 U	200 U	200 U	--	175 B	200 U	200 U	200 U	200 U	200 U	200 U
Antimony	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Arsenic	25	10 U	10 U	10 U	10 U	10 U	10 U	10 U	--	10 UJ	10 U	10 U	10 U	10 U	3.7 B	10 UJ
Barium	1000	22.9 B	21.3 B	21.4 B	44 B	44.6 B	15 B	11.5 B	--	50 U	9.8 B	9.5 B	13 B	13.1 B	16.7 B	12 B
Beryllium	3	5 U	5 U	5 U	5 U	5 U	5 U	5 U	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	--	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Calcium	NA	5540	7350	7420	15600	15800	9990	9710	--	23900	6750	6290	19400	18500	27000	25300
Chromium	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	--	10 U	10 U	10 U	180	10.3	10 U	10 U
Chloride	NA	--	112	--	56.9	--	13.4	--	18.6	--	19.4	--	80.6	--	17.9	--
Cobalt	NA	50 U	50 U	50 U	50 U	50 U	50 U	50 U	--	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Copper	200	25 U	5.5 B	25 U	25 U	25 U	25 U	25 U	--	25 U	25 U	25 U	5.6 B	25 U	25 U	25 U
Iron*	300	239	973	874	16300	1670	33400	447	--	22200	1570	1340	760	100 U	16600	13700
Lead	25	10 U	10 U	10 U	10 U	10 U	1.5 B	10 U	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Magnesium	35000	1760	2340	2390	5480	5590	3450	3330	--	3020	781 B	717 B	2720	2620	4080	3770
Manganese*	300	15 U	5.6 B	5.1 B	57.4	28.8	124	9.3 B	--	119	15.4	15.1	11.2 B	7.3 B	447	427
Mercury	0.7	0.2 U	0.042 B	0.039 B	0.2 U	0.2 U	0.2 U	0.46 J	--	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	40 U	40 U	40 U	40 U	40 U	19.7 B	40 U	--	40 U	40 U	40 U	58	57.6	40 U	40 U
Potassium	10	1770 B	5000 UJ	5000 U	2140 B	1870 B	5000 U	5000 U	--	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U
Selenium	10	15 U	15 U	15 U	15 U	15 U	15 U	15 U	--	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Silver	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	--	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Sodium	20000	50800	74100	74200	37700	38100	11100	11300	--	20100	14700	14100	55000	54900	25600	24700
Thallium	0.5	20 U	20 U	20 U	20 U	20 U	20 U	20 U	--	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Vanadium	2000	50 U	50 U	50 U	50 U	50 U	50 U	50 U	--	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Zinc	200	6.4 B	20 U	20 U	20 U	20 U	20 U	20 U	--	20 U	20 U	20 U	20 U	20 U	20 U	20 U

Table 4-3
Metals in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	W-03-72 total (ug/L)	W-03-72 dissolved (ug/L)	W-05-78 total (ug/L)	W-05-78 dissolved (ug/L)	W-06-79 total (ug/L)	W-06-79 dissolved (ug/L)	W-08-71 total (ug/L)	W-08-71 dissolved (ug/L)	W-10-120 total (ug/L)	W-10-120 dissolved (ug/L)	W-10-71 total (ug/L)	W-10-71 dissolved (ug/L)	W-11-70 total (ug/L)	W-11-70 dissolved (ug/L)	W-12-120 total (ug/L)
		4/19/2010	4/19/2010	4/20/2010	4/20/2010	4/20/2010	4/20/2010	4/19/2010	4/19/2010	4/20/2010	4/20/2010	4/20/2010	4/20/2010	4/21/2010	4/21/2010	4/21/2010
Aluminum	NA	200 U	200 U	203	185 B	200 U	200 U	200 U	200 U	1090	408	146 B	200 U	371	298	200 U
Antimony	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Arsenic	25	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Barium	1000	37.2 B	34.2 B	27.1 B	29.8 B	82.2	85.5	31.9 B	31.8 B	285	285	496	485	42.3 B	41.2 B	56.1
Beryllium	3	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	5	5 U	5 U	5 U	5 U	1.6 B	1.9 B	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Calcium	NA	20100	17400	6330	6660	8550	8570	6340	6130	33100	31300	34500	31900	23500	21900	6520
Chromium	50	3.6 B	3.8 B	10 U	10 U	10 U	10 U	14.2	10 U	165	5.2 B	42.6	3.6 B	12.6	4.8 B	91.5
Chloride	NA	5.5	--	31.3	--	19.6	--	14.1	--	119	--	381	--	20.2	--	7.2
Cobalt	NA	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	4.3 B	4.7 B	50 U	50 U	50 U
Copper	200	25 U	25 U	25 U	25 U	38	25 U	25 U	25 U	6.3 B	25 U	25 U	25 U	25 U	25 U	25 U
Iron*	300	78.6 B	100 U	223	163	222	100 U	111	100 U	916	100 U	396	100 U	56.6 B	100 U	661
Lead	25	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Magnesium	35000	1060	908 B	1290	1340	1260	1290	783 B	724 B	4180	3900	5430	4980	3100	2880	1040
Manganese*	300	4 B	15 U	28.4	21.9	50.4	19.7	12.4 B	8.6 B	65.3	52.3	10.7 B	8.1 B	190	134	73.3
Mercury	0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.017 B	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	40 U	40 U	40 U	40 U	32.4 B	40 U	40 U	40 U	88.4	57.4	20.7 B	19 B	40 U	40 U	14.7 B
Potassium	10	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U
Selenium	10	15 U	15 U	15 U	15 U	15 U	4 B	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Silver	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Sodium	20000	9830	9190	28300	30100	10900	10500	33000	32600	53200	52200	216000	215000	16100	15300	6710
Thallium	0.5	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Vanadium	2000	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Zinc	200	20 U	20 U	20 U	20 U	139	150	20 U	20 U	20 U	20 U	51.7 U	52.4 U	20 U	20 U	20 U

Table 4-3
Metals in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	W-12-120 dissolved (ug/L) 4/21/2010	W-12-70 total (ug/L) 4/21/2010	W-12-70 dissolved (ug/L) 4/21/2010	W-14-150 total (ug/L) 4/19/2010	W-14-150 dissolved (ug/L) 4/19/2010	W-16-148 total (ug/L) 4/22/2010	W-16-148 dissolved (ug/L) 4/22/2010	W-19-110 total (ug/L) 4/22/2010	W-19-110 dissolved (ug/L) 4/22/2010	W-19-150 total (ug/L) 4/22/2010	W-19-150 dissolved (ug/L) 4/22/2010	W-20-120 total (ug/L) 4/23/2010	W-20-120 dissolved (ug/L) 4/23/2010	W-20-160 total (ug/L) 4/23/2010	W-20-160 dissolved (ug/L) 4/23/2010
Aluminum	NA	200 U	263	200 U	299	202	1370	1300	334	200 U	2040	1800	--	158 B	92.7 B	200 U
Antimony	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	--	10 U	10 U	10 U
Arsenic	25	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	--	10 U	10 U	10 U
Barium	1000	57.9	80.7	79.2	38.4 B	34.7 B	53.2	58.5	40.4 B	39.1 B	99.2	96.4	--	82.8	61.4	64.1
Beryllium	3	5 U	5 U	5 U	5 U	5 U	5 U	0.69 B	5 U	5 U	0.64 B	0.73 B	--	5 U	5 U	5 U
Cadmium	5	5 U	5 U	5 U	1.5 B	1.7 B	5 U	5 U	5 U	5 U	5 U	5 U	--	5 U	5 U	5 U
Calcium	NA	6610	3890	3730	17200	15900	9810	10100	13900	13800	13100	12400	--	12700	11900	11900
Chromium	50	10 U	9.5 B	10 U	3.9 B	10 U	10 U	10 U	9.9 B	11.9	10 U	10 U	--	10 U	10 U	10 U
Chloride	NA	--	14.5	--	68.2	--	38.6	--	18.9	--	73.4	--	53.9	--	25	--
Cobalt	NA	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	--	50 U	50 U	50 U
Copper	200	25 U	25 U	25 U	8 B	25 U	5.1 B	9.2 B	25 U	25 U	25 U	25 U	--	25 U	25 U	25 U
Iron*	300	100 U	365 J	100 U	952	368	102	100 U	263	100 U	644	100 U	--	100 U	156	100 U
Lead	25	10 U	10 U	10 U	10 U	10 U	1.6 B	1.5 B	10 U	10 U	10 U	10 U	--	10 U	10 U	10 U
Magnesium	35000	1050	765 B	738 B	2170	1990	1650	1710	2260	2230	2640	2510	--	2850	3400	3370
Manganese*	300	8.7 B	16.7	10.6 B	154	142	126	135	25.7	15 U	477	358	--	5190	393	255
Mercury	0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	0.2 U	0.2 U	0.2 U
Nickel	100	40 U	40 U	40 U	40 U	40 U	17.7 B	21.4 B	40 U	40 U	40 U	40 U	--	40 U	40 U	40 U
Potassium	10	5000 U	5000 J	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	--	5000 U	5000 U	5000 U
Selenium	10	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	--	15 U	15 U	15 U
Silver	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	--	10 U	10 U	10 U
Sodium	20000	6700	5050	4710	72900	68100	29800	30100	13900	13700	52200	50000	--	38200	23300	23800
Thallium	0.5	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	--	20 U	20 U	20 U
Vanadium	2000	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	--	50 U	50 U	50 U
Zinc	200	20 U	382	399	20 U	20 U	41.7 U	84.6	20 U	20 U	20 U	20 U	--	20 U	20 U	60.9 U

Table 4-3
Metals in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	W-22-95 total (ug/L) 4/21/2010	W-22-95 dissolved (ug/L) 4/21/2010	W-23-110 total (ug/L) 4/22/2010	W-23-110 dissolved (ug/L) 4/22/2010	W-24-260 total (ug/L) 4/27/2010	W-24-260 dissolved (ug/L) 4/27/2010	W-25-150 total (ug/L) 4/27/2010	W-25-150 dissolved (ug/L) 4/27/2010	W-25-188 total (ug/L) 4/27/2010	W-25-188 dissolved (ug/L) 4/27/2010	W-26-270 total (ug/L) 4/27/2010	W-26-270 dissolved (ug/L) 4/27/2010	W-27-240 total (ug/L) 4/28/2010	W-27-240 dissolved (ug/L) 4/28/2010	W-27-285 total (ug/L) 4/28/2010
Aluminum	NA	320	114 B	275	200 U	118 B	200 U	1050	751	114 B	200 U	959	85.1 B	114 B	200 U	283
Antimony	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Arsenic	25	13.1 U	3.3 B	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Barium	1000	47.6 B	50.3	69.4	72.3	43.1 B	42.9 B	13.4 B	13.5 B	40.4 B	41.8 B	71.8	65	53.9	56.9	45.8 B
Beryllium	3	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	5	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Calcium	NA	10600	10300	12700	12800	15700	15100	70100	70600	9590	9540	24300	22700	19200	19600	14300
Chromium	50	10 U	10 U	10 U	10 U	10 U	10 U	17.1	17.4	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloride	NA	49.9	--	143	--	70.4	--	66.7	--	67.8	--	61.2	--	19.9	--	53.6
Cobalt	NA	13 B	14.2 B	8.7 B	7.8 B	50 U	50 U	50 U	50 U	4.3 B	5.3 B	50 U	50 U	50 U	50 U	50 U
Copper	200	25 U	25 U	7.6 B	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Iron*	300	1860	567	35000	33700	591	100 U	33 B	100 U	513	39.6 B	322	100 U	18700	13400	203
Lead	25	10 U	10 U	1.4 B	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Magnesium	35000	1610	1560	2180	2180	4250	4110	1000 U	1000 U	3990	3970	4770	4250	4890	5070	2990
Manganese*	300	148	145	860	899	124	127	15 U	15 U	162	170	142	5 B	508	520	57.2
Mercury	0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Potassium	10	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	5000 U	4080 B	2480 B	5000 U	1700
Selenium	10	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U
Silver	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Sodium	20000	49100	48100	91100	93200	32400	32500	31900	30800	38200	37700	38600 J	38200	16000 J	16900	49200 J
Thallium	0.5	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Vanadium	2000	50 U	50 U	50 U	50 U	50 U	50 U	6.3 B	7.2 B	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Zinc	200	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	31.4 U	20 U	12.2 BU	20 U	20 BU

Table 4-3
Metals in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Potential Concern	NYSDEC GA Standard (ug/L)	W-27-285 dissolved (ug/L)	W-30-285 total (ug/L)	W-30-285 dissolved (ug/L)	W-31-95 total (ug/L)	W-31-95 dissolved (ug/L)	W-32-110 total (ug/L)	W-32-110 dissolved (ug/L)	W-36-390 total (ug/L)	W-36-390 dissolved (ug/L)	W-36-448 total (ug/L)	W-36-448 dissolved (ug/L)	W-37-325 total (ug/L)	W-37-325 dissolved (ug/L)	W-37-385 total (ug/L)	W-37-385 dissolved (ug/L)
		4/28/2010	4/28/2010	4/28/2010	4/21/2010	4/21/2010	4/20/2010	4/20/2010	4/29/2010	4/29/2010	4/29/2010	4/29/2010	4/29/2010	4/29/2010	4/29/2010	4/29/2010
Aluminum	NA	200 U	182 B	200 U	418	263	693	605	203	200 U	100 B	200 U	87.6 B	200 U	--	200 U
Antimony	3	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	--	10 U
Arsenic	25	10 U	10 U	10 U	10 U	10 U	10 U	10 UJ	10 U	10 U	10 U	10 U	10 U	10 U	--	10 U
Barium	1000	44.9 B	49.7 B	45.4 B	34.1 B	35.8 B	82.2	83.6	47.8 B	42.7 B	29.6 B	29.5 B	62.3	62.5	--	44.6 B
Beryllium	3	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	--	5 U
Cadmium	5	5 U	5 U	5 U	5 U	5 U	8.1	8.6	5 U	5 U	5 U	5 U	5 U	5 U	--	5 U
Calcium	NA	14100	6100	5920	7740	7690	34800	34000	46000	39800	20500	19700	16900	16900	--	15100
Chromium	50	10 U	3.1 B	10 U	57.5	60.4	10 U	10 U	11.2	10 U	62	10 U	10 U	10 U	--	10 U
Chloride	NA	--	19.5	--	15	--	109	--	178	--	79.1	--	63.2	--	37	--
Cobalt	NA	50 U	50 U	50 U	50 U	50 U	19.9 B	20.6 B	50 U	50 U	50 U	50 U	50 U	50 U	--	50 U
Copper	200	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	--	25 U
Iron*	300	100 U	93.8 B	100 U	77.1 B	100 U	72.1 B	100 U	88.1 B	100 U	244	100 U	221	101	--	100 U
Lead	25	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	--	10 U
Magnesium	35000	2950	1460	1400	1380	1370	5530	5420	5020	4050	5430	5510	5120	5040	--	3970
Manganese*	300	19.6	301	4.9 B	196	189	63.2	61.3	37.7	20.8	142	114	69.6	68.1	--	104
Mercury	0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	--	0.2 U
Nickel	100	40 U	16.8 B	40 U	40 U	40 U	15.3 B	14.4 B	40 U	40 U	13.9 B	40 U	40 U	40 U	--	40 U
Potassium	10	5000 U	1680 B	5000 U	5000 U	5000 U	6570 U	8430 U	5000 U	5000 U	5000 U	5000 U	2730 B	5000 U	--	5000 U
Selenium	10	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	15 U	--	15 U
Silver	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	--	10 U
Sodium	20000	48900	21900 J	22200	9570	9560	47900	47800	123000 J	115000	62900 J	63200	37500 J	38100	--	26600
Thallium	0.5	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	--	20 U
Vanadium	2000	50 U	50 U	50 U	50 U	50 U	50 U	50 U	4.2 B	50 U	50 U	50 U	50 U	50 U	--	50 U
Zinc	200	8.1 BU	20 U	20 BU	20 U	20 U	29.1 U	31.9 U	22.3 U	11 BU	9.4 BU	7 BU	36.3 U	35.3 U	--	20 U

Table 4-4
Radionuclides in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Concern	MW-03	MW-04	MW-08	MW-09	MW-10	MW-11	MW-12	MW-13D	MW-13S	MW-14D	MW-14DD	MW-14S
	04/06/10	04/07/10	04/06/10	04/08/10	04/08/10	04/07/10	04/07/10	04/02/10	03/24/10	03/23/10	03/22/10	03/22/10
Radium-226	0.09 U	0.09 U	0.18 J	0.12 U	0.37 J	0.19 J	0.13 U	0.3 J	1 J	0.71 J	0.44 J	0.28 UJ
Radium-226, Dissolved	0.11 U	0.18 J	0.18 J	0.21 J	0.48 J	0.16 J	0.11 U	--	--	--	--	--
Radium-228	0.07 U	0.25 U	0.31 U	0.37 U	0.62 U	0.28 U	0.28 U	0.45 J	1.35 J	1.07 J	0.91 J	0.69 J
Radium-228, Dissolved	0.05 U	0.16 U	0.02 U	0.22 U	0.15 U	0.2 U	-0.09 U	--	--	--	--	--
Thorium-228	0.08 U	0.02 U	0.08 U	-0.03 U	0.25 U	-0.01 U	0.09 U	0.61 UJ	0.3 UJ	0.17 UJ	0.18 U	0.36 U
Thorium-228, dissolved	0.03 U	0.04 U	0.07 U	0.07 U	0.04 U	0.12 U	0.07 U	--	--	--	--	--
Thorium-230	0.1 U	0.07 U	0.17 J	0.17 J	0.99 J	0.64 J	0.79 J	0.83 J	0.26 UJ	R	R	R
Thorium-230, dissolved	0.11 J	0.1 U	0.2 J	0.15 U	0.16 J	0.13 J	0.15 J	--	--	--	--	--
Thorium-232	0.02 U	-0.01 U	0 U	-0.02 U	0.04 U	0.51 U	0.01 U	0.37 U	0.23 U	0.16 U	0.14 UJ	0.07 UJ
Thorium-232, dissolved	0 U	0.02 U	0.02 U	-0.01 U	0.05 U	0.02 U	0 U	--	--	--	--	--
Uranium-234	0.03 U	0.02 U	0.03 U	0.03 U	-0.01 U	0.09 U,J	1.62	0.14 UJ	0.11 UJ	0.37 J	0.16 UJ	0.13 UJ
Uranium-234, Dissolved	-0.02 U	0 U	0.02 U	0 U	0.18 U	0.03 U	0.93 J	--	--	--	--	--
Uranium-235/236	0 U	0.03 U	0 U	0 U	0.05 U	0 U	0.08 U	0.17 U	0.17 U	0.13 U	0.07 UJ	0.08 U
Uranium-235/236, Dissolved	0 U	-0.01 U	0.04 U	-0.01 U	0.06 U	0 U	0.12 J	--	--	--	--	--
Uranium-238	0.04 U	0.01 U	0.04 U	0.13 U	0.06 U	0.04 U	1.76	0.14 U	0.13 U	0.15 UJ	0.14	0.16 U
Uranium-238, Dissolved	0.05 U	0.02 U	0.04 U	0.02 U	0.06 U	-0.01 U	1.12	--	--	--	--	--

Units=pCi/L

--=Not Analyzed

=above applicable standard or MCL

Total Uranium USEPA MCL=30 ug/L (27 pCi/L)

Radium-226 NYSDEC GA STD=3 pCi/L

Radium (Radium-226 & Radium-228 combined) NYSDEC GA STD= 5 pCi/L

"J" The associated numerical value is an estimated quantity, due to a QC or statistical exceedance.

"UJ" The associated non-detect value is an estimated quantity, due to a QC or statistical exceedance.

"R" The associated non-detect or numerical value is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

"U" – Not detected at the detection limit listed.

Table 4-4
Radionuclides in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Concern	MW-15D	MW-15DD	MW-15S	MW-16D	MW-16S	MW-17S	MW-18I	MW-18S	MW-19D	MW-19S	MW-20D	MW-20I	MW-20S
	03/23/10	03/23/10	03/23/10	04/07/10	04/07/10	03/23/10	03/31/10	04/01/10	03/31/10	03/24/10	04/05/10	04/01/10	04/01/10
Radium-226	0.65 J	0.44 J	0.38 J	0.86 J	0.42 UJ	0.28 J	1.91	0.18 J	0.95 J	0.22 UJ	1.5	0.75 J	0.41 J
Radium-226, Dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Radium-228	1.51 J	0.94 UJ	0.68 J	R	R	0.56 J	1.03 J	0.72 J	1.2	0.93 UJ	1.57 J	0.87 J	0.86 J
Radium-228, Dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Thorium-228	0.15 UJ	0.26 U	0.28 U	0.56 UJ	0.28 UJ	0.34 U	0.26 U	1.51 U	0.19 U	R	0.11 U	0.28 U	0.12 U
Thorium-228, dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Thorium-230	R	0.44 J	R	0.73 J	0.28 UJ	0.44 J	0.24 J	0.22 J	0.14 U	0.23 UJ	0.13 UJ	0.2 UJ	0.09 U
Thorium-230, dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Thorium-232	0.14	0.11 U	0.16 U	0.41 U	0.28 U	0.26 UJ	0.13 U	0.97 U	0.11 UJ	0.19 UJ	0.08 U	0.23 U	0.73 UJ
Thorium-232, dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Uranium-234	0.15 UJ	0.07 UJ	0.14 UJ	0.46	0.15 U	0.18 UJ	58.4	3890 J	0.24 U	0.21 J	0.16 U	0.35	1010 J
Uranium-234, Dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Uranium-235/236	0.26 U	0.08 UJ	0.13 UJ	0.16 UJ	0.18 U	0.19 UJ	3.48	199 J	0.16 U	0.14 U	0.17 U	0.2 U	56 J
Uranium-235/236, Dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Uranium-238	0.16 UJ	0.07 UJ	0.24	0.13 UJ	0.12	0.11 U	53.52	4020	0.18 UJ	0.11 U	0.13 UJ	0.55	1020 J
Uranium-238, Dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 4-4
Radionuclides in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Concern	MW-21D	MW-21I	MW-21S	MW-22D	MW-22I	MW-22S	MW-23D	MW-23I	MW-23S	MW-24D	MW-24S	MW-25D	MW-25I
	03/24/10	03/24/10	03/24/10	04/01/10	04/01/10	03/31/10	03/31/10	03/29/10	03/29/10	03/31/10	03/31/10	03/31/10	03/31/10
Radium-226	0.34 J	1.47 J	0.19 J	2.14	1.11 J	0.47 J	0.43	0.91 J	0.36 J	0.82 J	0.26 U	2.44	1.3 J
Radium-226, Dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Radium-228	1.31 J	1.06 J	0.6 J	2.61 J	1.07 J	0.65 J	1.31 UJ	1.4 U	0.91 UJ	1.36	1.2 U	2.07	0.77 J
Radium-228, Dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Thorium-228	0.21 U	0.21 U	0.25 UJ	0.25 U	0.28 U	0.03 U	0.25 U	R	0.24 U	0.26 U	0.14 UJ	0.14 UJ	0.24 U
Thorium-228, dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Thorium-230	0.2 UJ	0.17 UJ	0.2 UJ	0.08 UJ	0.21 UJ	0.12 J	0.18 UJ	0.16 U	0.15 U	0.17 UJ	0.26 J	0.11 UJ	0.18 UJ
Thorium-230, dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Thorium-232	0.19 U	0.17 U	0.19 U	0.14 U	0.18 U	0.01 U	0.08 UJ	0.12 U	0.15 U	0.17 U	0.12 UJ	0.06 UJ	0.16 U
Thorium-232, dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Uranium-234	0.13 UJ	0.15 UJ	0.13 UJ	0.17 U	0.16 UJ	0.54 J	0.37 J	1.8	3.73	0.15 UJ	5.14 J	0.12 UJ	0.16 UJ
Uranium-234, Dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Uranium-235/236	0.2 U	0.16 U	0.16 U	0.19 U	0.03 U	0 U	0.1 UJ	0.15	0.64 J	0.18 U	0.68	0.13 UJ	0.1 UJ
Uranium-235/236, Dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Uranium-238	0.15 U	0.2 UJ	0.1 UJ	0.14 U	0.06 U	0.56 J	0.15 UJ	1.42	3.65	0.21 U	6.27	0.18	0.16 U
Uranium-238, Dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 4-4
Radionuclides in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Concern	MW-25S	MW-26D	MW-26I	MW-27D	MW-27S	MW-28D	MW-28I	MW-28S	MW-29S	MW-30D	MW-30I	MW-30S	MW-31D
	03/31/10	03/29/10	03/31/10	04/02/10	04/07/10	03/31/10	03/31/10	03/31/10	03/23/10	04/01/10	04/02/10	04/01/10	04/01/10
Radium-226	0.89 J	0.33	0.9	0.8	0.36 J	0.97	0.26 UJ	0.23 J	0.3 J	1.01	0.63	0.07 UJ	2.02
Radium-226, Dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Radium-228	0.83 U	1.01 U	1.23 U	1.61 UJ	R	1.55 U	1.13 U	0.54 U	1 UJ	1.6 J	1.7 J	0.88 J	1.54 J
Radium-228, Dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Thorium-228	0.21 U	0.24 UJ	0.22 UJ	0.1 UJ	0.21 UJ	0.5 J	0.25 UJ	0.02 U	0.34 U	0.2 UJ	0.14 U	0.14 U	2.83
Thorium-228, dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Thorium-230	0.14 U	0.13 J	0.17 UJ	0.09 UJ	0.49 J	0.8 J	0.16 U	0.22 J	R	0.12 UJ	0.12 UJ	0.07 UJ	3 J
Thorium-230, dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Thorium-232	0.14 U	0.12 U	0.15 U	0.06 U	0.21 U	0.51	0.13 U	0.04 U	R	0.12 U	0.09 U	0.04 U	3.1 J
Thorium-232, dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Uranium-234	2.6	0.27 J	1.83 J	0.13 UJ	0.52	0.83 J	3.23	0.23 J	0.18 UJ	0.14 U	0.16	0.12 UJ	0.15 UJ
Uranium-234, Dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Uranium-235/236	0.2	0.11 UJ	0.15 UJ	0.16 UJ	0.18 UJ	0.2 U	0.19	0 U	0.16 UJ	0.09 UJ	0.15 U	0.15 U	0.19 UJ
Uranium-235/236, Dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Uranium-238	2.47	0.17	1.37	0.11 UJ	0.33	0.62	3.9	0.16 J	0.16 U	0.12 UJ	0.14 UJ	0.12 UJ	0.23 J
Uranium-238, Dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 4-4
Radionuclides in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Concern	MW-31I	MW-32D	MW-33D	MW-33S	MW-34D	MW-34S	MW-39S	MW-41S	MW-42I	MW-43S	MW-44S	MW-49S	MW-50I
	04/01/10	03/23/10	04/02/10	04/02/10	04/05/10	04/05/10	03/24/10	03/31/10	04/01/10	04/01/10	04/01/10	03/31/10	03/31/10
Radium-226	0.24 U	3.1 J	0.74	0.22 J	1.19	0.16 UJ	0.29 J	0.52 J	0.39 J	0.23 J	0.38 J	0.42 J	0.58
Radium-226, Dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Radium-228	1.15 J	2.14 J	1.13 J	0.55 U	1.55 UJ	1.29 UJ	0.53 J	1.34	0.68 J	0.21 U	0.92 U	0.89 J	1.08 U
Radium-228, Dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Thorium-228	0.11 U	0.62 U	0.16 U	0.01 U	1.02 J	0.18 U	0.36 UJ	0.63 U	10.52	0.03 U	0.25 U	0.24 U	0.19 UJ
Thorium-228, dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Thorium-230	0.08 UJ	0.5 UJ	0.11 UJ	0.15 J	1.03 J	0.19 J	0.31 UJ	0.42 UJ	6.73	0.16 J	0.17 UJ	0.21 UJ	0.22 J
Thorium-230, dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Thorium-232	0.07 U	0.32 U	0.07 UJ	0 U	0.83	0.12 U	0.16 U	0.32 U	10.83	0.02 U	0.15 UJ	0.18 U	0.13 U
Thorium-232, dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Uranium-234	0.15 U	0.25 UJ	0.24	26.4	1.59	0.27 J	0.26 UJ	381.3	3.27	9.8	7.77	0.18 UJ	2.51 J
Uranium-234, Dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Uranium-235/236	0.21 U	0.17 U	0.09 U	1.37	0.36 UJ	0.19 U	0.25 U	28.09	0.12 U	0.29 J	0.87 J	0.19 UJ	0.08 U
Uranium-235/236, Dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--
Uranium-238	0.15 U	0.19 UJ	0.17	28.4	1.85	0.15 UJ	0.14 U	392.9	3.44	9.5	6.95	0.21	2.21
Uranium-238, Dissolved	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 4-4
Radionuclides in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Concern	MW-51I	MW-52D	MW-53S	MW-55S	MW-P110-355	MW-P110-440	MW-P114-170R	MW-P114-290	PW-02-01	PW-02-02	PW-02-03	PW-02-04	PW-02-05
	04/01/10	04/05/10	04/05/10	04/07/10	04/12/10	04/13/10	04/08/10	04/09/10	04/15/10	04/15/10	04/16/10	05/03/10	05/03/10
Radium-226	0.39 J	0.66 J	0.2 U	0.21 UJ	0.69 J	1.38	--	0.77 J	--	--	--	--	--
Radium-226, Dissolved	--	--	--	--	0.5 J	1.22	--	0.46 J	--	--	--	--	--
Radium-228	1.2 J	R	1.44 UJ	R	0.64 U	0.9 J	--	0.55 U	--	--	--	--	--
Radium-228, Dissolved	--	--	--	--	0.54 U	1.41	--	0.66 U	--	--	--	--	--
Thorium-228	2.19	0.49 UJ	0.14 U	0.19 UJ	0.54 J	0.23 J	--	0.32 J	--	--	--	--	--
Thorium-228, dissolved	--	--	--	--	-0.03 U	0.12 U	--	0.21 U	--	--	--	--	--
Thorium-230	2.58	0.67 J	0.13 J	0.15 UJ	0.16 J	0.37 J	--	0.56 J	--	--	--	--	--
Thorium-230, dissolved	--	--	--	--	0.08 U	0.11 U	--	0.13 U	--	--	--	--	--
Thorium-232	1.48	0.32 U	0.1 U	0.15 U	0.08 U	0.02 U	--	0.18 J	--	--	--	--	--
Thorium-232, dissolved	--	--	--	--	0 U	-0.01 U	--	0 U	--	--	--	--	--
Uranium-234	0.06 UJ	0.19 UJ	2.76	0.13	0.07 U	0.04 U	--	0.17 J	--	--	--	--	--
Uranium-234, Dissolved	--	--	--	--	0.05 U	0.03 U	--	0.05 U	--	--	--	--	--
Uranium-235/236	0.16 UJ	0.08 UJ	0.26	0.2 U	0.02 U	0.02 U	--	0.05 U	--	--	--	--	--
Uranium-235/236, Dissolved	--	--	--	--	0.06 U	0 U	--	0.02 U	--	--	--	--	--
Uranium-238	0.15 UJ	0.17 U	2.75	0.19 U	0.08 U	0.02 U	--	0.04 U	--	--	--	--	--
Uranium-238, Dissolved	--	--	--	--	0.11 J	0.04 U	--	0.09 U	--	--	--	--	--

Table 4-4
Radionuclides in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Concern	PW-02-06	PW-02-07	PW-03-01	PW-03-02	PW-03-03	PW-03-05	PW-03-06	PW-03-07	PW-04-01	PW-04-02	PW-04-03	PW-04-04	PW-04-05
	05/04/10	05/05/10	04/16/10	04/13/10	04/14/10	04/12/10	04/16/10	04/14/10	05/07/10	05/06/10	05/06/10	05/06/10	05/07/10
Radium-226	--	0.46 J	--	--	--	--	--	0.31 J	--	--	--	--	--
Radium-226, Dissolved	--	0.56 J	--	--	--	--	--	0.35 J	--	--	--	--	--
Radium-228	--	R	--	--	--	--	--	0.13 U	--	--	--	--	--
Radium-228, Dissolved	--	R	--	--	--	--	--	0.75 J	--	--	--	--	--
Thorium-228	--	0.1 U	--	--	--	--	--	0.14 J	--	--	--	--	--
Thorium-228, dissolved	--	0.04 U	--	--	--	--	--	0.11 U	--	--	--	--	--
Thorium-230	--	0.06 U	--	--	--	--	--	0.19 J	--	--	--	--	--
Thorium-230, dissolved	--	0.12 J	--	--	--	--	--	0.01 U	--	--	--	--	--
Thorium-232	--	0.02 U	--	--	--	--	--	0.02 U	--	--	--	--	--
Thorium-232, dissolved	--	0.01 U	--	--	--	--	--	0.01 U	--	--	--	--	--
Uranium-234	--	0.04 U	--	--	--	--	--	0.1 U	--	--	--	--	--
Uranium-234, Dissolved	--	0.07 U	--	--	--	--	--	0.08 U	--	--	--	--	--
Uranium-235/236	--	0.01 U	--	--	--	--	--	-0.01 U	--	--	--	--	--
Uranium-235/236, Dissolved	--	-0.02 U	--	--	--	--	--	0.02 U	--	--	--	--	--
Uranium-238	--	0.15 J	--	--	--	--	--	0.05 U	--	--	--	--	--
Uranium-238, Dissolved	--	0.06 U	--	--	--	--	--	0 U	--	--	--	--	--

Table 4-4
Radionuclides in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Concern	PW-04-06	PW-04-07	PW-05-01	PW-05-02	PW-05-03	PW-05-04	PW-05-05	PW-05-07	PW-06-02	PW-06-03	PW-06-04	PW-06-05	PW-06-06	PW-06-07	PW-07-01	PW-07-02	PW-07-03
	05/07/10	05/10/10	05/12/10	05/05/10	05/04/10	05/05/10	05/05/10	05/06/10	05/22/10	05/23/10	05/22/10	05/23/10	05/22/10	05/22/10	05/12/10	05/10/10	05/10/10
Radium-226	--	0.61 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Radium-226, Dissolved	--	0.55 J	--	--	--	--	--	1.18 J	--	--	--	--	--	0.54 J	--	--	--
Radium-228	--	2.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Radium-228, Dissolved	--	0.81 J	--	--	--	--	--	1.53	--	--	--	--	--	0.86 J	--	--	--
Thorium-228	--	0.02 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thorium-228, dissolved	--	0.04 U	--	--	--	--	--	0.11 U	--	--	--	--	--	0.1 U	--	--	--
Thorium-230	--	0.15 J	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thorium-230, dissolved	--	0.01 U	--	--	--	--	--	0.21 J	--	--	--	--	--	0.17 J	--	--	--
Thorium-232	--	-0.01 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thorium-232, dissolved	--	-0.01 U	--	--	--	--	--	0.04 U	--	--	--	--	--	0.01 U	--	--	--
Uranium-234	--	0.06 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Uranium-234, Dissolved	--	0.01 U	--	--	--	--	--	-0.03 U	--	--	--	--	--	0.04 U	--	--	--
Uranium-235/236	--	-0.01 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Uranium-235/236, Dissolved	--	0.01 U	--	--	--	--	--	-0.01 U	--	--	--	--	--	0.04 U	--	--	--
Uranium-238	--	0.1 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Uranium-238, Dissolved	--	-0.01 U	--	--	--	--	--	0.06 U	--	--	--	--	--	0.02 U	--	--	--

Table 4-4
Radionuclides in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Concern	PW-07-04	PW-07-05	PW-07-06	PW-07-07	S-1-325	S-1-450	W-01-120	W-01-75	W-02-70	W-03-112	W-03-72	W-05-78	W-06-79	W-08-71	W-10-120	W-10-71	W-11-70	W-12-120	W-12-70
	05/11/10	05/12/10	05/13/10	05/11/10	05/04/10	05/04/10	04/19/10	04/19/10	04/20/10	04/19/10	04/19/10	04/20/10	04/20/10	04/19/10	04/20/10	04/20/10	04/21/10	04/21/10	04/21/10
Radium-226	--	--	--	0.44 J	R	1.59	--	0.12 U	0.08 U	0.42 J	0.12 U	0.24 J	0.17 J	0.15 J	1.18	0.69 J	0.14 U	0.2 J	0.12 U
Radium-226, Dissolved	--	--	--	0.58 J	R	0.89 J	0.11 U	0.04 U	0.11 U	0.24 J	0.04 U	--	--	0.18 J	1.22	--	--	--	--
Radium-228	--	--	--	0.75 J	2.83	1.68	--	0.33 U	0.13 U	0.26 U	0.07 U	0.2 U	0.26 U	0.41 U	1.5	0.66 J	0.05 U	0.12 U	0.38 U
Radium-228, Dissolved	--	--	--	0.79 J	1.83	1.4	0.42 U	0.12 U	0.47 U	0.23 U	0.26 U	--	--	0.04 U	1.29	--	--	--	--
Thorium-228	--	--	--	0.09 U	0.09 U	0.21 J	--	0.14 U	0 U	0.13 U	-0.05 U	0.08 U	0.07 J	0.04 U	0.06 U	0.1 U	0.11 U	0.04 U	0.03 U
Thorium-228, dissolved	--	--	--	0.04 U	0.08 U	0.07 U	0.01 U	0.02 U	0.04 U	0.04 U	0.05 U	--	--	0.02 U	0.03 U	--	--	--	--
Thorium-230	--	--	--	0.28 J	0.3 J	0.02 U	--	0.11 U	0.21 J	0.02 U	0.09 U	0.17 J	0.13 J	0.14 U	0.06 U	0.25 J	0.12 U	0.14 J	0.17 J
Thorium-230, dissolved	--	--	--	0.1 U	0.1 U	0.31 J	0.06 U	0.17 J	0.09 J	0.16 J	0.12 J	--	--	0.11 J	0.14 U	--	--	--	--
Thorium-232	--	--	--	-0.01 U	0.02 U	0.08 U	--	0.01 U	-0.01 U	0.07 U	0.02 U	0 U	0.02 U	0.02 U	0 U	0.01 U	0.02 U	0 U	0.04 U
Thorium-232, dissolved	--	--	--	-0.01 U	-0.01 U	0.04 U	0 U	0.02 U	0.04 U	0.07 U	0 U	--	--	0 U	-0.01 U	--	--	--	--
Uranium-234	--	--	--	-0.03 U	0.05 U	-0.03 U	--	0.06 U	0.01 U	0.03 U	0.38 J	0.08 U	0.02 U	-0.02 U	0.06 U	-0.01 U	0.05 U	0.03 U	-0.02 U
Uranium-234, Dissolved	--	--	--	0.03 U	-0.02 U	0.03 U	0.11 U	0.11 U	0.04 U	0.02 U	0.58 J	--	--	0 U	-0.02 U	--	--	--	--
Uranium-235/236	--	--	--	0.04 U	-0.01 U	0.01 U	--	0 U	0.02 U	0.05 U	0.02 U	-0.01 U	0 U	0 U	0.03 U	0 U	-0.01 U	0.03 U	0.03 U
Uranium-235/236, Dissolved	--	--	--	0.06 U	-0.01 U	-0.01 U	0 U	0.02 U	-0.01 U	0.01 U	0.01 U	--	--	-0.01 U	0.03 U	--	--	--	--
Uranium-238	--	--	--	-0.01 U	0.04 U	0.07 U	--	0.02 U	0 U	0.06 U	0.24 J	-0.01 U	0.01 U	0.05 U	-0.01 U	0.02 U	0.07 U	0.03 U	0 U
Uranium-238, Dissolved	--	--	--	0 U	0 U	0.04 U	0.04 U	0.08 U	0.04 U	0.02 U	0.19 J	--	--	0.02 U	0.06 J	--	--	--	--

Table 4-4
Radionuclides in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Concern	W-14-150	W-16-148	W-19-110	W-19-150	W-20-120	W-20-160	W-22-95	W-23-110	W-24-260	W-25-150	W-25-188	W-26-270	W-27-240	W-27-285	W-30-285	W-31-95	W-32-110	W-36-390	W-36-448
	04/19/10	04/22/10	04/22/10	04/22/10	04/23/10	04/23/10	04/21/10	04/22/10	04/27/10	04/27/10	04/27/10	04/27/10	04/28/10	04/28/10	04/28/10	04/21/10	04/20/10	04/29/10	04/29/10
Radium-226	0.02 U	0.23 J	0.34 J	0.21 J	--	0.43 J	0.18 J	0.51 J	3.12	0.13 U	1.44	0.49 J	0.65 J	0.73 J	0.43 J	0.19 J	0.59 J	0.77 J	0.7 J
Radium-226, Dissolved	0.17 J	--	--	--	0.23 J	0.5 J	--	0.53 J	1.13	0.17 U	1.76	0.36 J	0.52 J	0.95 J	0.58 J	--	0.52 J	1.1	0.43 J
Radium-228	0.08 U	0.45 J	0.09 U	-0.18 U	--	0.7 J	0.21 U	0.46 J	0.86 J	-0.07 U	1.62	0.56 J	0.6 J	0.65 J	0.5 J	0.31 U	0.43 J	0.69 J	0.37 U
Radium-228, Dissolved	0.45 U	--	--	--	-0.04 U	0.82 J	--	0.79 J	1.55	0.11 U	1.4	0.63 J	1.39	1.05	0.01 U	--	0.86 J	0.97 J	0.29 U
Thorium-228	-0.28 U	0.12 U	0.18 J	0.01 U	--	0.05 U	0 U	0.55 U	-0.03 U	-0.02 U	0.32 U	0.35 J	0.12 U	0.12 J	0.15 J	0.1 U	0.05 U	0.1 U	0.07 U
Thorium-228, dissolved	0.04 U	--	--	--	0.01 U	0.06 U	--	0.24 U	0.17 J	0.04 U	0.14 J	0.11 U	0.12 U	0.12 J	0.11 U	--	0.05 U	0.27 J	0.2 J
Thorium-230	0.01 U	0.06 U	0.26 J	0.06 U	--	0.44 U	0.09 U	0.59 U	0.52 J	0.99 J	0.65 J	0.82 J	0.25 J	0.41 J	0.27 J	0.01 U	0.2 J	0.41 J	0.41 J
Thorium-230, dissolved	0.21 J	--	--	--	0.35 J	0.19 J	--	0.22 U	0.11 J	0.21 J	0.24 J	0.26 J	0.21 J	0.17 J	0.1 U	--	0.06 U	0.13 U	0.07 U
Thorium-232	0.03 U	0.05 U	0.03 U	0.06 U	--	0 U	0.01 U	0.11 U	0.11 U	-0.02 U	0.22 U	0.21 J	0.08 J	0.07 J	0.12 U	-0.02 U	0 U	0.05 U	0.21 J
Thorium-232, dissolved	0 U	--	--	--	0.02 U	-0.02 U	--	0.08 U	-0.01 U	0 U	0 U	0.02 U	0 U	0 U	0 U	--	0 U	0.01 U	0 U
Uranium-234	0.03 U	0.04 U	0.1 U	0.04 U	--	0.01 U	0.01 U	0.07 U	0.23 J	0.02 U	0.42 J	-0.01 U	0.04 U	0.04 U	0.03 U	0.05 U	0.01 U	0.18 J	0.07 U
Uranium-234, Dissolved	-0.01 U	--	--	--	0.02 U	0.01 U	--	0.04 U	0.07 U	0.01 U	0.1 U	0.02 U	-0.05 U	0 U	0 U	--	0.07 U	0.15 U	-0.01 U
Uranium-235/236	0 U	0 U	-0.01 U	-0.01 U	--	-0.01 U	-0.01 U	0.05 U	-0.01 U	0 U	0.02 U	0 U	0.03 U	0 U	0 U	0 U	-0.01 U	0.06 U	0 U
Uranium-235/236, Dissolved	-0.01 U	--	--	--	-0.01 U	0.03 U	--	0.02 U	0.02 U	-0.02 U	0.04 U	0.02 U	0.02 U	0.05 U	-0.01 U	--	0.04 U	0.03 U	0 U
Uranium-238	0.02 U	0.01 U	0.06 U	0.03 U	--	0 U	0.05 U	0.02 U	0.42 J	0.09 J	0.46 J	0.01 U	0.02 U	0.02 U	0.02 U	0.06 J	-0.01 U	0.18 J	0.03 U
Uranium-238, Dissolved	0.05 U	--	--	--	0 U	-0.02 U	--	0 U	0.04 U	0.01 U	0.03 U	0.03 U	-0.02 U	0.02 U	0 U	--	0.02 U	0.12 J	0.02 U

Table 4-4
Radionuclides in Groundwater Samples Collected from Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical of Concern		
	W-37-325	W-37-385
	04/29/10	04/29/10
Radium-226	1.04	--
Radium-226, Dissolved	1.1	0.45 J
Radium-228	0.71 J	--
Radium-228, Dissolved	1.12	1.15
Thorium-228	0.2 U	--
Thorium-228, dissolved	0.14 J	0.11 J
Thorium-230	1.27 J	--
Thorium-230, dissolved	0.21 U	0.28 J
Thorium-232	0.42 J	--
Thorium-232, dissolved	0.04 U	0 U
Uranium-234	0.12 U	--
Uranium-234, Dissolved	0.08 U	0.07 U
Uranium-235/236	0.05 U	--
Uranium-235/236, Dissolved	0.04 U	0.02 U
Uranium-238	-0.05 U	--
Uranium-238, Dissolved	0.05 U	0.04 U

Table 6-1
Human Exposure Pathways
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Environmental Media and Exposure Routes	Potential Receptors	Human Exposure Assessment
Potable use of groundwater, including: ingestion, dermal contact, and inhalation of volatiles in air	Future residents and workers, in the event any portion of the groundwater potentially impacted with Site-related COPC impacts water supply wells down-gradient of the Site.	Long Island is within a sole source aquifer; however, there is insufficient information to determine if groundwater containing Site-related COPC has reached down-gradient water supply wells. The potential for this to occur is unknown. Potable water use down-gradient of the Site within groundwater potentially impacted with Site-related COPC is considered as a possible future scenario.
Subsurface vapor intrusion from shallow groundwater to indoor air and subsequent inhalation by building occupants	Current off-Site workers in existing commercial/industrial buildings down-gradient of the Site	Although groundwater potentially impacted with Site-related COPC is migrating downward, some volatile COPC may be present in groundwater at the water table down-gradient of the Site in the vicinity of existing commercial/industrial properties.
	Future off-Site and on-Site workers either in existing or newly constructed commercial/industrial buildings	The most likely reuse of the Site is for commercial/industrial purposes. Although much of the soil on-Site has been remediated and the groundwater potentially impacted with Site-related COPC is migrating downward, limited soil source areas remain which could contribute to volatile COPC in groundwater at the water table on-Site.
	Future on-Site and/or off-Site residents in existing or newly constructed residental buildings	Although much of the area on-Site and on surrounding commercial/industrial properites is paved, some areas within groundwater potentially impacted with Site-related COPC are not paved. Future redevelopment may include leaving areas unpaved. Given the depth of groundwater and the fact that subsurface vapors released to outdoor air would be diluted in ambient air, such exposure is unlikely.
Subsurface vapor migration to ambient air	Current and/or future off-Site workers and residents and future on-Site workers or residents	Although much of the area on-Site and on surrounding commercial/industrial properites is paved, some areas where groundwater containing Site-related COPC is present are not paved. Future redevelopment may include leaving areas unpaved. However, given the depth of groundwater (60-70 feet bgs) and the fact that subsurface vapors released to outdoor air would be rapidly dispersed in ambient air, such exposure is unlikely.
Direct contact with shallow groundwater, inlcuding dermal contact and inhalation of volatiles in air	Current and/or future construction/utility workers excavating into the subsurface	Currently, the water table is too deep for contact by construction/utility workers excavating into the subsurface. Although the water table has fluctuated in the past, it is unlikely to ever be shallow enough (10 feet or less bgs) for such direct contact exposure.
Groundwater discharge to surface water and subsequent direct contact, including inadvertent ingestion, dermal contact, inhalation of volatiles in air, and consumption of biota	Future recreational users in nearby surface water bodies	The nearest surface water body is over four miles down-gradient of the Site. Groundwater potentially impacted with Site-related COPC is not expected to discharge to surface water bodies.

Table 6-2

Select On-Site and Off-Site/Down-Gradient Monitoring Wells
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

On-Site Monitoring Wells		Off-Site/Down-Gradient Monitoring Wells	
MW-03	MW-26I	MW-33D	PW-06-04
MW-04	MW-27D	**MW-33S**	PW-06-05
MW-08	**MW-27S**	MW-34D	PW-06-06
MW-09	MW-28D	**MW-34S**	PW-06-07
MW-10	MW-28I	MW-52D	**PW-07-01**
MW-11	MW-28S	**MW-53S**	PW-07-02
MW-12	**MW-29S**	MW-55S	PW-07-03
MW-17S	MW-30D	**PW-02-01**	PW-07-04
MW-18I	MW-30I	PW-02-02	PW-07-05
MW-18S	MW-30S	PW-02-03	PW-07-06
MW-19D	MW-31D	PW-02-04	PW-07-07
MW-19S	MW-31I	PW-02-05	**W-02-70**
MW-20D	MW-32D	PW-02-06	W-03-112
MW-20I	**MW-39S**	PW-02-07	**W-03-72**
MW-20S	**MW-41S**	**PW-03-01**	**W-06-79**
MW-21D	MW-42I	PW-03-02	**W-08-71**
MW-21I	**MW-43S**	PW-03-03	**W-11-70**
MW-21S	**MW-44S**	PW-03-04	W-12-120
MW-22D	MW-49S	PW-03-05	**W-12-70**
MW-22I	MW-50I	PW-03-06	W-16-148
MW-22S	MW-51I	PW-03-07	W-19-110
MW-23D		**PW-05-01**	W-19-150
MW-23I		PW-05-02	W-20-120
MW-23S		PW-05-03	W-20-160
MW-24D		PW-05-04	W-22-95
MW-24S		PW-05-05	W-26-270
MW-25D		PW-05-06	W-27-285
MW-25I		PW-05-07	W-30-285
MW-25S		PW-06-02	W-31-95
MW-26D		PW-06-03	

Notes

Data showing characteristics similar to those of GTEOSI impacts may be related in whole or in part to other contamination sources.

Shallow monitoring wells are **bolded**; monitoring wells considered shallow are those screened less than 90 feet bgs.

Monitoring wells were selected based on impacts characteristic of GTEOSI and in aquifer locations and depths consistent with flowpaths from GTEOSI source locations; however, data showing characteristics similar to those of GTEOSI impacts may be related in whole or in part to other contamination sources depending on the location of the impact with respect to known or suspected source locations and the patterns of groundwater flow in the vicinity.

Table 6-3

Select On-Site and Off-Site/Dwon-Gradient Profile Borings
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

On-Site Profile Borings	Off-Site/Down-Gradient Profile Borings	
P-01	**P-13**	**P-52**
P-02	**P-14**	**P-53**
P-03	**P-15**	**P-54**
P-04	**P-16**	P-56 (76)
P-05	**P-20**	**P-58**
P-06	**P-28**	**P-F**
P-07	P-29 (200-410)	**P-102**
P-08	**P-30**	**P-104**
P-09	P-36 (76-236)	P-110 (391-499)
P-10	**P-42**	**P-112**
P-11	**P-43**	P-118 (491-580)
P-12	P-44 (179-199 & 250-356)	P-119 (154-354)
P-103	**P-45**	P-120 (220-463)
P-107	**P-46**	WP-03 (463) *
P-108	**P-49**	WP-05 (470-490) *
	P-50	**LP-04 ***
	P-51	

Notes

Data showing characteristics similar to those of GTEOSI impacts may be related in whole or in part to other contamination sources.

Depth-discrete sampling depths are shown parenthetically. If no depths are indicated, all depths were included.

Profile borings with shallow sampling intervals are **bolded**; sampling intervals considered shallow generally range between 60 and 80 feet bgs.

Profiles and depth-discrete sampling intervals were selected based on impacts characteristic of GTEOSI and in aquifer locations and depths consistent with flowpaths from GTEOSI source locations; however, data showing characteristics similar to those of GTEOSI impacts may be related in whole or in part to other contamination sources depending on the location of the impact with respect to known or suspected source locations and the patterns of groundwater flow in the vicinity.

Table 6-4

Summary of Select Monitoring Well Data (All Depths) and Comparison to Screening Criteria
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical	Frequency of Detection	Range of Detected Concentrations	NYSDEC Class GA Standards (1)	COPC (Y/N)	Rationale for Selection or Deletion as COPC
Volatile Organic Compounds (µg/L)					
Tetrachloroethene	81 / 110	0.12 - 1,800	5[a]	Y	ASC
Trichloroethene	35 / 110	0.23 - 280	5[a]	Y	ASC
Inorganics (µg/L)					
Nickel	52 / 101	0.24 - 1,500	100	Y	ASC
Radionuclides (pCi/L)					
Uranium 234	31 / 78	0.13 - 3,890	NA	--	--
Uranium 235	13 / 78	0.15 - 199	NA	--	--
Uranium 238	31 / 78	0.06 - 4,020	NA	--	--
Uranium 234+235+238	36 / 78	0.06 - 8,109	27 [b]	Y	ASC

Notes

(1) Class GA Ambient Water Quality Standards and Guidance Values from NYSDEC TOGS 1.1.1, June 1998 and April 2000 and June 2004 Addenda

[a] The principal organic contaminant standard of 5 µg/L applies to this chemical

[b] Value is the USEPA maximum contaminant level for uranium in drinking water (30 µg/L) converted to pCi/L.

NA = Not Available

Rationale Codes:

ASC = Above screening concentration

Table 6-5

Summary of Select Profile Data (All Depths) and Comparison to Screening Criteria
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical	Frequency of Detection	Range of Detected Concentrations	NYSDEC Class GA Standards (1)	COPC (Y/N)	Rationale for Selection or Deletion as COPC
Volatile Organic Compounds (µg/L)					
Tetrachloroethene	682 / 1076	1 - 32,000	5 [a]	Y	ASC
Trichloroethene	441 / 1077	1 - 1,100	5 [a]	Y	ASC

Notes

(1) Class GA Ambient Water Quality Standards and Guidance Values from NYSDEC TOGS 1.1.1, June 1998 and April 2000 and June 2004 Addenda

[a] The principal organic contaminant standard of 5 µg/L applies to this chemical

Rationale Codes:

ASC = Above screening concentration

Table 6-6

Summary of Select Shallow Monitoring Well Data
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical	Frequency of Detection	Range of Detected Concentrations	COPC (Y/N)	Rationale for Selection or Deletion as COPC
Volatile Organic Compounds (µg/L)				
Tetrachloroethene	25 / 30	0.13 - 1,800	Y	D
Trichloroethene	7 / 30	0.48 - 91	Y	D

Notes

Rationale Codes:

D = Detected

Table 6-7

Summary of Select Shallow Profile Data
GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

Chemical	Frequency of Detection	Range of Detected Concentrations	COPC (Y/N)	Rationale for Selection or Deletion as COPC
Volatile Organic Compounds (µg/L)				
Tetrachloroethene	23 / 41	2 - 32,000	Y	D
Trichloroethene	15 / 41	1 - 670	Y	D

Notes

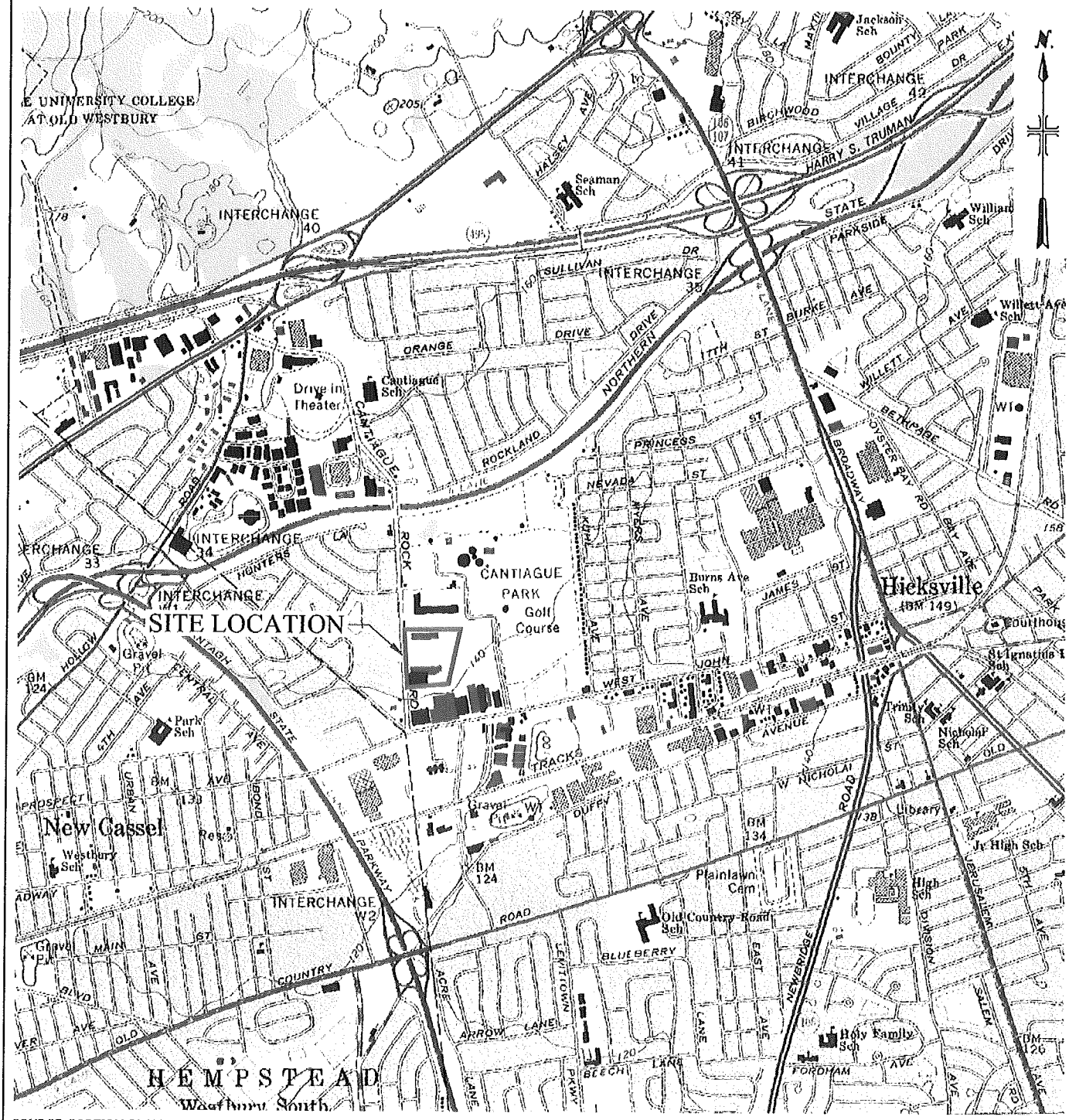
Rationale Codes:

D = Detected

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

Figures



MALCOLM PIRNIE	GTE Operations Support Incorporated Former Sylvania Electric Products Incorporated Facility Hicksville, New York	SITE LOCATION MAP	MALCOLM PIRNIE, INC. DECEMBER 2010 FIGURE 1-1

NOTES

1. AERIAL IMAGE FROM NYS GIS CLEARINGHOUSE HIGH RESOLUTION DIGITAL ORTHOIMAGERY (6-INCH RESOLUTION - 2007).

SCALE IN FEET

0 300 600 1,200

MALCOLM PIRNIE

GTE Operations Support Incorporated
Former Sylvania Electric Products
Incorporated Facility
Hicksville, New York

FORMER SYLVANIA AND SURROUNDING PROPERTIES

MALCOLM PIRNIE, INC.

DECEMBER 2010

FIGURE 1-2

LEGEND

- USACE WELL LOCATION
- GI WELL LOCATION
- NYSDEC WELL LOCATION
- GTEOSI WELL LOCATION

NOTES

1. AERIAL IMAGE FROM NYS GIS CLEARINGHOUSE HIGH RESOLUTION DIGITAL ORTHOIMAGERY (6-INCH RESOLUTION - 2007).

SCALE IN FEET

0 250 500 1,000

MALCOLM PIRNIE

GTE Operations Support Incorporated
Former Sylvania Electric Products
Incorporated Facility
Hicksville, New York

ON-SITE AND OFF-SITE MONITORING WELL LOCATION MAP

MALCOLM PIRNIE, INC.

DECEMBER 2010

FIGURE 1-3

User:jmarchi Date: PIRNIE SHARENAS File:I:\GTE\GSH Hicksville\Admin\MXD\Fig 1-3 2010 FINAL.mxd

LEGEND

- GTEOSI PROFILE LOCATION
- GI PROFILE LOCATION
- NYSDEC CANTIAGUE ROCK ROAD INVESTIGATION PROFILE LOCATION

SCALE IN FEET

0 300 600 1,200

NOTES

1. AERIAL IMAGE FROM NYS GIS CLEARINGHOUSE HIGH RESOLUTION DIGITAL ORTHOIMAGERY (6-INCH RESOLUTION - 2007).

MALCOLM PIRNIE	GTE Operations Support Incorporated Former Sylvania Electric Products Incorporated Facility Hicksville, New York	WATERLOO PROFILER LOCATIONS	MALCOLM PIRNIE, INC. JANUARY 2011 FIGURE 1-4

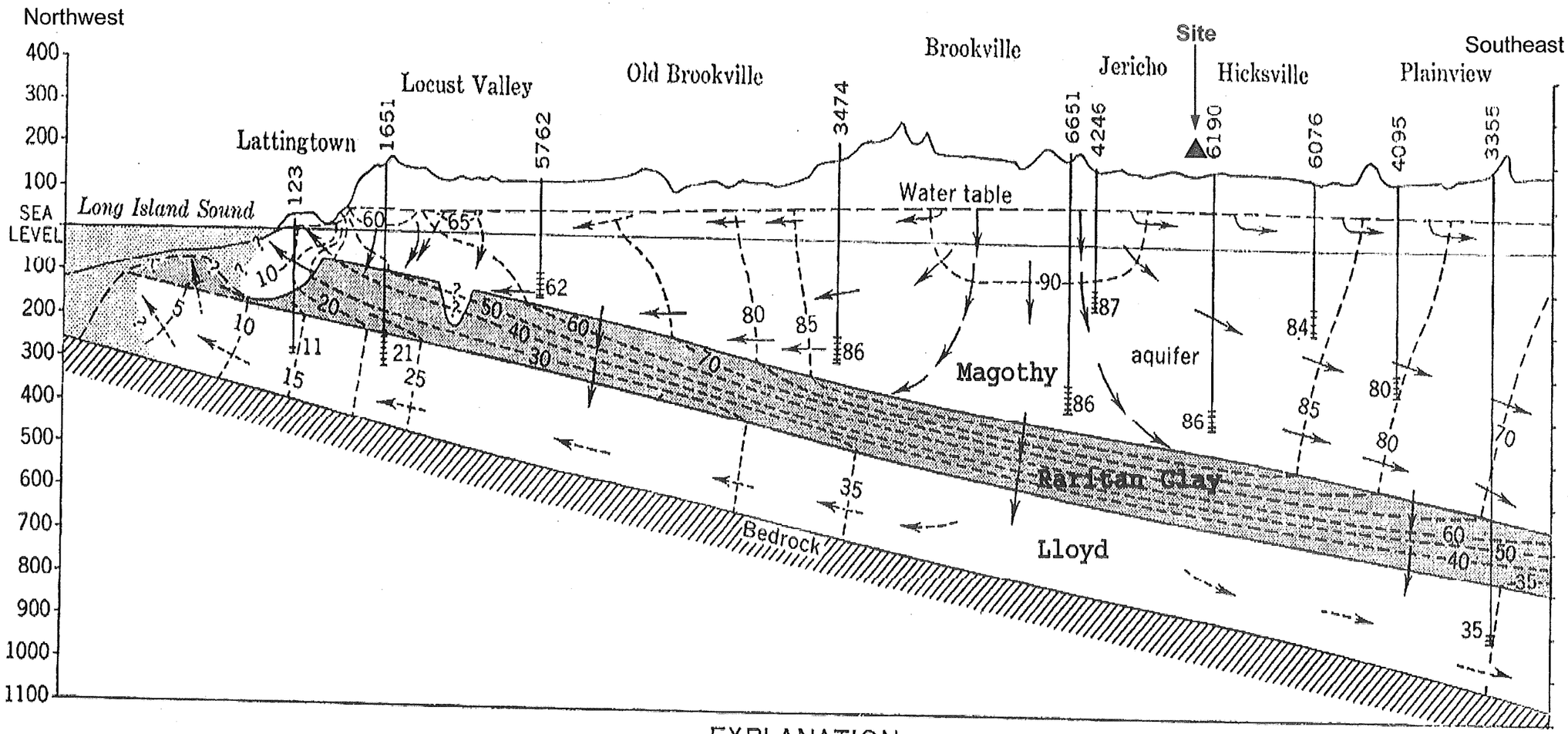
System	Series	Geologic Units		Hydrogeologic Unit	Range of Thickness (feet)	Range of Altitude of Upper Surface, in feet above or below sea level
Quaternary	Holocene	Shore, beach Salt-Marsh deposits, and alluvium				
	Pleistocene	Wisconsin Glaciation (Harbor Hill, Interstadial Marine, and Ronkonkoma Drift)	Till (ground terminal moraine) Outwash 20-foot Clay (marine)	Upper Glacial aquifer	0 to 450	Land Surface
		Sangamon Interglaciation	Gardiners Clay (marine)	Gardiners Clay	0 to 320	-40 to -250
		Pre-Wisconsin Glaciation (Illinoian)	Jameco Gravel	Jameco aquifer	0 to 185	-90 to -450
Tertiary	Pliocene	Mannetto Gravel		Unsaturated	0-220	0 to -120
Cretaceous	Upper Cretaceous	Matawan Group - Magothy Formation (undifferentiated)		Magothy aquifer	0 to 800	200 to -350
		Raritan Formation	Clay member	Raritan Clay confining unit	0 to 300	-100 to -1,000
			Lloyd sand member	Lloyd aquifer	0 to 300	-200 to -1,200
Precambrian		Crystaline Bedrock		Bedrock	--	-400 to -1,500

MALCOLM PIRNIE

GTE Operations Support Incorporated
Former Sylvania Electric Products
Incorporated Facility
Hicksville, New York

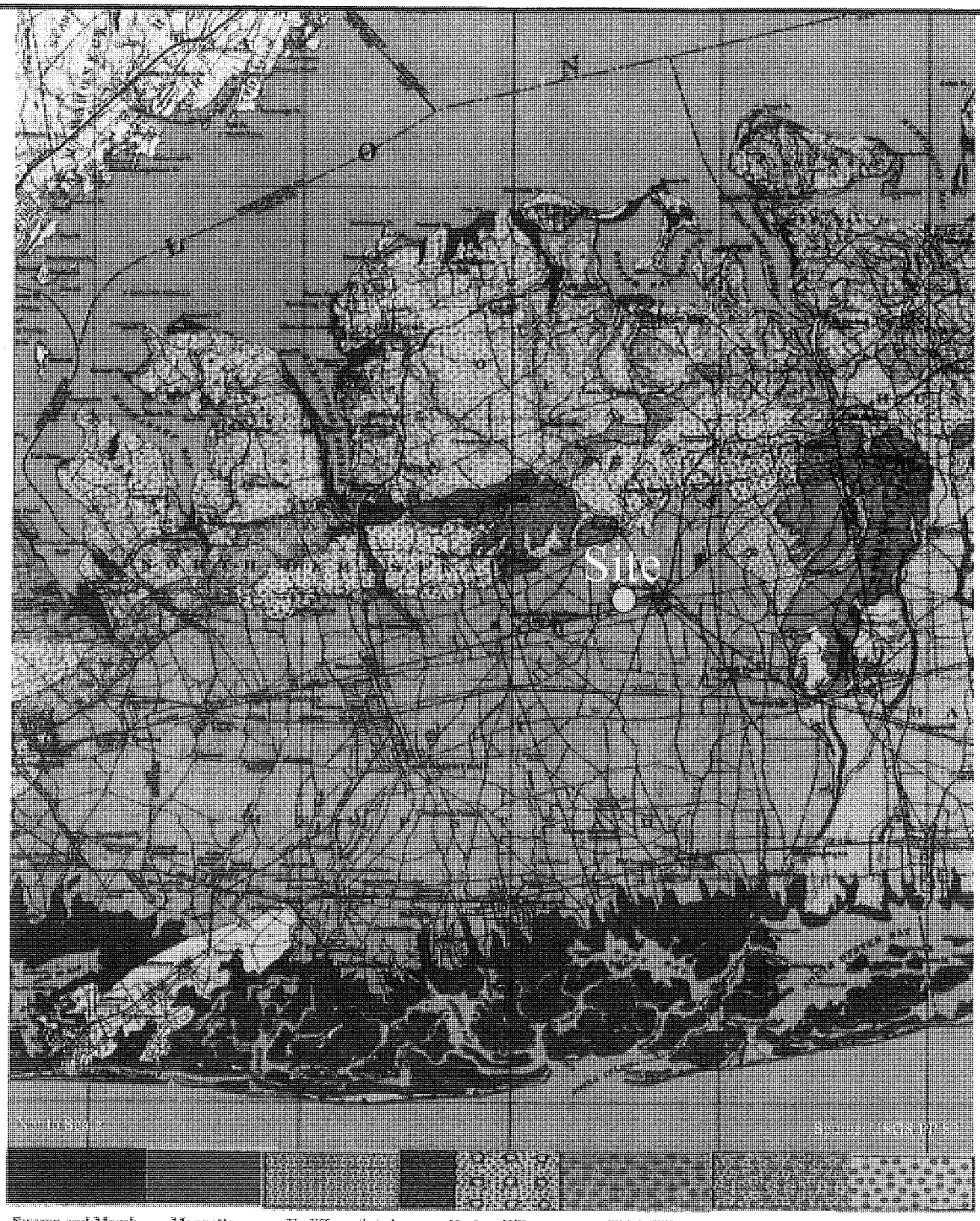
Stratigraphic Column of the Geology of Nassau County

MALCOLM PIRNIE, INC
December 2010
Figure 3-1



Source: USGS WSP 1613-A

MALCOLM PIRNIE	GTE Operations Support Incorporated Former Sylvania Electric Products Incorporated Facility Hicksville, New York	HYDROGEOLOGIC CROSS-SECTION	MALCOLM PIRNIE, INC. DECEMBER 2010 FIGURE 3-2



MALCOLM PIRNIE

GTE Operations Support Incorporated
Former Sylvania Electric Products
Incorporated Facility
Hicksville, New York

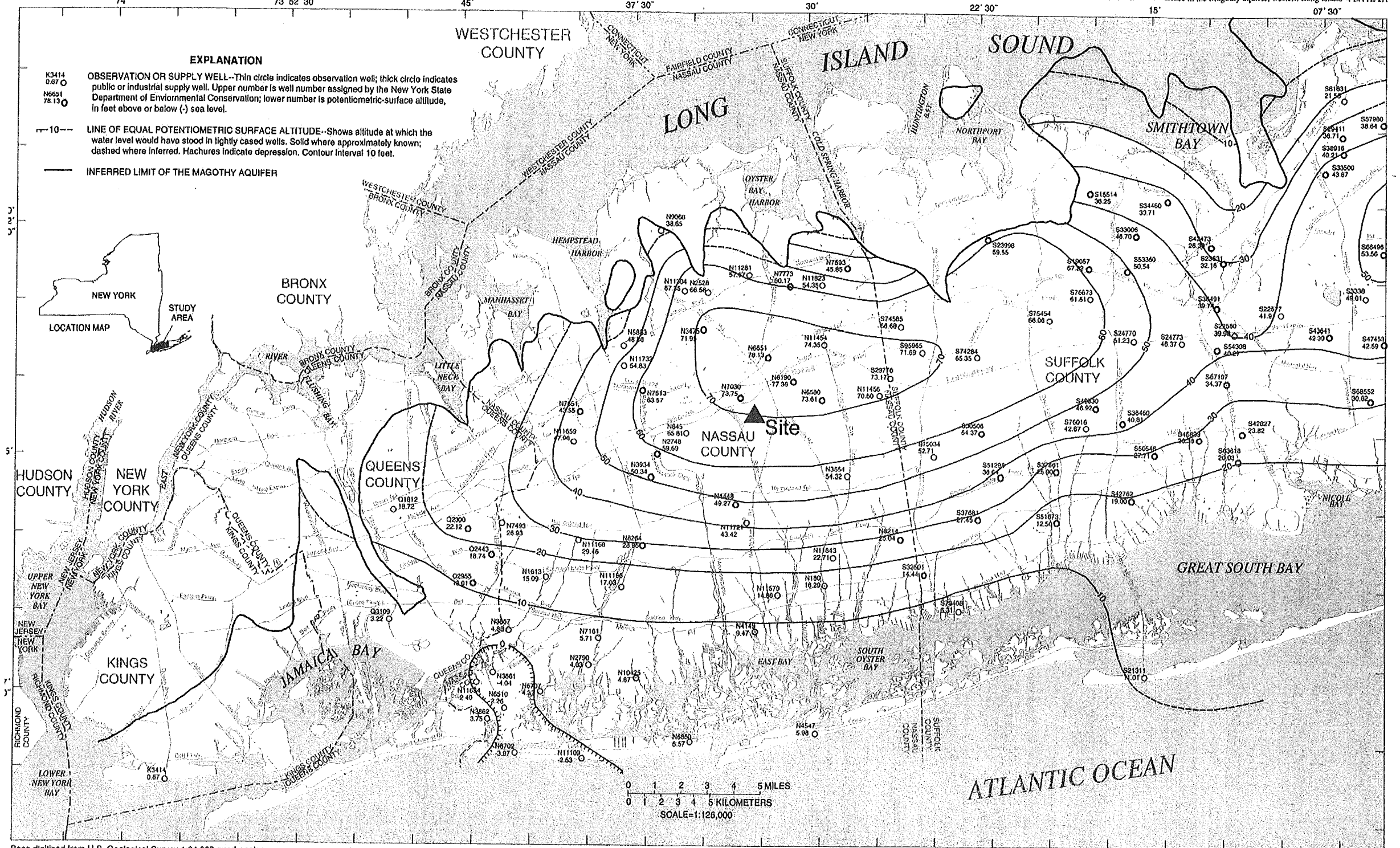
Surficial Geologic Map of Nassau County Long Island

MALCOLM PIRNIE, INC.
December 2010
Figure 3-3

UNITED STATES DEPARTMENT OF THE INTERIOR
U.S GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE
SUFFOLK COUNTY WATER AUTHORITY
NASSAU COUNTY DEPARTMENT OF PUBLIC WORKS
NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION

WATER-RESOURCES INVESTIGATIONS REPORT 98-4019
Potentiometric surface in the Magothy aquifer, western Long Island--PLATE 2A



Base digitized from U.S. Geological Survey 1:24,000 quadrangles
and New York State Department of Transportation 1:24,000 quadrangles

POTENTIOMETRIC SURFACE OF THE MAGOTHY AQUIFER ON WESTERN LONG ISLAND, NEW YORK, IN MARCH-APRIL 1997

By
Ronald Busciolano, Jack Monti, Jr., and Anthony Chu

1997

Hydrology by Busciolano, Ronald, Monti, Jack, Jr., Chu, Anthony, 1997
Water-table and potentiometric-surface altitudes of the upper glacial, Magothy, and Lloyd aquifers on Long Island, New York in March-April 1997, with a summary of hydrogeologic conditions

MALCOLM PIRNIE

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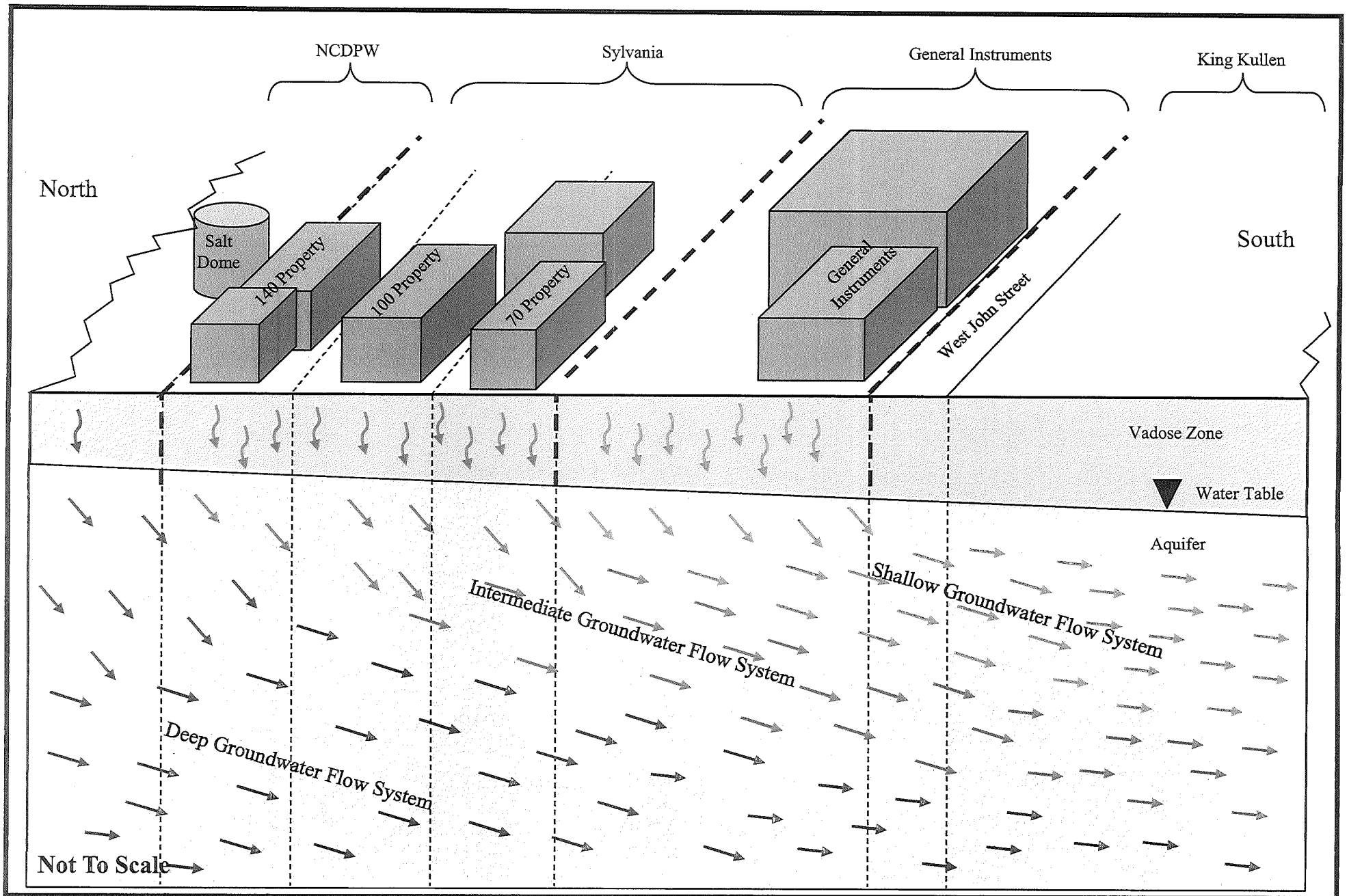
Former Sylvania Electric Products
Incorporated Facility
Hicksville, New York

POTENTIOMETRIC SURFACE MAP OF THE MAGOTHY AQUIFER

MALCOLM PIRNIE, INC.

DECEMBER 2010

FIGURE 3-4



MALCOLM PIRNIE

Conceptual Model of Groundwater Flow

GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

MALCOLM PIRNIE, INC.
December 2010
Figure 3-5

MW-16S 83.17
83.0
MW-14S 82.6
MW-13S 82.64
MW-15S 82.56
MW-17S 82.53
MW-18S 82.5
82.5
MW-19S 82.51
MW-20S 82.46
MW-55S 82.45
MW-44S 82.38
MW-23S 82.33
MW-21S 82.46
MW-43S 82.44
MW-24S 82.39
MW-22S 82.41
MW-49S 82.42
MW-26I 82.35
MW-33S 82.24
MW-25S 82.31
MW-27S 82.28
MW-09 82.1
MW-34S 82.16
MW-29S 80.01
MW-53S 82.17
MW-04 82.1
MW-11 82.15
MW-03 82.12
W-08-71 82.08
MW-30S 82.05
W-03-72 82.08
82.0
MW-39S 82.07
W-02-70 81.87
W-32-110 81.83
W-22-95 81.57
W-12-70 81.63
W-10-71 81.5
W-06-79 81.56
81.5
W-05-78 81.52
W-31-95 81.38
PW-02-01 81.26
PW-04-01 81.22
PW-03-01 81.14
81.0
PW-07-01 80.78
W-23-110 80.95
PW-05-01 80.57
PW-06-02 80.64
80.5
W-19-110 80.43
W-20-120 80.36

LEGEND

MW-16S 83.17 SHALLOW MONITORING WELL LOCATION, WELL ID, AND GROUNDWATER ELEVATION (FEET)

LINES OF EQUAL WATER ELEVATION

NOTES

1. AERIAL IMAGE FROM NYS GIS CLEARINGHOUSE HIGH RESOLUTION DIGITAL ORTHOIMAGERY (6-INCH RESOLUTION - 2007).

SCALE IN FEET

0 300 600 1,200

MALCOLM PIRNIE

GTE Operations Support Incorporated
Former Sylvania Electric Products
Incorporated Facility
Hicksville, New York

POTENTIOMETRIC SURFACE - SHALLOW GROUNDWATER ZONE - MAY 25, 2010

MALCOLM PIRNIE, INC.
JANUARY 2011
FIGURE 3-6

User:gronicki Spec:PIRNIE STANDARD File:J:\GTE\OSR\Hicksville\dwg\RI-rpt-11-2010\FINAL\JAN2011\FIG3-6_012511.DWG Scale:1:1 Date:01/25/2011 Time:21:03 Layout:22x34-2

MW-20I 82.45
MW-42I 82.46
MW-21I 82.44
MW-22I 82.36
MW-23I 82.28
MW-28I 82.27
MW-50I 82.27
MW-10 82.11
MW-12 82.12
MW-08 82.07
MW-31I 82.09
MW-53I 82.07
82.0
MW-30I 82.05
W-14-150 81.94
81.5
W-15-168 81.27
W-16-148 81.37
PW-03-06 81.08
PW-04-06 81.13
PW-02-06 81.11
81.0
PW-07-04 80.69
PW-05-04 80.57
PW-06-04 80.6
80.5
W-18-150 80.4
W-19-150 80.4
W-20-160 80.2
80.0
W-25-150 79.93
79.5
79.0
W-27-240 78.97
78.5
78.0
77.5
77.0
76.5
76.0
75.5
MW-P114-170R 75.4

N

LEGEND

MW-21I 82.44 INTERMEDIATE MONITORING WELL LOCATION, WELL ID, AND GROUNDWATER ELEVATION

LINES OF EQUAL GROUNDWATER ELEVATION (DASHED WHERE INFERRED)

NOTES

1. AERIAL IMAGE FROM NYS GIS CLEARINGHOUSE HIGH RESOLUTION DIGITAL ORTHOIMAGERY (6-INCH RESOLUTION - 2007).

SCALE IN FEET

0 300 600 1,200

MALCOLM PIRNIE

GTE Operations Support Incorporated
Former Sylvania Electric Products
Incorporated Facility
Hicksville, New York

POTENTIOMETRIC SURFACE - INTERMEDIATE GROUNDWATER ZONE - MAY 25, 2010

MALCOLM PIRNIE, INC.

JANUARY 2011

FIGURE 3-7

User:gtoncki Spec:PIRNIE STANDARD File:I:\GTEOS\Hicksville\dwg\RI-rpt-11-2010\FINAL\JAN2011\FIG3-7 012511.DWG Scale:1:1 Date:01/27/2011 Time:11:40 Layout:22x34-2

MW-16S 83.17
83.0
MW-14S 82.6
MW-13S 82.64
MW-15S 82.56
MW-17S 82.53
MW-18S 82.5
82.5
MW-19S 82.51
MW-20S 82.46
MW-55S 82.45
MW-44S 82.38
MW-23S 82.33
MW-21S 82.46
MW-43S 82.44
MW-24S 82.39
MW-22S 82.41
MW-49S 82.42
MW-26I 82.35
MW-33S 82.24
MW-25S 82.31
MW-27S 82.28
MW-09 82.1
MW-34S 82.16
MW-29S 80.01
MW-53S 82.17
MW-04 82.1
MW-11 82.15
MW-03 82.12
W-08-71 82.08
MW-30S 82.05
W-03-72 82.08
82.0
MW-39S 82.07
W-02-70 81.87
W-32-110 81.83
W-22-95 81.57
W-12-70 81.63
W-10-71 81.5
W-06-79 81.56
81.5
W-05-78 81.52
W-31-95 81.38
PW-02-01 81.26
PW-04-01 81.22
PW-03-01 81.14
81.0
PW-07-01 80.78
W-23-110 80.95
PW-05-01 80.57
PW-06-02 80.64
80.5
W-19-110 80.43
W-20-120 80.36

LEGEND

MW-16S 83.17 SHALLOW MONITORING WELL LOCATION, WELL ID, AND GROUNDWATER ELEVATION (FEET)

LINES OF EQUAL WATER ELEVATION

NOTES

1. AERIAL IMAGE FROM NYS GIS CLEARINGHOUSE HIGH RESOLUTION DIGITAL ORTHOIMAGERY (6-INCH RESOLUTION - 2007).

SCALE IN FEET

0 300 600 1,200

MALCOLM PIRNIE

GTE Operations Support Incorporated
Former Sylvania Electric Products
Incorporated Facility
Hicksville, New York

POTENTIOMETRIC SURFACE - SHALLOW GROUNDWATER ZONE - MAY 25, 2010

MALCOLM PIRNIE, INC.
JANUARY 2011
FIGURE 3-6

User:gronicki Spec:PIRNIE STANDARD File:J:\GTE\OSR\Hicksville\dwg\RI-rpt-11-2010\FINAL\JAN2011\FIG3-6_012511.DWG Scale:1:1 Date:01/25/2011 Time:21:03 Layout:22x34-2

MW-20I 82.45
MW-42I 82.46
MW-21I 82.44
MW-22I 82.36
MW-23I 82.28
MW-28I 82.27
MW-50I 82.27
MW-10 82.11
MW-12 82.12
MW-08 82.07
MW-31I 82.09
MW-53I 82.07
82.0
MW-30I 82.05
W-14-150 81.94
81.5
W-15-168 81.27
W-16-148 81.37
PW-03-06 81.08
PW-04-06 81.13
PW-02-06 81.11
81.0
PW-07-04 80.69
PW-05-04 80.57
PW-06-04 80.6
80.5
W-18-150 80.4
W-19-150 80.4
W-20-160 80.2
80.0
W-25-150 79.93
79.5
79.0
W-27-240 78.97
78.5
78.0
77.5
77.0
76.5
76.0
75.5
MW-P114-170R 75.4

N

LEGEND

MW-21I 82.44 INTERMEDIATE MONITORING WELL LOCATION, WELL ID, AND GROUNDWATER ELEVATION

LINES OF EQUAL GROUNDWATER ELEVATION (DASHED WHERE INFERRED)

NOTES

1. AERIAL IMAGE FROM NYS GIS CLEARINGHOUSE HIGH RESOLUTION DIGITAL ORTHOIMAGERY (6-INCH RESOLUTION - 2007).

SCALE IN FEET

0 300 600 1,200

MALCOLM PIRNIE

GTE Operations Support Incorporated
Former Sylvania Electric Products
Incorporated Facility
Hicksville, New York

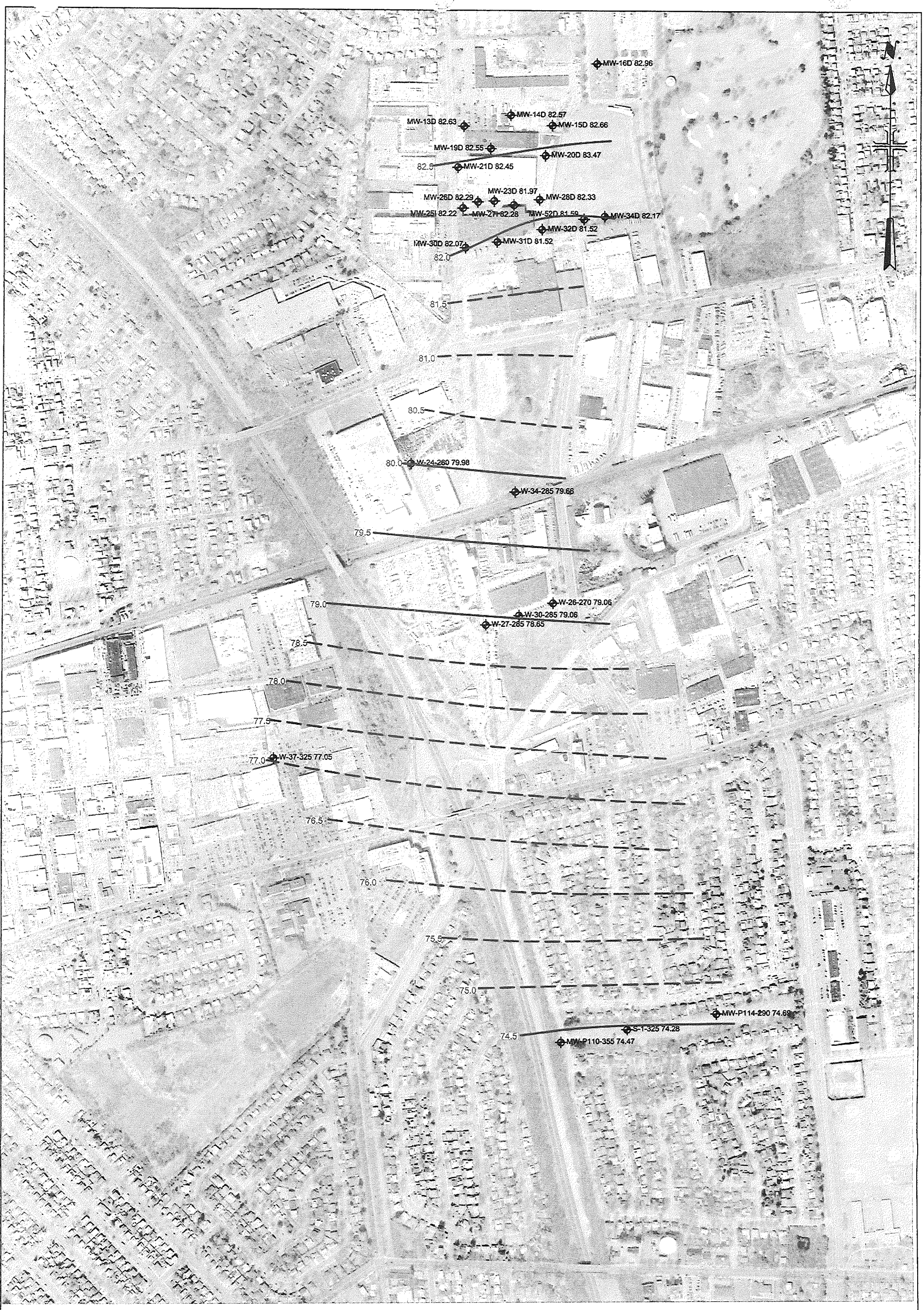
POTENTIOMETRIC SURFACE - INTERMEDIATE GROUNDWATER ZONE - MAY 25, 2010

MALCOLM PIRNIE, INC.

JANUARY 2011

FIGURE 3-7

User:gtoncki Spec:PIRNIE STANDARD File:I:\GTEOS\Hicksville\dwg\RI-rpt-11-2010\FINAL\JAN2011\FIG3-7 012511.DWG Scale:1:1 Date:01/27/2011 Time:11:40 Layout:22x34-2



LEGEND

MW-16D 82.96 DEEP MONITORING WELL LOCATION, WELL ID, AND GROUNDWATER ELEVATION

LINES OF EQUAL WATER LEVEL ELEVATION (DASHED WHERE INFERRED)

SCALE IN FEET

0 300 600 1,200

NOTES

1. AERIAL IMAGE FROM NYS GIS CLEARINGHOUSE HIGH RESOLUTION DIGITAL ORTHOIMAGERY (6-INCH RESOLUTION - 2007).

MALCOLM PIRNIE

GTE Operations Support Incorporated
Former Sylvania Electric Products
Incorporated Facility
Hicksville, New York

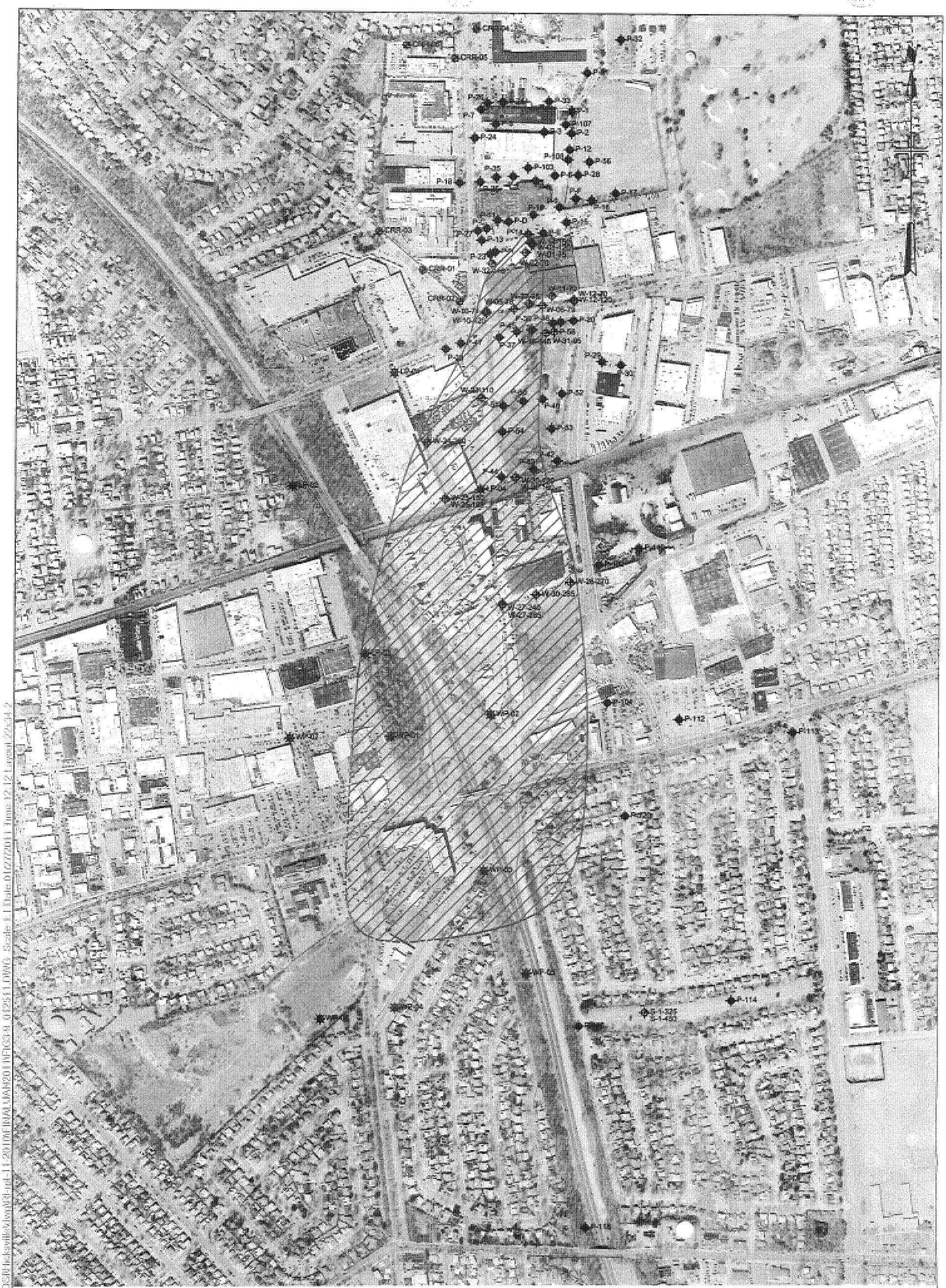
POTENTIOMETRIC SURFACE - DEEP GROUNDWATER ZONE - MAY 25, 2010

MALCOLM PIRNIE, INC.

JANUARY 2011

FIGURE 3-8

User:gronicki Spec:PIRNIE STANDARD File:I:\GTE\OS\Hicksville\dwg\RI-rpt-11-2010\F-INAL\JAN2011\FIG3-8 012511.DWG Scale:1:1 Date:01/27/2011 Time:11:48 Layout:22x34-2



LEGEND

1,2-DICHLOROBENZENE PLUME BOUND AT 25 ug/L (DASHED WHERE INFERRED)

NOTES

1. MAXIMUM 1,2-DICHLOROBENZENE CONCENTRATIONS DETECTED AT EACH LOCATION ARE PRESENTED.
2. GTEOSI PROFILES, GI PROFILES, AND THE HIGHEST HISTORIC SAMPLING RESULTS FROM GI WELLS WERE CONSIDERED IN PREPARATION OF THIS FIGURE.
3. AERIAL IMAGE FROM NYS GIS CLEARINGHOUSE HIGH RESOLUTION DIGITAL ORTHOIMAGERY (6-INCH RESOLUTION - 2007).

SCALE IN FEET

0 300 600 1,200

MALCOLM PIRNIE

GTE Operations Support Incorporated
Former Sylvania Electric Products
Incorporated Facility
Hicksville, New York

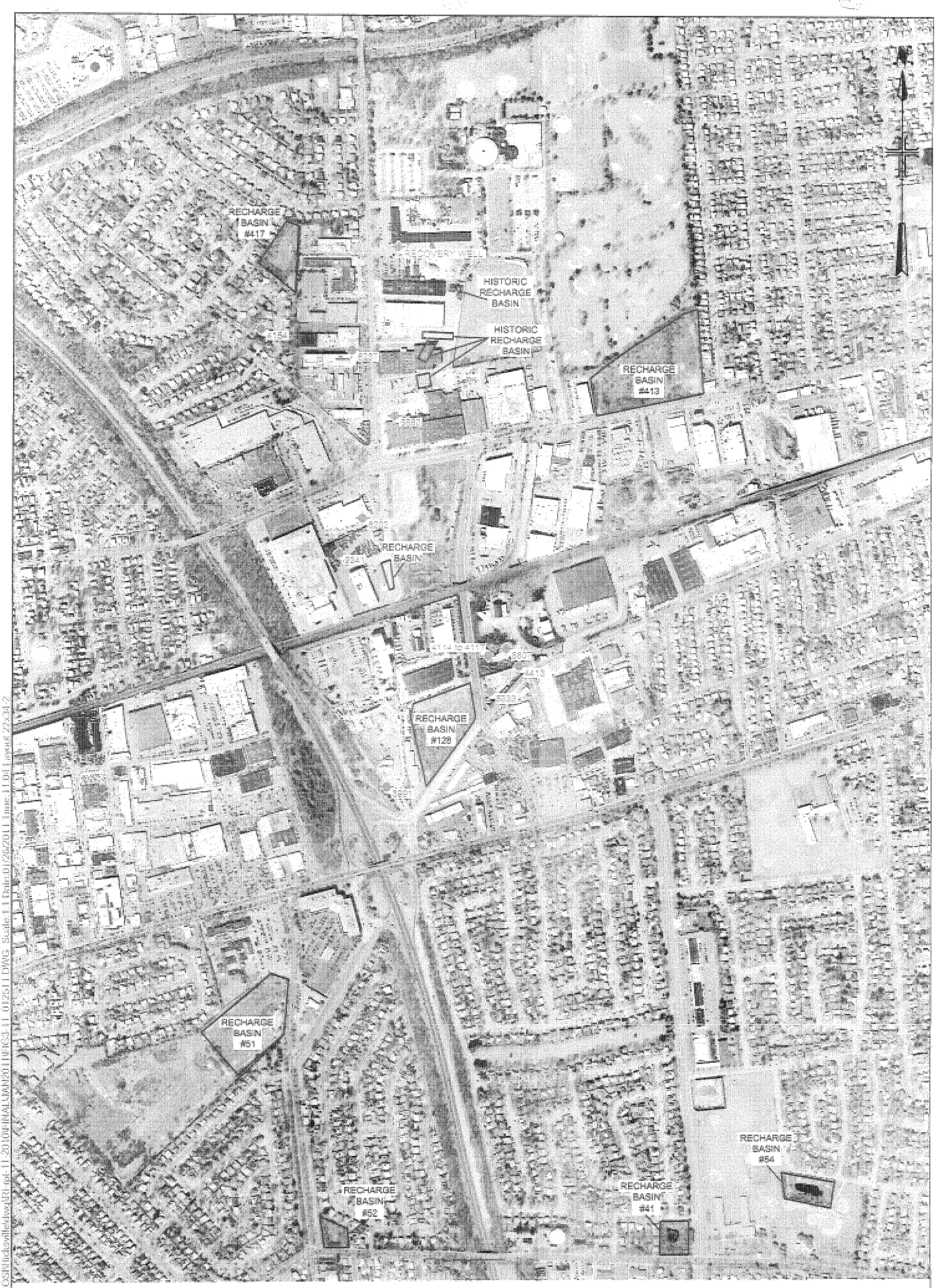
DISTRIBUTION OF 1,2-DICHLOROBENZENE IN GROUNDWATER

MALCOLM PIRNIE, INC.

JANUARY 2011

FIGURE 3-9

I:\Projects\GTE_PIRNIE STANDARD Files\GTE Hicksville\MXD\Fig 3-9 Jan 2011 Final\Fig 3-9.mxd 1/11/2011 11:25:11 AM



LEGEND

INDUSTRIAL OR RECOVERY WELL

RECHARGE BASIN

SCALE IN FEET

0 350 700 1,400

NOTES

1. AERIAL IMAGE FROM NYS GIS CLEARINGHOUSE HIGH RESOLUTION DIGITAL ORTHOIMAGERY (6-INCH RESOLUTION - 2007).

MALCOLM PIRNIE

GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

POTENTIAL LOCAL INFLUENCES ON GROUNDWATER FLOW

MALCOLM PIRNIE, INC.

JANUARY 2011

FIGURE 3-11

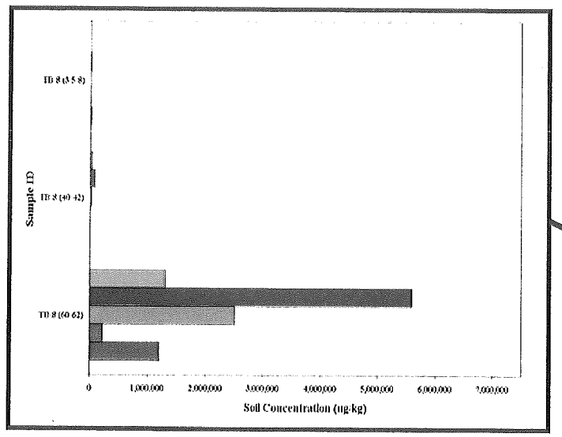
User:jmunda Date:PIRNIE STANDARD Path:N:\GTE\Hicksville\mxd\Final\Report\Fig3-11_20100104.mxd

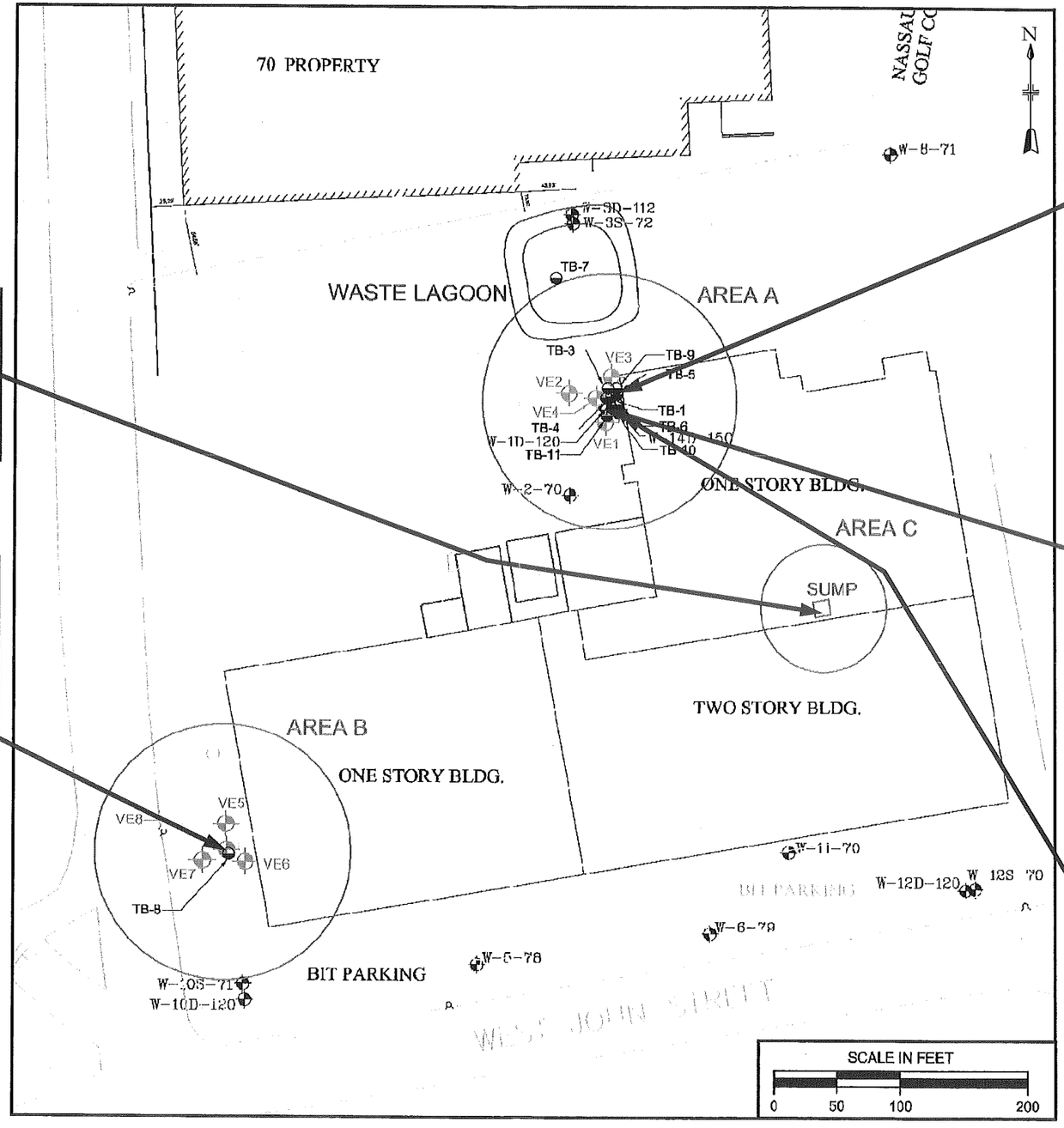
Legend

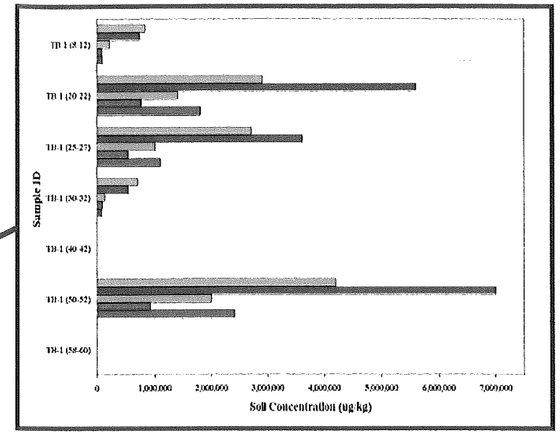
- 1,2-DCB
- Total Xylenes
- Ethylbenzene
- PCE
- TCE

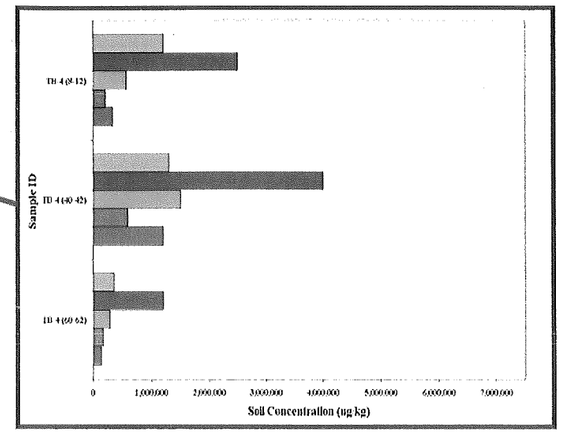
Concentrations Reported from Soil Samples Beneath the Sumps:

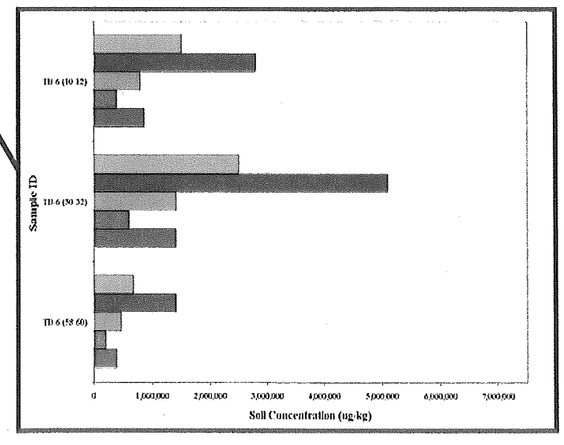
Sump D (2 ft bgs)	TCE = 16,000,000 ug/Kg PCE = 2,900,000 ug/Kg
Sump S (0.5 ft bgs)	TCE = 250,000 ug/Kg PCE = 17,000 ug/Kg











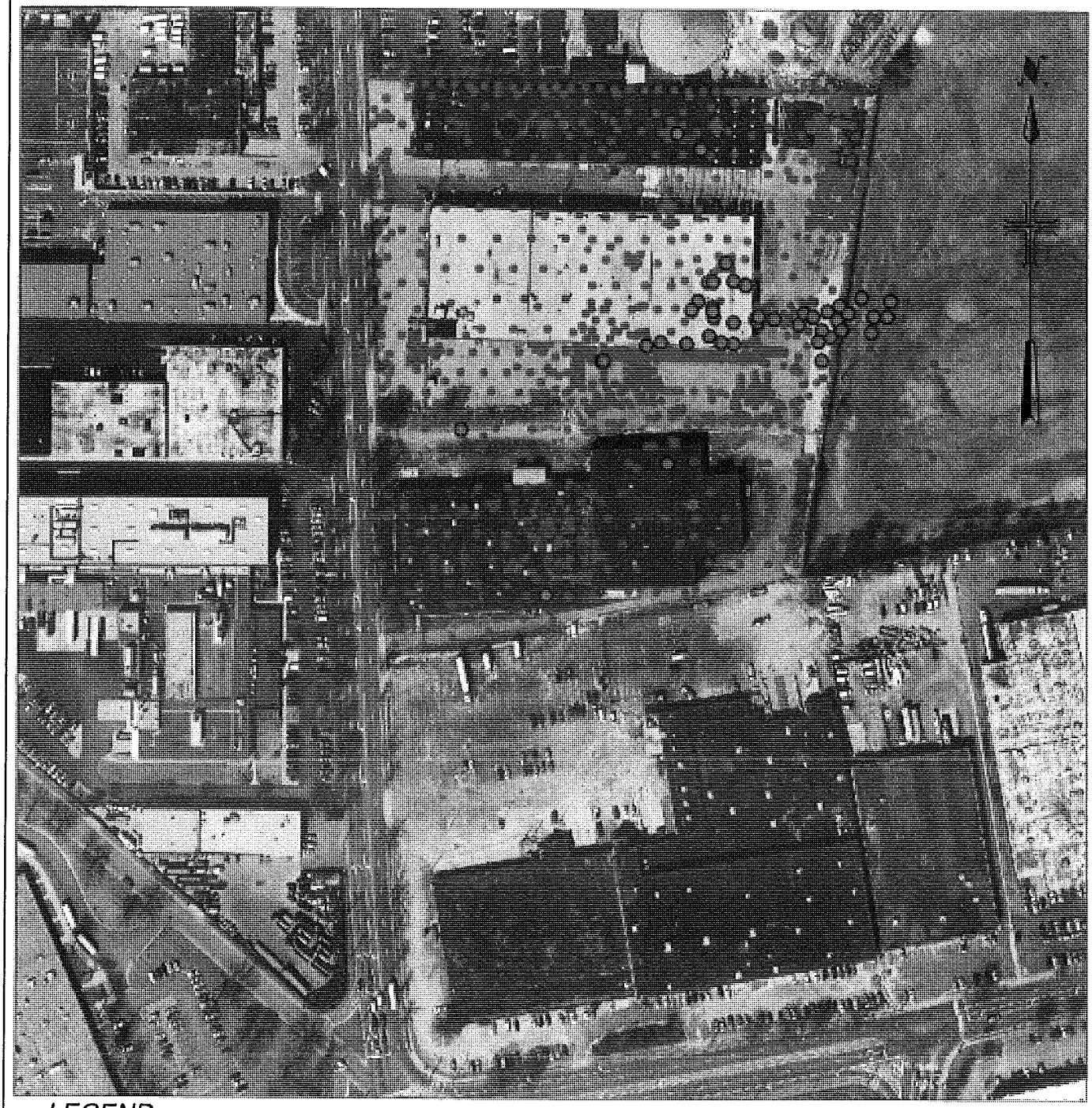
Data Sources: Remedial Investigation General Instrument Corporation prepared by Stearns and Wheler January 1992 and Chemtech laboratory report dated June 10, 1980.

MALCOM PIRNIE

GI Source Areas

GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

MALCOLM PIRNIE, INC.
December 2010
Figure 3-12



LEGEND

- SOIL SAMPLING LOCATION
- PCE RESULT EXCEEDING 1.82 MG/KG

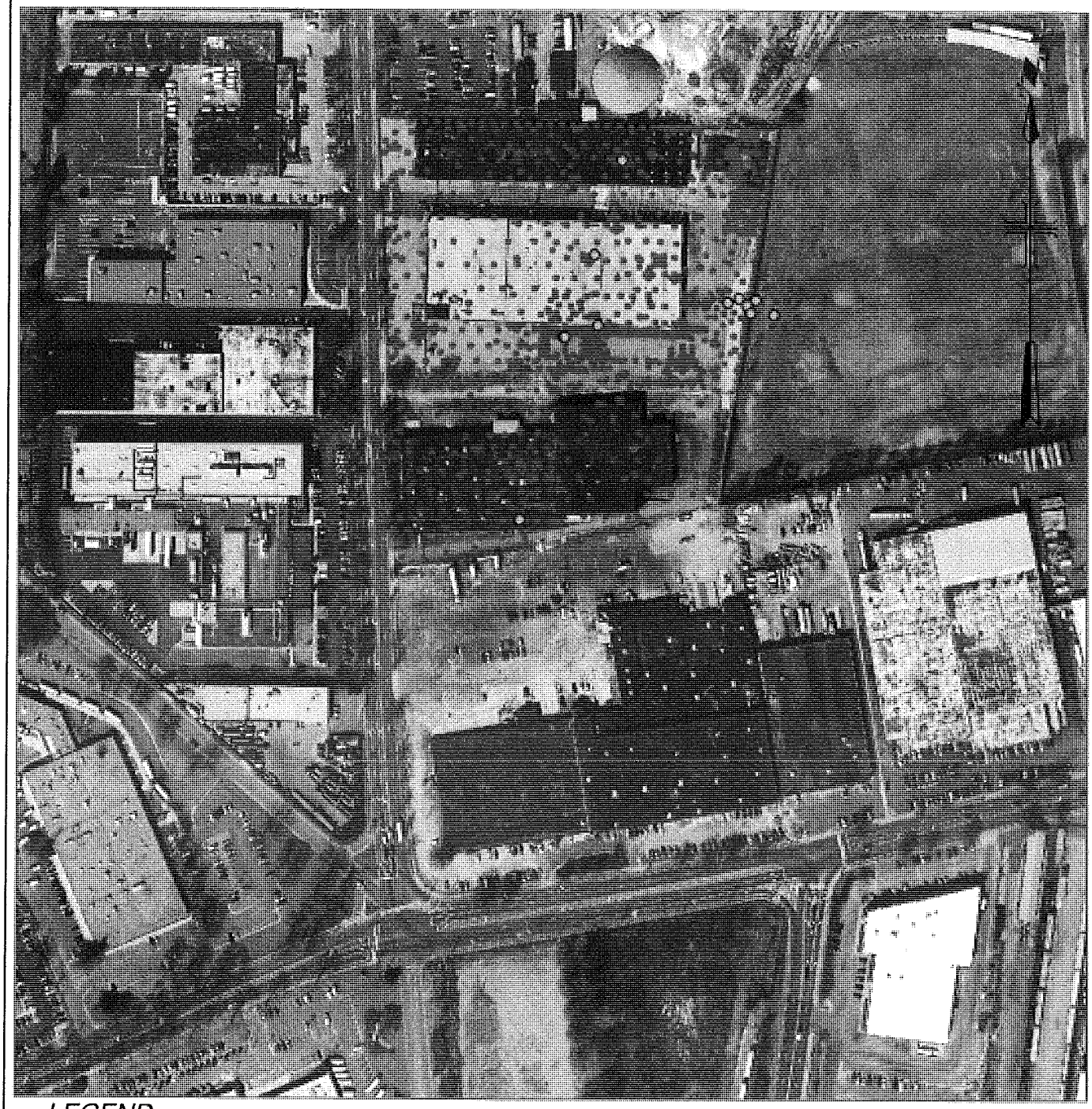
SCALE IN FEET

0 100 200 400

NOTES

1. AERIAL IMAGE FROM NYS GIS CLEARINGHOUSE HIGH RESOLUTION DIGITAL ORTHOIMAGERY (6-INCH RESOLUTION - 2007).
2. RESULTS DO NOT INCLUDE SAMPLE LOCATIONS FROM AREAS THAT HAVE BEEN REMEDIATED.

MALCOLM PIRNIE	GTE Operations Support Incorporated Former Sylvania Electric Products Incorporated Facility Hicksville, NY	ON-SITE PCE AREAS EXCEEDING 1.82 MG/KG	MALCOLM PIRNIE, INC. JANUARY 2011 FIGURE 4-1



LEGEND

- SOIL SAMPLING LOCATION
- TCE RESULT EXCEEDING 0.7 MG/KG

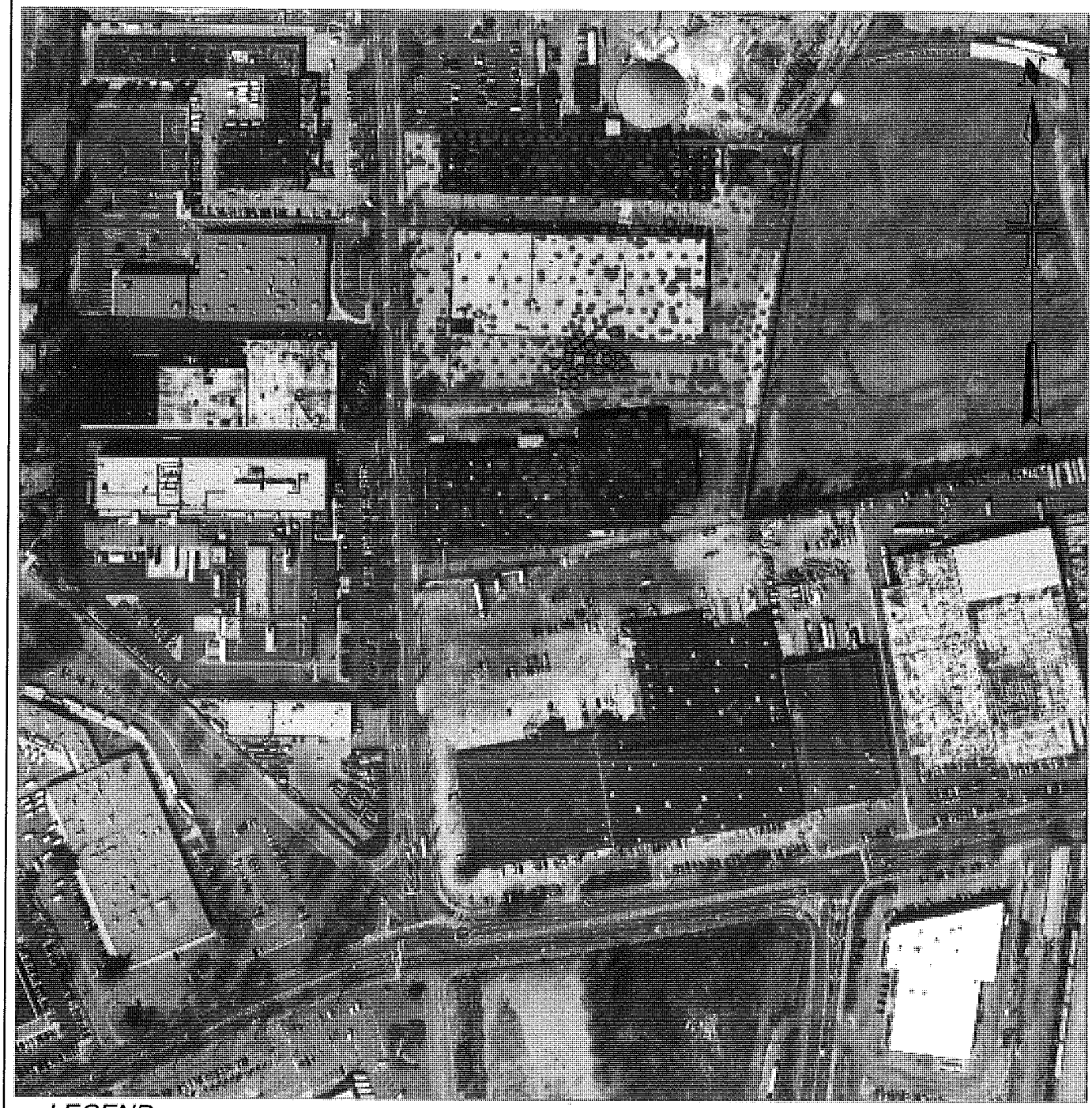
SCALE IN FEET

0 100 200 400

NOTES

1. AERIAL IMAGE FROM NYS GIS CLEARINGHOUSE HIGH RESOLUTION DIGITAL ORTHOIMAGERY (6-INCH RESOLUTION - 2007).
2. RESULTS DO NOT INCLUDE SAMPLE LOCATIONS FROM AREAS THAT HAVE BEEN REMEDIATED.

MALCOLM PIRNIE	GTE Operations Support Incorporated Former Sylvania Electric Products Incorporated Facility Hicksville, NY	ON-SITE TCE EXCEEDING 0.70 MG/KG	MALCOLM PIRNIE, INC. JANUARY 2011 FIGURE 4-2



LEGEND

- SOIL SAMPLING LOCATION
- NICKEL RESULT EXCEEDING 560 MG/KG

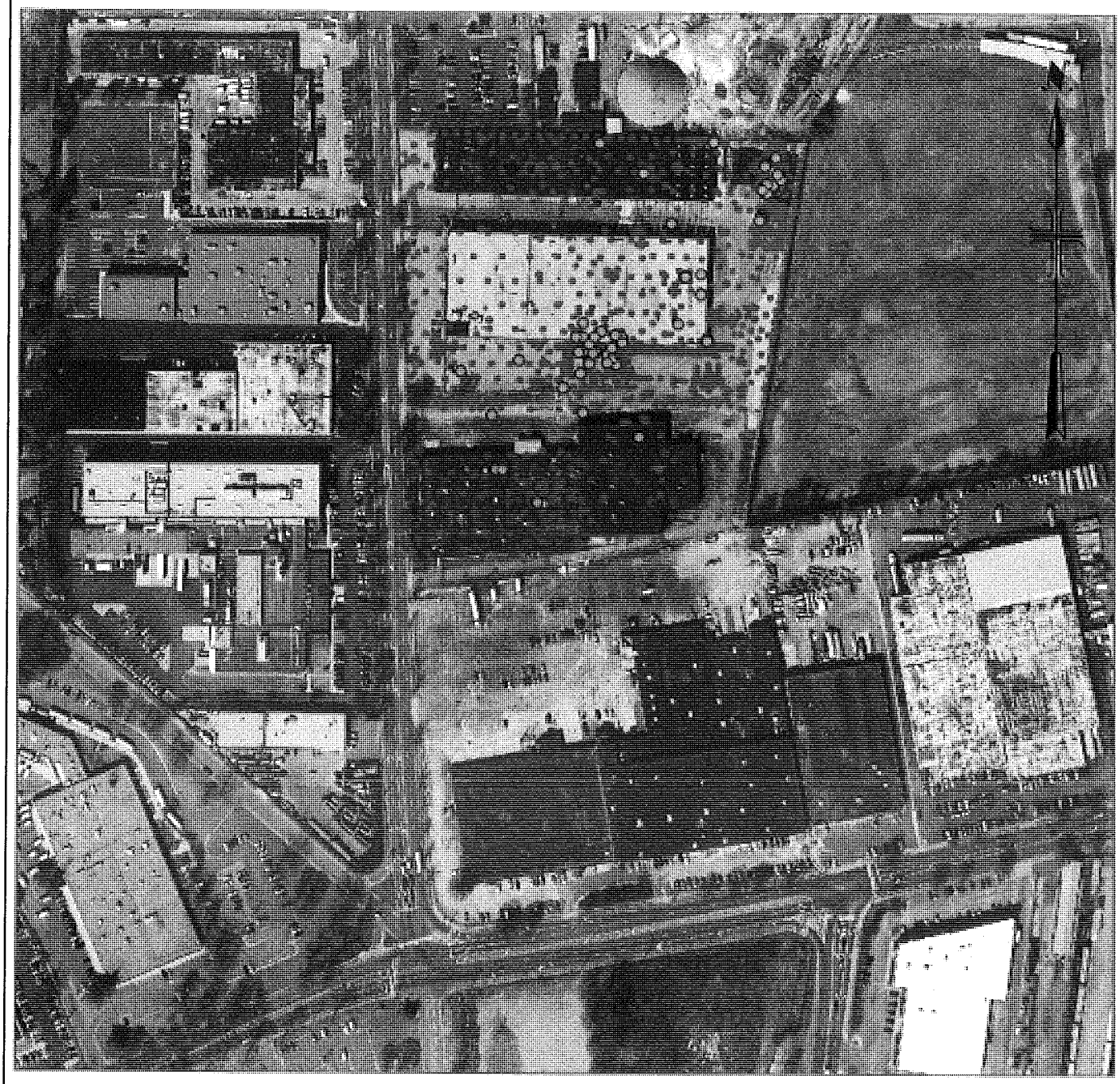
SCALE IN FEET

0 100 200 400

NOTES

1. AERIAL IMAGE FROM NYS GIS CLEARINGHOUSE HIGH RESOLUTION DIGITAL ORTHOIMAGERY (6-INCH RESOLUTION - 2007).
2. RESULTS DO NOT INCLUDE SAMPLE LOCATIONS FROM AREAS THAT HAVE BEEN REMEDIATED.

MALCOLM PIRNIE	GTE Operations Support Incorporated Former Sylvania Electric Products Incorporated Facility Hicksville, NY	ON-SITE NICKEL EXCEEDING 560 MG/KG	MALCOLM PIRNIE, INC. JANUARY 2011 FIGURE 4-3



LEGEND

- SOIL SAMPLING LOCATION
- SAMPLE LOCATION WITH TOTAL URANIUM CONCENTRATION EXCEEDING 100 PCI/G, URNAIUM 234 EXCEEDING 50 PCI/G, OR URANIUM 238 EXCEEDING 50 PCI/G

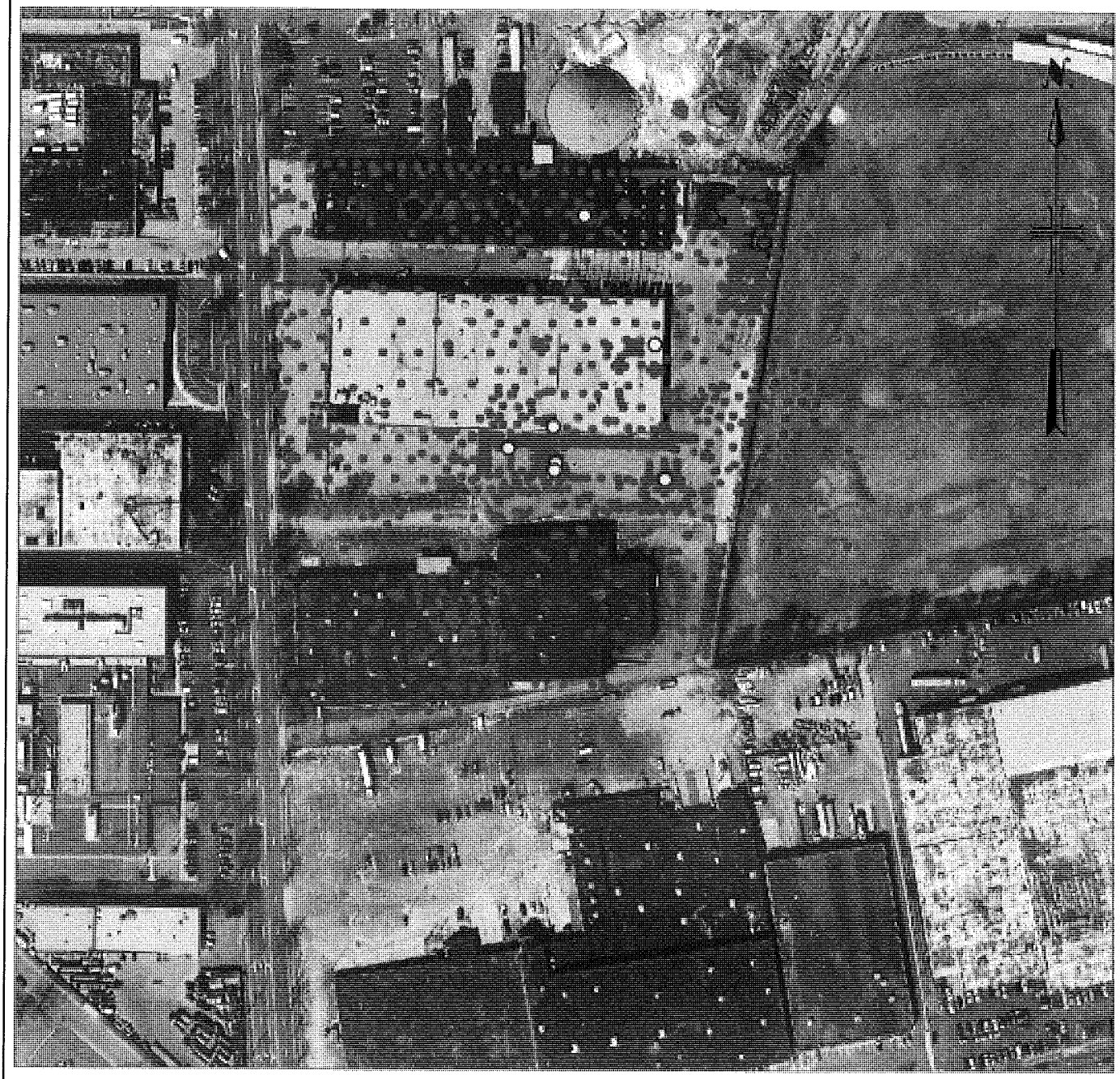
SCALE IN FEET

0 100 200 400

NOTES

1. AERIAL IMAGE FROM NYS GIS CLEARINGHOUSE HIGH RESOLUTION DIGITAL ORTHOIMAGERY (6-INCH RESOLUTION - 2007).
2. RESULTS DO NOT INCLUDE SAMPLE LOCATIONS FROM AREAS THAT HAVE BEEN REMEDIATED.

MALCOLM PIRNIE	GTE Operations Support Incorporated Former Sylvania Electric Products Incorporated Facility Hicksville, NY	ON-SITE TOTAL URANIUM EXCEEDING 100 PCI/G OR 50 PCI/G FOR U-234 AND U-238	MALCOLM PIRNIE, INC. JANUARY 2011 FIGURE 4-4



LEGEND

- ◦ SOIL SAMPLING LOCATION
- **O** SAMPLE LOCATION WITH THORIUM 232 EXCEEDING THE SITE SOIL STANDARD OF 3.4 PCI/G, WHICH IS REPRESENTATIVE OF 2.8 PCI/G ABOVE SITE BACKGROUND (0.6 PCI/G).

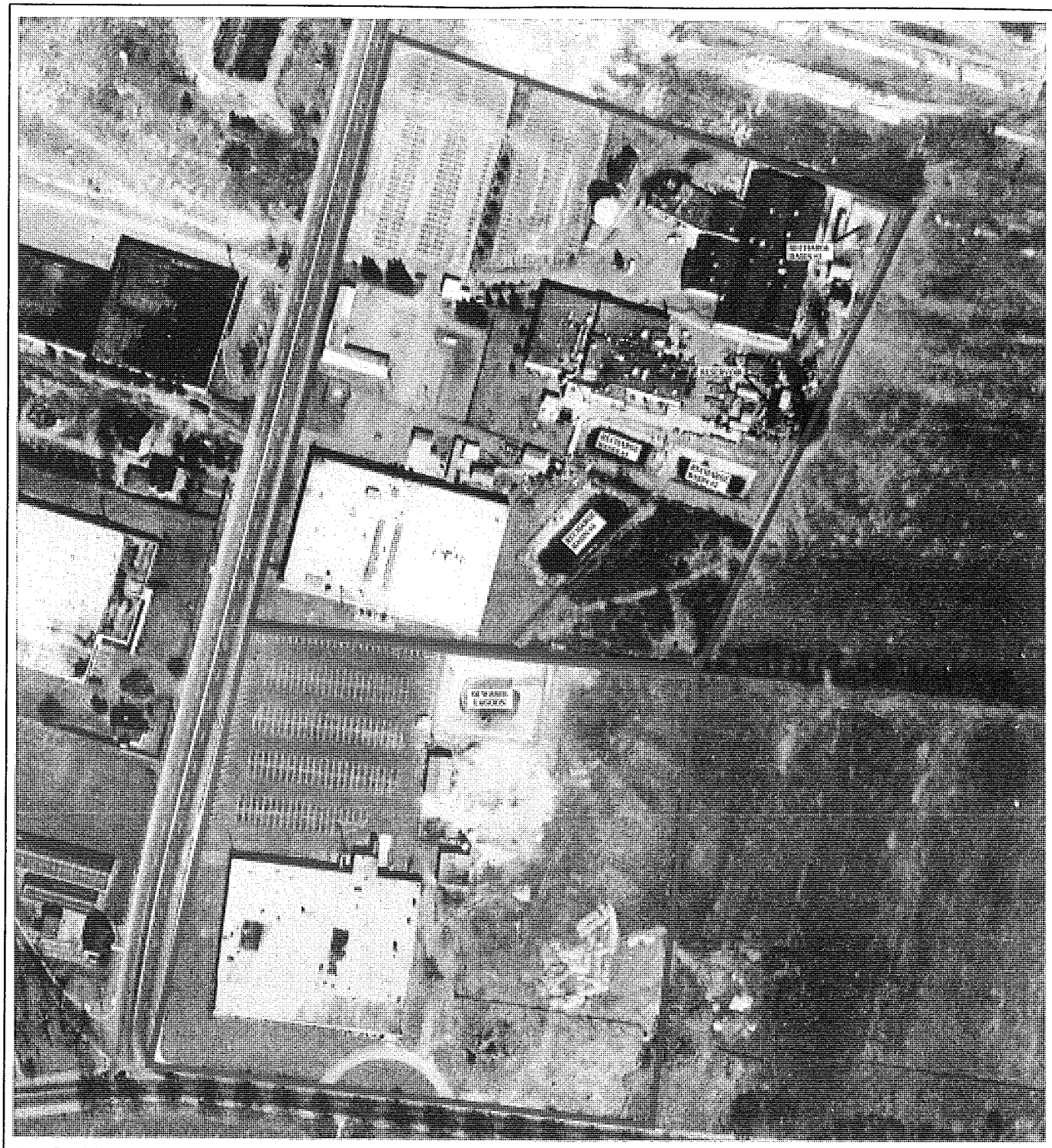
SCALE IN FEET

0 100 200 400

NOTES

1. AERIAL IMAGE FROM NYS GIS CLEARINGHOUSE HIGH RESOLUTION DIGITAL ORTHOIMAGERY (6-INCH RESOLUTION - 2007).
2. RESULTS DO NOT INCLUDE SAMPLE LOCATIONS FROM AREAS THAT HAVE BEEN REMEDIATED.

MALCOLM PIRNIE	GTE Operations Support Incorporated Former Sylvania Electric Products Incorporated Facility Hicksville, NY	ON-SITE THORIUM EXCEEDING 3.4 PCI/G	MALCOLM PIRNIE, INC. JANUARY 2011 FIGURE 4-5



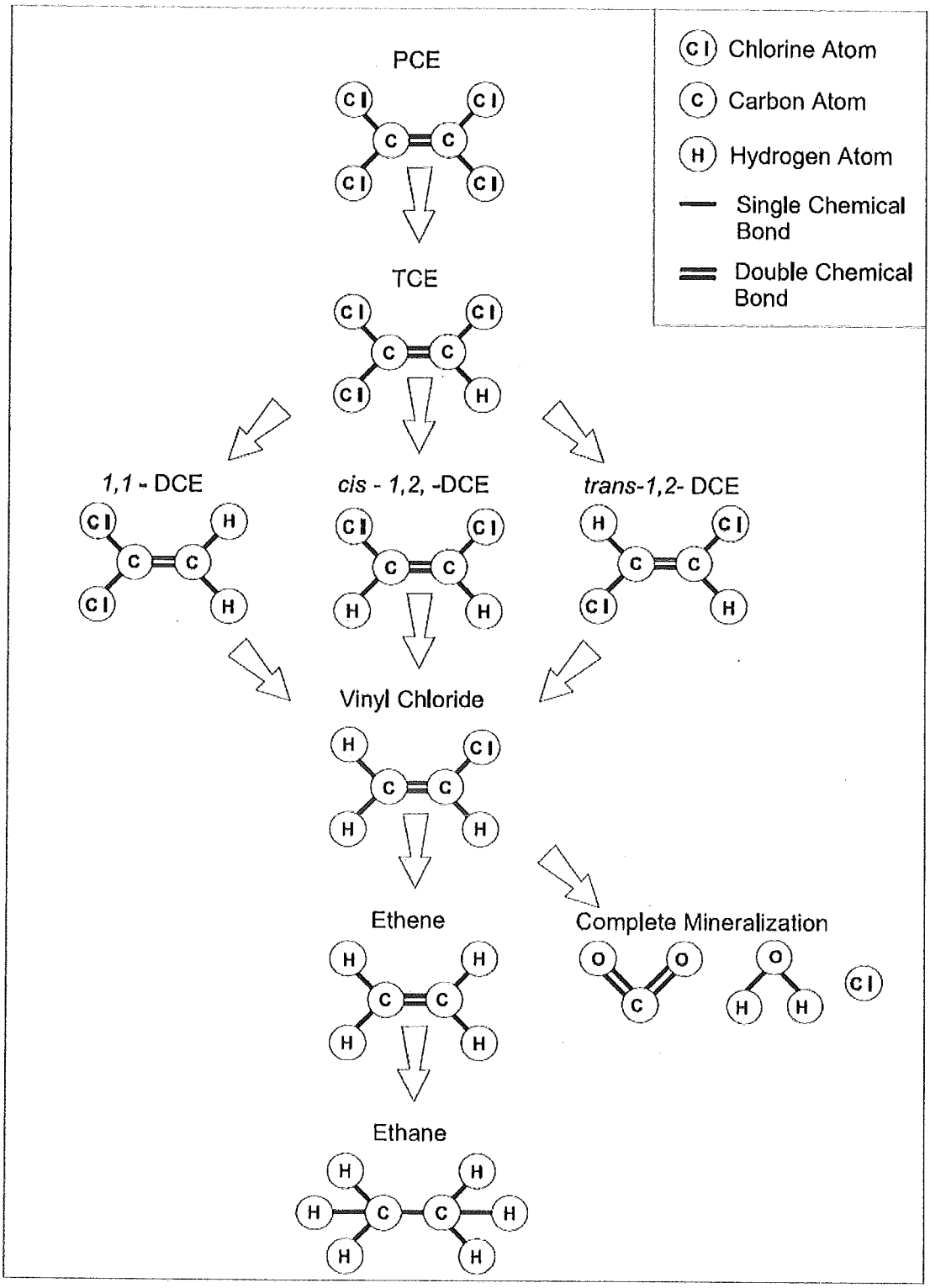
LEGEND

FORMER SYLVANIA ELECTRIC PRODUCTS INCOPRORATED FACILITY
GENERAL INSTRUMENTS SITE

NOTES

1. RECHARGE BASINS AND RESERVOIR LOCATIONS ARE FROM URS PHASE 1 SOIL REMEDIATION REPORT, DATED DECEMBER 2006.
2. GI WASTE LAGOON LOCATION IS FROM STEARNS AND WHEELER REMEDIAL INVESTIGATION REPORT, DATED JANUARY 1992.

MALCOLM PIRNIE	GTE Operations Support Incorporated Former Sylvania Electric Products Incorporated Facility Hicksville, NY	SITE AREA 1962	MALCOLM PIRNIE, INC. JANUARY 2011 FIGURE 4-6



SOURCE: USEPA., *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater, EPA/600/R-98/128, September 1998*

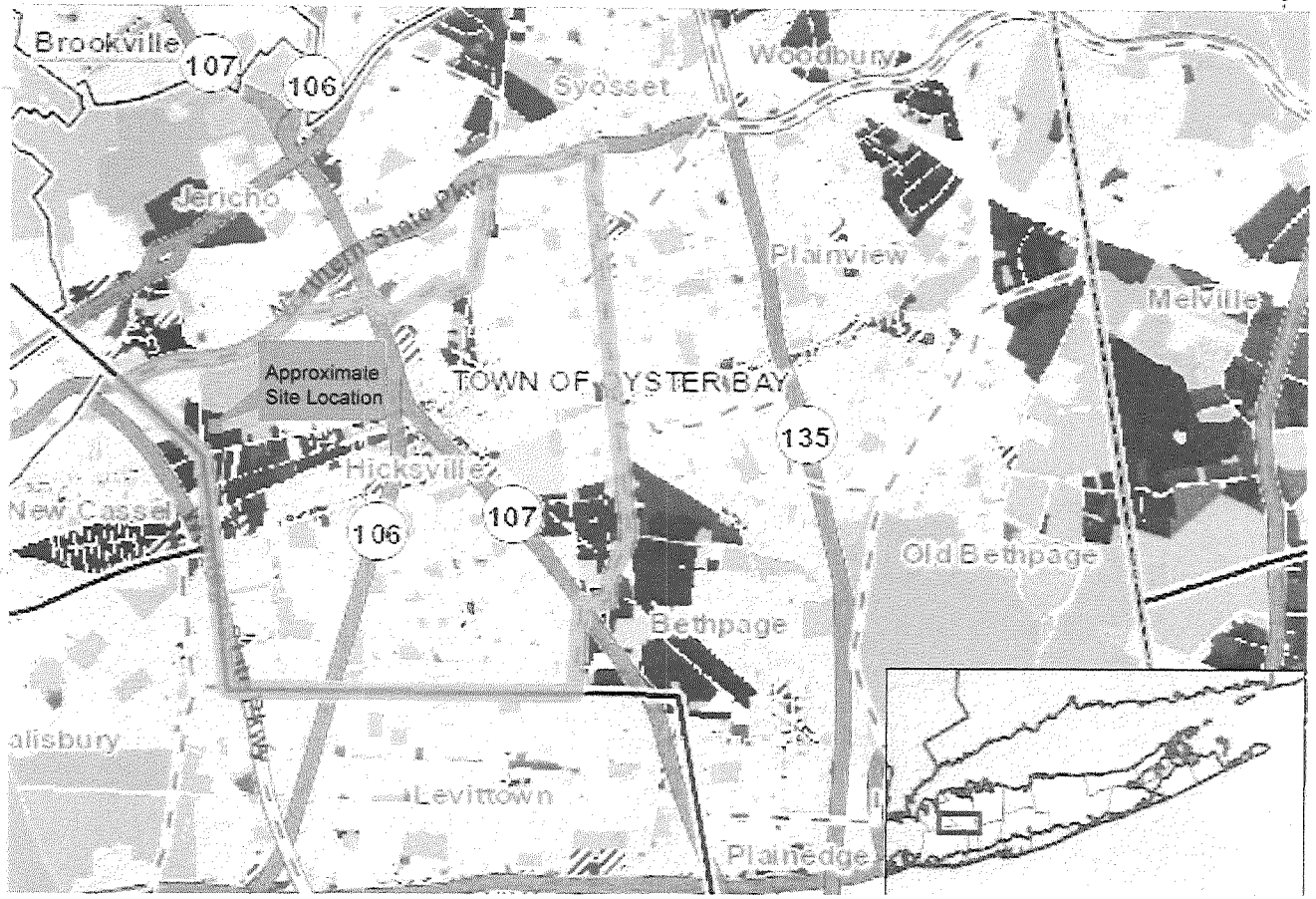
MALCOLM PIRNIE	**GTE Operations Support Incorporated** **Former Sylvania Electric Products Incorporated Facility** **Hicksville, New York**	**Reductive Dechlorination Pathway for Selected Chlorinated Solvents**	**FIGURE 5-1**

Hicksville

Legend

Land Use
- Agriculture
- Commercial
- Community Services
- Industrial
- Recreation & Open Space
- Residential
- Transportation
- Utilities
- Vacant
- Waste Handling & Management
- Unknown

- Parkway, major road
- Town/City
- Incorp. Village (underlined)
- Unincorporated village
- Lakes, ponds, etc.



This map was created using the Long Island Index interactive mapping application. Visit www.longislandindex.org for the latest information about data sources and notes about how the maps were developed.
Please contact info@longislandindex.org with questions or comments.
Developed by the CUNY Mapping Service at the Center for Urban Research.

LONG ISLAND INDEX

MALCOLM PIRNIE

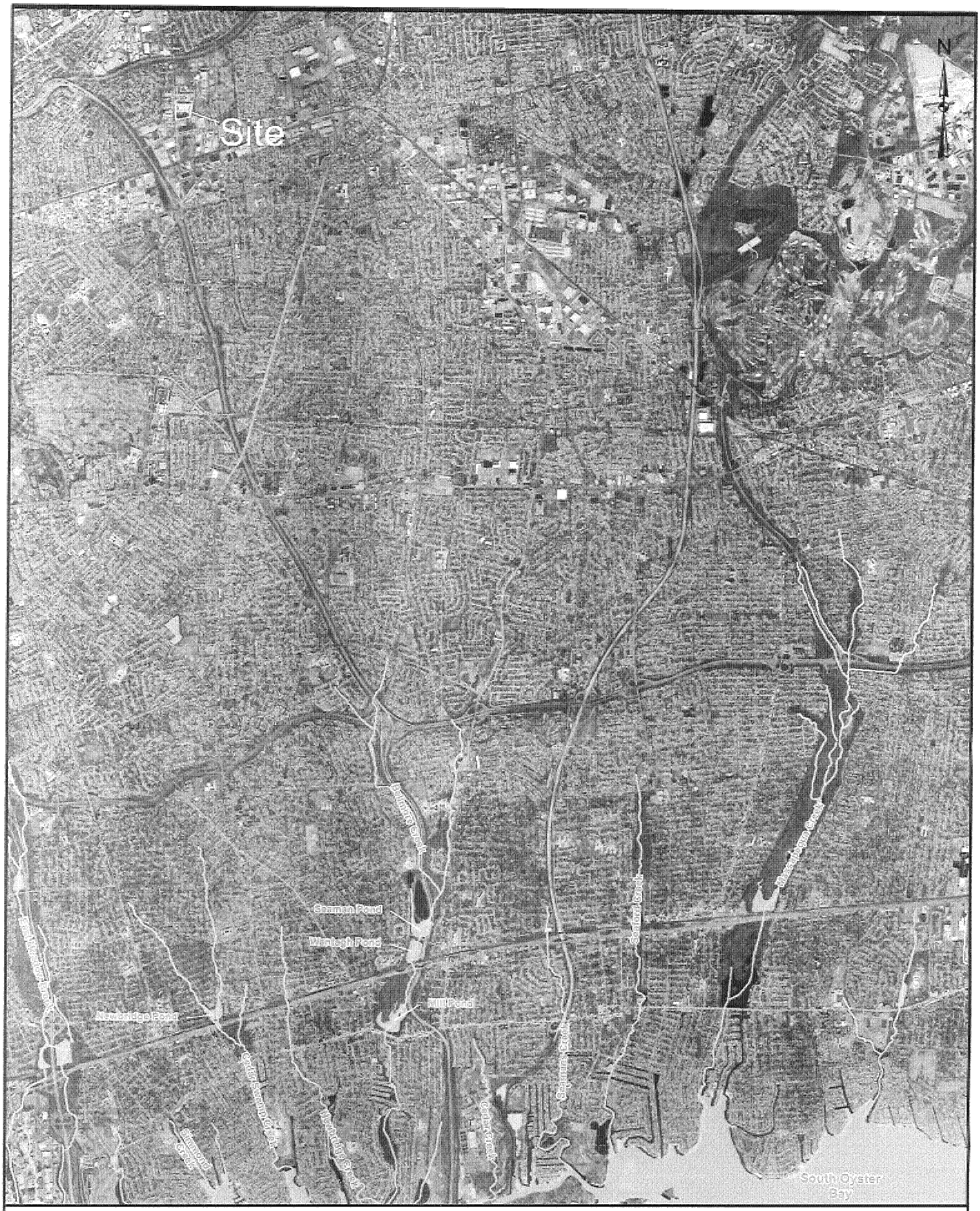
GTE Operations Support Incorporated
Former Sylvania Electric Products
Incorporated Facility
Hicksville, New York

Land Use

MALCOLM PIRNIE, INC.

DECEMBER 2010

FIGURE 6-1



Legend

SITE PROPERTY

WATER CLASSIFIED RIVERS/STREAMS

WATER CLASSIFIED WATER BODIES

SCALE IN MILES

0 0.5 1 2

NOTES

1. AERIAL IMAGE FROM ENVIRONMENTAL SYSTEMS RESEARCH INSTITUTE'S ONLINE WORLD MAP SERVICE.
2. WATER QUALITY DATA LAYERS FROM NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION.

MALCOLM PIRNIE

GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility
Hicksville, New York

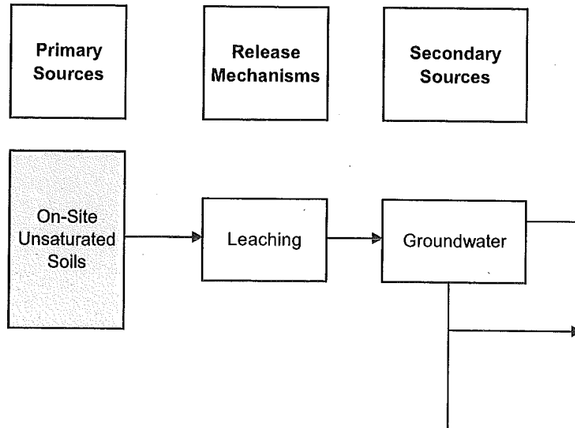
CLASSIFIED WATER BODIES

MALCOLM PIRNIE, INC.

DECEMBER 2010

FIGURE 6-2

J:\GTE_OSI\Hicksville\GROUNDWATER\GIS\MXDs\RI_report\Figure6_2.mxd



Exposure Media	Exposure Routes	Potential Human Receptors: Current: Off-Site Commercial/ Industrial Workers	Current: Off-Site Residents	Current: Construction/ Utility Workers	Current: Recreational Users	Future: On-Site and Off-Site Commercial/ Industrial Workers	Future: On-Site and Off-Site Residents	Future: Construction/ Utility Workers	Future: Recreational Users
Groundwater	Ingestion					⊕	⊕		
	Dermal Contact					⊕	⊕		
	Inhalation					⊕	⊕		
Indoor Air	Inhalation	⊕				⊕	⊕		
Outdoor Air	Inhalation								
Surface Water	Ingestion								
	Dermal Contact								
	Inhalation								
	Consumption of Biota								
Sediment	Ingestion								
	Dermal Contact								
	Inhalation								
	Consumption of Biota								

LEGEND
→ = Chemical Migration Pathway
⊕ = Potentially Complete Exposure Pathway

MALCOLM PIRNIE

GTE Operations Support Incorporated
Former Sylvania Electric Products Incorporated Facility

CONCEPTUAL SITE EXPOSURE MODEL

January 2011

FIGURE 6-3

Legend

MUNICIPAL WELL LOCATION (APPROXIMATE)

SITE PROPERTY

SCALE IN FEET

0 300 600 1,200

NOTES

1. AERIAL IMAGE FROM ENVIRONMENTAL SYSTEMS RESEARCH INSTITUTE'S ONLINE WORLD MAP SERICE

J:\GTE_OS\Hicksville\GROUNDWATER\GIS\MXDs\RI_report\Figure6_4.mxd

MALCOLM PIRNIE

GTE Operations Support Incorporated
Former Sylvania Electric Products
Incorporated Facility
Hicksville, New York

MUNICIPAL WELL LOCATIONS

MALCOLM PIRNIE, INC.

DECEMBER 2010

FIGURE 6-4

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

A

APPENDIX

GREEN SEAL

Appendix A

Geologic Logs

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

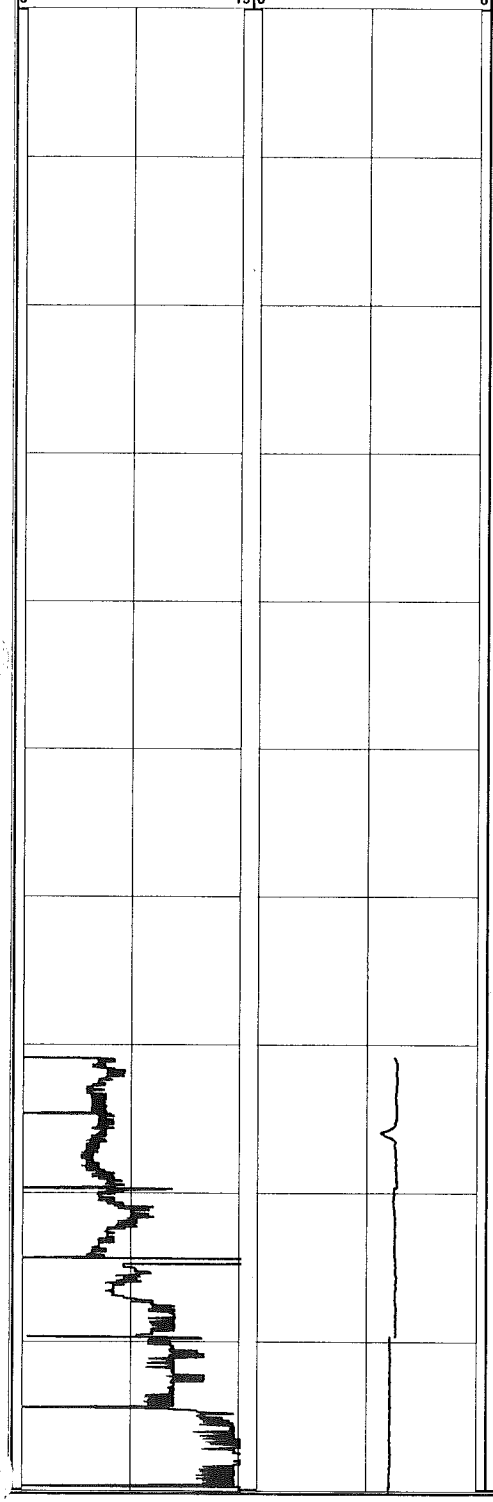
Boring ID:
P-C

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Wes Eicfeld
HELPER:	Karri Carley

START DATE: June 9, 2003
END DATE: June 19, 2003
LOCATION: E of Cantiague Rock Rd, N of W John St, S of 70 Property, E of P-27
DATUM: Land Surface
HYDROGEOLOGIST: G. Ferguson/J. Hilton/J. Dekoskie

Total depth of Profile: 394.5 ft
Total depth of Boring: 350 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Well-graded SAND with some silt and clay; brown	SW		Hollow stem auger used from 0 to 10 ft
10				Begin mud rotary drilling at 10 ft
20	Well-graded SAND with some gravel; brown to tan	SW		Loss of ~200 gal drilling fluid.
30				Loss of ~200 gal drilling fluid.
40				
50				Loss of ~200 gal drilling fluid.
60				
70	Poorly-graded SAND (medium to coarse) with some gravel (fine); tan	SP		Begin profiling at 70.87 ft Trace mica
80				
90				

Boring ID:

MALCOLM PIRNIE, INC.

P-C

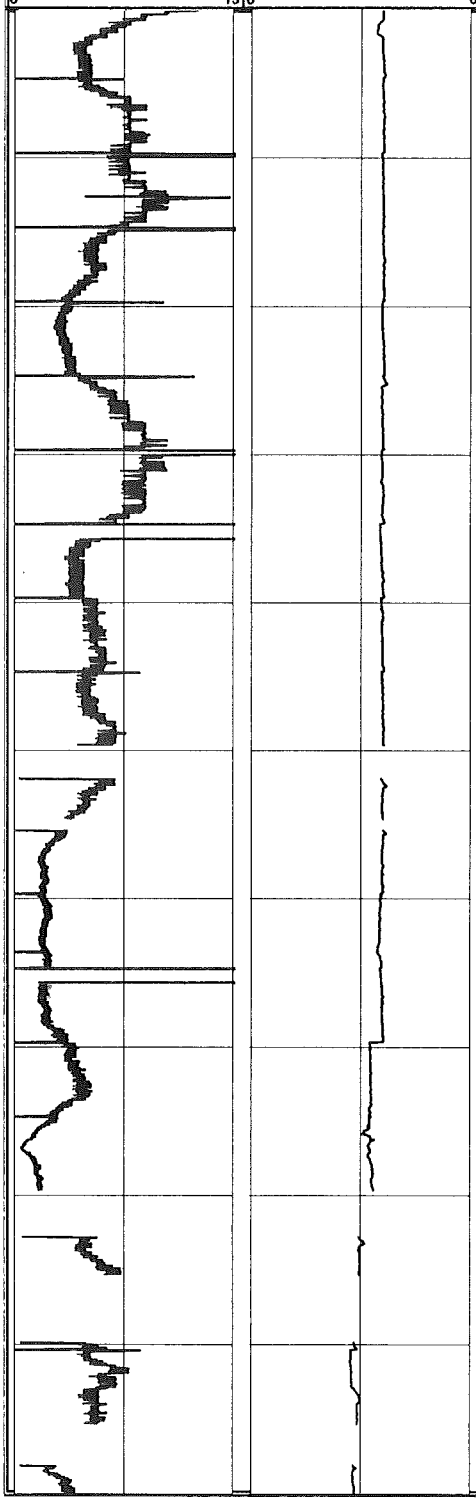
17-17 Route 208 North Fair Lawn, NJ 07401

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	June 9, 2003
JOB NUMBER:	4563001	END DATE:	June 19, 2003
DRILLING FIRM:	CT&E	LOCATION:	E of Cantiague Rock Rd, N of W John
DRILLING METHOD:	Mud Rotary		of 70 Property, E of P-27
DRILLER:	Wes Eicfeld	DATUM:	Land Surface
HELPER:	Karri Carley	HYDROGEOLOGIST:	G. Ferguson/J. Hilton/J. Dekoskie

Total depth of Profile: 394.5 ft

Total depth of Boring: 350 ft

GEOLOGIC INFORMATION



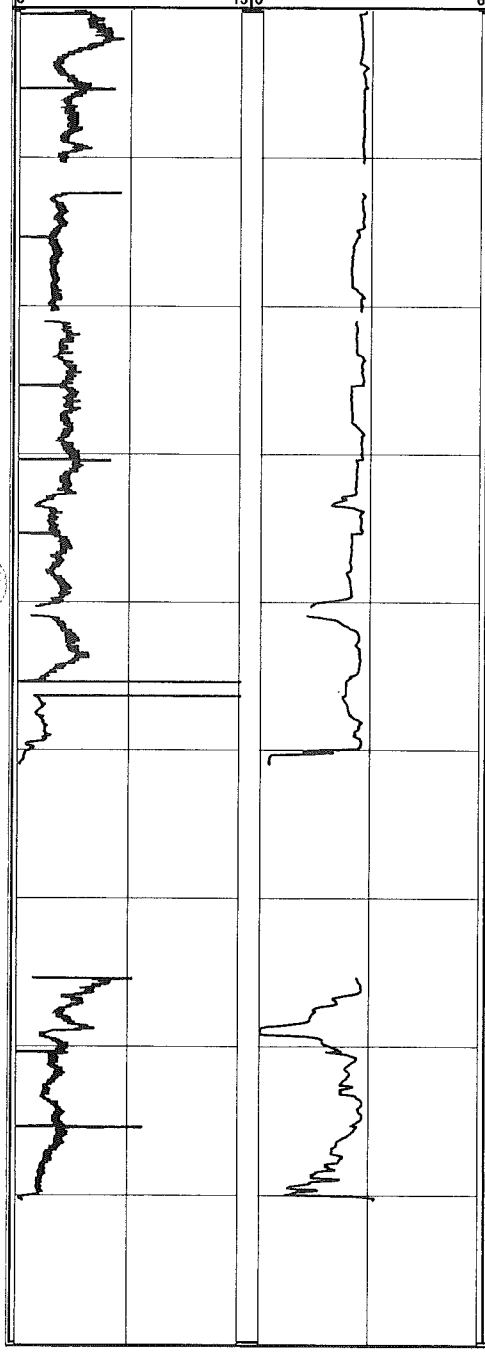
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100	Well-graded SAND with trace gravel (fine); tan	SW		Trace lignite. Slight loss of drilling fluids
				Trace lignite
110				
				Trace mica
120				Gravel from 123 to 135 ft.
	Well-graded SAND and GRAVEL (fine); tan	SW-GP		
130				
140				
150				Profile data gaps due to poor KPRO equilibration
	Well-graded SAND with little gravel (fine); tan	SW		Trace mica
160				
170				
180				Profile data gap due to poor KPRO equilibration
	Poorly-graded GRAVEL (fine) with trace sand (medium); tan	GP		Profile data gap due to equipment problems
190				Profile data gap due to poor KPRO equilibration
	Poorly-graded SAND (fine to medium) with trace gravel (fine); tan to brown	SP		Micaceous

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-C

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	June 9, 2003
JOB NUMBER:	4563001	END DATE:	June 19, 2003
DRILLING FIRM:	CT&E	LOCATION:	E of Cantiague Rock Rd, N of W John St, S of 70 Property, E of P-27
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Wes Eicfeld	HYDROGEOLOGIST:	G. Ferguson/J. Hilton/J. Dekoskie
HELPER:	Karri Carley		
Total depth of Profile:	394.5 ft	Total depth of Boring:	350 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200				
210				Profile data gap due to poor KPRO equilibration
220				
230				Micaceous
	Poorly-graded SAND (fine to medium); light tan, white, and yellow	SP		Iron stained sediments from 245 to 250 ft
240				Profile data gap due to poor KPRO equilibration
250	CLAY with silt; light gray to white	CL		Profiler refusal at 250.1 ft, no penetration rate or IK data from 250.95 to 265.36 ft due to drilling activities
	Poorly-graded SAND (fine) with silt and clay	SM		
260	Poorly-graded SAND (fine); light gray	SP		
	Poorly-graded SAND (fine) and SILT; light brown	SM		Iron stained sediments from 275 to 280 ft
270				Trace organic material
	Poorly-graded SAND (fine to medium); yellow brown	SP		
280	CLAY; whitish-gray to brown-gray	CL		Profiler refusal at 280.3 ft, no penetration rate or IK data from 280.3 to 304.75 ft due to drilling activities

Boring ID:

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

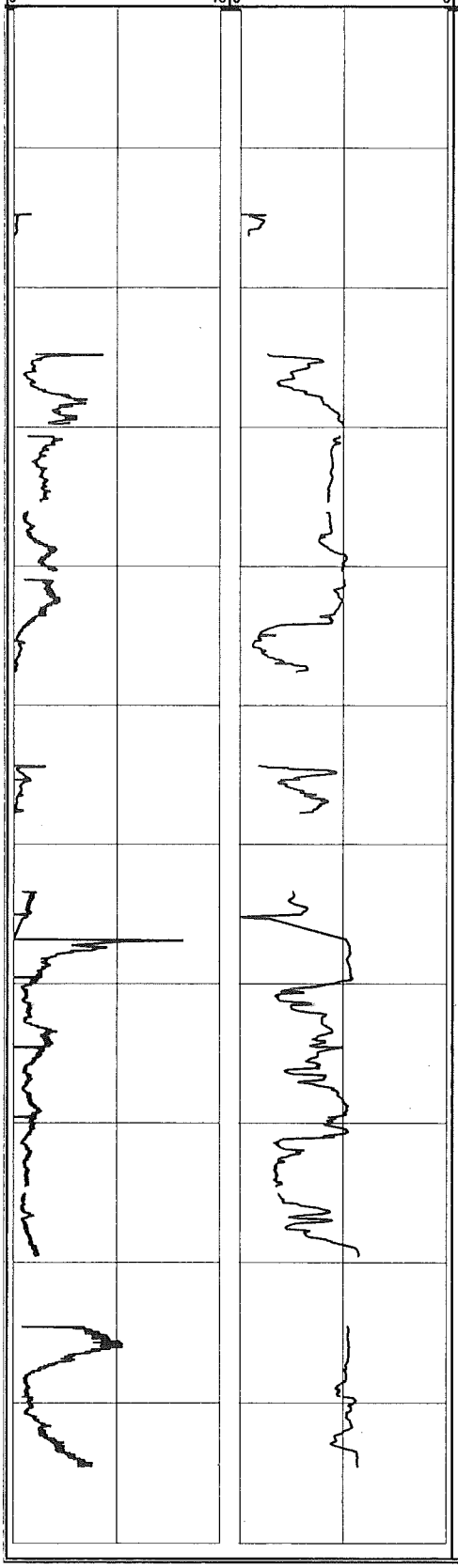
P-C

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	June 9, 2003
JOB NUMBER:	4563001	END DATE:	June 19, 2003
DRILLING FIRM:	CT&E	LOCATION:	E of Cantiague Rock Rd, N of W John St, S of 70 Property, E of P-27
DRILLING METHOD:	Mud Rotary		
DRILLER:	Wes Eicfeld	DATUM:	Land Surface
HELPER:	Karri Carley	HYDROGEOLOGIST:	G. Ferguson/J. Hilton/J. Dekoskie

Total depth of Profile: 394.5 ft

Total depth of Boring: 350 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
290				
300	Poorly-graded SAND (fine); brown	SP		
	CLAY; dark brown	CL		Lignite and organic material
310	Poorly-graded SAND (fine to medium); white to gray	SP		Profiler refusal at 306.2 ft, no penetration rate or IK data from 306.2 to 314.76 ft due to drilling activities
320				
330	Well-graded SAND (fine to coarse) with trace gravel (fine); white to gray	SW		Profile data gap due to poor KPRO equilibration
	Well-graded SAND (fine to coarse) and GRAVEL (fine); white to gray	SW-GP		Profiler refusals at 337.56 ft and 347.72 ft, no penetration rate or IK data from 337.56 to 344.35 ft and from 347.72 to 353.4 ft due to drilling activities
340	Poorly-graded SAND (medium to coarse); white to gray	SP		
	Well-graded SAND (fine to coarse), trace gravel (fine); white to gray	SW		End of boring at 350 ft
350				
360				
370				
380				Profile data gap due to equipment problems
390				End of profile at 394.5 feet
400				

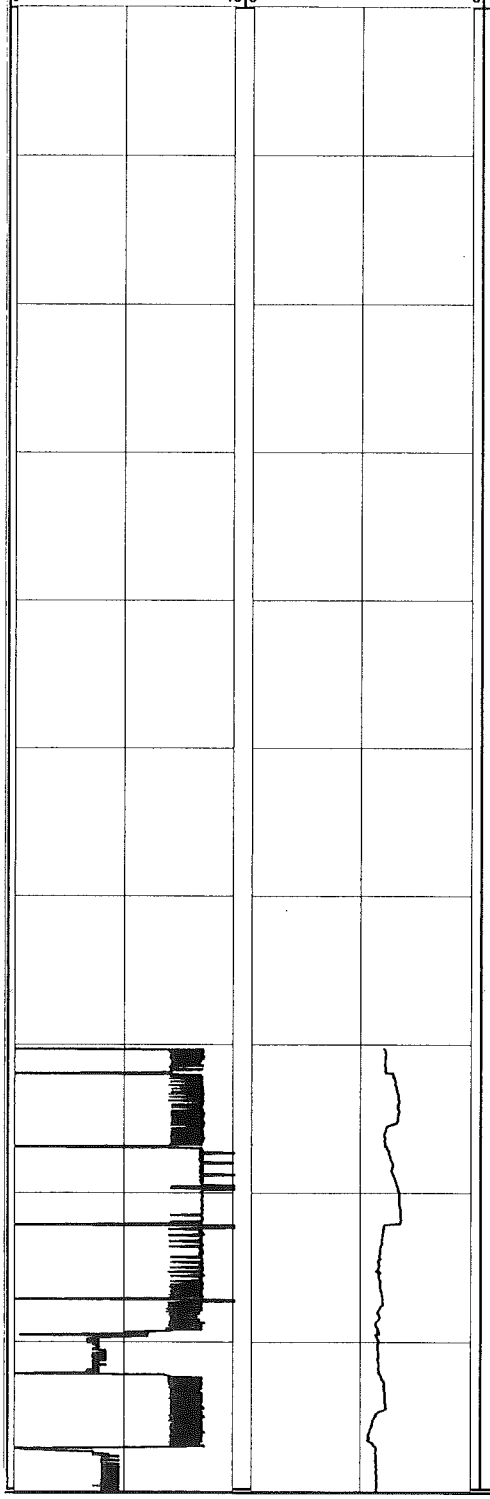
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-D**

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 27, 2003
JOB NUMBER:	4563001	END DATE:	June 4, 2003
DRILLING FIRM:	CT&E	LOCATION:	E of Cantiague Rock Rd, N of W John St, S
DRILLING METHOD:	Mud Rotary	WEATHER:	of 70 Property, E of P-11
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	John Hilton

Total depth of Profile: 351.95 ft
Total depth of Boring: 315 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Well-graded SAND and GRAVEL	SW-GW		Hollow stem auger used from 0 to 8 ft. Begin mud rotary drilling at 8 ft.
10				
	Poorly-graded GRAVEL (fine) with some sand (fine to medium); brown	GP		
20				
	Poorly-graded GRAVEL (coarse)	GP		
30	Poorly-graded SAND (medium to coarse) with trace silt; light to medium brown	SP		
40				Lost circulation of drilling fluids from 45 to 65 ft, no recovery of cuttings, drilling character indicative of sand
50				
60				
	Poorly-graded SAND (medium to coarse), light brown	SP		
70				Begin Profiling at 70.2 ft
				Lost circulation of drilling fluids from 75 to 95 ft, no recovery of cuttings
80				
90				
	Poorly-graded SAND (fine to medium) with trace gravel; light tan to brown	SP		

Boring ID:

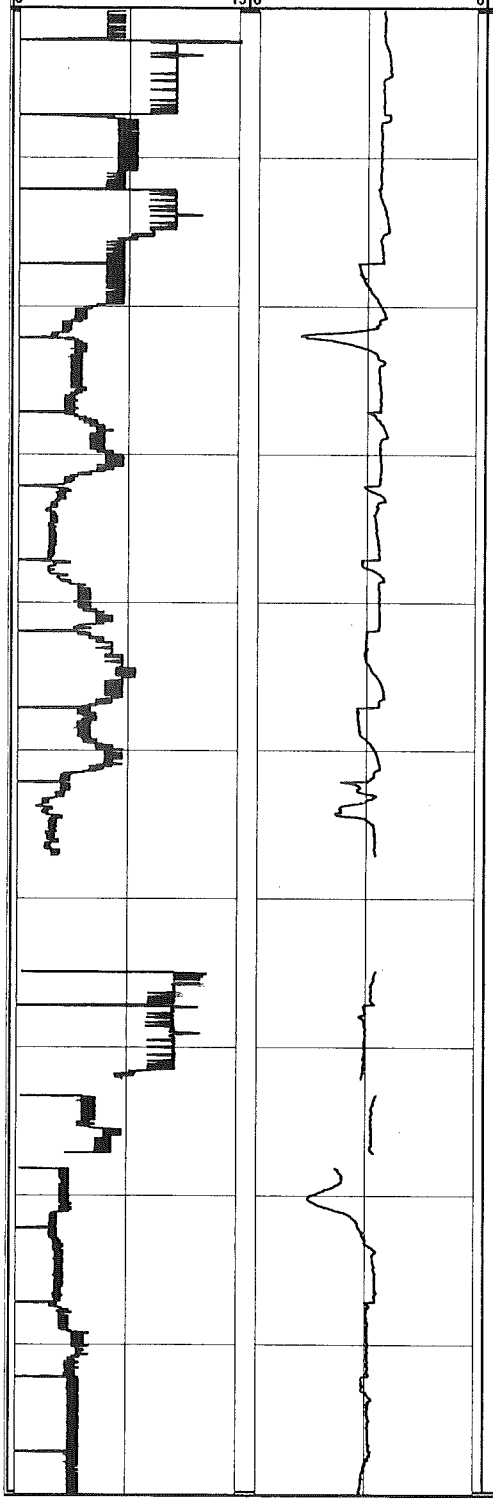
MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

P-D

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 27, 2003
JOB NUMBER:	4563001	END DATE:	June 4, 2003
DRILLING FIRM:	CT&E	LOCATION:	E of Cantiague Rock Rd, N of W John
DRILLING METHOD:	Mud Rotary	WEATHER:	of 70 Property, E of P-11
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	John Hilton
Total depth of Profile:	351.95 ft	Total depth of Boring:	315 ft

GEOLOGIC INFORMATION



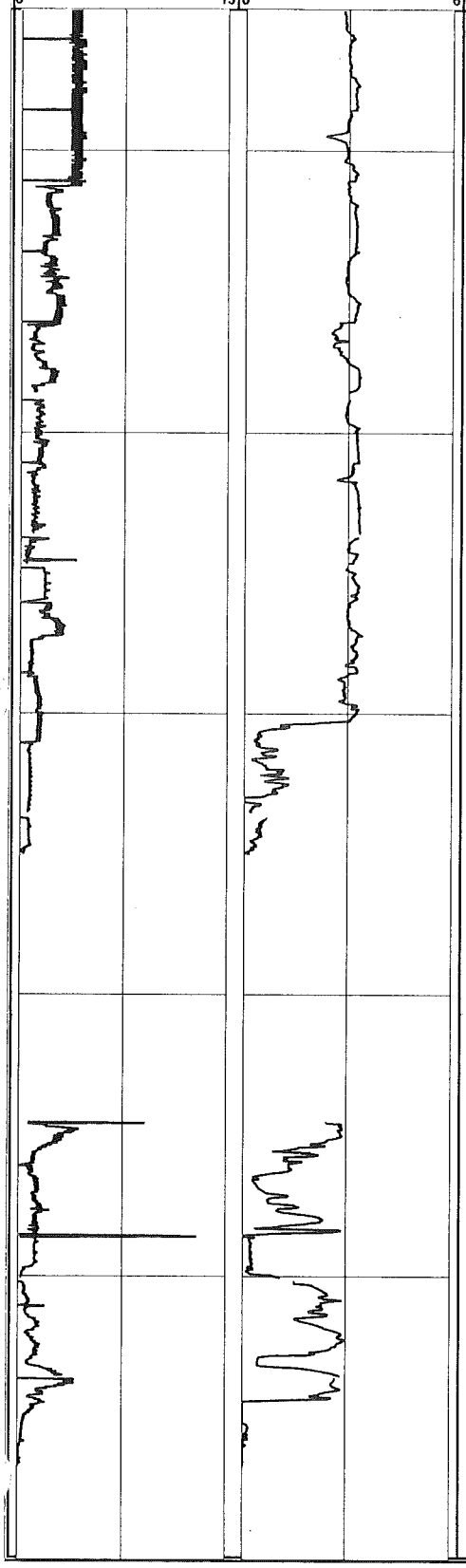
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100		SP		
110				Micaceous
120				
130	Poorly-graded SAND (medium) with trace gravel (fine), light tan to white	SP		
140				Bad IK and drive rate data 141 ft, malfunctioning reed valve
150	Poorly-graded SAND (coarse) and GRAVEL (fine); white	SP-GP		
160	Poorly-graded SAND (medium) with some gravel; light tan to brown	SP		No IK data 157.05 - 164.88 ft due to malfunctioning Profiling equipment Lost circulation of drilling fluids from 160 to 180 ft, no recovery of cuttings
170				Profile data gaps due to poor KPRO equilibration
180	Poorly-graded SAND (medium to coarse) with trace gravel (fine); light tan to brown	SP		
190				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-D**

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 27, 2003
JOB NUMBER:	4563001	END DATE:	June 4, 2003
DRILLING FIRM:	CT&E	LOCATION:	E of Cantiague Rock Rd, N of W John St, S
DRILLING METHOD:	Mud Rotary	WEATHER:	of 70 Property, E of P-11
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	John Hilton
Total depth of Profile:	351.95 ft	Total depth of Boring:	315 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	Poorly-graded SAND (medium to coarse) with little gravel (fine); light tan to white	SP		
210				
220	Poorly-graded SAND (fine to medium); light tan to white	SP		
230				
240				Profiler refusal at 238 ft Begin profiler advance at 239.5 ft
250	SAND and SILT	SM-ML		Lost circulation of drilling fluids, no recovery of cuttings from 250 to 280 ft. Log is based on drilling characteristics, penetration rate and IK data.
260	SAND and SILT with some clay	SM-ML		Profiler refusal at 259.97 ft, no penetration rate or IK data from 259.97 to 297.06 ft due to drilling activities
270				
280				
	CLAY and SILT with some sand	CL- ML		
290	SAND and SILT with some clay	SM-ML		
300	CLAY and SILT with some sand	CL- ML		Profiler refusal at 303.3 ft, no penetration rate or IK data from 303.3 to 313.91 ft due to drilling activities

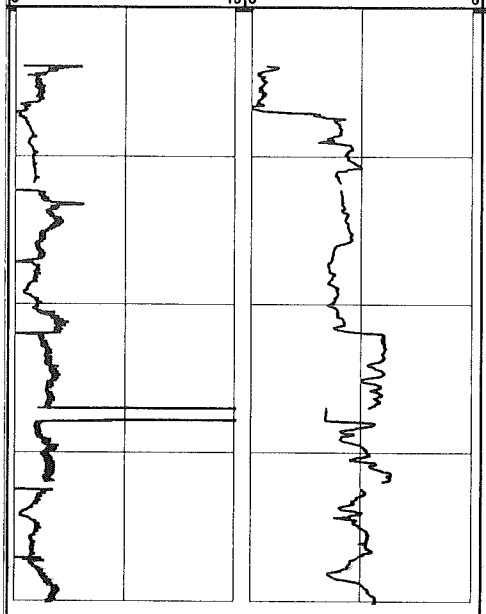
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-D

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 27, 2003
JOB NUMBER:	4563001	END DATE:	June 4, 2003
DRILLING FIRM:	CT&E	LOCATION:	E of Cantiague Rock Rd, N of W John St, S
DRILLING METHOD:	Mud Rotary	WEATHER:	of 70 Property, E of P-11
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	John Hilton

Total depth of Profile: 351.95 ft
Total depth of Boring: 315 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
310	SILT and SAND	ML-SM		End of boring 315 ft
320				
330				
340				Profile data gap due to poor KPRO equilibration
350				End of profile at 351.95 ft bgs

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

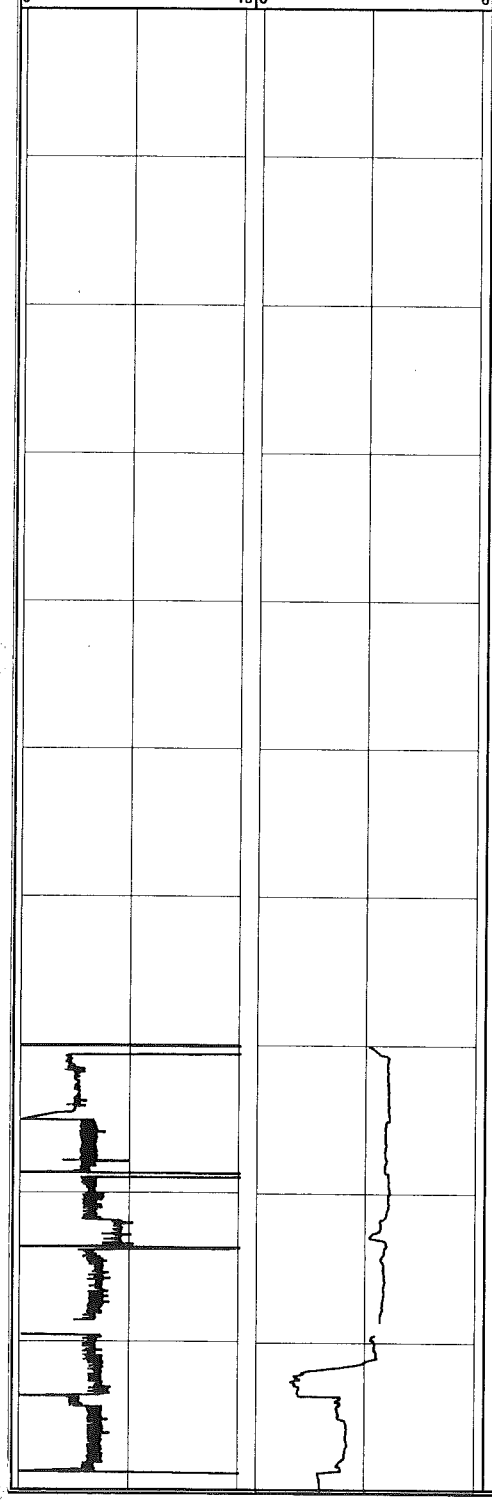
Boring ID:
P-E

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Wes Eicfeld
HELPER:	Karri Carley

START DATE: May 14, 2003
END DATE: May 22, 2003
LOCATION: N of W John St, on E side of Cantiague Rock Rd, South of 70 Property
DATUM: Land Surface
HYDROGEOLOGIST: Garrett Ferguson

Total depth of Profile: 332.65 ft
Total depth of Boring: 310 ft

GEOLOGIC INFORMATION



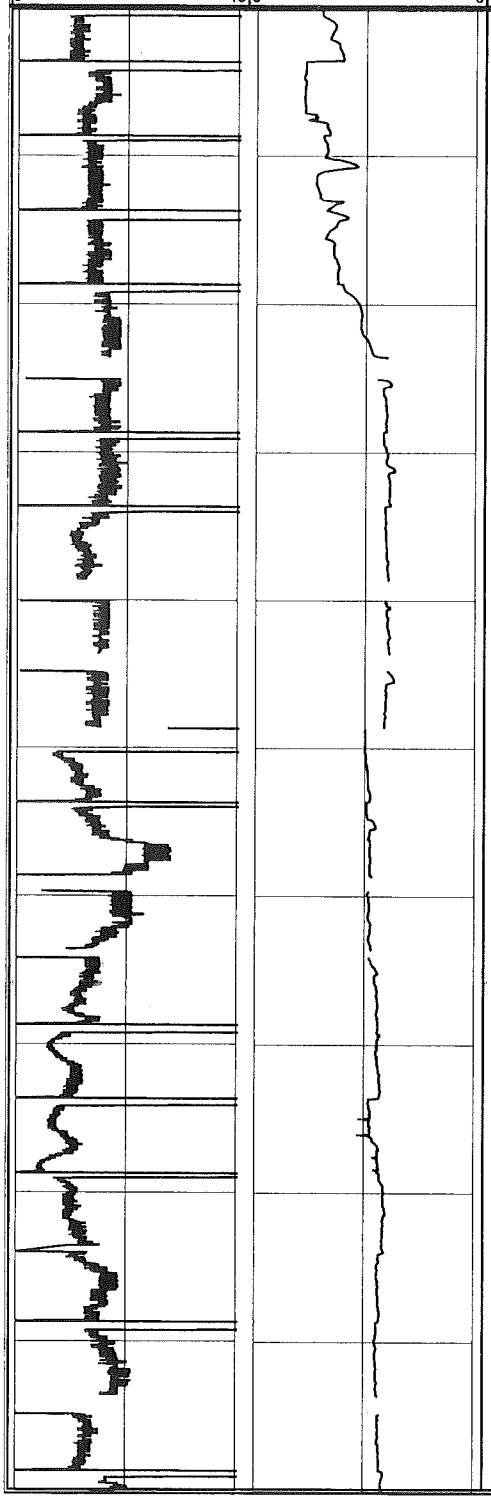
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Poorly-graded SAND (medium to coarse) and GRAVEL (fine to coarse); brown	SP-GP		
10	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); brown	SP-GP		Hollow stem auger used from 0 to 10 ft. Begin mud rotary drilling at 10 ft.
20	Well-graded SAND with gravel (fine); brown	SW		Micaceous
30				
40				
50	Poorly-graded SAND (medium to coarse) with gravel (fine); brown	SP		
60				
70	Well-graded SAND with trace silt, clay, and gravel; brown to grayish brown	SW		Silt and clay fraction diminishes with depth
80				
90	Poorly-graded SAND (fine) with trace silt; brown	SP		Profile data gap due to poor KPRO equilibration
	Well-graded SAND with trace gravel (fine), and silt; brown	SP		Micaceous

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-E**

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 14, 2003
JOB NUMBER:	4563001	END DATE:	May 22, 2003
DRILLING FIRM:	CT&E	LOCATION:	N of W John St, on E side of Cantiag Rock Rd, South of 70 Property
DRILLING METHOD:	Mud Rotary		
DRILLER:	Wes Eicfeld	DATUM:	Land Surface
HELPER:	Karri Carley	HYDROGEOLOGIST:	Garrett Ferguson
Total depth of Profile:	332.85 ft	Total depth of Boring:	310 ft

GEOLOGIC INFORMATION



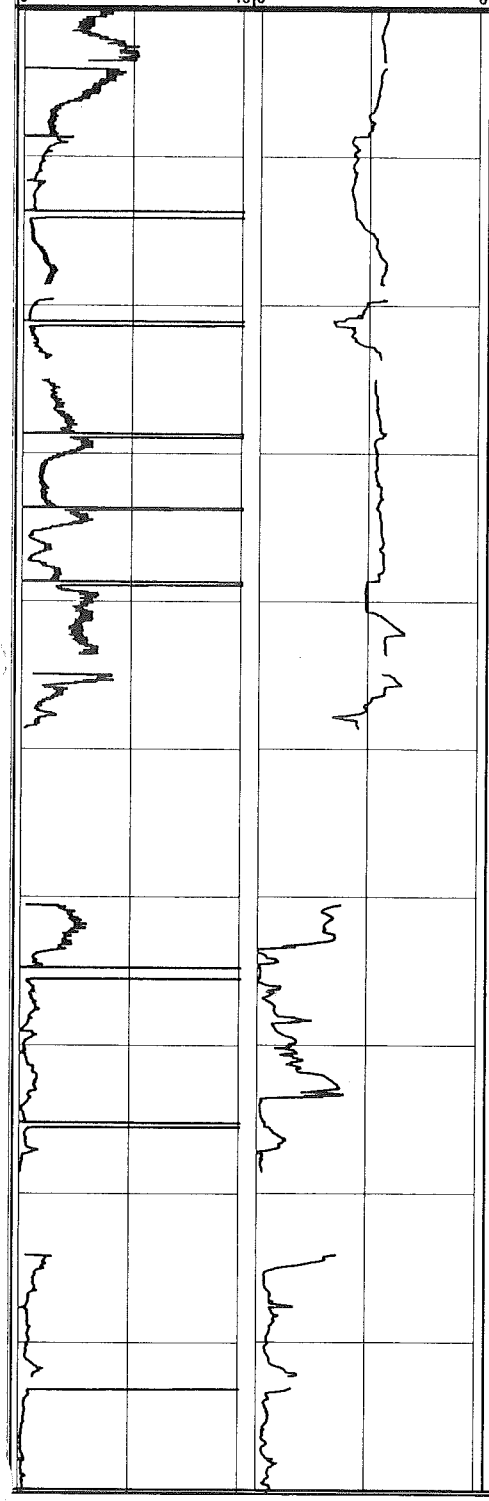
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100		SP		Micaceous
110	Poorly-graded SAND (fine to medium); brown to grayish brown	SP		Trace mica
	Poorly-graded SAND (fine) with trace silt; brown to grayish brown	SP		Trace mica
120				Profile data gap due to poor KPRO equilibration
	Poorly-graded SAND (fine to medium); brown	SP		Micaceous
130				
140				Profile data gaps due to poor K equilibration
	Well-graded SAND (fine to coarse); brown	SW		
150	Well-graded SAND with trace gravel (fine); brown	SW		
160	Poorly-graded SAND (fine to medium); brown	SP		
170	Poorly-graded SAND (fine, trace medium and coarse) with trace gravel (fine); brown	SP		
180	Poorly-graded SAND (fine, trace medium to coarse); brown	SP		
	Well-graded SAND (fine to coarse); brown	SW		
190	Well-graded SAND with little gravel (fine); brown	SW		
	Well-graded SAND with trace gravel (fine); brown	SW		Profile data gap due to poor KPRO equilibration

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-E

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 14, 2003
JOB NUMBER:	4563001	END DATE:	May 22, 2003
DRILLING FIRM:	CT&E	LOCATION:	N of W John St, on E side of Cantiague Rock Rd, South of 70 Property
DRILLING METHOD:	Mud Rotary		
DRILLER:	Wes Eicfeld	DATUM:	Land Surface
HELPER:	Karri Carley	HYDROGEOLOGIST:	Garrett Ferguson
Total depth of Profile:	332.85 ft	Total depth of Boring:	310 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	Well-graded SAND (fine to coarse); brown	SW		
210				
	Poorly-graded SAND (fine) with trace gravel; brown	SP		
220	Poorly-graded SAND (fine to medium) with trace gravel (fine); brown to orange	SP		Profile data gaps due to poor KPRO equilibration
230	Poorly-graded SAND (fine); orange	SP		
	Poorly-graded SAND (fine to medium); orange	SP		
240	Poorly-graded SAND (fine to medium) with some clay; orange	SC		
				Profiler refusal at 248.57 ft, no penetration rate or IK data from 248.57 to 260.52 ft due to drilling activities
250	Well-graded SAND (fine to coarse) and CLAY; orange	SC-CL		
260	Poorly-graded SAND (fine to medium) and CLAY; gray to black	SC-CL		
270				
				Profiler refusal at 278.5 ft, no penetration rate or IK data from 278.5 to 284.12 ft due to drilling activities
280	Poorly-graded SAND (fine to medium) with some clay and silt; gray	SC		
290				

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

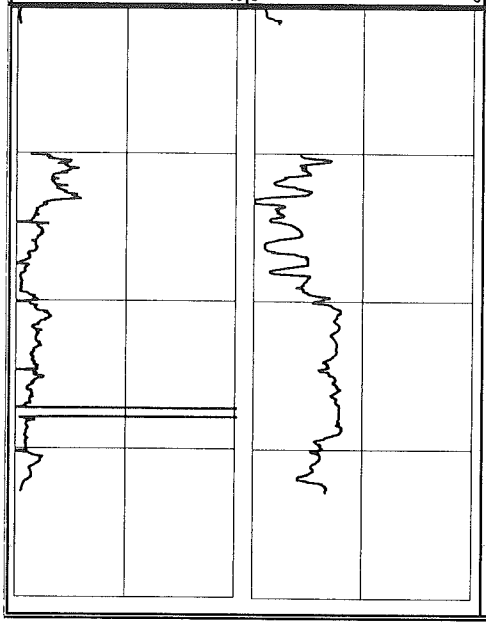
Boring ID: **P-E**

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 14, 2003
JOB NUMBER:	4563001	END DATE:	May 22, 2003
DRILLING FIRM:	CT&E	LOCATION:	N of W John St, on E side of Cantiague Rock Rd, South of 70 Property
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Wes Eicfeld	HYDROGEOLOGIST:	Garrett Ferguson
HELPER:	Karri Carley		

Total depth of Profile: 332.85 ft

Total depth of Boring: 310 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300		SC		Profiler refusal at 301.23 ft, no penetration rate or IK data from 301.23 to 310.05 ft due to drilling activities
				End mud rotary boring at 310 ft
310				
320				
				Profiler refusal at 332.85 ft
330				End of profile at 332.85 ft
340				

Boring ID:

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

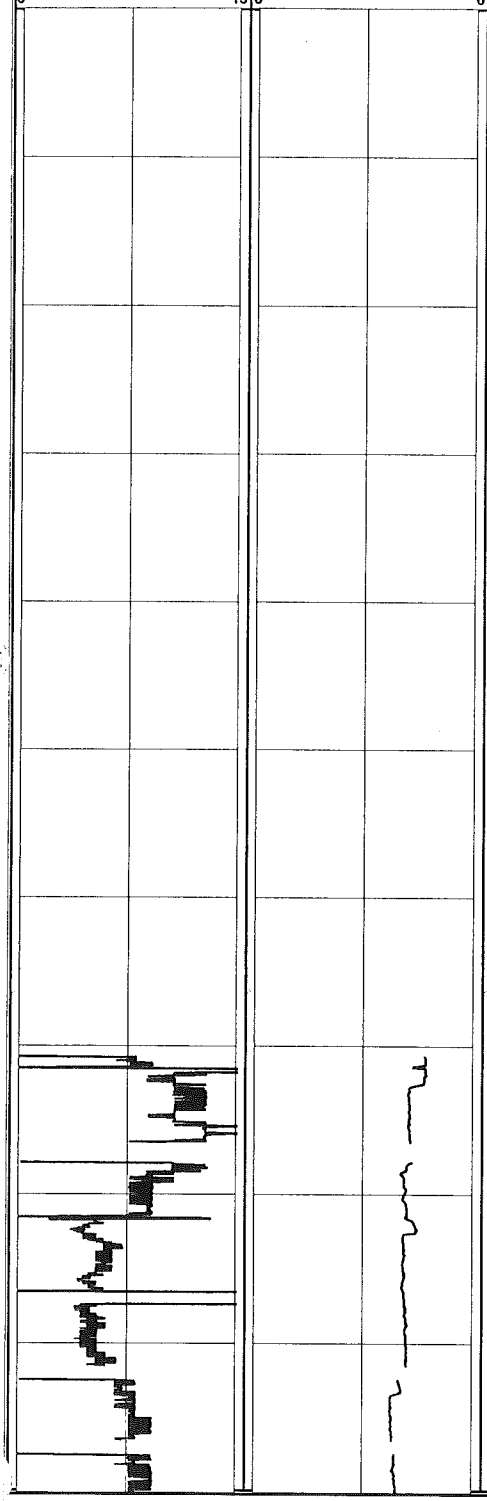
P-F

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	April 28, 2003
JOB NUMBER:	4563001	END DATE:	May 1, 2003
DRILLING FIRM:	CT&E	LOCATION:	E of Cantiague Rock Rd, N of W John St, on
DRILLING METHOD:	Mud Rotary	WEATHER:	Nassau Co driving range
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	John Hilton

Total depth of Profile: 170.87 ft

Total depth of Boring: 175 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Well-graded SAND and GRAVEL; light brown to tan	SW-GW		
40	Poorly-graded SAND (medium to coarse); brown	SP		
70	Well-graded SAND with trace silt and gravel; light brown	SW		Begin Profiling at 70.71 ft Gravel bed 71 - 72 ft bgs Gravel bed 77-78 ft bgs Gravel bed 81-82 ft bgs Profile data gaps due to poor KPRO equilibration
90	No geologic description recorded			

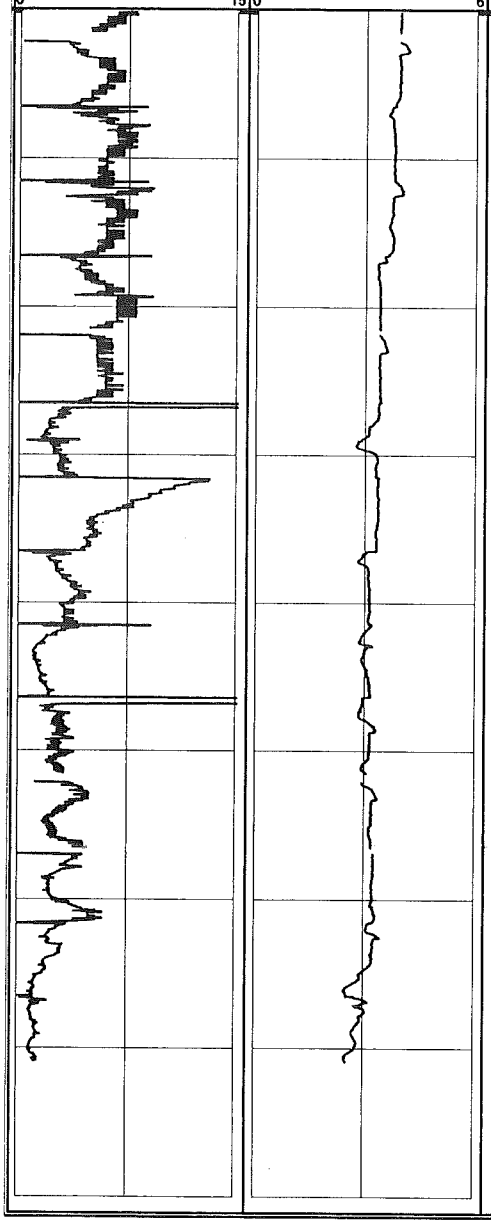
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-F

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	April 28, 2003
JOB NUMBER:	4563001	END DATE:	May 1, 2003
DRILLING FIRM:	CT&E	LOCATION:	E of Cantiague Rock Rd, N of W John St, on
DRILLING METHOD:	Mud Rotary	WEATHER:	Nassau Co driving range
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	John Hilton

Total depth of Profile: 170.87 ft
Total depth of Boring: 175 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100				Profile data gaps due to poor KPRO equilibration
110				
120				
130	GRAVEL			Description based on drilling characteristics
140	No geologic description recorded			
150				Profile data gaps due to poor KPRO equilibration
160				
170				End of profile at 170.87 ft. Profile rods broken, probe and some rods abandoned in hole.
180				End of mud rotary boring at 175 ft

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

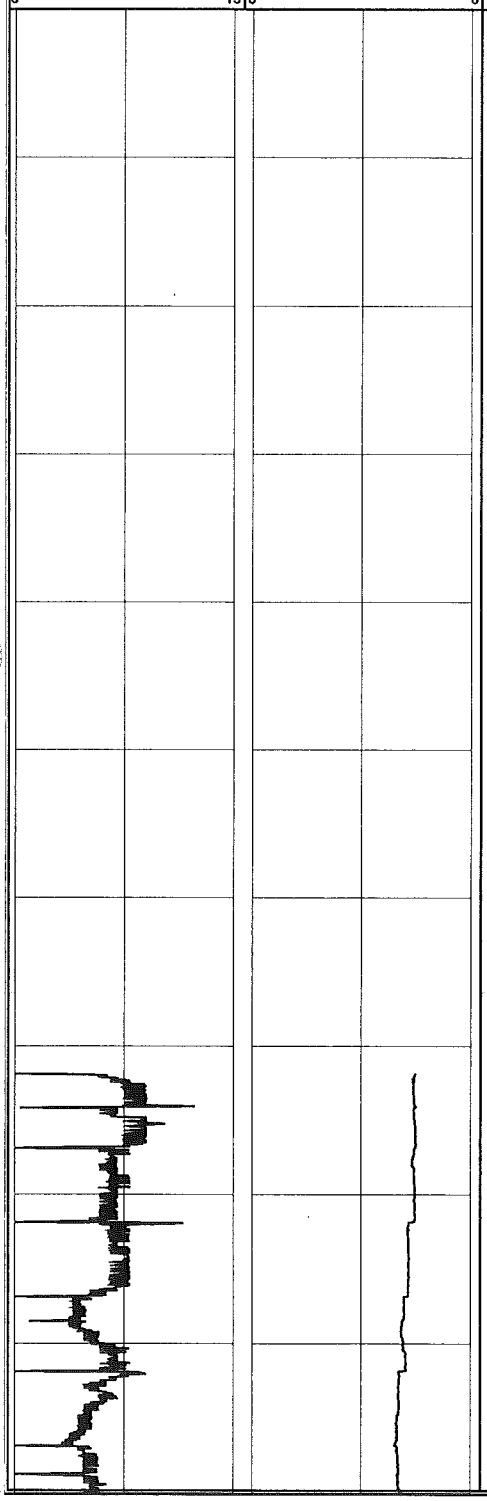
Boring ID: **P-H**

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	July 21, 2003
JOB NUMBER:	4563001	END DATE:	July 28, 2003
DRILLING FIRM:	CT&E	LOCATION:	E side of Cantiague Rock Rd, N of W John St, S of 70 property
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Bill Petley	HYDROGEOLOGIST:	Kevin Wheeler, Jon Turk
HELPER:	Kenny Heinz		

Total depth of Profile: 404.15 ft

Total depth of boring: 370 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Poorly-graded SAND (fine to medium) and GRAVEL (fine) with trace cobles; brown	SP-GP		
10				Hollow stem auger used from 0 to 14 ft. Begin mud rotary drilling at 14 ft.
	Poorly-graded SAND (fine to medium) with some gravel (fine)	SP		
20				
	Poorly-graded SAND (medium to coarse) with little gravel; light brown	SP		
30				Gravel fraction increases with depth
40				
	Poorly-graded SAND (fine to medium) and GRAVEL (fine); tan to light brown	SP-GP		
50				
	Poorly-graded SAND (fine to medium) with some to little gravel (fine); tan to light brown	SP		
60				
70	Poorly-graded SAND (medium to coarse) and GRAVEL (fine), trace clay; tan	SP-GP		Begin profiling at 71.86 ft
80	Poorly-graded SAND (fine to medium) with little clay; tan	SP		Thin brown clay lenses with lignite
90				

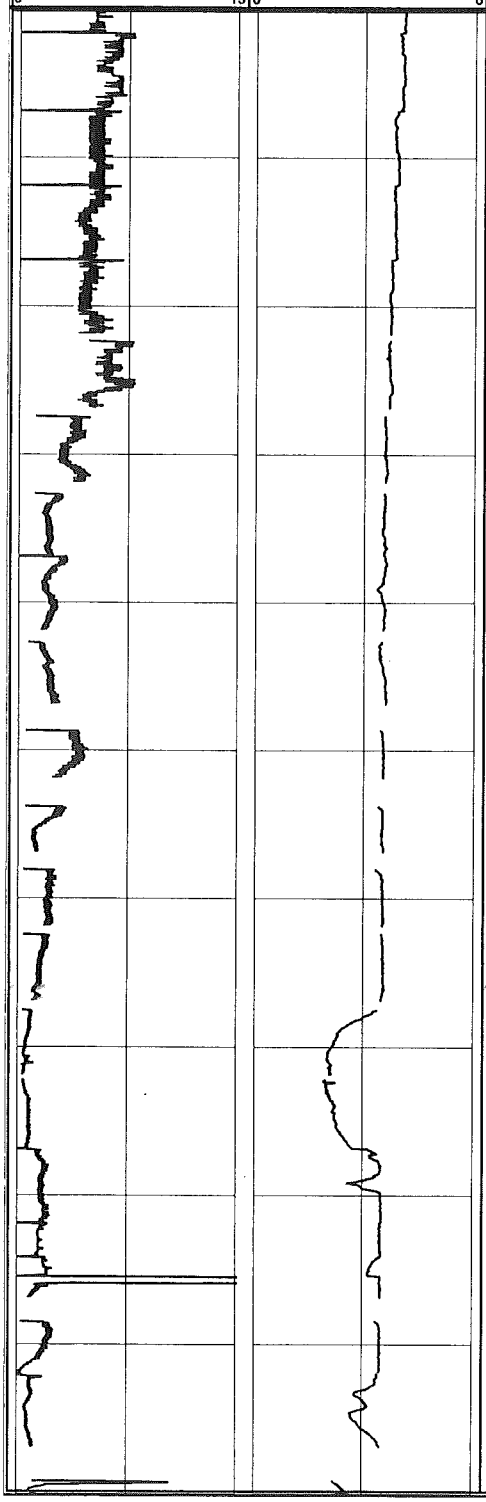
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-H

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	July 21, 2003
JOB NUMBER:	4563001	END DATE:	July 28, 2003
DRILLING FIRM:	CT&E	LOCATION:	E side of Cantiague Rock Rd, N of W St, S of 70 property
DRILLING METHOD:	Mud Rotary		
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Kenny Heinz	HYDROGEOLOGIST:	Kevin Wheeler, Jon Turk

Total depth of Profile: 404.15 ft
Total depth of boring: 370 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100		SP		Thin brown clay lenses with lignite
110				
120	Well-graded SAND with some to little gravel (fine); tan	SW		Profile data gaps due to poor KPRO equilibration
130				
140				Profile data gaps due to poor KPRO equilibration
	Well-graded SAND (fine to coarse) and GRAVEL (fine); tan	SW-GP		
150				
	Poorly-graded SAND (medium to coarse) with some gravel (fine); light brown to tan	SP		
160				Profile data gaps due to poor KPRO equilibration
170	Poorly-graded SAND (fine to medium); light brown	SP		
180	Poorly-graded SAND (fine to medium); tan	SP		
190				Profile data gaps due to poor KPRO equilibration
	Well graded SAND (fine to coarse) with some gravel (fine); tan	SW		

Boring ID:

MALCOLM PIRNIE, INC.

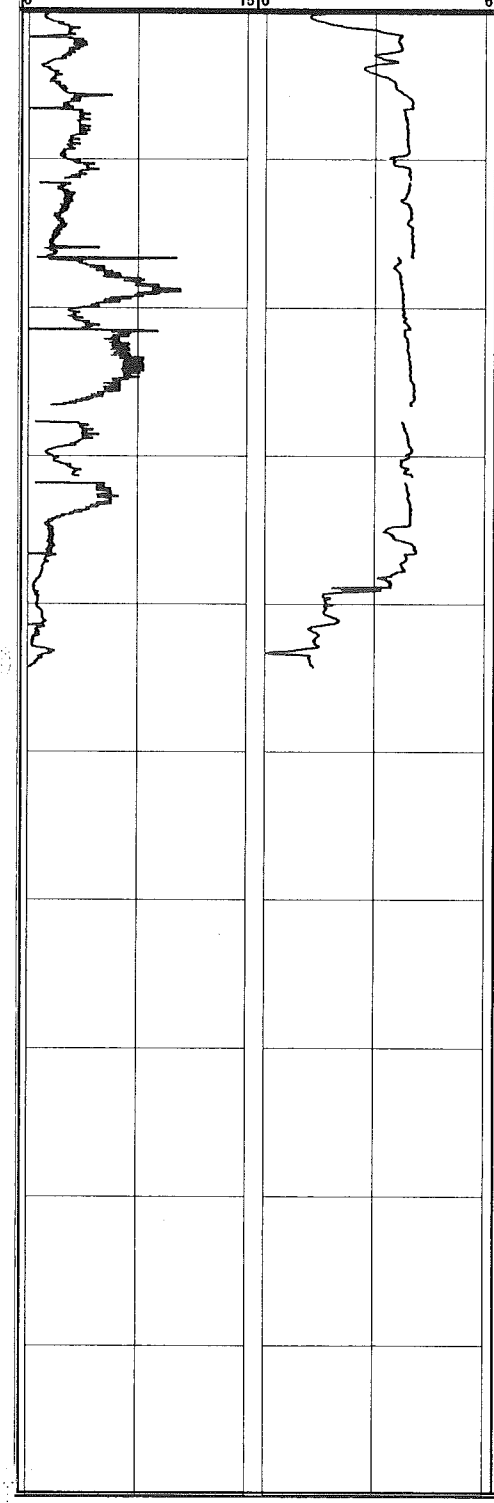
17-17 Route 208 North Fair Lawn, NJ 07401

P-H

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	July 21, 2003
JOB NUMBER:	4563001	END DATE:	July 28, 2003
DRILLING FIRM:	CT&E	LOCATION:	E side of Cantiague Rock Rd, N of W John St, S of 70 property
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Bill Petley	HYDROGEOLOGIST:	Kevin Wheeler, Jon Turk
HELPER:	Kenny Heinz		

Total depth of Profile: 404.15 ft

Total depth of boring: 370 ft



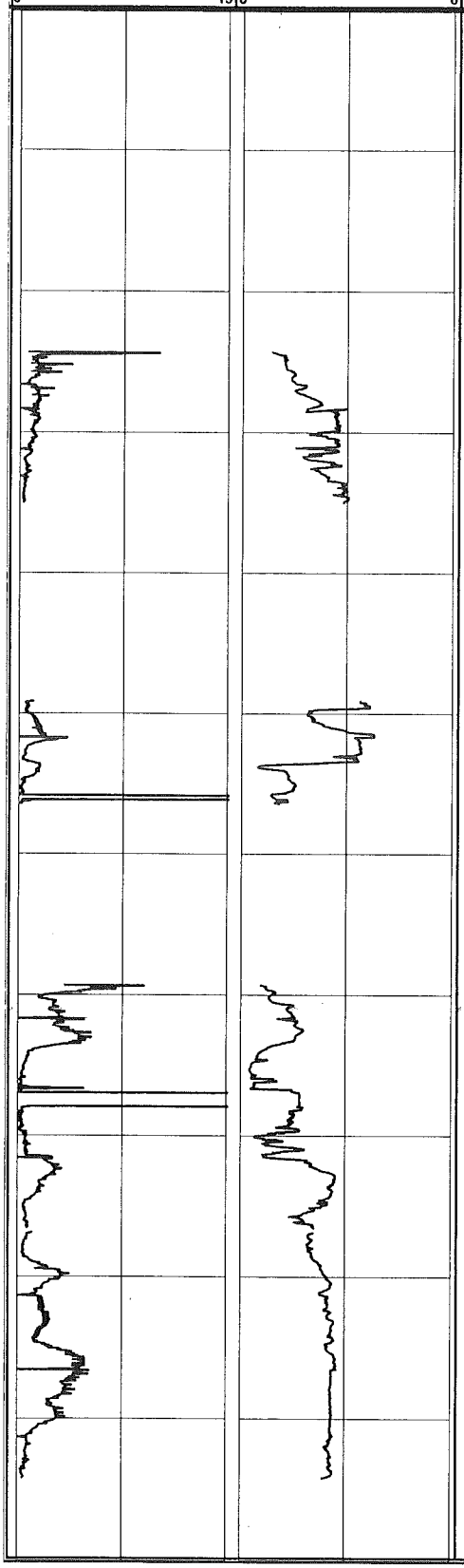
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	Poorly-graded SAND (medium to coarse) with trace gravel (fine); tan	SP		Poor Recovery of Cuttings
	Poorly-graded SAND (medium to coarse); tan	SP		
210	Poorly-graded SAND (fine to medium); tan	SP		Trace mica
220				Profile data gaps due to poor KPRO equilibration
	Poorly-graded SAND (fine) and GRAVEL (fine); light brown	SP-GP		
230	Poorly-graded SAND (coarse); light brown to tan	SP		Profile data gaps due to poor KPRO equilibration
	Poorly-graded SAND (fine to medium); tan	SP		
240	Silty SAND (fine) with little clay and trace gravel (fine); tan	SM		Hardpan present in cuttings Profiler refusal at 244.25 ft, no penetration rate or IK data from 244.25 to 324.31 ft due to drilling activities
250				Low recovery, trace mica
260				Trace hardpan in cuttings
	SILT and CLAY with trace sand (medium); tan	ML- CL		
270				Most cuttings pass through the strainer
	Silty CLAY with trace sand (fine to medium); tan	CL- ML		
280	Poorly-graded SAND (fine) and CLAY, some silt; tan	SC-CL		
	Well-graded SAND (fine to coarse) with trace gravel (fine), trace clay; tan	SW		
290				
	SILT and SAND; tan	ML-SM		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-H**

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	July 21, 2003
JOB NUMBER:	4563001	END DATE:	July 28, 2003
DRILLING FIRM:	CT&E	LOCATION:	E side of Cantiague Rock Rd, N of W John St, S of 70 property
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Bill Petley	HYDROGEOLOGIST:	Kevin Wheeler, Jon Turk
HELPER:	Kenny Heinz		
Total depth of Profile:	404.15 ft	Total depth of boring:	370 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300	CLAY with little silt; black	CL		Very firm, silt fraction increases with depth
310				
	CLAY and SAND (fine to coarse) with some gravel (fine); dark gray	CL- SP		
320	Poorly-graded GRAVEL (fine) with trace sand, trace clay	GP		
	Poorly-graded GRAVEL (fine) and CLAY, some silt and sand; black to gray	GC-CL		
330	CLAY with some sand (fine to medium); black to gray	CL		Most cuttings pass through the strainer Profiler refusal at 334.97 ft, no penetration rate or IK data from 334.97 to 349.11 ft due to drilling activities
340	Poorly-graded SAND (medium to coarse) and GRAVEL with some silt and clay	SM-GM		
	Poorly-graded SAND (medium to coarse) with trace gravel; tan	SP		
350				
	Poorly-graded SAND (fine) and CLAY, some silt; tan	SC-CL		Profiler refusal at 356.41 ft, no penetration rate or IK data from 356.41 to 369.3 ft due to drilling activities
360				
	Poorly-graded SAND (coarse) with trace gravel (fine); tan	SP		End of boring at 370 ft
370				
380				
390				
				End of profile at 404.15 ft
400				

Boring ID:

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

P-15

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 27, 2003
JOB NUMBER:	4563001	END DATE:	June 3, 2003
DRILLING FIRM:	CT&E	LOCATION:	N of W John St, E of Cantiague Rock Rd,
DRILLING METHOD:	Mud Rotary	WEATHER:	adjacent to Nassau Co driving range
DRILLER:	Wes Eicfeld	DATUM:	Land Surface
HELPER:	Karri Carly	HYDROGEOLOGIST:	Garrett Ferguson

Total depth of Profile: 339.2 ft

Total depth of Boring: 280 ft

GEOLOGIC INFORMATION						
Penetration Rate (ft/min) 0 – 15	Index of Hyd. Conductivity 0 – 6	Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
		0	Poorly-graded SAND (medium to coarse) and GRAVEL; dark brown	SP-GP		Hollow stem auger used from 0 to 10 ft. Begin mud rotary drilling at 10 ft
		10	Well-graded SAND (fine to coarse); tan	SW		
		20	Poorly-graded SAND (coarse) with gravel (fine); tan to light brown	SP-GP		
		30				Gravel fraction increases with depth
		40				
		50	Well-graded SAND (fine to coarse); tan	SW		
		60	Poorly-graded SAND (fine to medium); tan to gray	SP		
		70	Well-graded SAND (fine to coarse) with some gravel (fine); tan to gray	SW		Profile data gap due to poor KPRO equilibration
		80	Poorly-graded SAND (fine to medium) with trace gravel (fine); tan to gray	SP		
		90	Poorly-graded SAND (fine to medium) with trace gravel (fine); tan to gray	SP		

Boring ID:

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

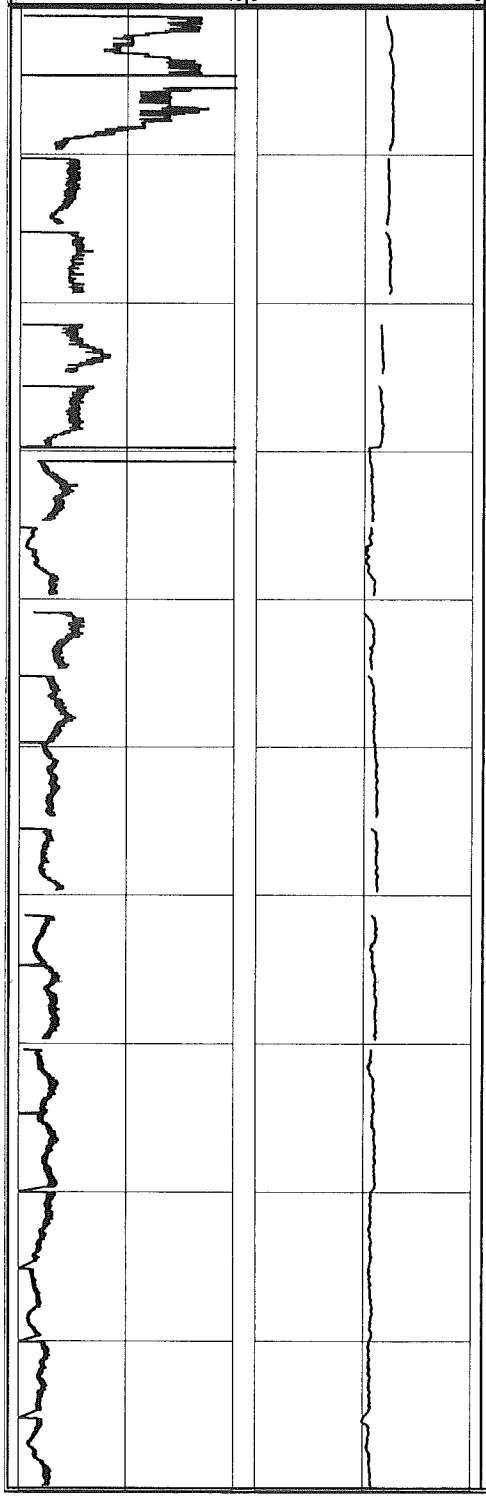
P-15

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 27, 2003
JOB NUMBER:	4563001	END DATE:	June 3, 2003
DRILLING FIRM:	CT&E	LOCATION:	N of W John St, E of Cantiague Rock I
DRILLING METHOD:	Mud Rotary	WEATHER:	adjacent to Nassau Co driving range
DRILLER:	Wes Eicfeld	DATUM:	Land Surface
HELPER:	Karri Carly	HYDROGEOLOGIST:	Garrett Ferguson

Total depth of Profile: 339.2 ft

Total depth of Boring: 280 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100		SP		
110				
120	Poorly-graded SAND (fine to medium); tan to gray	SP		Profile data gaps due to poor KPRO equilibration
130				
140				Profile data gaps due to poor KPRO equilibration
150	Poorly graded GRAVEL (fine) with some sand (fine to medium); tan to gray	GP		
160	Poorly-graded SAND (fine to medium); tan to gray	SP		Profile data gaps due to poor KPRO equilibration
170				
180				
190				

Boring ID:

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

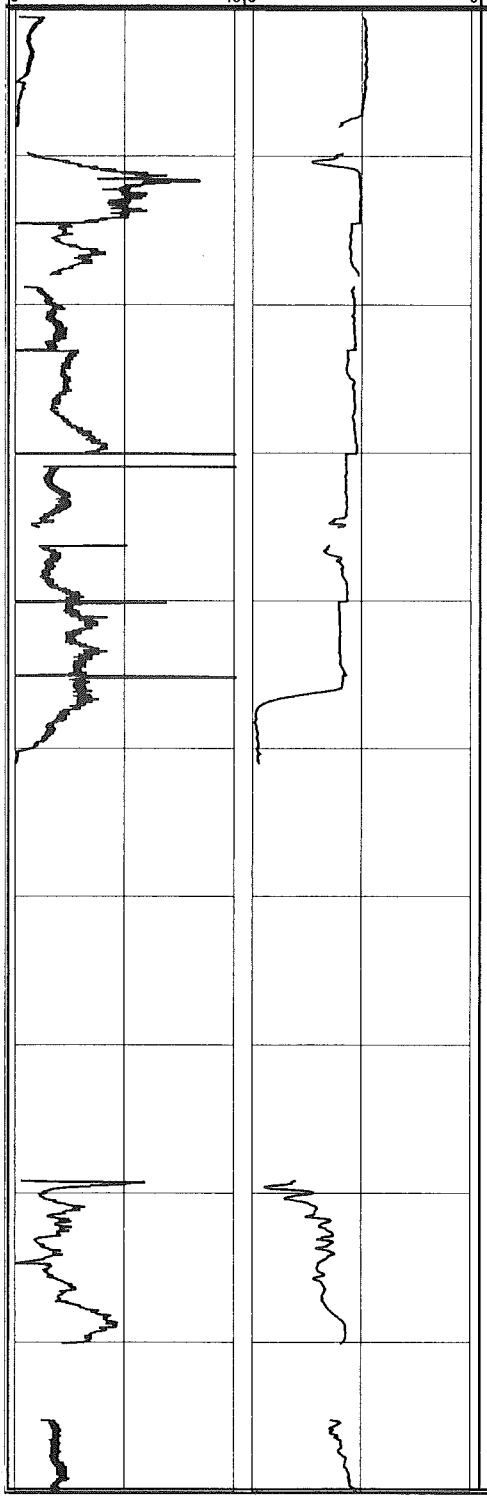
P-15

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 27, 2003
JOB NUMBER:	4563001	END DATE:	June 3, 2003
DRILLING FIRM:	CT&E	LOCATION:	N of W John St, E of Cantiague Rock Rd,
DRILLING METHOD:	Mud Rotary	WEATHER:	adjacent to Nassau Co driving range
DRILLER:	Wes Eicfeld	DATUM:	Land Surface
HELPER:	Karri Carly	HYDROGEOLOGIST:	Garrett Ferguson

Total depth of Profile: 339.2 ft

Total depth of Boring: 280 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200		SP		
210	Well-graded SAND; tan to red	SW		Profiler refusal at 208 ft, no penetration rate or IK data from 208 to 209.81 ft due to drilling activities Profile data gap due to poor KPRO equilibration
220	Poorly-graded SAND (fine to medium) with trace silt; tan to red	SP		
230				Profile data gaps due to poor KPRO equilibration
240				
250	Poorly graded SAND (fine to medium) and CLAY with some silt; tan to light brown	SC-CL		Profiler refusal at 250.95 ft, no penetration rate or IK data from 250.95 to 279.15 ft due to drilling activities
260				
270				
280				End of mud rotary boring at 280 ft
290				Profile data gap from 290 to 295.05 ft due to equipment problems

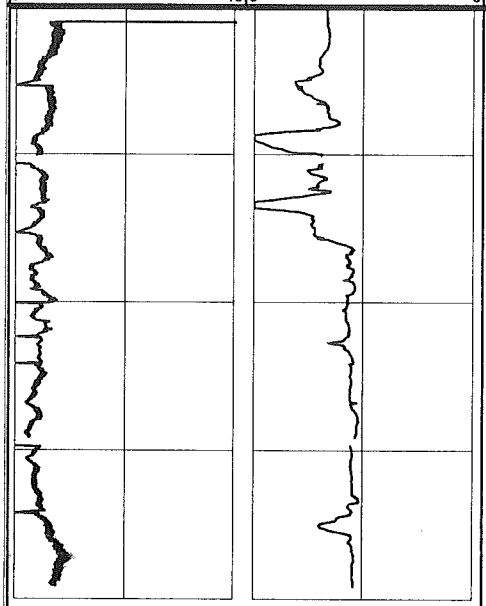
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-15

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 27, 2003
JOB NUMBER:	4563001	END DATE:	June 3, 2003
DRILLING FIRM:	CT&E	LOCATION:	N of W John St, E of Cantiague Rock Rd,
DRILLING METHOD:	Mud Rotary	WEATHER:	adjacent to Nassau Co driving range
DRILLER:	Wes Eicfeld	DATUM:	Land Surface
HELPER:	Karri Carly	HYDROGEOLOGIST:	Garrett Ferguson

Total depth of Profile: 339.2 ft
Total depth of Boring: 280 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300				
310				Profile data gaps due to poor KPRO equilibration
320				
330				
340				End of Profile at 339.2 ft

Boring ID:

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

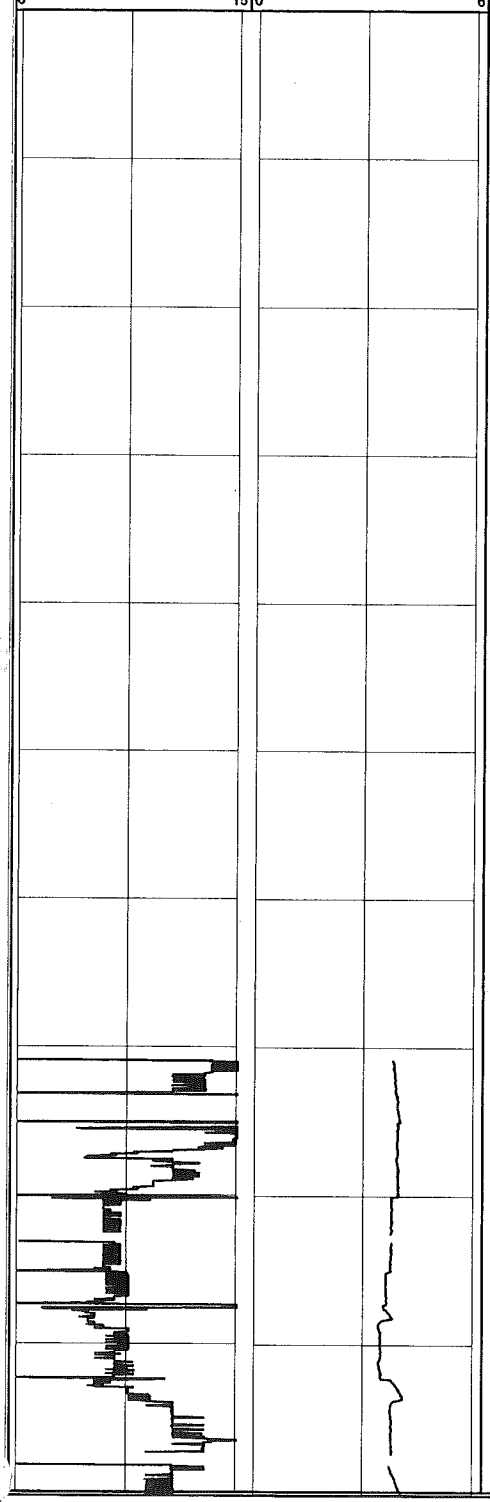
P-17

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	April 24, 2003
JOB NUMBER:	4563001	END DATE:	April 27, 2003
DRILLING FIRM:	CT&E	LOCATION:	E of Cantigue Rock Rd, E of 70 Property, on
DRILLING METHOD:	Mud Rotary	WEATHER:	Nassau Co driving range
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	John Hilton

Total depth of Profile: 235.63 ft

Total depth of Boring: 235 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Well-graded SAND (fine to medium) and GRAVEL (fine to coarse); light brown	SW-GW		
10				
20				Hollow stem auger to used from 0 to 20 ft, begin mud rotary drilling at 20 ft
30	Well-graded GRAVEL; light brown	GW		Based on drilling rig response
	Well-graded SAND (fine to medium) and GRAVEL; light brown	SW-GP		
40				
50				
60				
70	No geologic description recorded below 70 ft			Begin Profiling at 70.88 ft
80				
90				Profile data gaps due to poor KPRO equilibration

Boring ID:

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

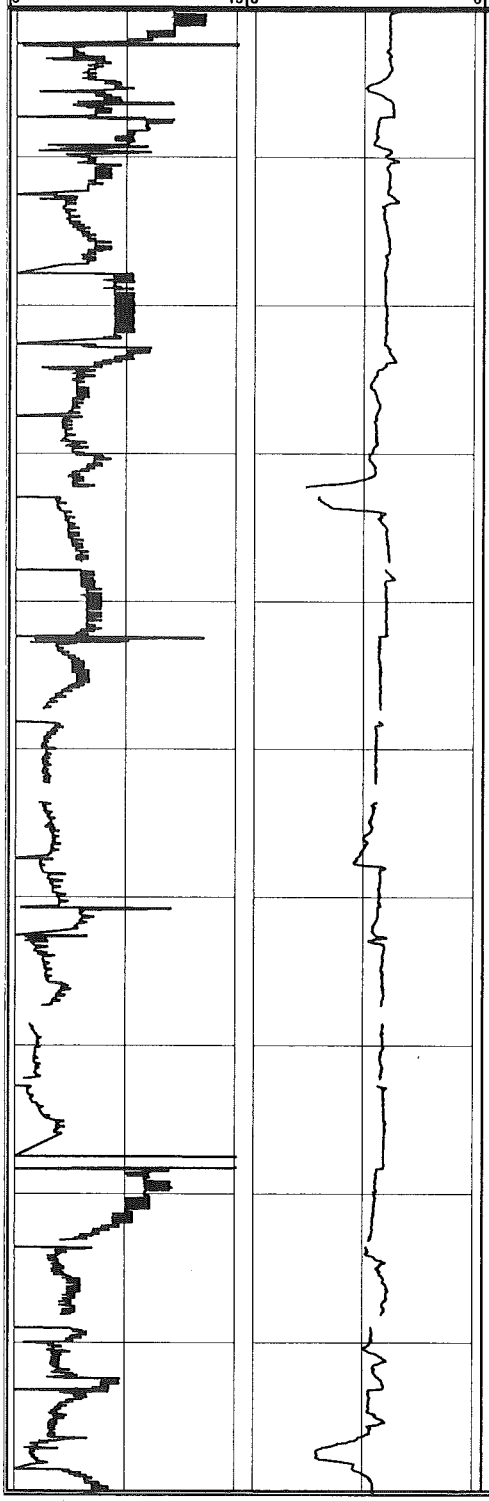
P-17

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	April 24, 2003
JOB NUMBER:	4563001	END DATE:	April 27, 2003
DRILLING FIRM:	CT&E	LOCATION:	E of Cantigue Rock Rd, E of 70 Prop
DRILLING METHOD:	Mud Rotary	WEATHER:	Nassau Co driving range
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	John Hilton

Total depth of Profile: 235.63 ft

Total depth of Boring: 235 ft

GEOLOGIC INFORMATION



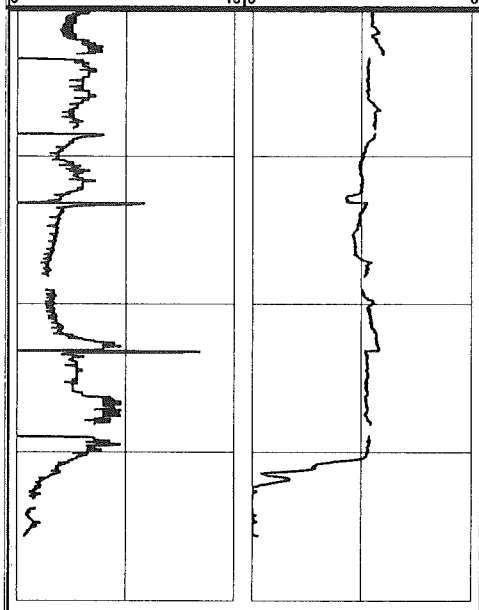
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
140				Profile data gaps due to poor KPRO equilibration
170				Profile data gaps due to poor KPRO equilibration
190				Profile data gaps due to poor KPRO equilibration

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-17

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	April 24, 2003
JOB NUMBER:	4563001	END DATE:	April 27, 2003
DRILLING FIRM:	CT&E	LOCATION:	E of Cantigue Rock Rd, E of 70 Property, on
DRILLING METHOD:	Mud Rotary	WEATHER:	Nassau Co driving range
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	John Hilton
Total depth of Profile:	235.63 ft	Total depth of Boring:	235 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200				
210				Profile data gaps due to poor KPRO equilibration
220				
230				Profiler refusal at 235.63 ft. End of profile End of boring at 235 ft
240				

Boring ID:

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

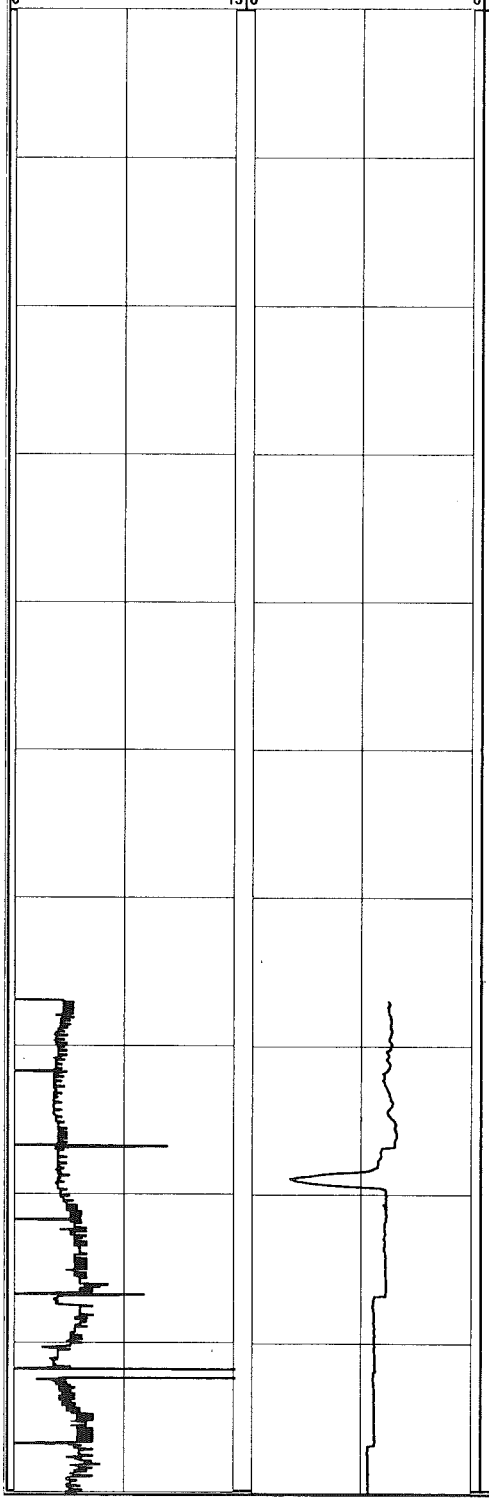
P-18

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	October 4, 2003
JOB NUMBER:	4563001	END DATE:	October 10, 2003
DRILLING FIRM:	CT&E	LOCATION:	W of Cantiague Rock Rd, Across fro 70 and 100 Properties
DRILLING METHOD:	Mud Rotary		
DRILLER:	Jim Lewis	DATUM:	Land Surface
HELPER:	Brian Slecker	HYDROGEOLOGIST:	Colleen Sullivan

Total depth of Profile: 350.25 ft

Total depth of Boring: 325 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Poorly-graded SAND (medium to coarse) and GRAVEL (fine to coarse); brown	SP-GP		
10				
20				Hollow stem auger used from 0 to 20 ft Begin mud rotary drilling at 20 ft
	Poorly-graded SAND (medium to coarse) with some gavel (fine); brown to yellow	SP		
30				Micaceous
40				Micaceous
50				
	Well-graded SAND with some gravel (well-graded); light brown to white	SW		
60				
	Poorly-graded SAND (medium to coarse) with trace gravel (fine) and trace clay; light brown to white	SP		Begin Profiling at 66.8 ft
70				
80				
	Well-graded SAND (fine to coarse); light brown	SW		
90				
	Poorly-graded SAND (medium) with trace gravel (fine); light brown to white	SP		

Boring ID:

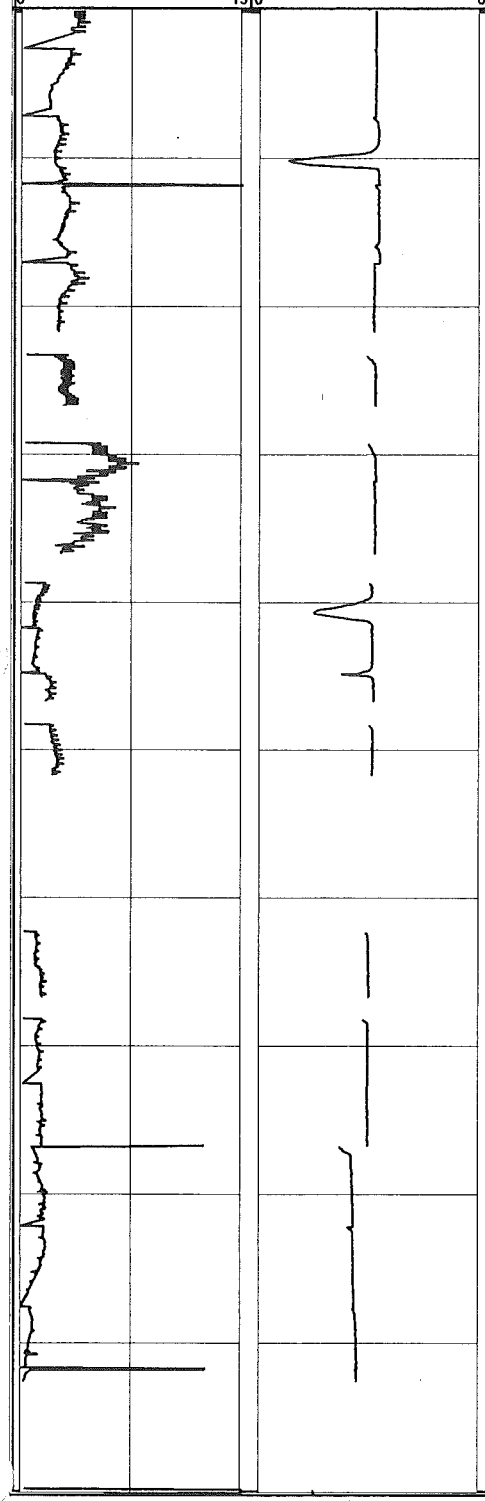
MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

P-18

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	October 4, 2003
JOB NUMBER:	4563001	END DATE:	October 10, 2003
DRILLING FIRM:	CT&E	LOCATION:	W of Cantiague Rock Rd, Across from the 70 and 100 Properties
DRILLING METHOD:	Mud Rotary		
DRILLER:	Jim Lewis	DATUM:	Land Surface
HELPER:	Brian Siecker	HYDROGEOLOGIST:	Colleen Sullivan
Total depth of Profile:	350.25 ft	Total depth of Boring:	325 ft

GEOLOGIC INFORMATION



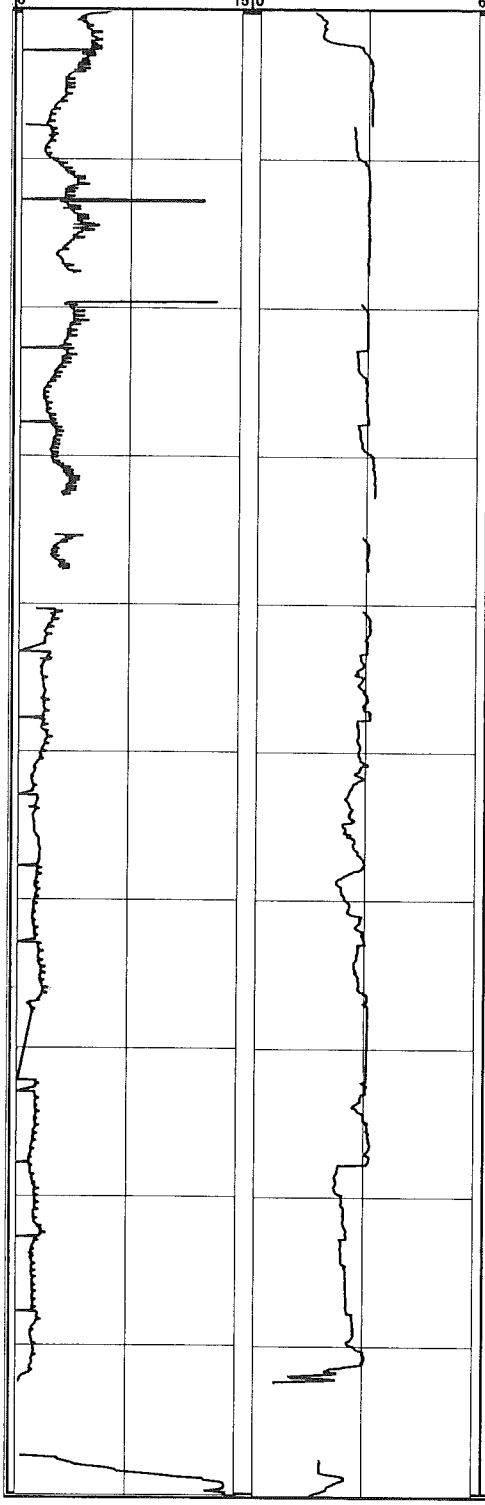
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100		SP		
110				
	Well-graded SAND (fine to coarse) with trace gravel (fine); light brown	SW		
120	Poorly-graded SAND (medium to coarse) with some gravel (coarse); light brown	SP		Profile data gaps due to poor KPRO equilibration from 121.72 to 123.2, 126.7 to 129.15, 136.71 to 138.61 and 146.70 to 148.19 ft
130				
	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); tan	SP-GP		Gravel lens from 135 to 136 ft
140	Poorly-graded SAND (medium to coarse) with trace gravel (fine); light brown to white	SP		
	Poorly-graded SAND (medium to coarse) with little gravel (fine); light brown	SP		
150				No profile data from 151.70 to 162.26 ft due to malfunctioning Profiling equipment
160				
170				Profile data gaps due to poor KPRO equilibration
180				
190				Profiler refusal at 192.5 ft bgs, no penetration rate or IK data from 192.5 to 199.73 ft due to drilling activities

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-18

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Jim Lewis
HELPER:	Brian Slecker
Total depth of Profile:	350.25 ft
START DATE:	October 4, 2003
END DATE:	October 10, 2003
LOCATION:	W of Cantiague Rock Rd, Across fro 70 and 100 Properties
DATUM:	Land Surface
HYDROGEOLOGIST:	Colleen Sullivan
Total depth of Boring:	325 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	Poorly-graded SAND (medium to coarse) with trace gravel (fine); white to light brown	SP		
210				
220				Profile data gap due to poor KPRO equilibration
230				Loss of circulation of drilling fluids from 230 to 235 ft, no recovery of cuttings. Much drilling fluid lost into the formation.
240	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); light brown to white	SP-GP		Profile data gaps due to poor KPRO equilibration
250				
260	Poorly-graded SAND (medium to coarse) with trace gravel and trace silt; light brown to white	SP		
270				
280	Well-graded SAND with trace clay; light brown to orange	SW		
290				Profiler refusal at 292.4 ft, no penetration rate or IK data from 292.4 to 297.3 ft due to drilling activities
	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); light brown to orange	SP-GP		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

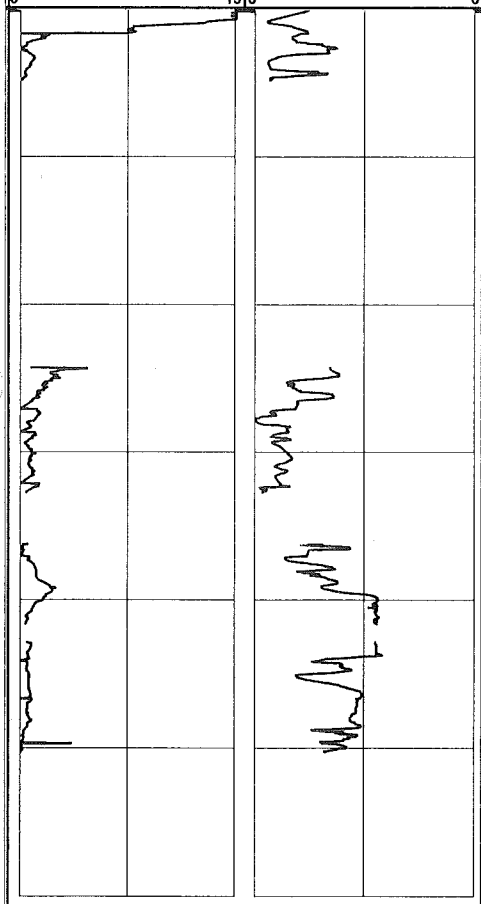
Boring ID:
P-18

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	October 4, 2003
JOB NUMBER:	4563001	END DATE:	October 10, 2003
DRILLING FIRM:	CT&E	LOCATION:	W of Cantiague Rock Rd, Across from the 70 and 100 Properties
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Jim Lewis	HYDROGEOLOGIST:	Colleen Sullivan
HELPER:	Brian Siecker		

Total depth of Profile: 350.25 ft

Total depth of Boring: 325 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300	Well-graded SAND with trace clay; red to brown	SW		Micaceous
310				Profiler refusal at 307.71 ft, no penetration rate or IK data from 307.7 to 324.66 due to drilling activities.
320				End of boring at 325 ft
330				Loss of IK data from 332.71 to 336.41 ft due to dead generator
340				
350				Profiler refusal at 350.25 ft, end of profile
360				

Boring ID:

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

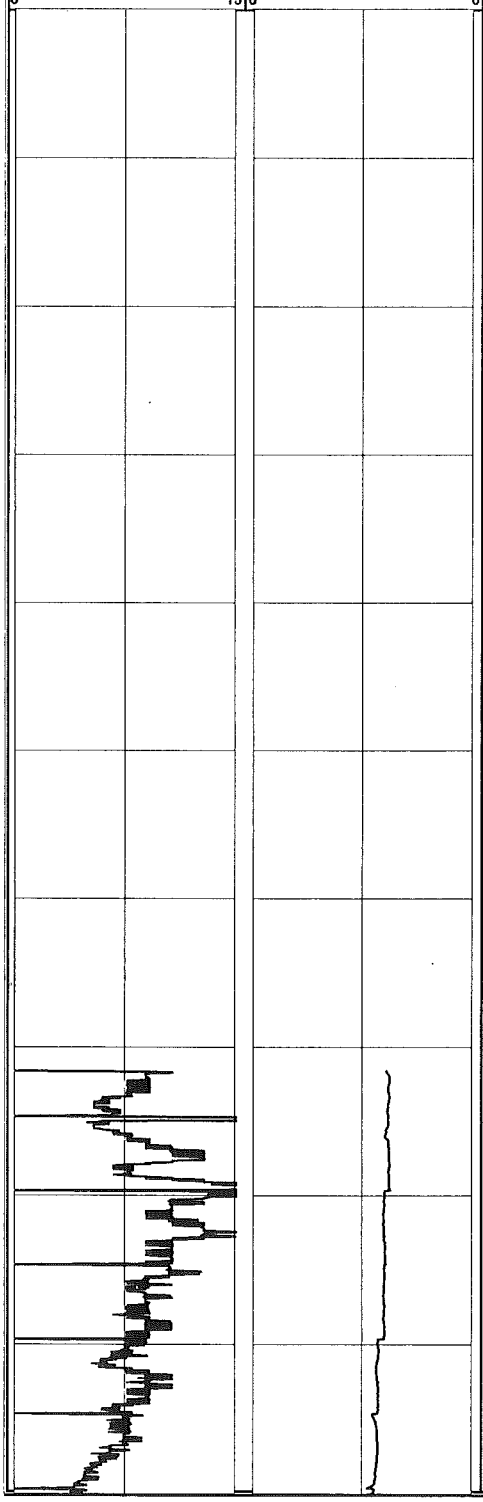
P-20

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	August 4, 2003
JOB NUMBER:	4563001	END DATE:	August 14, 2003
DRILLING FIRM:	CT&E	LOCATION:	NE corner of Property, S of W John St / Charlotte St
DRILLING METHOD:	Mud Rotary		
DRILLER:	Wes Eicfeld	DATUM:	Land Surface
HELPER:	Steve Somonski	HYDROGEOLOGIST:	Garret Furguson, Colleen Sullivan

Total depth of Profile: 477.73 ft

Total depth of Boring: 459 ft

GEOLOGIC INFORMATION



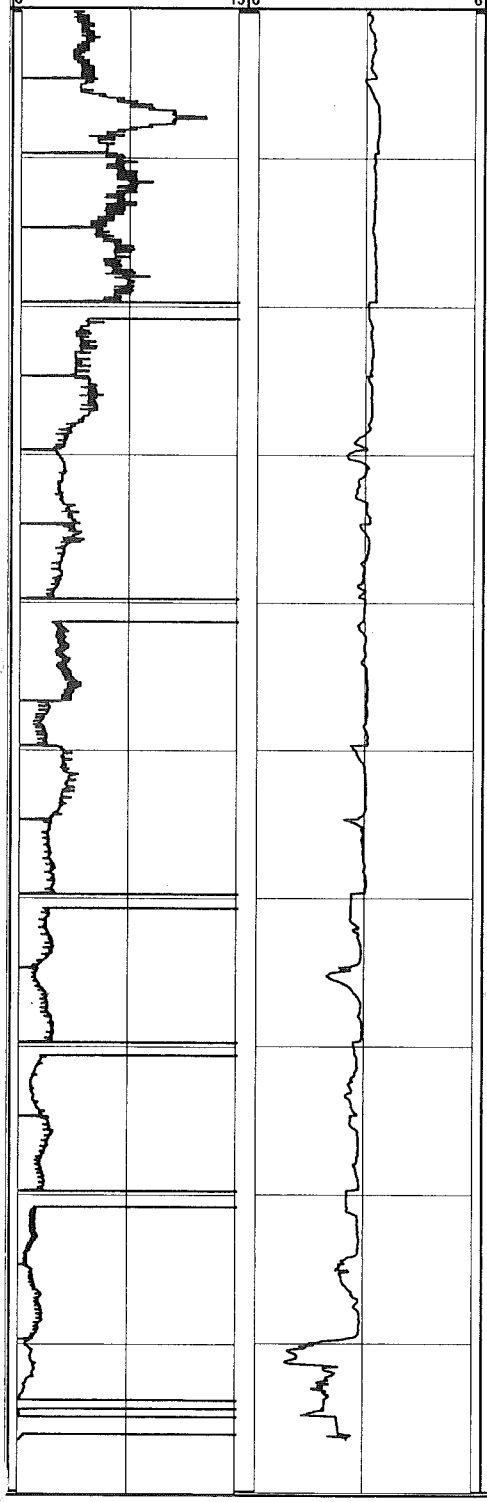
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Poorly-graded SAND (fine to medium) and GRAVEL (fine); brown	SP-GP		
10				Hollow stem auger used from 0 to 15 ft
20				Begin mud rotary drilling - 3 inch hole at 15 ft
	Well-graded SAND (fine to coarse) and GRAVEL (fine); brown	SW-GP		
30				
	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); light brown	SP-GP		
40				
50				
60				
	Well-graded SAND with some gravel (fine)	SW		
70	Well-graded SAND with some silt; light brown	SW		Begin Profiling at 71.61 ft
80				Micaceous
	Well-graded SAND with some gravel (fine); light brown	SW		
90				Lost ~50 gal drilling fluid
	Well-graded SAND; light brown	SW		Micaceous

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-20

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	August 4, 2003
JOB NUMBER:	4563001	END DATE:	August 14, 2003
DRILLING FIRM:	CT&E	LOCATION:	NE corner of Property, S of W John St, W of Charlotte St
DRILLING METHOD:	Mud Rotary		
DRILLER:	Wes Eicfeld	DATUM:	Land Surface
HELPER:	Steve Somonski	HYDROGEOLOGIST:	Garret Furguson, Colleen Sullivan
Total depth of Profile:	477.73 ft	Total depth of Boring:	459 ft

GEOLOGIC INFORMATION



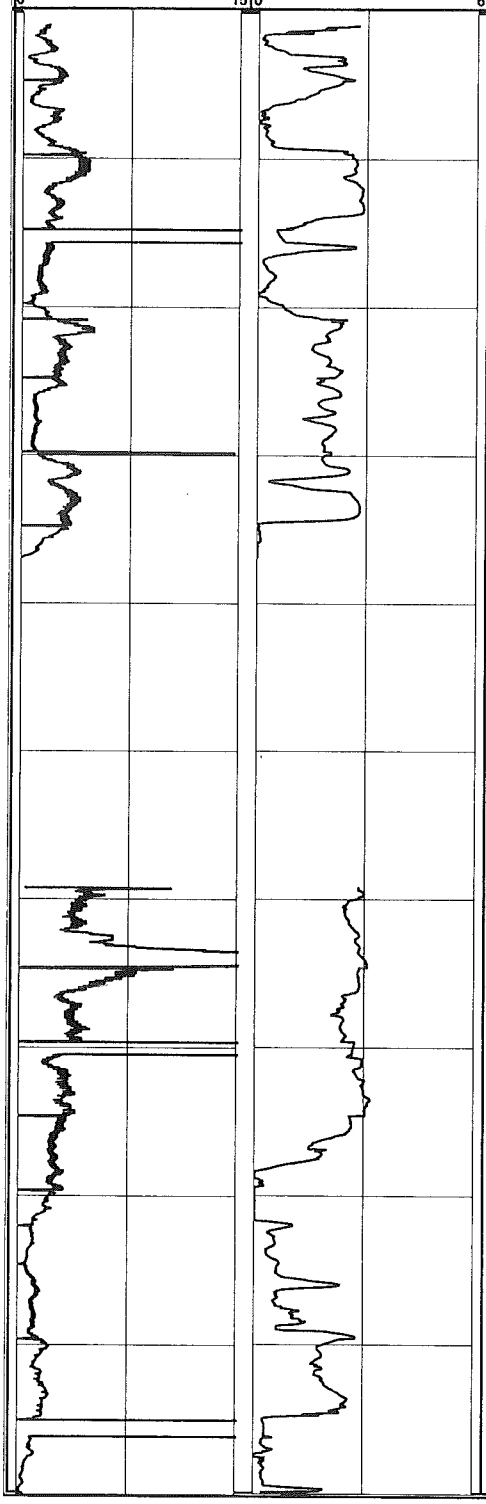
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100		SW		
	Poorly-graded SAND (fine to medium) with little gravel (fine); light brown	SP		Micaceous
110				
	Well-graded SAND; light brown	SW		Micaceous Some loss of drilling fluid
120				
	Well-graded SAND (fine to coarse) with little silt; light brown	SM		
130				
	Poorly-graded SAND (medium to coarse) with some silt and trace clay; light brown	SM		
140				
	Poorly-graded SAND (medium to coarse) with little silt and clay; light brown	SM		Micaceous
150				
	Poorly-graded SAND (medium to coarse) with trace clay; light brown	SP		Micaceous
160	Well-graded SAND; light brown	SW		Some fluid loss
				Micaceous
170				
180				
190				Profiler refusal at 196.38 ft, no penetration rate or IK data from to 196.38 to 201.06 ft due to drilling activities

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-20

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	August 4, 2003
JOB NUMBER:	4563001	END DATE:	August 14, 2003
DRILLING FIRM:	CT&E	LOCATION:	NE corner of Property, S of W John S Charlotte St
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Wes Eicfeld	HYDROGEOLOGIST:	Garret Furguson, Colleen Sullivan
HELPER:	Steve Somonski		
Total depth of Profile:	477.73 ft	Total depth of Boring:	459 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	Well-graded SAND with trace clay; orange to red	SW		
210				Micaceous
220				
230				
240	LIGNITE with some sand (medium) and clay; black	PT		Profiler refusal at 236.88 ft, no penetration rate or IK data from 236.88 to 259.21 ft due to drilling activities
250				Bedded lignite
260	Poorly-graded SAND (medium); light brown to gray	SP		Micaceous
270				
280	Poorly-graded SAND (medium to coarse) with some clay; gray	SC		
	CLAY with some silt and some sand (fine to medium); gray	CL		Micaceous
290	Poorly-graded SAND (fine) with some to little clay and trace lignite; light brown	SC		Micaceous

Boring ID:

MALCOLM PIRNIE, INC.

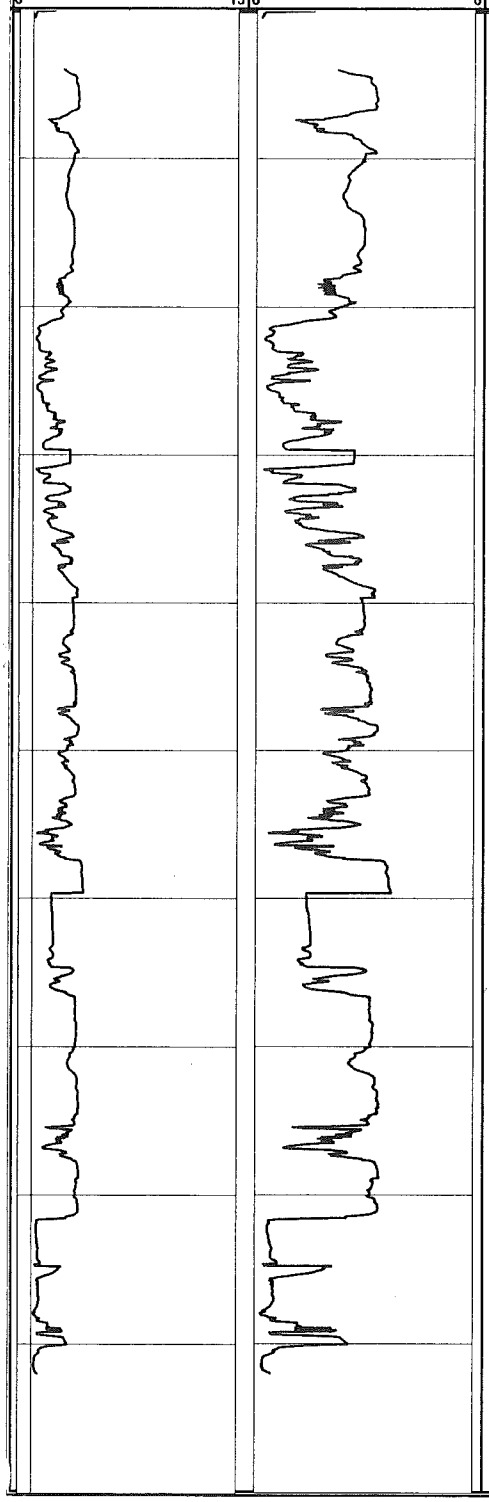
17-17 Route 208 North Fair Lawn, NJ 07401

P-20

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	August 4, 2003
JOB NUMBER:	4563001	END DATE:	August 14, 2003
DRILLING FIRM:	CT&E	LOCATION:	NE corner of Property, S of W John St, W of Charlotte St
DRILLING METHOD:	Mud Rotary		
DRILLER:	Wes Eicfeld	DATUM:	Land Surface
HELPER:	Steve Somonski	HYDROGEOLOGIST:	Garret Furguson, Colleen Sullivan

Total depth of Profile: 477.73 ft — Total depth of Boring: 459 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300		SC		Profiler refusal at 300.56 ft, no penetration rate or IK data from 300.56 to 300.05 ft due to drilling activities
310				
320				
330				
340	Poorly-graded SAND (fine to medium) with trace clay and trace lignite; light brown	SP		Micaceous
350	Poorly-graded SAND (fine to medium); white-gray	SP		Micaceous
360				
370	Poorly-graded SAND (medium) and trace clay; white-gray	SP		
380	LIGNITE; black	PT		Bedded Lignite
	Well-graded SAND with trace silt and clay; white to gray	SW		Profiler refusal a 385 ft Restart profiler at 384.15 ft
390				Profiler refusal at 391.96 ft, no penetration rate or IK data from 391.96 to 404.46 ft due to drilling activities

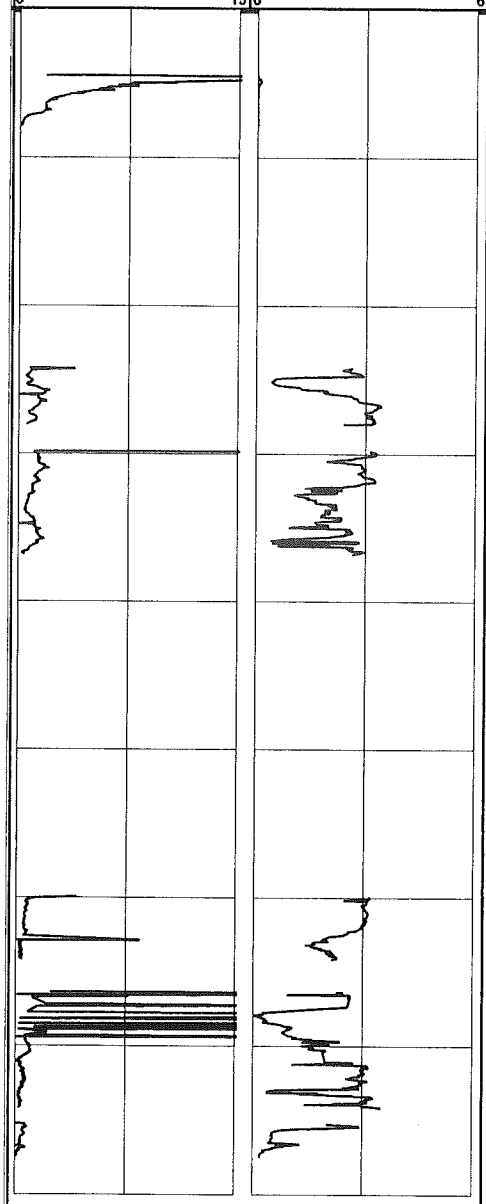
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-20

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Wes Eicfeld
HELPER:	Steve Somonski
START DATE:	August 4, 2003
END DATE:	August 14, 2003
LOCATION:	NE corner of Property, S of W John St, W of Charlotte St
DATUM:	Land Surface
HYDROGEOLOGIST:	Garret Furguson, Colleen Sullivan

Total depth of Profile: 477.73 ft
Total depth of Boring: 459 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
400		SW		
	Well-graded SAND with some silt and trace lignite; white to gray	SM		Profiler refusal at 407.85 ft, no penetration rate or IK data from 407.85 to 424.2 ft due to drilling activities
410				
420				IK data from 428 to 429 ft is erroneous due to computer malfunction
430	Poorly-graded SAND (medium to coarse); light brown	SP		Bad IK data from 435 to 437.1 broken reed valve
	CLAY with some sand (medium); white to gray	CL		Profiler refusal at 436.77 ft, no penetration rate or IK data from 436.77 to 459.95 ft due to drilling activities
440				
	CLAY with some sand and silt; white-pink-gray	CL		Lignite present in cuttings
450	Poorly-graded SAND (medium) with some lignite and trace clay; light	SP		Micaceous
				End boring at 459 ft
460				
470				Invalid IK data from 474.15 to 475.22 ft - insufficient KPRO fluid
				End of Profile at 477.73 ft
480				

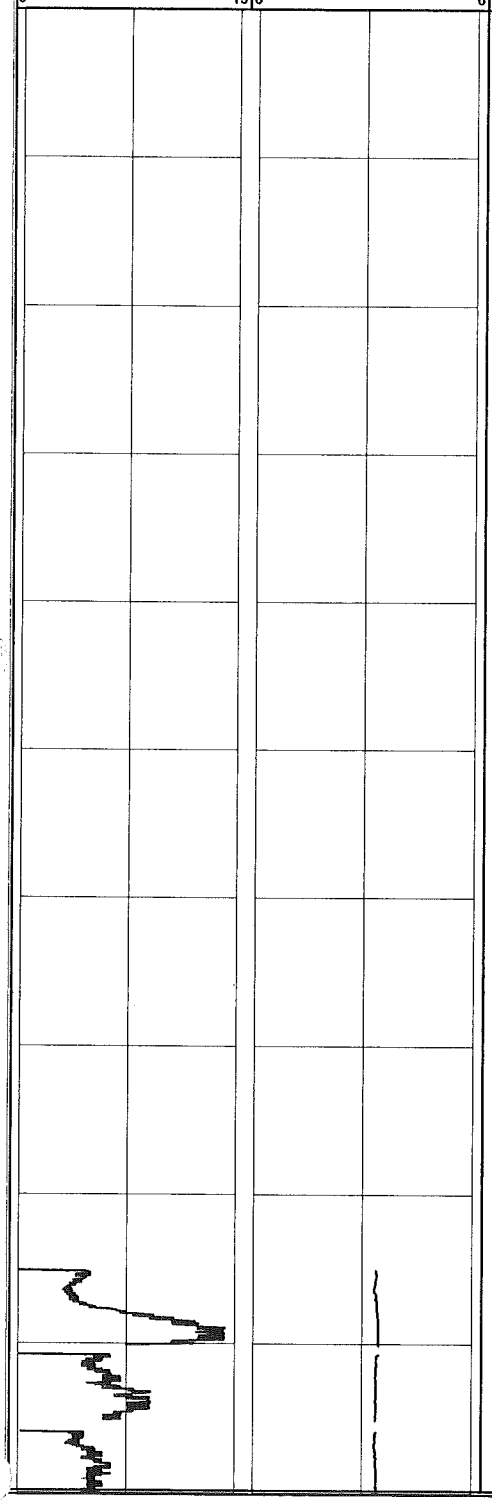
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-23

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	June 24, 2003
JOB NUMBER:	4563001	END DATE:	July 3, 2003
DRILLING FIRM:	CT&E	LOCATION:	N of W John St, E of Cantiague Rock Rd, W
DRILLING METHOD:	Mud Rotary	WEATHER:	of P-H
DRILLER:	Wes Eicfeld	DATUM:	Land Surface
HELPER:	Karri Carley	HYDROGEOLOGIST:	Jeff Dekoskie

Total depth of Profile: 347.36 ft
Total depth of Boring: 330 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Silty SAND (medium), with some gravel (fine), and trace clay; brown	SM		Pavement from 0 to 1 ft
10	Poorly-graded SAND (medium to coarse) with some gravel (fine); brown to tan	SP		Hollow stem auger used from 0 to 15 ft. Begin mud rotary drilling at 15 ft
20	Poorly-graded SAND (fine to medium) with some gravel (fine), trace silt; brown	SP		
30	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); brown to tan	SP-GP		
40	Well-graded SAND with little gravel (fine); tan	SW		
50	Well-graded SAND and GRAVEL (fine); white-tan	SW-GP		Micaceous
60	Poorly-graded SAND (medium to coarse); tan	SP		IK and Drive rate data from 69.75 to 80.1 ft did not record
70	Poorly-graded SAND (medium); tan	SP		
80				Profile data gaps due to poor KPRO equilibration
90	Poorly-graded SAND (fine to medium); tan	SP		Micaceous

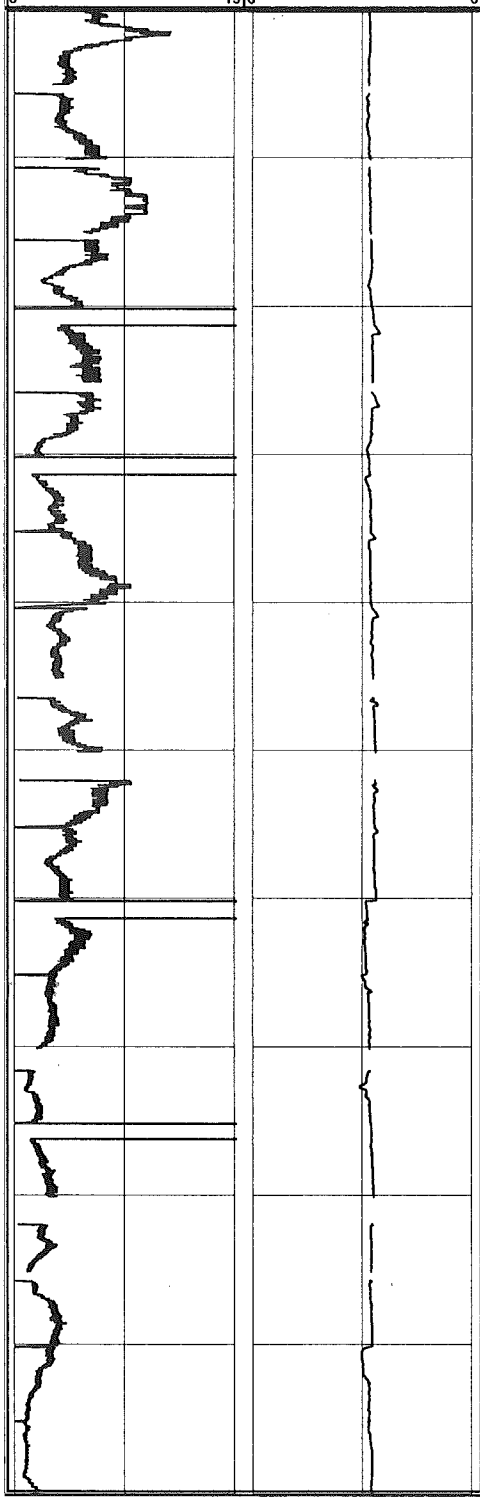
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-23

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	June 24, 2003
JOB NUMBER:	4563001	END DATE:	July 3, 2003
DRILLING FIRM:	CT&E	LOCATION:	N of W John St, E of Cantiague Rock
DRILLING METHOD:	Mud Rotary	WEATHER:	of P-H
DRILLER:	Wes Eicfeld	DATUM:	Land Surface
HELPER:	Karri Carley	HYDROGEOLOGIST:	Jeff Dekoskie

Total depth of Profile: 347.36 ft — Total depth of Boring: 330 ft

GEOLOGIC INFORMATION



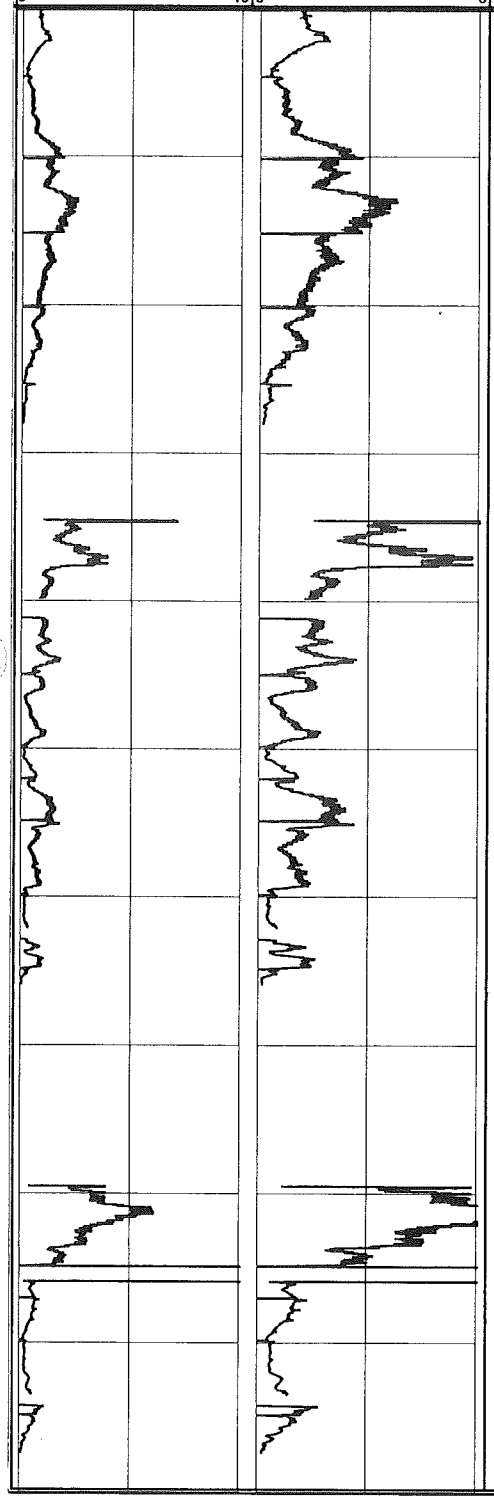
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100		SP		
110	Poorly-graded SAND (medium with little fine and coarse); tan	SP		Profile data gaps due to poor KPRO equilibration
120				Micaceous
				Profile data gaps due to poor KPRO equilibration
130				
140				
	Poorly-graded SAND (medium to coarse) with trace gravel; tan	SP		Profile data gaps due to poor KPRO equilibration
150				
	Poorly-graded SAND (medium with little fine and coarse); tan	SP		
160				Micaceous
170				Profile data gaps due to poor KPRO equilibration
180				
190	Poorly-graded SAND (medium to coarse) with trace gravel; tan	SP		Micaceous
	Poorly-graded SAND (medium with little fine and coarse); tan	SP		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-23

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	June 24, 2003
JOB NUMBER:	4563001	END DATE:	July 3, 2003
DRILLING FIRM:	CT&E	LOCATION:	N of W John St, E of Cantiague Rock Rd, W
DRILLING METHOD:	Mud Rotary	WEATHER:	of P-H
DRILLER:	Wes Eicfeld	DATUM:	Land Surface
HELPER:	Karri Carley	HYDROGEOLOGIST:	Jeff Dekoskie
Total depth of Profile:	347.36 ft	Total depth of Boring:	330 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200		SP		Micaceous
210				
	Poorly-graded SAND (medium to coarse); tan	SP		Micaceous
220	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); tan	SP-GP		
	Well-graded SAND and GRAVEL (fine); tan to brown	SW-GP		Profiler refusal at 227.97 ft, no penetration rate or IK data from 227.97 to 234.51 ft due to drilling activities
230	Poorly-graded SAND (medium to coarse) with little gravel (fine); tan to brown	SP		
	Poorly-graded SAND (fine) with trace clay and silt; tan to brown	SP		Most cuttings pass through strainer
240	Poorly-graded SAND (fine) with little clay; tan and white	SC		Profile data gap due to poor KPRO equilibration
	Poorly-graded SAND (fine) with some clay	SC		
250	Poorly-graded SAND (fine) and CLAY; tan and white	SC-CL		Micaceous
	Poorly-graded SAND (fine) with little clay and silt; tan	SC		
260	Poorly-graded SAND (fine) and CLAY with some silt; tan	SC-CL		Clay and silt fractions decrease with depth
	Poorly-graded SAND (fine to medium) with trace clay, trace lignite; tan	SM		Profiler refusal at 265.85 ft, no penetration rate or IK data from 265.85 to 279.46 ft due to drilling activities
270	Poorly-graded SAND (fine to medium) with trace lignite; tan	SP		
280				Loss of circulation of drilling fluids from 280 to 330 ft. No recovery of cuttings. No geologic log.
290				Profile data gap due to poor KPRO equilibration

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

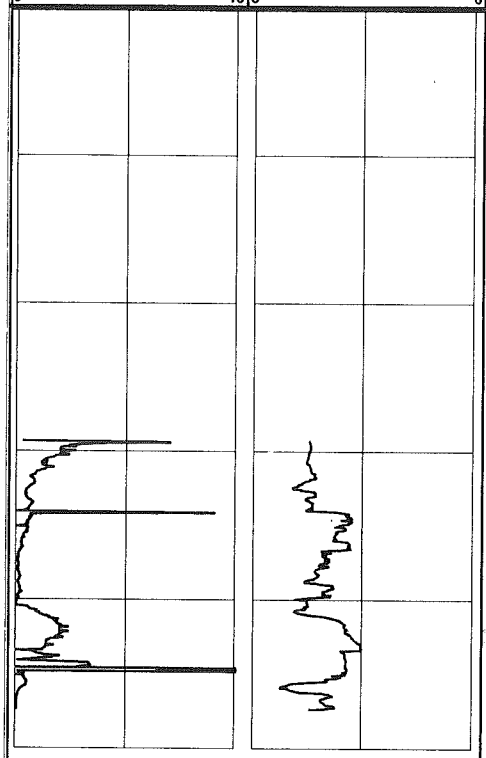
Boring ID: **P-23**

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	June 24, 2003
JOB NUMBER:	4563001	END DATE:	July 3, 2003
DRILLING FIRM:	CT&E	LOCATION:	N of W John St, E of Cantiague Rock Rd, W
DRILLING METHOD:	Mud Rotary	WEATHER:	of P-H
DRILLER:	Wes Eicfeld	DATUM:	Land Surface
HELPER:	Karri Carley	HYDROGEOLOGIST:	Jeff Dekoskie

Total depth of Profile: 347.36 ft

Total depth of Boring: 330 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300				Profiler refusal at 297.36 ft, no penetration rate or IK data from 297.36 to 329.29 ft due to drilling activities
310				
320				
330				End of boring at 330 ft
340				End of profile at 347.36 ft
350				

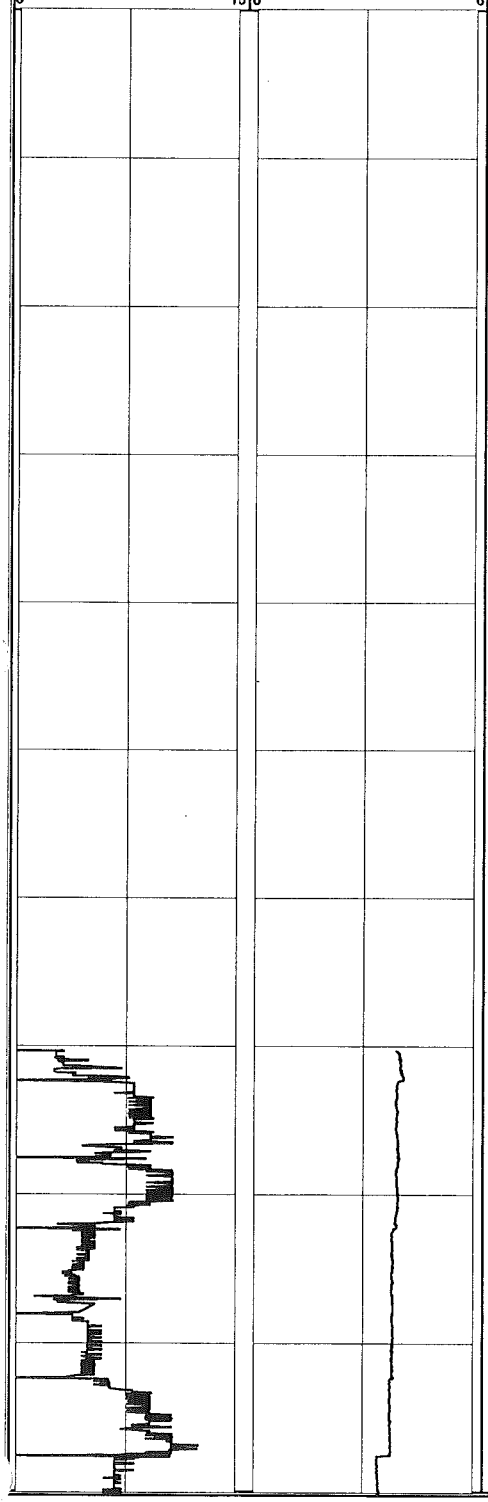
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-24

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	June 16, 2003
JOB NUMBER:	4563001	END DATE:	June 19, 2003
DRILLING FIRM:	CT&E	LOCATION:	East of Cantiague Rock Rd, near NW corner of 100 Property
DRILLING METHOD:	Mud Rotary		
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	John Hilton

Total depth of Profile: 297.3 ft
Total depth of Boring: 120 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Well-graded SAND with trace gravel (fine); light brown	SW		6 1/4 hollow stem auger used from 0 to 20 ft
10	Well-graded GRAVEL with little sand; light brown	GW		
	Well-graded SAND with trace gravel (fine); medium brown	SW		
20	Poorly-graded SAND (fine to medium); light brown	SP		Begin mud rotary drilling at 20 ft
	Poorly-graded GRAVEL (fine)	GP		
30				
	Poorly-graded SAND (fine to medium) with trace to little gravel (fine); light to medium brown	SP		
40				
50	Well-graded GRAVEL; tan to white	GP		
	Poorly-graded SAND (fine); light tan to white	SP		
60				
70	Poorly-graded SAND (fine to medium) with trace gravel (fine); light tan to brown	SP		Begin Profiling at 70.12 ft
80				
90				

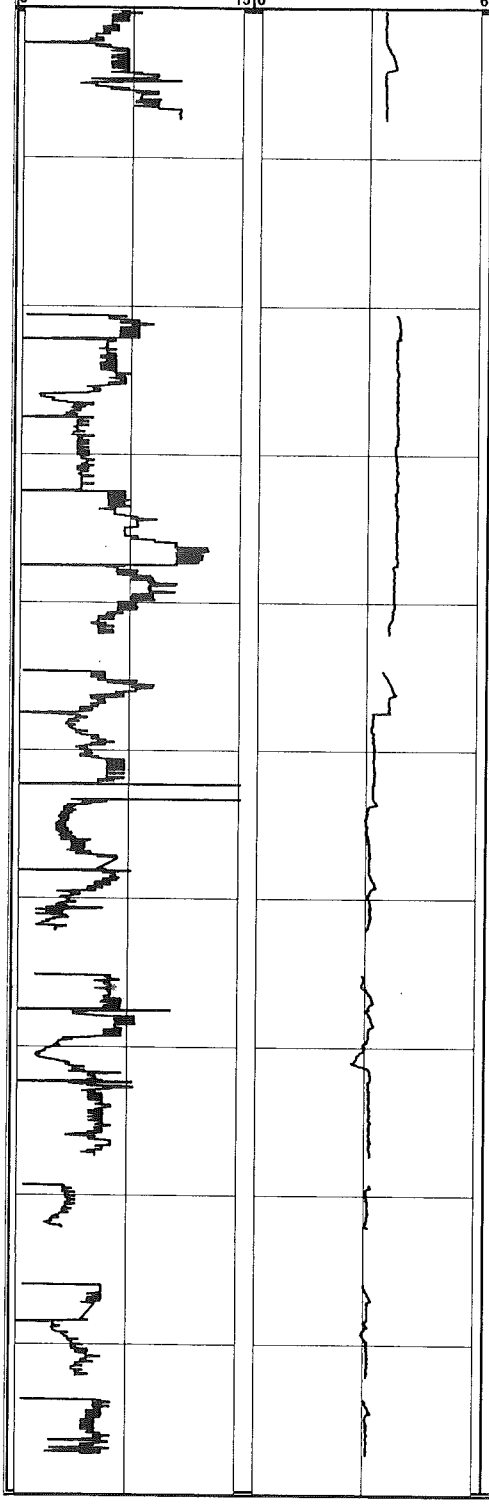
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-24

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Bill Petley
HELPER:	Ken Heinz

START DATE: June 16, 2003
END DATE: June 19, 2003
LOCATION: East of Cantiague Rock Rd, near NW [illegible] of 100 Property
DATUM: Land Surface
HYDROGEOLOGIST: John Hilton

Total depth of Profile: 297.3 ft
Total depth of Boring: 120 ft



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100		SP		
				No IK data from 107.35 to 120.41 malfunctioning profiling equipment and drilling activity.
110				
120				End of boring/mudlog at 120 ft
130				
140				Profile data gap due to poor KF equilibration
150				
160				Profile data gap due to poor KPRO equilibration
170				
180				Profile data gaps due to poor KPRO equilibration
190				

Boring ID:

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

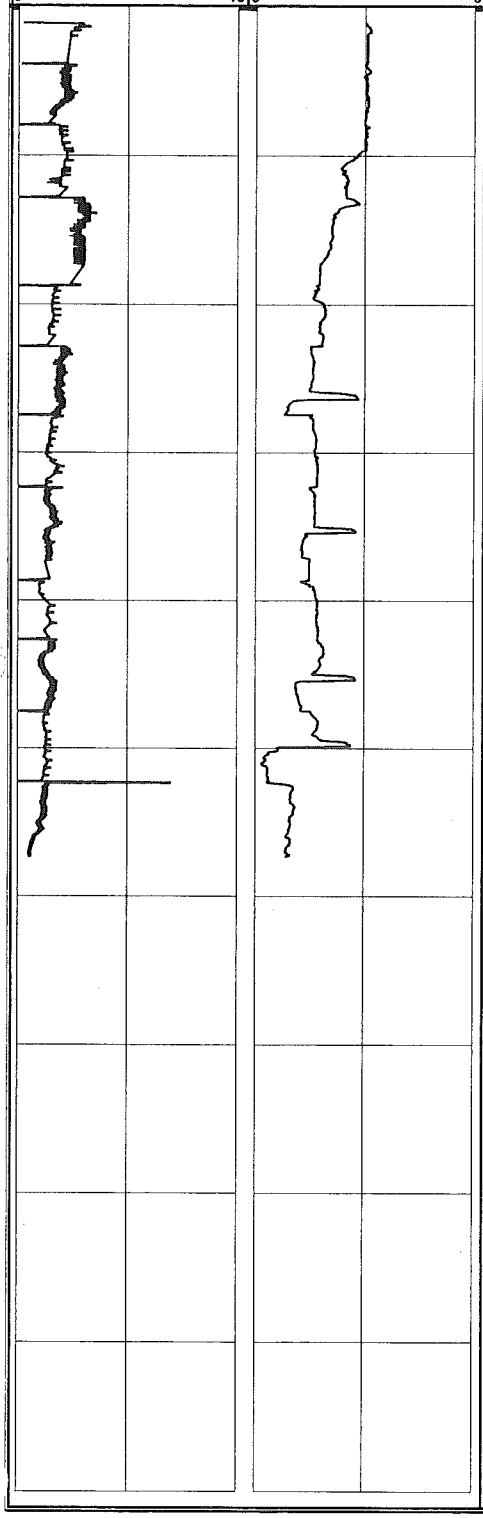
P-24

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	June 16, 2003
JOB NUMBER:	4563001	END DATE:	June 19, 2003
DRILLING FIRM:	CT&E	LOCATION:	East of Cantiague Rock Rd, near NW corner of 100 Property
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Bill Petley	HYDROGEOLOGIST:	John Hilton
HELPER:	Ken Heinz		

Total depth of Profile: 297.3 ft

Total depth of Boring: 120 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200				
210				
220				
230				
240				
250				Plugged KPRO line from 257.35 to 297.3 ft
260				
270				
280				
290				End of profile at 297.3 ft bgs
300				

Boring ID:

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

P-25

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	July 8, 2003
JOB NUMBER:	4563001	END DATE:	July 15, 2003
DRILLING FIRM:	CT&E	LOCATION:	On E side of Cantiague Rock Rd, on corner of 70 building
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Wes Eicfeld	HYDROGEOLOGIST:	Jeff Dekoskie/John Hilton
HELPER:	Karri Carly		

Total depth of Profile: 379.15 ft

Total depth of Boring: 365 ft

GEOLOGIC INFORMATION

Penetration Rate (ft/min) 0–15	Index of Hyd. Conductivity 0–6	Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
		0	Well-graded silty SAND with gravel (fine); brown to light brown	SM		Drilled with hollow stem auger from 0 to 13 ft
		10				Begin mud rotary drilling at 13 ft
			Poorly-graded SAND (medium to coarse) with some gravel (fine); light brown	SP		
		20				
		30	Poorly-graded SAND (fine to medium) with trace gravel (fine); light brown	SP		
		40	Poorly-graded GRAVEL (fine); white to tan	GP		
			Poorly-graded SAND (medium to coarse) with some gravel (fine); light brown	SP		
		50	Poorly-graded GRAVEL (fine) and SAND (coarse); white, tan	GP-SP		
			Poorly-graded SAND (fine to medium); light brown, trace black	SP		
		60				
		70	Poorly-graded SAND (fine to medium) with trace gravel (fine); light brown	SP		Begin profiling at 69.7 ft, no profile data from 69.7 to 91.88 ft due to plugged KPRO line
			Poorly-graded SAND (medium to coarse) with some gravel (fine); light brown	SP		
		80	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); light brown	SP-GP		
		90	Poorly-graded SAND (medium to coarse) with some to little gravel (fine); light brown	SP		Gravel fraction decreases with depth

Boring ID:

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

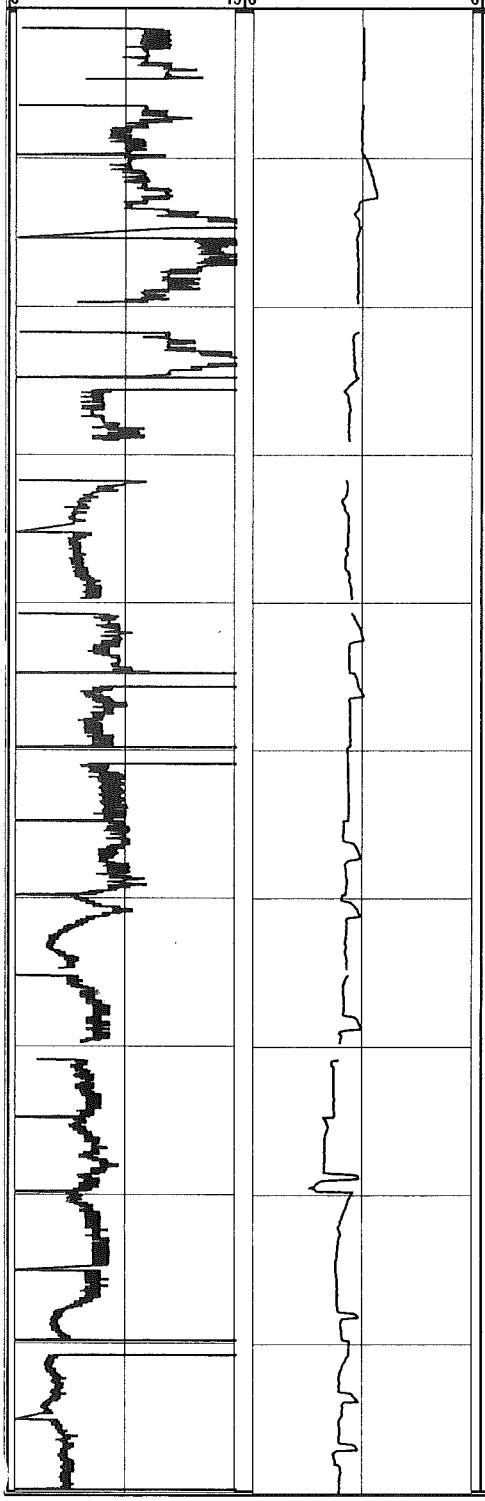
P-25

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	July 8, 2003
JOB NUMBER:	4563001	END DATE:	July 15, 2003
DRILLING FIRM:	CT&E	LOCATION:	On E side of Cantiague Rock Rd, on NW corner of 70 building
DRILLING METHOD:	Mud Rotary		
DRILLER:	Wes Eicfeld	DATUM:	Land Surface
HELPER:	Karri Carly	HYDROGEOLOGIST:	Jeff Dekoskie/John Hilton

Total depth of Profile: 379.15 ft

Total depth of Boring: 365 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100	Poorly-graded SAND (fine to medium); light brown	SP		
	Well-graded SAND with trace gravel (fine); light brown	SW		Profile data gap due to poor KPRO equilibration
110	Well-graded SAND and GRAVEL (fine); light brown	SW-GP		
120	Well-graded SAND; light brown	SW		Profile data gaps due to poor KPRO equilibration
130				
140	Well-graded SAND with some gravel; light brown	SW		
	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); light brown	SP-GP		
150	Poorly-graded SAND (medium to coarse) with some to trace gravel (fine); light brown	SP		Gravel fraction decreases with depth
160	Poorly-graded SAND (fine to medium); light brown	SP		Profile data gaps due to poor KPRO equilibration
170	Well-graded sand; light brown to tan	SW		Some loss of drilling fluid
180	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); light brown	SP-GP		
190				
	Poorly-graded SAND (medium to coarse) and some gravel (fine); light brown	SP		Profile data gap due to poor KPRO equilibration

Boring ID:

MALCOLM PIRNIE, INC.

P-25

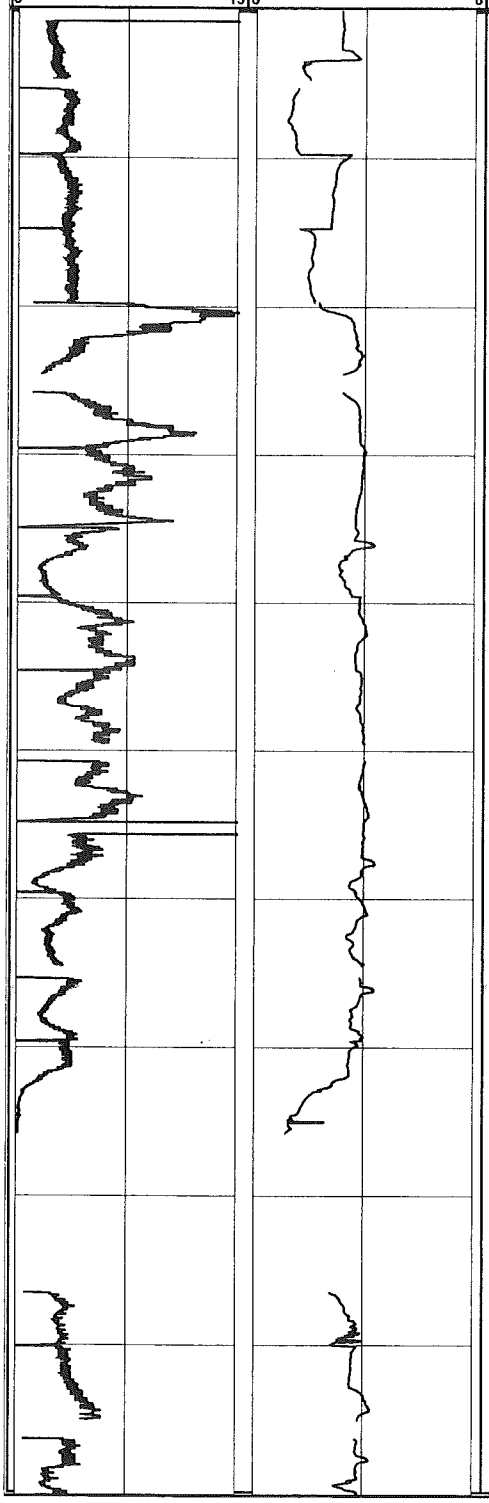
17-17 Route 208 North Fair Lawn, NJ 07401

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	July 8, 2003
JOB NUMBER:	4563001	END DATE:	July 15, 2003
DRILLING FIRM:	CT&E	LOCATION:	On E side of Cantiague Rock Rd, on corner of 70 building
DRILLING METHOD:	Mud Rotary		
DRILLER:	Wes Eicfeld	DATUM:	Land Surface
HELPER:	Karri Carly	HYDROGEOLOGIST:	Jeff Dekoskie/John Hilton

Total depth of Profile: 379.15 ft

Total depth of Boring: 365 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200		SP		
	Well-graded SAND; light brown	SW		Profile data gap due to poor KPRO equilibration
210				
220	Poorly-graded SAND (medium to coarse) with trace gravel (fine); light brown	SP		Profile data gap due to poor KPRO equilibration
230	Well-graded SAND; light brown	SW		
240				
250	Well-graded SAND with trace gravel (fine); light brown	SW		Profile data gap due to poor KPRO equilibration
	Poorly-graded SAND (fine to medium) and GRAVEL (fine); light brown	SP-GP		
260	Well-graded SAND with trace gravel (fine); light brown	SW		Profile data gap due to poor KPRO equilibration
270	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); light brown	SP-GP		Increased down pressure, but drive rate decreasing
	Poorly-graded SAND (fine to medium); light brown	SP		Profiler refusal at 275.8 ft. No penetration rate or IK data from 275.8 to 284.65 ft due to drilling activity, and from 284.65 to 286.42 due to malfunctioning profile equipment.
280	Poorly-graded SAND (medium to coarse); light brown to white	SP		
290	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); light brown	SP-GP		Profile data gap due to poor KPRO equilibration

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

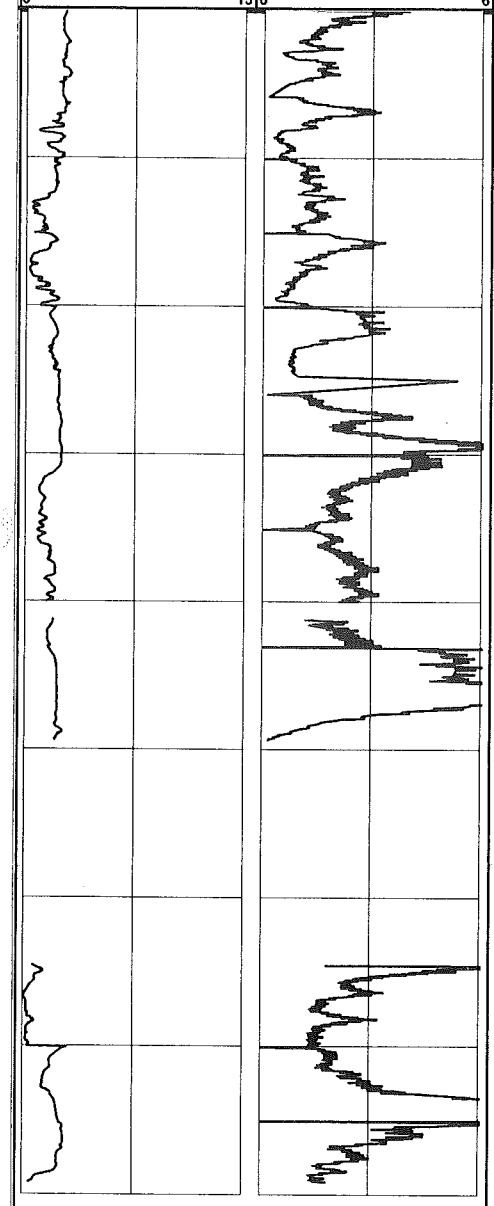
Boring ID:
P-25

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Wes Eicfeld
HELPER:	Karrl Carly

START DATE: July 8, 2003
END DATE: July 15, 2003
LOCATION: On E side of Cantiague Rock Rd, on NW corner of 70 building
DATUM: Land Surface
HYDROGEOLOGIST: Jeff Dekoskie/John Hilton

Total depth of Profile: 379.15 ft
Total depth of Boring: 365 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300		SP-GP		
	Poorly-graded SAND (medium to coarse) with trace gravel (fine); light brown	SP		
310				
	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); light brown	SP-GP		
320	Poorly-graded SAND (fine to medium); light brown	SP		
330				
340				Profile data gap due to poor KPRO equilibration
	SAND and SILT with some clay; gray	SM-CL		Silt and clay fractions increase with depth.
350				Profiler refusal at 349.4 ft. No penetration rate or IK data from 349.4 to 364.5 ft due to drilling activity
	CLAY with some sand; gray	CL		Sand occurs as thin interbeds within the clay
360				
	Poorly-graded SAND (medium to coarse) with trace gravel (fine); light brown			End of boring at 365 ft
370				
380				End of profile at 379.15 ft bgs

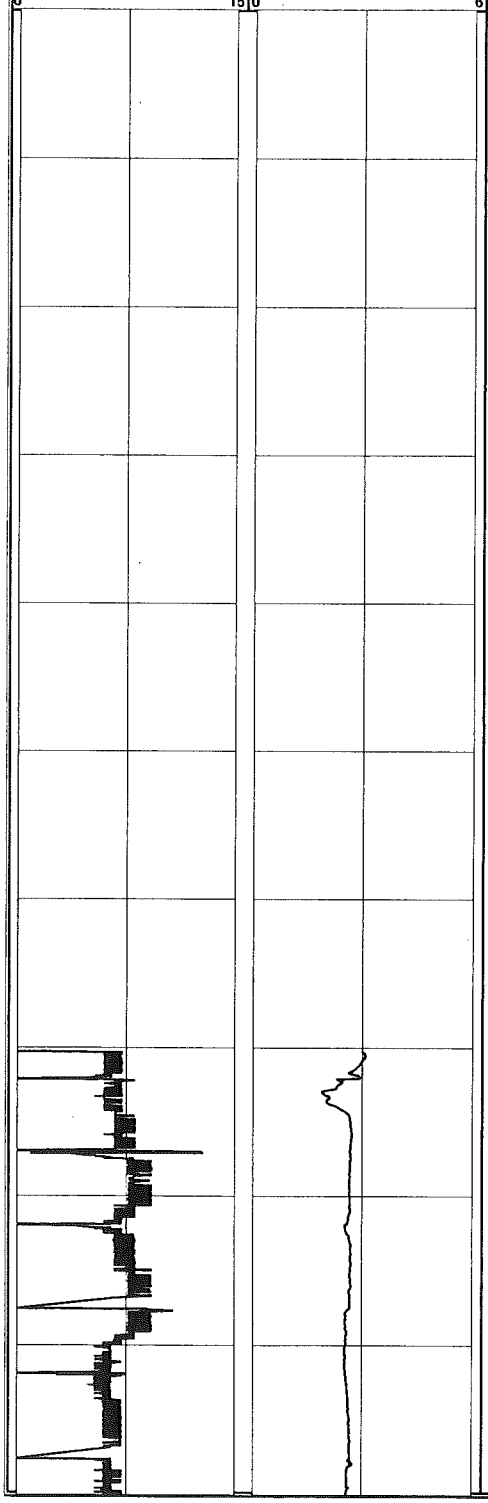
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-26

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 12, 2003
JOB NUMBER:	4563001	END DATE:	May 20, 2003
DRILLING FIRM:	CT&E	LOCATION:	East of Cantiague Rock Rd, near NW corner of 140 property
DRILLING METHOD:	Mud Rotary		
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	John Hilton

Total depth of Profile: 295.8 ft
Total depth of Boring: 300 ft

GEOLOGIC INFORMATION



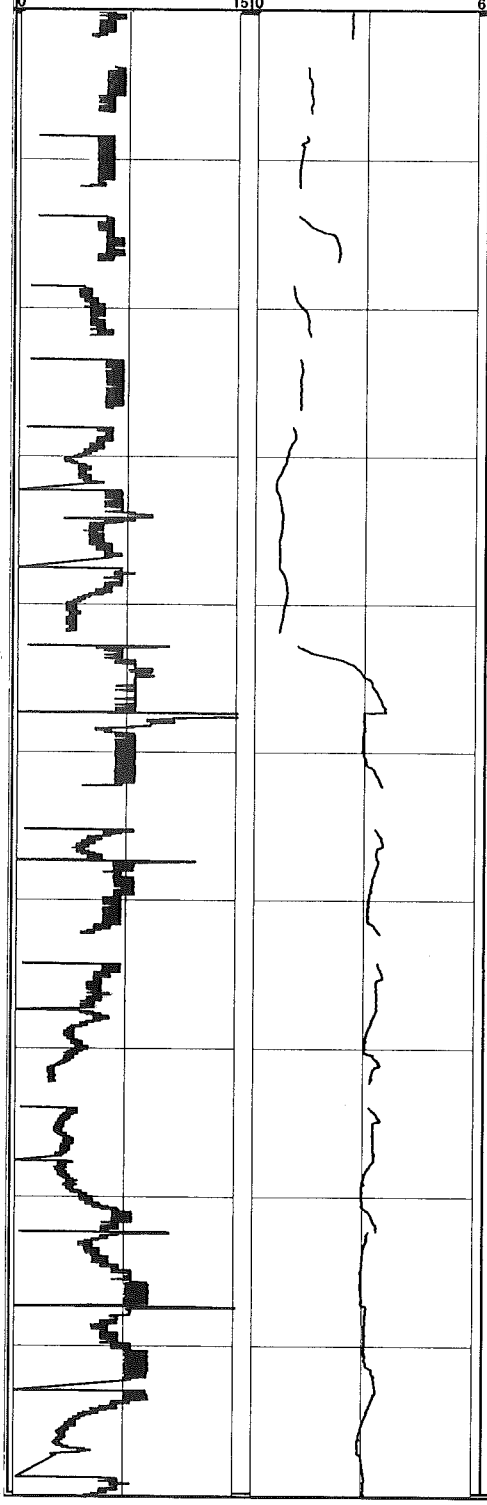
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Well-graded SAND with gravel; light to medium brown	SW		8 in steel casing used to drill from 0 to 8 ft
10	Poorly-graded SAND (medium to coarse) with little gravel (fine); light tan to brown	SP		Begin mud rotary drilling with 3 in casing at 8 ft
20				Significant loss of drilling fluid from 20 to 30 ft
30	Poorly-graded GRAVEL (fine to medium) with some sand (fine to medium); orange to brown	GP		
40	Poorly-graded SAND (medium to coarse) with little gravel (fine); light gray to white	SP		
50	Silty-SAND; tan, orange, brown	SM		Silt occurs as interbeds (< 1ft thick) within the sand
60				
70	SAND (medium to coarse) and GRAVEL (fine); white to gray	SP-GP		Begin profiling at 69.55 ft
	Poorly-graded SAND (medium) with trace gravel (fine); gray to white	SP		
80				
90				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-26

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 12, 2003
JOB NUMBER:	4563001	END DATE:	May 20, 2003
DRILLING FIRM:	CT&E	LOCATION:	East of Cantiague Rock Rd, near NW corner of 140 property
DRILLING METHOD:	Mud Rotary		
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	John Hilton
Total depth of Profile:	295.8 ft	Total depth of Boring:	300 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100		SP		Profile data gaps due to poor KPRO flow equilibration from 101.85 to 103.74, 106.8 to 108.4, 111.85 to 113.72, and 116.85 to 118.43 ft.
	Poorly-graded SAND (fine to medium) with trace gravel (fine); light gray to white	SP		
110				
120				Gravel occurs as thin (<1 ft) thick interbeds within the sand from 120 to 135 ft Profile data gaps due to poor KPRO equilibration
130				
140				Profile data gap due to poor KPRO equilibration
150	Poorly-graded SAND (fine to medium) with silt and trace gravel (coarse); light gray to brown.	SP-SM		Profile data gap due to poor KPRO equilibration
160				Profile data gap due to poor KPRO equilibration
170				Profile data gap due to poor KPRO equilibration Silt lenses (< 1 ft) at 175 - 180 ft and 185 - 190 ft
180				
190				Trace gravel (coarse) at 190 - 195 ft

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

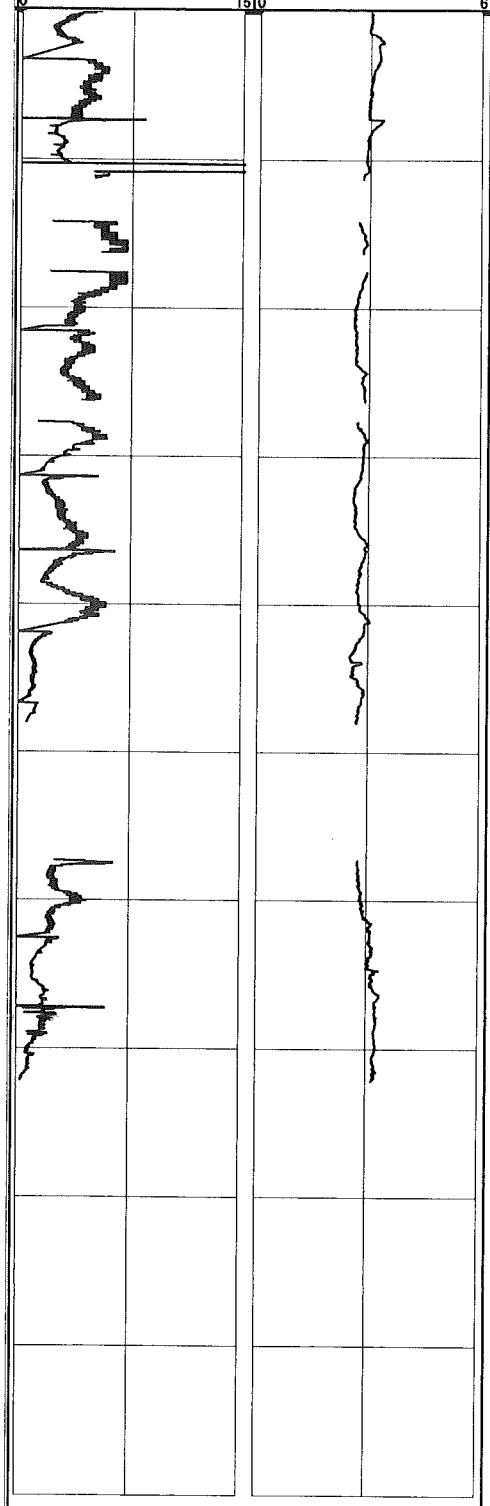
Boring ID:
P-26

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Bill Petley
HELPER:	Ken Heinz

START DATE: May 12, 2003
END DATE: May 20, 2003
LOCATION: East of Cantiague Rock Rd, near NW [illegible] of 140 property
DATUM: Land Surface
HYDROGEOLOGIST: John Hilton

Total depth of Profile: 295.8 ft
Total depth of Boring: 300 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	Well-graded SAND with trace gravel; light gray to brown	SW		
210				Profile data gap due to poor KPRO equilibration
220				Coarsens downward, gravel fraction increases with depth
230				Profile data gap due to poor KPRO equilibration
	Poorly-graded GRAVEL (fine)	GP		
240	Well-graded SAND with trace gravel; brown to tan	SW		
250				Gravel interbeds from 250 - 255 ft
	Poorly-graded SAND (medium to coarse); white to tan	SP		Profile data gap from 247.97 to 257.3 ft due to drilling activities
260				Coarsens with depth
270				Drilling equipment malfunctions, lost 5 ft of 3 in casing and tri-cone roller bit in bore hole. Abandoned bore hole and off-set drilling location. Much drilling fluid lost during drilling upper 80 ft of new hole
280				End of Profile at 272.12 ft
	Poorly-graded SAND (medium to coarse) with trace gravel; orange to pink	SP		
290				Gravel from 291 to 292 ft, Increased K-feldspar (up to 50% at 295 to 298 ft bgs)
300				End of boring at 300 ft, end profile at 295.8 ft bgs

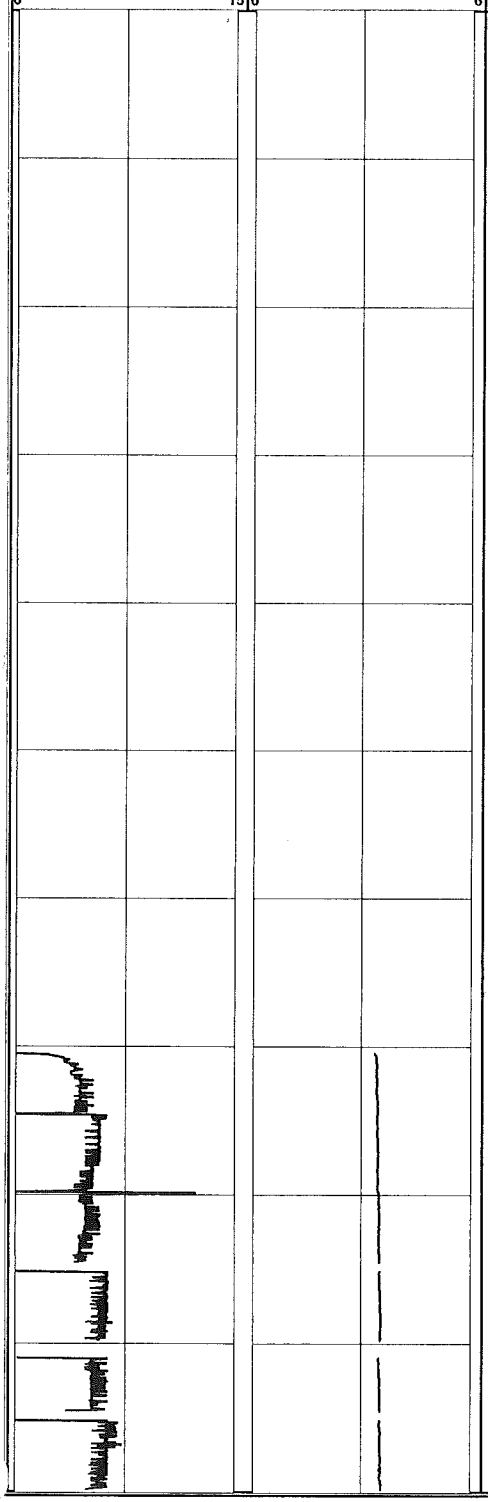
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-27

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 1, 2003
JOB NUMBER:	4563001	END DATE:	May 9, 2003
DRILLING FIRM:	CT&E	LOCATION:	East of Cantiage Rock Rd. Next to 70 property south driveway
DRILLING METHOD:	Mud Rotary		
DRILLER:	Wes Eicfeld	DATUM:	Land Surface
HELPER:	Karri Carley	HYDROGEOLOGIST:	Garrett Ferguson

Total depth of Profile: 285.02 ft
Total depth of Boring: 280.5 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Poorly-graded SAND (medium to coarse) with some gravel; brown	SP		
10				Hollow stem auger used from 0 to 13 ft
				Begin mud rotary drilling at 13 ft.
20	Well-graded SAND with some gravel (fine); brown	SW		
30				
40	Poorly-graded SAND (coarse) and GRAVEL (fine); brown	SP-GP		
50				
60				
70	Poorly-graded SAND (medium to coarse) with trace gravel (fine); brown	SP		Begin profiling at 70.47 ft
80				
				Profile data gaps due to poor KPRO equilibration
90				

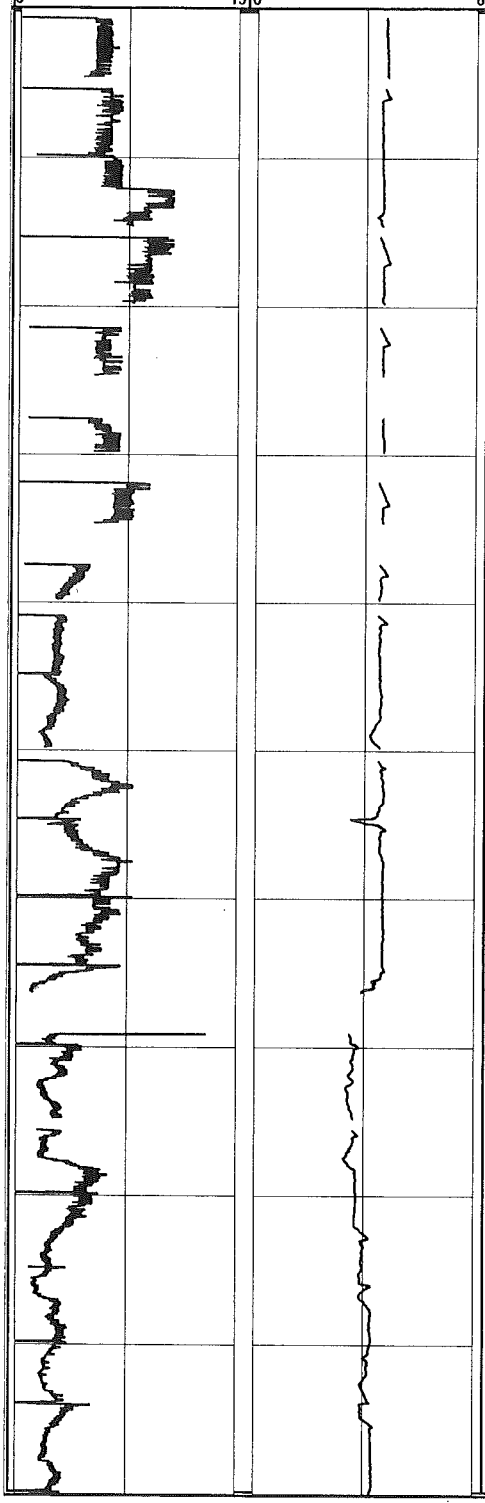
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-27

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 1, 2003
JOB NUMBER:	4563001	END DATE:	May 9, 2003
DRILLING FIRM:	CT&E	LOCATION:	East of Cantiage Rock Rd. Next to 70 property south driveway
DRILLING METHOD:	Mud Rotary		
DRILLER:	Wes Eicfeld	DATUM:	Land Surface
HELPER:	Karri Carley	HYDROGEOLOGIST:	Garrett Ferguson

Total depth of Profile: 285.02 ft
Total depth of Boring: 280.5 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100		SP		Profile data gap due to poor KPRO equilibration
110	Poorly-graded SAND (medium to coarse) with some gravel (fine); brown	SP		Micaceous
120	Poorly graded SAND (medium to coarse); brown	SP		Micaceous Profile data gaps due to poor KPRO equilibration
130	Well-graded SAND with trace gravel; brown	SW		
140	Well-graded SAND with some gravel (fine); brown	SW		Micaceous Pulled profile rods at 149.75 ft
150	Well-graded SAND with trace gravel and trace silt; brown	SW		Micaceous
160	Well-graded SAND with some gravel (fine); brown	SW		Micaceous Profile data gap due to poor KPRO equilibration
170				
180				
190	Poorly-graded SAND (medium to fine); brown	SP		Micaceous

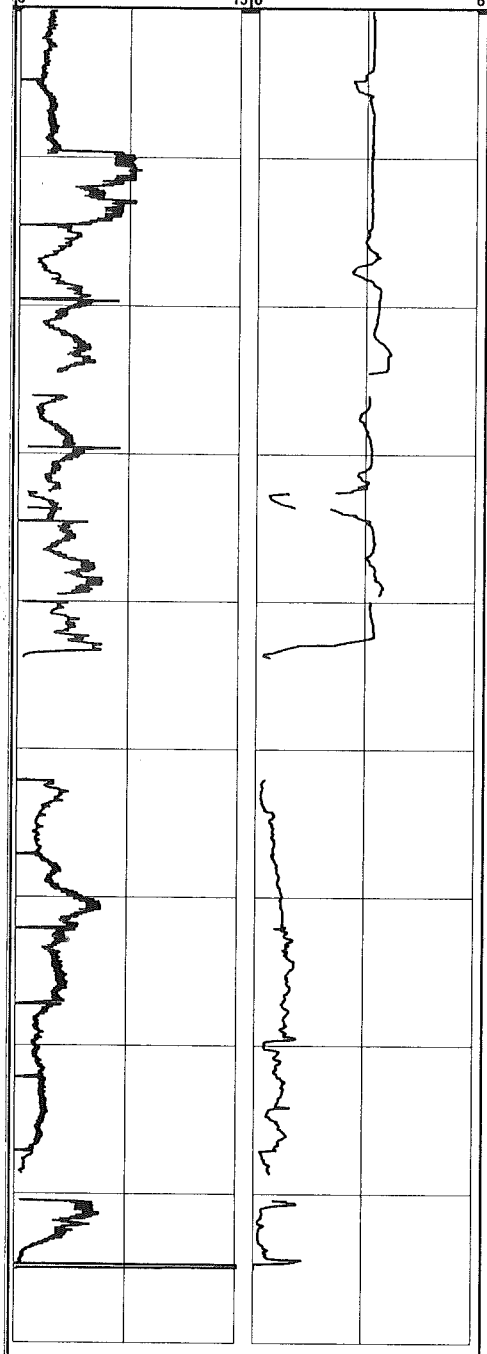
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-27

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 1, 2003
JOB NUMBER:	4563001	END DATE:	May 9, 2003
DRILLING FIRM:	CT&E	LOCATION:	East of Cantiage Rock Rd. Next to 70 property south driveway
DRILLING METHOD:	Mud Rotary		
DRILLER:	Wes Eicfeld	DATUM:	Land Surface
HELPER:	Karri Carley	HYDROGEOLOGIST:	Garrett Ferguson

Total depth of Profile: 285.02 ft
Total depth of Boring: 280.5 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	Well-graded SAND with some gravel (fine); brown	SW		
210				
220				Profile data gaps due to poor KPRO equilibration
230	Poorly-graded SAND (fine to medium); brown	SP		
240	Well-graded SAND (fine to coarse) with some clay and silt; brown	SC		
250	Poorly-graded SAND (medium to coarse) with some gravel and some clay; brown	SC		Profiler refusal at 245 ft, no penetration rate or IK data from 243.76 to 252.05 ft due to drilling activities
260	Poorly-graded SAND (fine to medium) and CLAY with trace gravel; brown	SC-CL		
270				Profiler refusal at 278.58 ft, no penetration rate or IK data from 278.58 to 280.42 ft due to drilling activities
280				End boring at 280.5 ft
290				End of profile at 285.02 ft

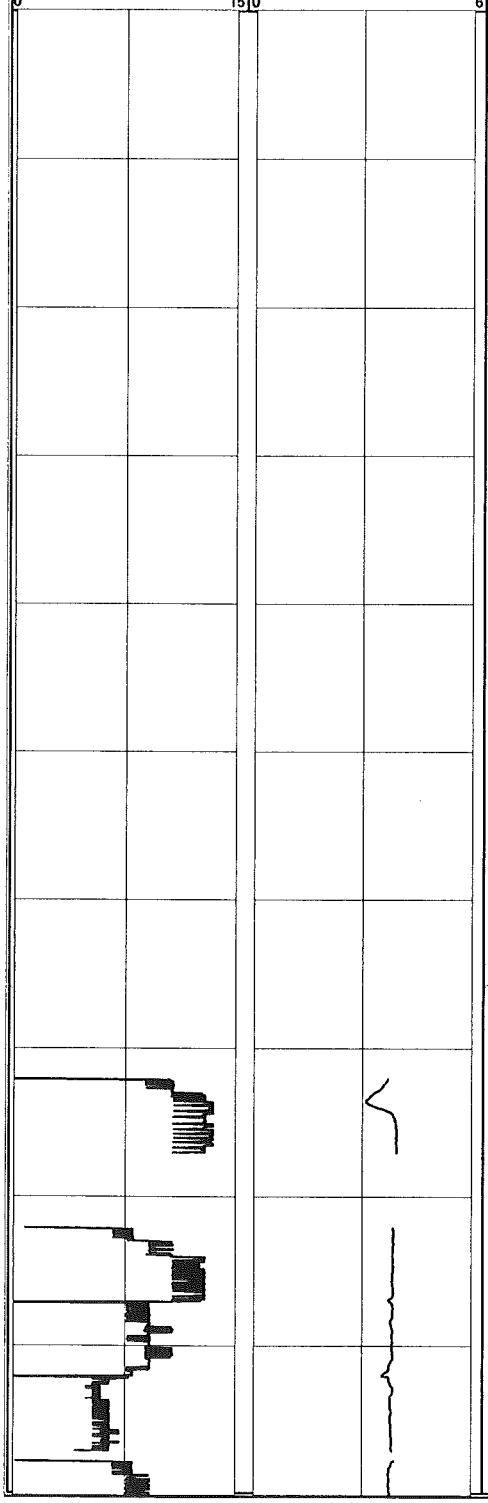
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-28

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 2, 2003
JOB NUMBER:	4563001	END DATE:	May 7, 2003
DRILLING FIRM:	CT&E	LOCATION:	N of W John St, E of Cantiague Rock
DRILLING METHOD:	Mud Rotary	WEATHER:	Nassau Co. Golf Course's driving range
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	John Hilton

Total depth of Profile: 247 ft
Total depth of Boring: 200 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Poorly-graded GRAVEL with little sand (medium to coarse) and trace silt; light brown	GP		
10	Well-graded SAND with trace to little gravel (fine); light brown to brown	SW		
20	Well-graded SAND with trace silt and gravel (fine); medium brown	SW		~300 gallons drilling fluid lost in upper 15 ft of boring
30	SAND (fine to medium) and GRAVEL (fine); light to medium brown	SP-GP		
40	Well-graded SAND with trace silt and gravel (fine); light brown to gray	SW		
50				Sand unit fines downward from having fine gravel from 35 to 55 ft, to fine sand at 70 ft
60				
70	Poorly-graded SAND (medium to coarse) with trace gravel (fine); light gray to white	SP		Begin profiling at 67.98 ft No IK data from 67.89 to 72.07 ft due to plugged KPRO lines
80				No record of penetration rate or IK from 77.02 to 82.02 due to broken string potentiometer
90	Poorly-graded SAND (fine to medium); light tan to brown	SP		Profile data gap due to poor KPRO equilibration

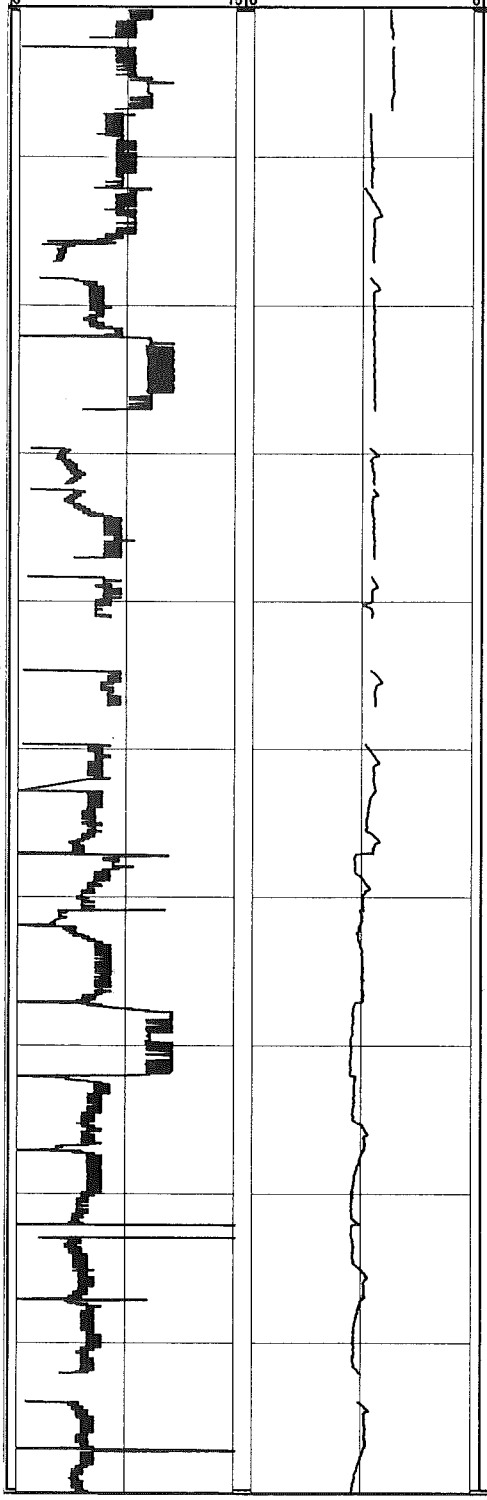
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-28

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 2, 2003
JOB NUMBER:	4563001	END DATE:	May 7, 2003
DRILLING FIRM:	CT&E	LOCATION:	N of W John St, E of Cantiague Rock Rd, on
DRILLING METHOD:	Mud Rotary	WEATHER:	Nassau Co. Golf Course's driving range
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	John Hilton

Total depth of Profile: 247 ft
Total depth of Boring: 200 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100		SP		
110				Profile data gaps due to poor KPRO equilibration
120				
				Trace fine gravel interbeds at 128 to 130 ft
130				Profile data gaps due to poor KPRO equilibration
140	Poorly-graded SAND (medium) with trace gravel (fine); light tan to brown	SP		
150				Profile data gaps due to poor KPRO equilibration
	Poorly-graded SAND (medium to coarse); gray to white	SP		
160				
170				
180				
190				Profile data gaps due to poor KPRO equilibration

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

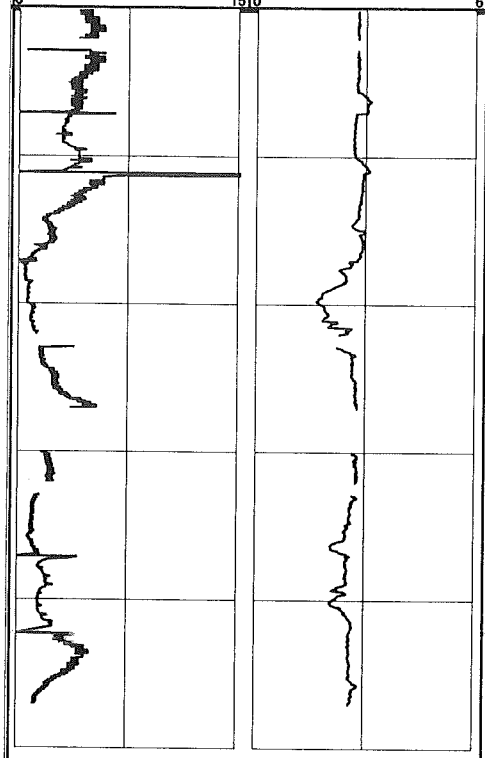
Boring ID:
P-28

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Bill Petley
HELPER:	Ken Heinz

START DATE: May 2, 2003
END DATE: May 7, 2003
LOCATION: N of W John St, E of Cantiague Rock Rd, on
WEATHER: Nassau Co. Golf Course's driving range
DATUM: Land Surface
HYDROGEOLOGIST: John Hilton

Total depth of Profile: 247 ft
Total depth of Boring: 200 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200				End of mud rotary boring at 200 ft. End mud log.
210				
220				
230				Profile data gaps due to poor KPRO equilibration
240				
250				End of profile at 247 ft

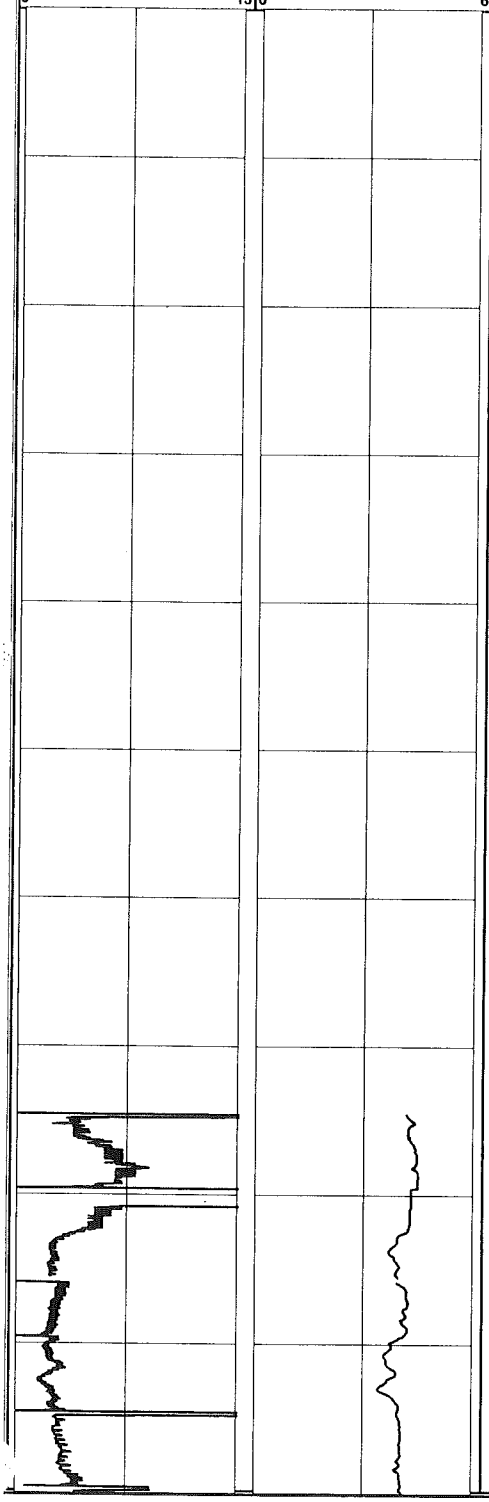
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-29**

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Larry Carlin
Total depth of Profile:	410.7

START DATE: September 16, 2003
END DATE: September 24, 2003
LOCATION: On E side of Charlotte St, S of W John St, and N of railroad tracks
DATUM: Land Surface
HYDROGEOLOGIST: John Hilton
Total depth of Boring: 410 ft

GEOLOGIC INFORMATION



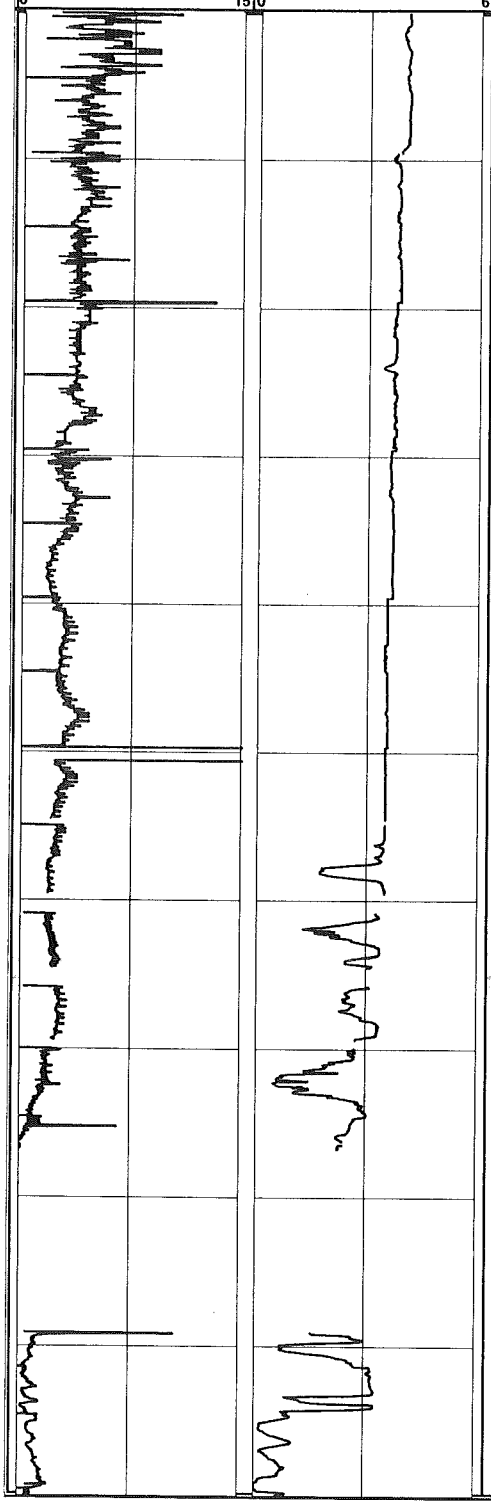
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	SAND (fine to medium) and GRAVEL (fine); dark brown	SP-GP		6 1/4 hollow stem auger used to drill from 0 to 14 ft
10				
	GRAVEL (coarse) with some sand (medium to coarse); light brown	GP		Begin mud rotary drilling at 14 ft
20	Poorly-graded SAND with trace gravel (fine); light brown	SP		
	SAND (medium to coarse) and GRAVEL (fine); light brown	SP-GP		
30				
40				
50	Poorly-graded SAND (fine to medium) with trace gravel (fine); light brown to white	SP		Gravel occurs as interbeds <1 ft thick.
60				
70	Poorly-graded SAND (fine to medium); light brown to white	SP		Begin profiling at 69.0 ft, but no data due to disconnected string potentiometer, reconnected at 74.57 ft
80				
90				Profile data gap due to poor KPRO equilibration

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-29

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Larry Carlin
START DATE:	September 16, 2003
END DATE:	September 24, 2003
LOCATION:	On E side of Charlotte St, S of W John... and N of railroad tracks
DATUM:	Land Surface
HYDROGEOLOGIST:	John Hilton
Total depth of Profile:	410.7
Total depth of Boring:	410 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100				
	Poorly-graded SAND (medium); light gray to brown	SP		
110				
	Poorly-graded SAND (medium) with trace clay and silt; light gray to brown	SP		Clay and silt occurs as thin interbeds
120				
130				
140				
	Poorly-graded SAND (medium to coarse) with some gravel (fine)	SP		Gravel occurs as thin interbeds
150	Silty sand; light brown	SM		Silt occurs as thin interbeds < 1 ft
160				Profile data gaps due to poor KPRO equilibration
170	Poorly-graded SAND (medium to coarse); light brown	SP		Profiler refusal at 176.7 ft, no pentration rate or IK data from 176.7 to 189.07 ft due to drilling activities
180	SAND and GRAVEL (fine)	SP-GP		
	SAND with some silt and clay; light tan to brown	SM		Silt and clay occur as thin interbeds
190				

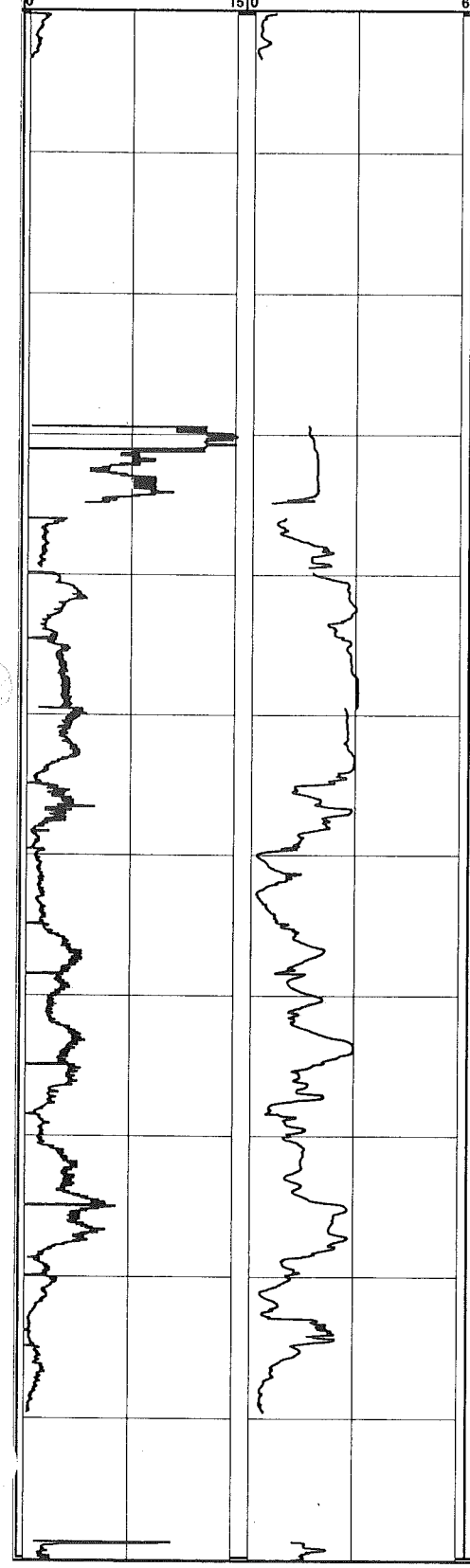
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-29

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	September 16, 2003
JOB NUMBER:	4563001	END DATE:	September 24, 2003
DRILLING FIRM:	CT&E	LOCATION:	On E side of Charlotte St, S of W John St, and N of railroad tracks
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Larry Lynch	HYDROGEOLOGIST:	John Hilton
HELPER:	Larry Carlin		

Total depth of Profile: 410.7
Total depth of Boring: 410 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	SILT and CLAY; light gray-white to dark brown	ML- CL		Some carbonaceous clay Profiler refusal at 203.32 ft
210				No penetration rate or IK data from 203.32 to 229.4 ft due to drilling activities
220				
	Silty SAND; light brown to yellow	SM		
230	Poorly-graded SAND (fine); light tan to brown	SP		Profile data gaps due to poor KPRO equilibration
240		SP		
250				
260				
	Poorly-graded sand with some silt and clay; light brown	SM		Silty clay interbeds
270				
280				
290	Silty SAND with some clay; light brown	SM		Carbonaceous clay interbeds Profiler refusal at 299.55 ft. No penetration rate or IK data from 299.55 to 308.71 ft due to drilling activities
300				

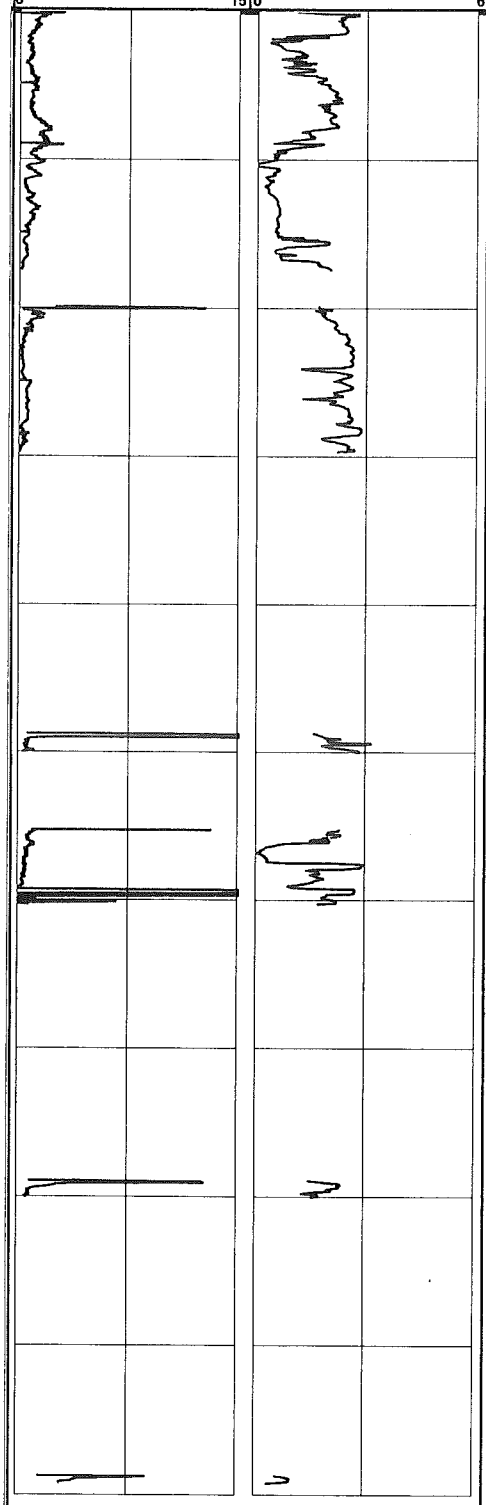
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-29**

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	September 16, 2003
JOB NUMBER:	4563001	END DATE:	September 24, 2003
DRILLING FIRM:	CT&E	LOCATION:	On E side of Charlotte St, S of W Jo and N of railroad tracks
DRILLING METHOD:	Mud Rotary		
DRILLER:	Larry Lynch	DATUM:	Land Surface
HELPER:	Larry Carlin	HYDROGEOLOGIST:	John Hilton

Total depth of Profile: 410.7 — Total depth of Boring: 410 ft

GEOLOGIC INFORMATION



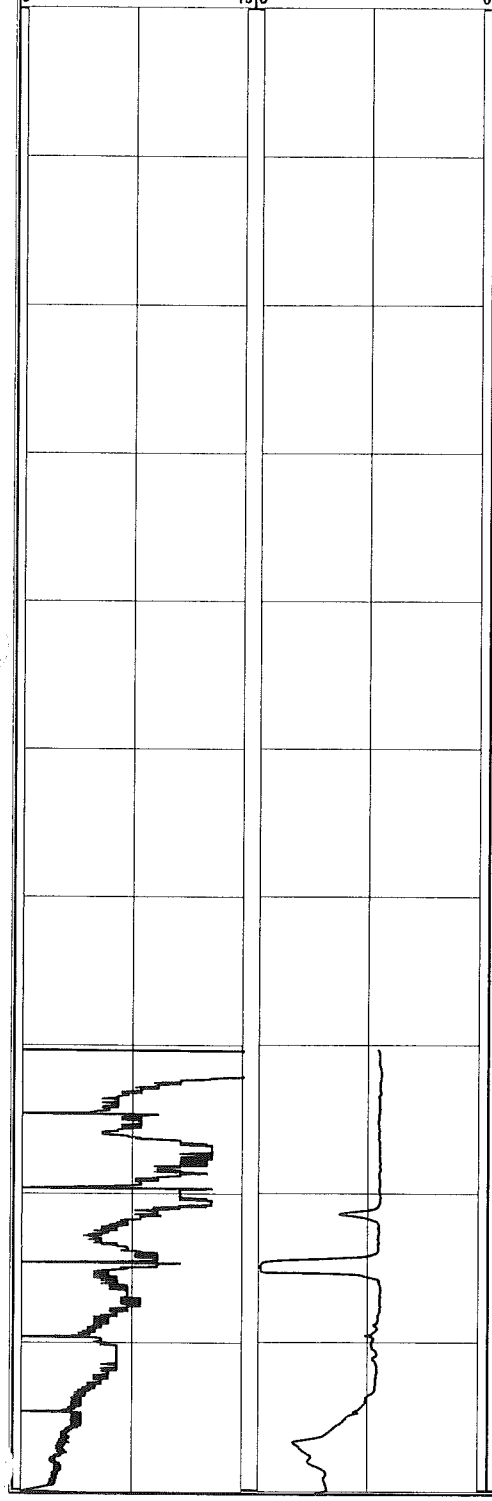
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
310	Poorly-graded SAND (fine to medium) with trace to little silt; gray to white	SP		Silty clay interbeds
320				
330				Profile data gap due to equipment malfunction
	Well-graded SAND; gray to white	SW		Profiler refusal at 339.70. High IK, but very low penetration rate
340				No penetration rate or IK data from 339.70 to 358.75 due to drilling activities
350				
				No profile data from 360.08 to 365.19 due to equipment malfunction
360	Poorly-graded SAND with trace clay; light gray to white	SP		
				Profiler refusal at 370.3 ft
370				No penetration rate or IK data from 370.3 to 388.91 ft due to drilling activities
380				
	CLAY with trace lignite; dark brown, carbonaceous	CL		
	Silty SAND with trace clay; light yellow to white	SM		Profiler refusal at 390.0 ft
390				
	Well-graded SAND; light gray to white	SW		No penetration rate or IK data from 390.0 to 408.71 ft due to drilling activities
400				
				Profiler refusal at 410.7 ft, end of Profile. End of boring at 410 ft. Upon pulling 3 in mud rotary casing, casing broke, interval from 279 409 ft left in boring
410				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-30

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	September 30, 2003
JOB NUMBER:	4563001	END DATE:	October 9, 2003
DRILLING FIRM:	CT&E	LOCATION:	On E side of Charlotte St, S of W John St, N of railroad tracks, and E of P-29
DRILLING METHOD:	Mud Rotary		
DRILLER:	Larry Lynch	DATUM:	Land Surface
HELPER:	Brian Sieker	HYDROGEOLOGIST:	Emily Moshier, John Hilton
Total depth of Profile:	406.55 ft	Total depth of Boring:	390 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Well-graded SAND and GRAVEL (fine to coarse); medium to dark brown	SP-GP		6 1/4 in hollow stem auger used to drill from 0 to 14 ft
10				Begin mud rotary drilling at 14 ft
	Poorly-graded SAND (coarse to medium) with trace gravel; light to medium brown	SP		
20				
	Well-graded SAND and GRAVEL (fine to medium); light brown	SP-GP		
30				Gravel fraction increases with depth
40	Poorly-graded SAND (medium to coarse) with trace gravel (fine); medium to light brown	SP		
50				
60				
	Poorly-graded SAND (medium to coarse); medium to light brown			Begin profiling at 70.34 ft
70				
80	Poorly-graded SAND (medium) with trace clay; light brown to orange	SC		
	CLAY with some sand; medium brown to orange	CL		
90	Poorly-graded SAND (medium to fine); light brown to white, some orange	SP		

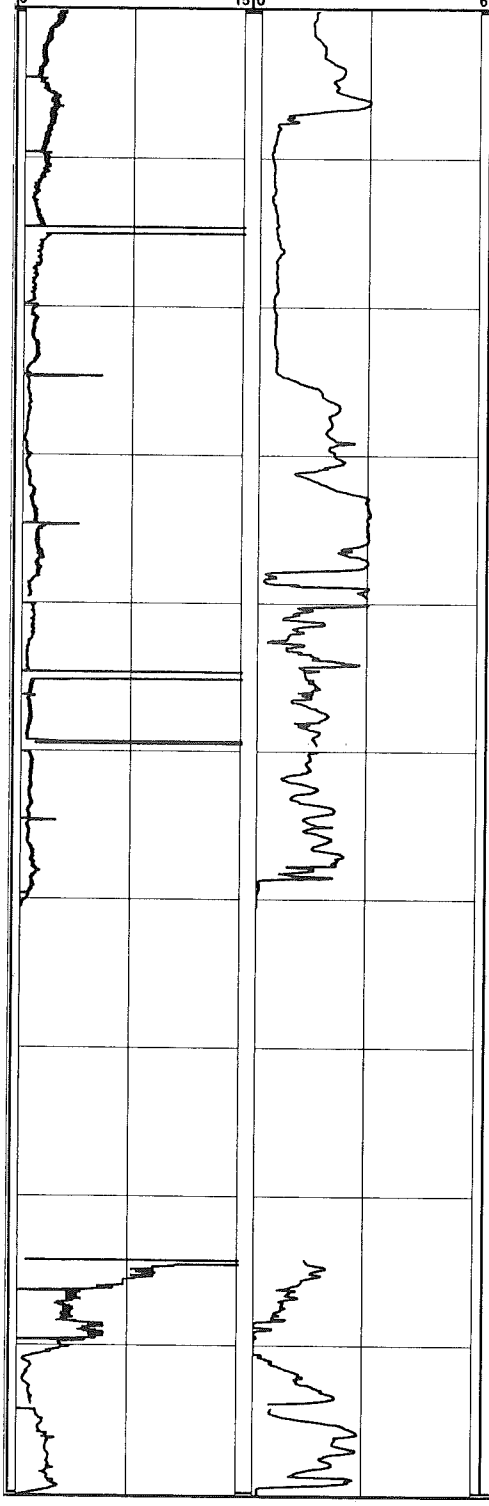
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-30

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Brian Sieker
Total depth of Profile:	406.55 ft

START DATE: September 30, 2003
END DATE: October 9, 2003
LOCATION: On E side of Charlotte St, S of W John[illegible], N of railroad tracks, and E of P-29
DATUM: Land Surface
HYDROGEOLOGIST: Emily Moshier, John Hilton
Total depth of Boring: 390 ft

GEOLOGIC INFORMATION



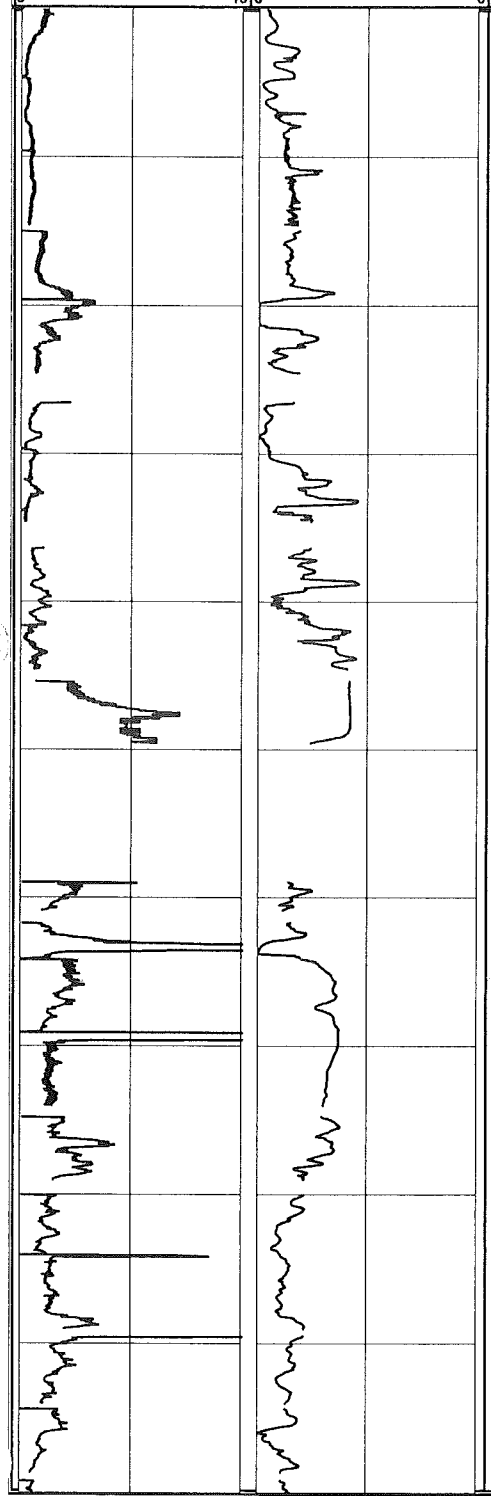
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100		SP		
	Poorly-graded SAND (fine) and SILT; light brown	SM-ML		
110				
120				
	Poorly-graded SAND (medium to fine); light tan	SP		
130				
140	SAND and CLAY; orange-brown	SC-CL		
150	Poorly-graded SAND (coarse); light brown	SP		
	CLAY with some sand; orange-brown	CL		
160	Clay; light gray to brown	CL		Profiler refusal at 160.5 ft, no penetration rate or IK data from 160.5 to 184.27 ft due to drilling activities
170				
180	SILT and SAND (medium); brown and orange	ML-SM		
	SILT; medium brown to orange	ML		
190	CLAY; light brown to white	CL		
	SILT and SAND (fine); dark to light brown	ML-SM		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-30

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	September 30, 2003
JOB NUMBER:	4563001	END DATE:	October 9, 2003
DRILLING FIRM:	CT&E	LOCATION:	On E side of Charlotte St, S of W John St, N of railroad tracks, and E of P-29
DRILLING METHOD:	Mud Rotary		
DRILLER:	Larry Lynch	DATUM:	Land Surface
HELPER:	Brian Sieker	HYDROGEOLOGIST:	Emily Moshier, John Hilton
Total depth of Profile:	406.55 ft	Total depth of Boring:	390 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200		ML-SM		
210				Profile data gap due to poor KPRO equilibration
220	CLAY and SAND (fine); light brown	SC-CL		Drill casing broke in hole at 223 ft, casing from 211 to 223 ft abandoned in hole, initiated drilling in off-set location
230				
240				Profile data gaps due to poor KPRO equilibration
250				Profiler refusal at 249.55 ft, no penetration rate or IK data from 249.55 ft to 258.95 ft due to drilling activities
260	Poorly-graded SAND (fine) with trace to little silt; light brown to gray	SP		Profile data gaps due to poor KPRO equilibration
270				
280				
290				Profile data gaps due to poor KPRO equilibration

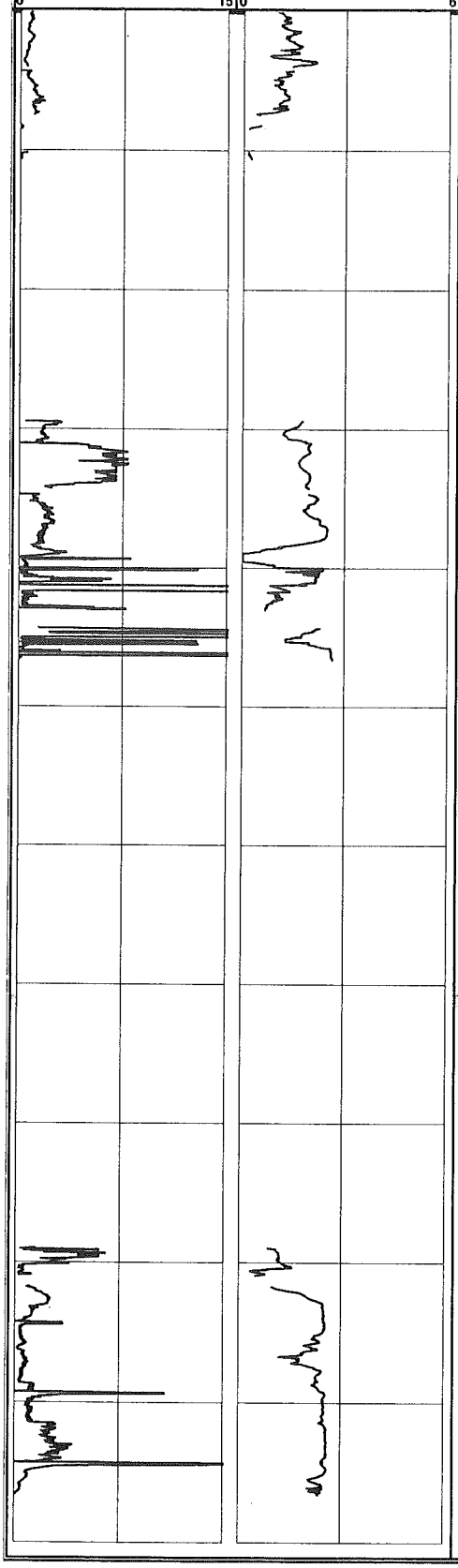
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-30

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Brian Sieker
START DATE:	September 30, 2003
END DATE:	October 9, 2003
LOCATION:	On E side of Charlotte St, S of W John St, N of railroad tracks, and E of P-29
DATUM:	Land Surface
HYDROGEOLOGIST:	Emily Moshier, John Hilton

Total depth of Profile: 406.55 ft
Total depth of Boring: 390 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300	SAND with some silt and clay; light brown to gray	SM		Profile data gaps due to poor KPRO equilibration Silt and clay interbeds (< 2 ft) from 305 to 330 ft
310				Profiler refusal at 310.6 ft, no penetration rate or IK data from 310.6 to 329.43 ft due to drilling activities
320				
330	Poorly-graded SAND (fine) with trace silt; light brown to gray	SP		
340				
	Well-graded SAND; light gray to white (1 ft clay lens from 354 to 355 ft)	SW		Profiler refusal at 346.59 ft, no penetration rate or IK data from 346.59 to 388.95 ft due to drilling activities
350				
	Well-graded SAND with trace gravel (fine); light gray to brown	SW		
360				
370				
380				End of boring at 390 ft
390				Profile data gap due to poor KPRO equilibration
400				Profiler refusal at 406.55 ft. End profile.
410				

Boring ID:

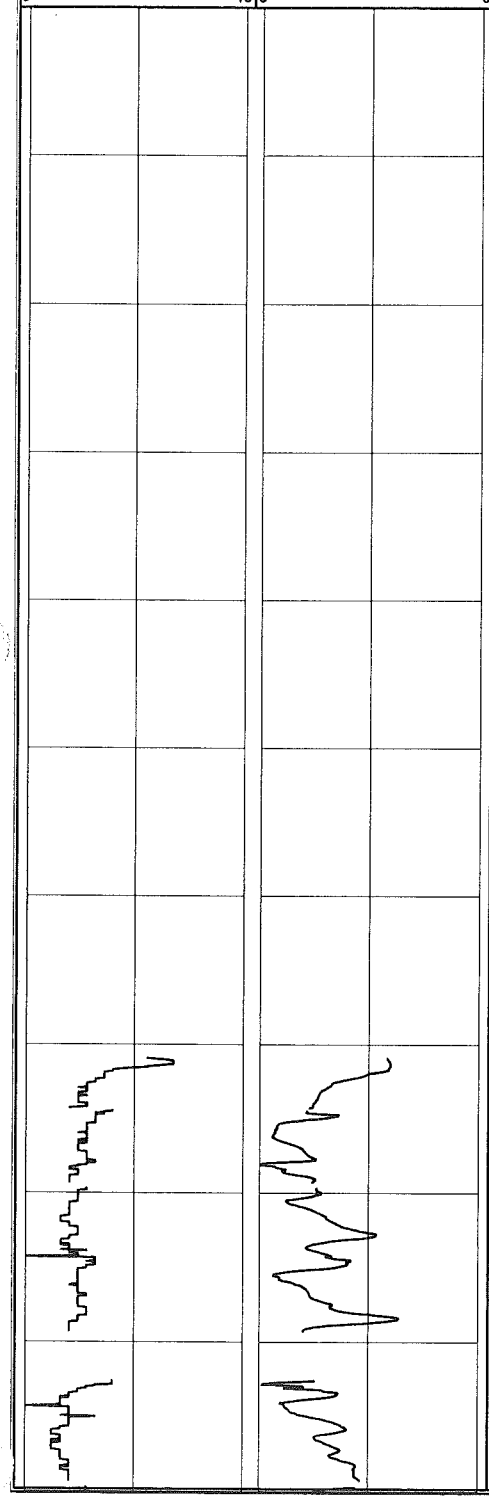
MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

P-31

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	January 5, 2004
JOB NUMBER:	4563001	END DATE:	January 24, 2004
DRILLING FIRM:	CT&E	LOCATION:	East of Cantiage Rock Rd., North of 140 Property
DRILLING METHOD:	Mud Rotary		
DRILLER:	Larry Lynch	DATUM:	Land Surface
HELPER:	Larry Carlin	HYDROGEOLOGIST:	Colleen Sullivan
Total depth of Profile:	451.5 ft	Total depth of Boring:	440 ft

GEOLOGIC INFORMATION



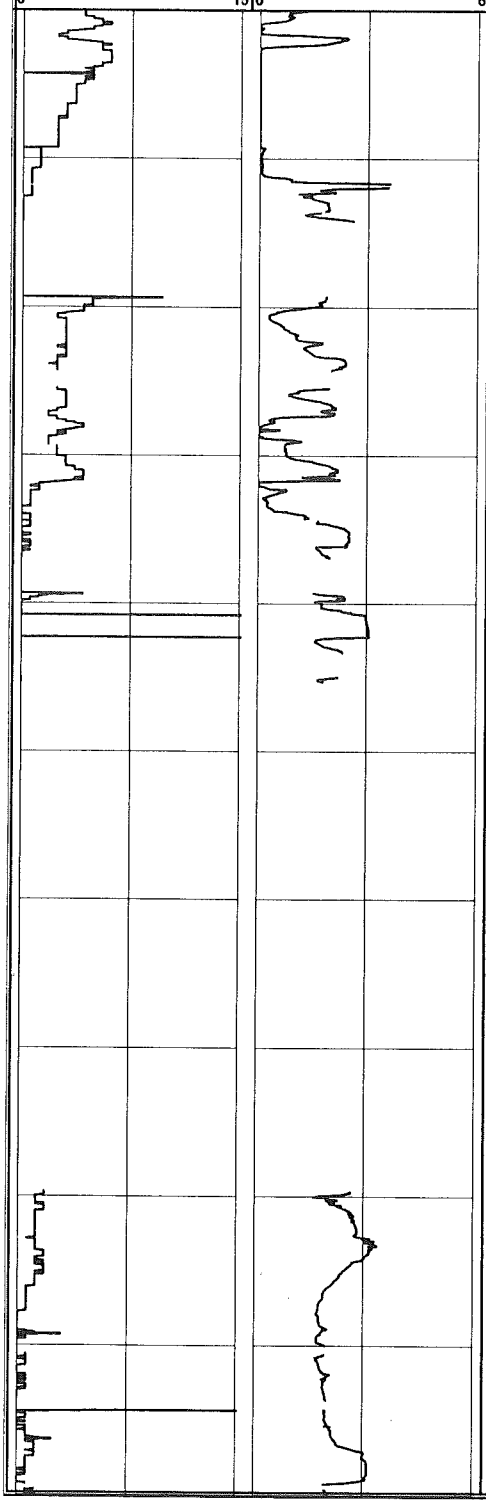
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Well-graded SAND (fine to coarse) with some gravel and cobbles; light brown.	SW		Hollow stem augers used from 0 to 15 ft
10				
	Poorly-graded SAND (medium to coarse) and GRAVEL; light brown-white-orange	SP-GP		Begin mud rotary drilling at 15 ft
20				
30				
40	Poorly-graded SAND (medium to coarse) with some silt; light brown to white	SM		Micaceous
50	Poorly-graded SAND (fine) with silt and clay; white-gray-orange	SM-SC		
60	Poorly-graded SAND (fine) with little clay; light brown to white	SC		
70	Poorly-graded SAND (fine to medium) with trace silt and clay; light brown to orange	SP		Begin profiling at 69.29 ft Profile data gaps due to poor KPRO equilibriation
80				
90	Poorly-graded SAND (fine to medium) with little clay and silt; brown	SC		Profile data gaps due to poor KPRO equilibriation

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-31

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	January 5, 2004
JOB NUMBER:	4563001	END DATE:	January 24, 2004
DRILLING FIRM:	CT&E	LOCATION:	East of Cantiage Rock Rd., North of [illegible] Property
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Larry Lynch	HYDROGEOLOGIST:	Colleen Sullivan
HELPER:	Larry Carlin		
Total depth of Profile:	451.5 ft	Total depth of Boring:	440 ft

GEOLOGIC INFORMATION



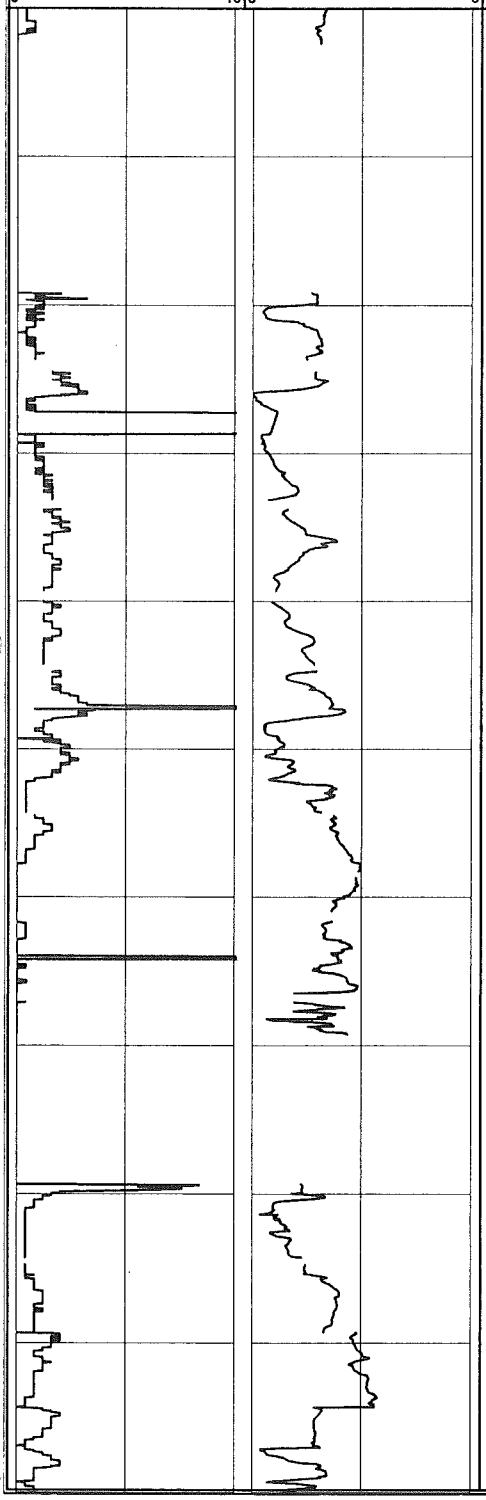
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100	Poorly-graded SAND (fine to medium) with little clay and silt; brown	SC		
	SILT and CLAY with little sand (fine); orange-light brown-black	ML-CL		Profile data gaps due to poor KPRO equilibriation
110	Poorly-graded SAND (fine); dark brown to black	SP		Micaceous Profiler refusal at 114.20. No penetration rate or IK data from 114.2 to 119.25 ft due to drilling activities
120	SILT and CLAY with some sand (fine); dark brown-white-black	ML-CL		Profile data gaps due to poor KPRO equilibriation
130	Poorly-graded SAND (fine) and SILT with trace clay	SM-ML		Profiler refusal at 136.9. No penetration rate or IK data from 136.9 to 139.25 ft due to drilling activities
140	Poorly-graded SAND (fine); light brown to orange	SP		Profile data gaps due to poor KPRO equilibriation
	Poorly-graded SAND (fine); light brown to orange	SP		Interbedded clay from 148 to 173 ft
150				Profiler refusal at 145.2. No penetration rate or IK data from 145.2 to 179.25 ft due to drilling activities
160				
170	Poorly-graded SAND (fine); brown	SP		Micaceous
180	Poorly-graded SAND (fine) and SILT; brown	SM-ML		Profile data gaps due to poor KPRO equilibriation
190				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-31**

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	January 5, 2004
JOB NUMBER:	4563001	END DATE:	January 24, 2004
DRILLING FIRM:	CT&E	LOCATION:	East of Cantiage Rock Rd., North of 140 Property
DRILLING METHOD:	Mud Rotary		
DRILLER:	Larry Lynch	DATUM:	Land Surface
HELPER:	Larry Carlin	HYDROGEOLOGIST:	Colleen Sullivan
Total depth of Profile:	451.5 ft	Total depth of Boring:	440 ft

GEOLOGIC INFORMATION



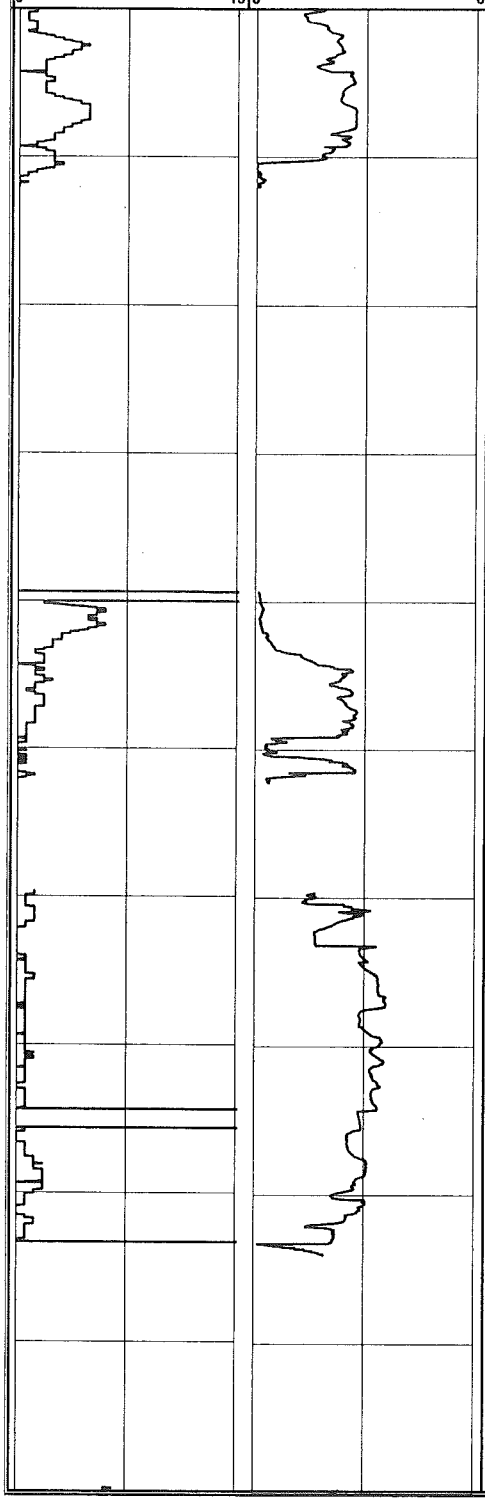
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	Poorly-graded SAND (fine to medium); white to orange	SP		Clay lenses from 200 to 220 ft Micaceous Profiler refusal at 202.38. No penetration rate or IK data from 202.38 to 219.25 ft due to drilling activities
210				
220	Poorly-graded SAND (fine) with trace clay; light brown to white	SP		Micaceous Profile data gaps due to poor KPRO equilibriation
230				
240				Profile data gaps due to poor KPRO equilibriation
250				
260	Poorly-graded SAND (fine); light brown	SP		Micaceous Profile data gaps due to poor KPRO equilibriation
270				Profiler refusal at 269.20. No penetration rate or IK data from 269.20 to 279.75 ft due to drilling activities
280	Poorly-graded SAND (fine) with trace clay; light brown-white-gray	SP		Profile data gaps due to poor KPRO equilibriation
290				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-31

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	January 5, 2004
JOB NUMBER:	4563001	END DATE:	January 24, 2004
DRILLING FIRM:	CT&E	LOCATION:	East of Cantiage Rock Rd., North of ... Property
DRILLING METHOD:	Mud Rotary		
DRILLER:	Larry Lynch	DATUM:	Land Surface
HELPER:	Larry Carlin	HYDROGEOLOGIST:	Colleen Sullivan
Total depth of Profile:	451.5 ft	Total depth of Boring:	440 ft

GEOLOGIC INFORMATION



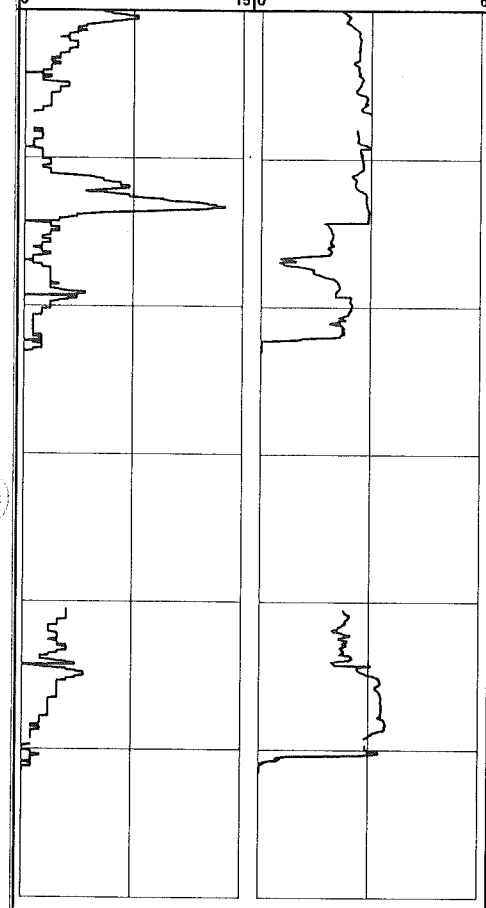
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300	Poorly-graded SAND (fine); light brown	SP		Micaceous
310	Poorly-graded SAND (fine) with silt and clay; white-orange-black	SM-SC		Profiler refusal at 312.04. No penetration rate or IK data from 312.04 to 339.25 ft due to drilling activities
320	Poorly-graded SAND (fine) and SILT with some clay and lignite; gray	SM-ML		
330	Poorly-graded SAND (fine) and SILT with trace clay	SM-ML		
340	Poorly-graded SAND (fine to medium); light brown to white	SP		Micaceous
350	Poorly-graded SAND (fine to medium); light brown to white	SP		Micaceous Thin clay layer at 352 ft Profiler refusal at 352.20. No penetration rate or IK data from 352.20 to 359.40 ft due to drilling activities
360	Well-graded SAND (fine to coarse) with trace clay; brown-orange-white	SW		Micaceous
370				
380	SILT and CLAY with some sand (fine to medium) and lignite; white-gray-orange	ML-CL		Micaceous Profiler refusal at 384.02. No penetration rate or IK data from 384.02 to 399.25 ft due to drilling activities
390	Poorly-graded SAND (medium to coarse); light brown to white	SP		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-31**

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Larry Carlin
START DATE:	January 5, 2004
END DATE:	January 24, 2004
LOCATION:	East of Cantiage Rock Rd., North of 140 Property
DATUM:	Land Surface
HYDROGEOLOGIST:	Colleen Sullivan
Total depth of Profile:	451.5 ft
Total depth of Boring:	440 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
400	Poorly-graded SAND (medium to coarse); light brown to white	SP		No penetration rate or IK data from 407.0 to 408.0 ft due to leak in harness
410	Well-graded SAND (fine to coarse); light brown-white-orange	SW		
420	Well-graded SAND (fine to coarse) with little clay; light brown-white-orange	SC		Profiler refusal at 423.09. No penetration rate or IK data from 423.09 to 439.25 ft due to drilling activities
430	Poorly-graded SAND (medium to coarse) with trace clay; white-gray-tan	SP		
440				End of boring at 440 ft Profile data gap due to poor KPRO equilibriation
450				End of profile at 451.5 ft
460				
470				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

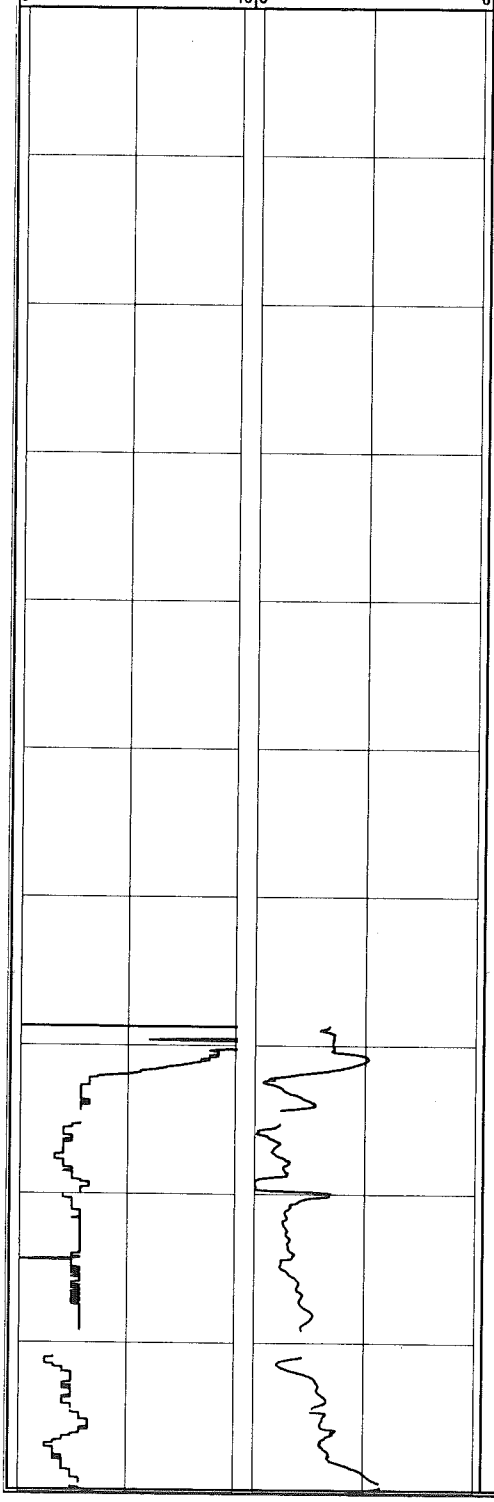
Boring ID:
P-32

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Larry Carlin

START DATE: February 9, 2004
END DATE: February 19, 2004
LOCATION: East of Cantiage Rock Rd., North of 140 Property
DATUM: Land Surface
HYDROGEOLOGIST: J. Hilton, C. Sullivan, E. Mosier

Total depth of Profile: 492.58
Total depth of boring: 420 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Well-graded SAND (fine to coarse) with trace gravel (fine); brown	SW		Hollow stem augers used from 0 to 15 ft
	Well-graded SAND (fine to coarse) with some gravel (fine to coarse); brown	SW		
10	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); light brown	SP-GP		Begin mud rotary drilling at 15 ft
20				
30	Poorly-graded SAND (medium to coarse) with little gravel (fine); tan to brown	SP		
40				
50	Poorly-graded SAND (fine to medium) and GRAVEL (fine); brown	SP-GP		
60	Poorly-graded SAND (fine to medium) with trace silt; light brown to white	SP		Begin profiling at 68.65 ft
70				Profile data gaps due to poor KPRO equilibriation
80				
90	Poorly-graded SAND (fine) with trace silt; light gray to brown	SP		Profile data gaps due to poor KPRO equilibriation

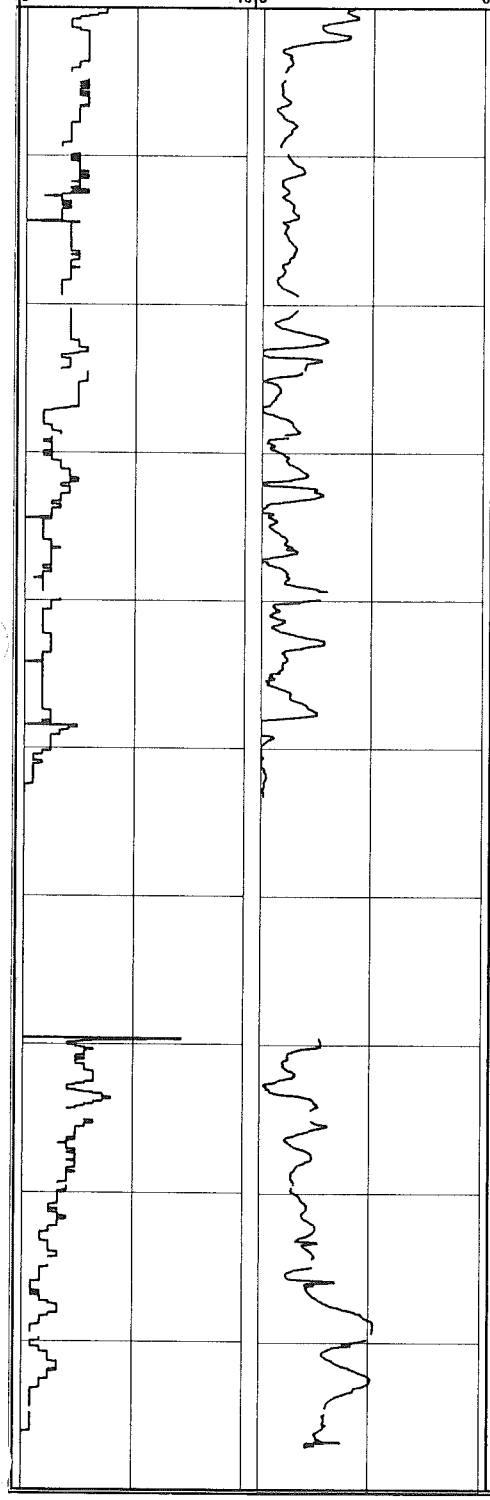
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-32

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	February 9, 2004
JOB NUMBER:	4563001	END DATE:	February 19, 2004
DRILLING FIRM:	CT&E	LOCATION:	East of Cantiage Rock Rd., North of 140 Property
DRILLING METHOD:	Mud Rotary		
DRILLER:	Larry Lynch	DATUM:	Land Surface
HELPER:	Larry Carlin	HYDROGEOLOGIST:	J. Hilton, C. Sullivan, E. Mosier

Total depth of Profile: 492.58 | Total depth of boring: 420 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100	Poorly-graded SAND (fine) with trace silt; light gray to brown	SP		Profile data gaps due to poor KPRO equilibriation
110				
120				Profile data gaps due to poor KPRO equilibriation
130	Poorly-graded SAND (fine and coarse) with trace silt and clay; light gray to brown	SP		
140				Profile data gaps due to poor KPRO equilibriation
150				Profiler refusal at 153.23 ft. No penetration rate or IK data from 153.23 to 169.50 ft due to drilling activities
160	Poorly-graded SAND (fine) with silt; light tan to white	SM		
170				Profile data gaps due to poor KPRO equilibriation
180	Poorly-graded SAND (medium to coarse); light tan to brown	SP		Micaceous
190	Poorly-graded SAND (fine to medium); brown			Profiler refusal at 196.96 ft. No penetration rate or IK data from 196.96 to 219.38 ft due to drilling activities

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

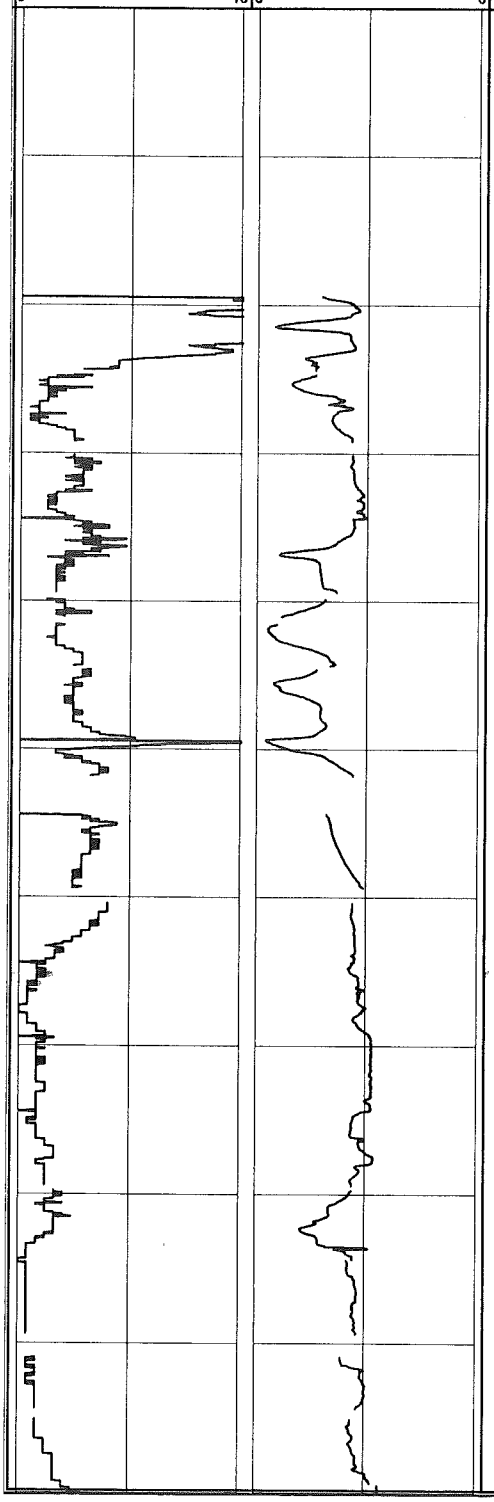
Boring ID:
P-32

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Larry Carlin

START DATE: February 9, 2004
END DATE: February 19, 2004
LOCATION: East of Cantiage Rock Rd., North of [illegible] Property
DATUM: Land Surface
HYDROGEOLOGIST: J. Hilton, C. Sullivan, E. Mosier

Total depth of Profile: 492.58
Total depth of boring: 420 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	Poorly-graded SAND (fine) with little silt; olive brown to gray-white	SM		
210				
220				Profile data gaps due to poor KPRO equilibriation
230				
240				Profile data gaps due to poor KPRO equilibriation
	Poorly-graded SAND (fine) with little silt and clay; olive brown to gray-white	SM		
250	Poorly-graded SAND (fine) with little silt; light tan to white	SM		No penetration rate or IK data from 251.83 to 254.35 ft due to plugged KPRO line
260				Profile data gaps due to poor KPRO equilibriation
270				
280				Clay interbeds from 282 to 284 ft
290	Poorly-graded SAND (fine) with trace silt; light tan to white	SP		Profile data gaps due to poor KPRO equilibriation

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

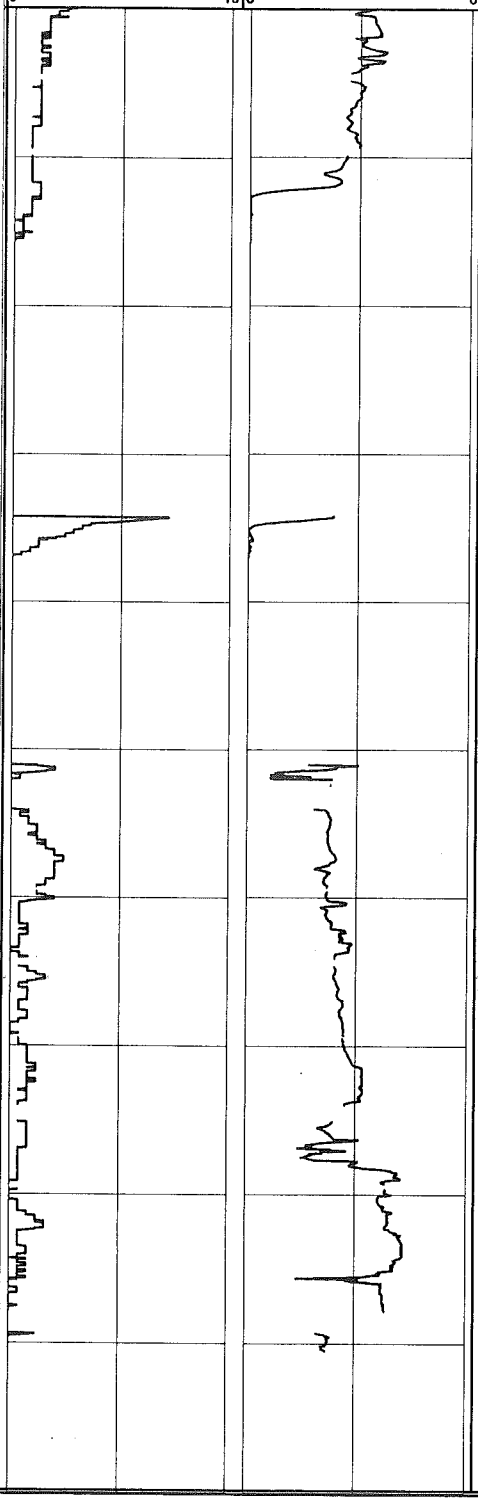
Boring ID:
P-32

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Larry Carlin

START DATE: February 9, 2004
END DATE: February 19, 2004
LOCATION: East of Cantiage Rock Rd., North of 140 Property
DATUM: Land Surface
HYDROGEOLOGIST: J. Hilton, C. Sullivan, E. Mosier

Total depth of Profile: 492.58
Total depth of boring: 420 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300	Poorly-graded SAND (fine) with trace silt; light tan to white	SP		Profile data gaps due to poor KPRO equilibriation
310	SILT and CLAY; dark gray to brown	ML-CL		Thin bedded fine sand (< 2 ft)
				Profiler refusal at 315.0 ft. No penetration rate or IK data from 315.0 to 334.15 ft due to drilling activities
320				
330	CLAY with little silt, trace sand (fine), and trace lignite; dark gray to brown	CL		
				Profiler refusal at 336.93 ft. No penetration rate or IK data from 336.93 to 349.05 ft due to drilling activities
340				
	Poorly graded SAND (fine to medium); light brown to tan	SP		No penetration rate or IK data from 349.10 to 350.95 ft due to low pressure reading
350				No penetration rate or IK data from 352.00 to 353.96 ft due to computer malfunction
360				Profile data gaps due to poor KPRO equilibriation
370	Well-graded SAND (fine to coarse) with trace silt; light brown to white	SW		Profile data gaps due to poor KPRO equilibriation
380				Profiler refusal at 387.8 ft. No penetration rate or IK data from 387.8 to 389.25 ft due to drilling activities
390	Well-graded SAND (fine to coarse); gray-white to tan-white	SW		Profiler refusal at 390.1 ft. No penetration rate or IK data from 390.1 to 409.30 ft due to drilling activities

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

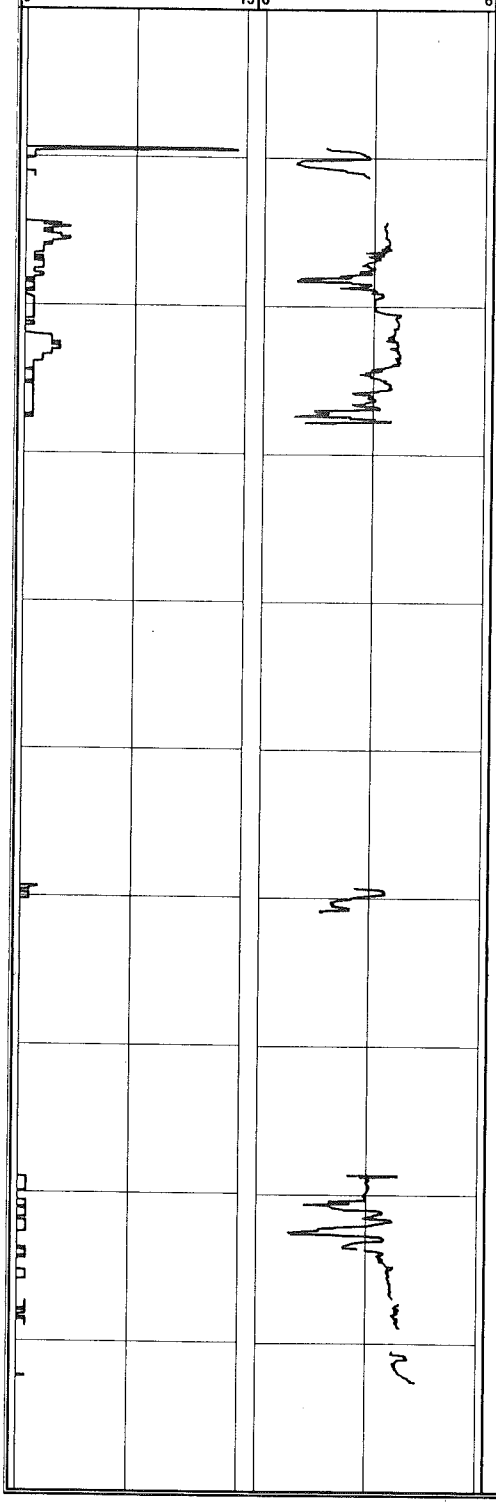
Boring ID:
P-32

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Larry Carlin
START DATE:	February 9, 2004
END DATE:	February 19, 2004
LOCATION:	East of Cantiage Rock Rd., North of [illegible] Property
DATUM:	Land Surface
HYDROGEOLOGIST:	J. Hilton, C. Sullivan, E. Mosier

Total depth of Profile: 492.58

Total depth of boring: 420 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
400	Well-graded SAND (fine to coarse); gray-white to tan-white	SW		
410	No Recovery			Lost circulation. No recovery of cuttings
				No penetration rate or IK data from 449.51 to 451.04 ft due to low pressure reading
420				Profile data gaps due to poor KPRO equilibriation
				Profiler refusal at 427.7 ft. No penetration rate or IK data from 427.7 to 449.45 ft due to drilling activities
430				
440				
450		CL		Rig response indicated interbedded silty sand and clay from 450 to 460 ft
460				
470				
480				End of boring at 480 ft
490				End of profile at 492.58 ft

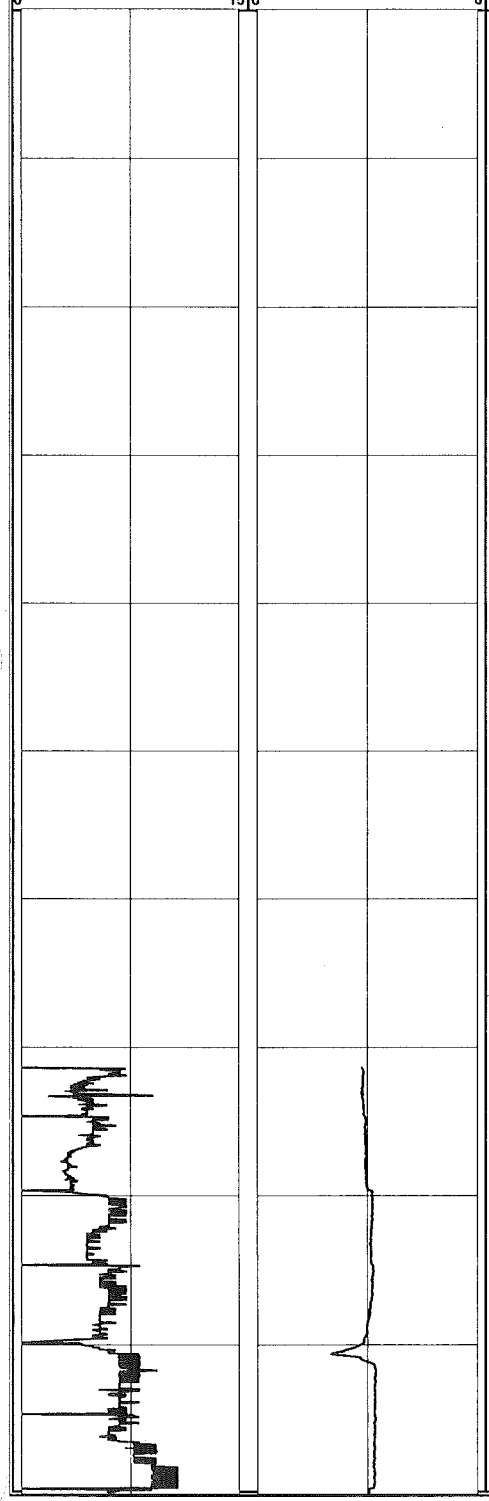
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-33

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	December 5, 2003
JOB NUMBER:	4563001	END DATE:	December 15, 2003
DRILLING FIRM:	CT&E	LOCATION:	East of Cantiage Rock Rd. on North side of 140 building
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Larry Lynch	HYDROGEOLOGIST:	Emily Moshier
HELPER:	Larry Carlin		

Total depth of Profile: 500.1 ft
Total depth of Boring: 500 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Poorly-graded SAND (fine to medium) with little gravel (fine); dark brown to orange	SP		
10				Auger to 15 ft bgs
	Poorly-graded SAND (medium) and GRAVEL (fine to coarse); brown	SP-GW		Begin mud rotary drilling at 15 ft
20				
30				
40	Poorly-graded SAND (medium to coarse) with little gravel (fine); white to light brown	SP		
50				
60				
70	Poorly-graded SAND (fine to medium) with trace gravel (fine); white to light brown	SP		Begin Profiling at 71.37 ft
80				
90				

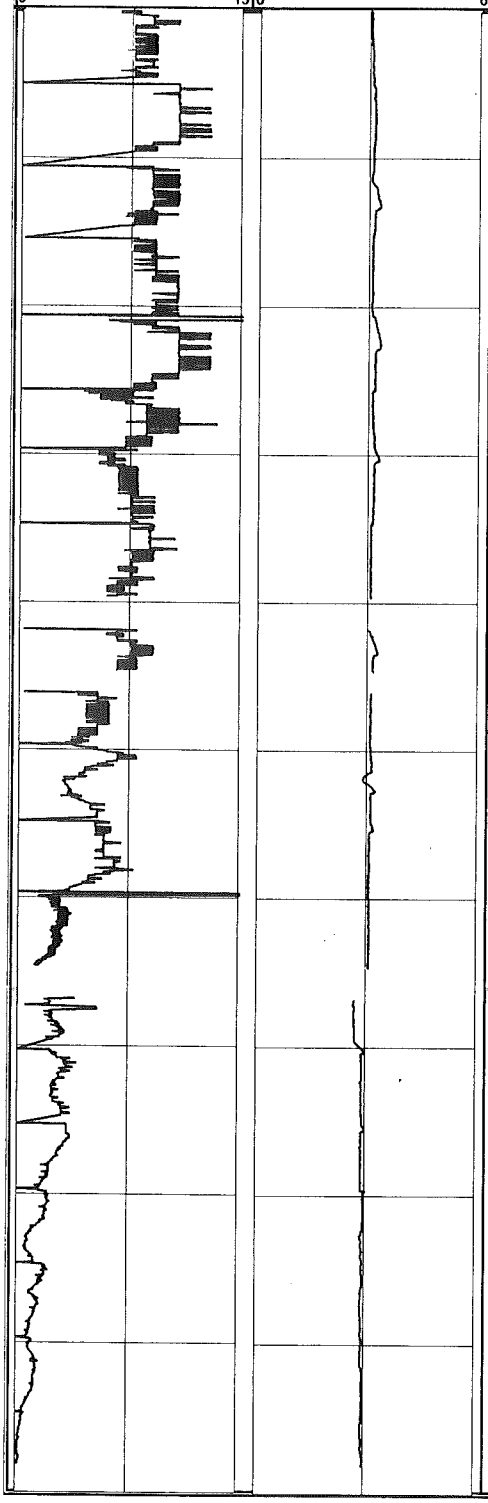
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-33

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Larry Carlin
START DATE:	December 5, 2003
END DATE:	December 15, 2003
LOCATION:	East of Cantiage Rock Rd. on North 140 building
DATUM:	Land Surface
HYDROGEOLOGIST:	Emily Moshier

Total depth of Profile: 500.1 ft
Total depth of Boring: 500 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100		SP		
110				
120				
130	Poorly-graded SAND (fine to medium) with little gravel (fine); white	SP		
140				Profile data gaps due to poor KPRO equilibration
150	Poorly-graded SAND (fine to medium) and GRAVEL (fine); light brown to white	SP-GP		
160				Profile data gap due to poor KPRO equilibration
170	Well-graded SAND (fine to coarse) with some gravel (fine); light brown to white	SW		
180				
190				Refusal at 198.1 ft bgs

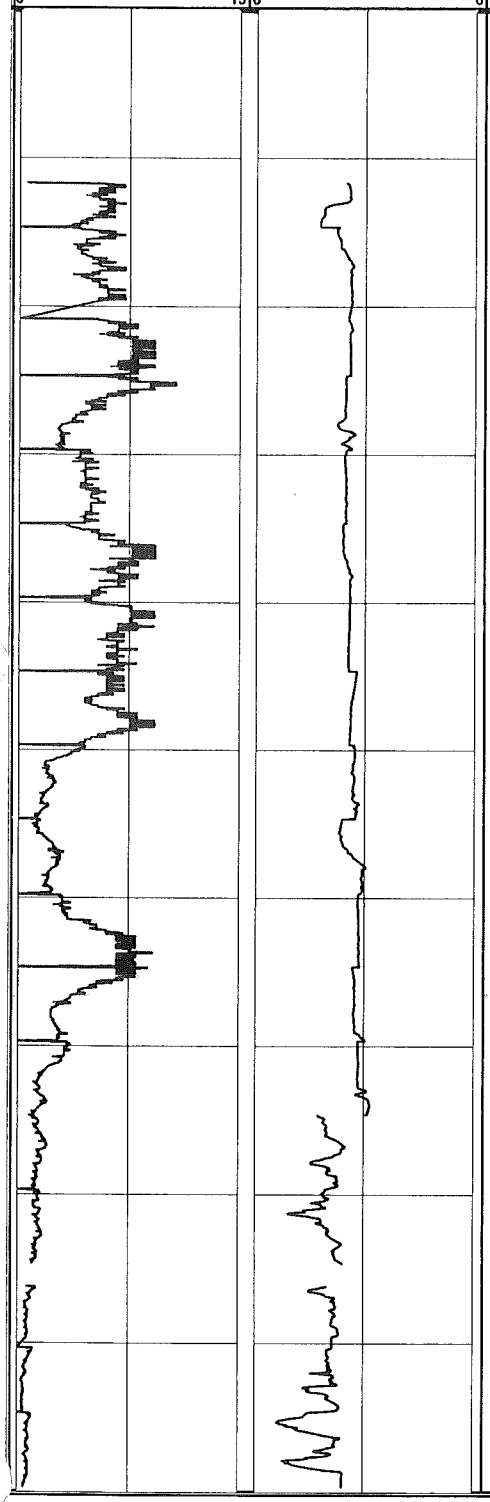
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-33**

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	December 5, 2003
JOB NUMBER:	4563001	END DATE:	December 15, 2003
DRILLING FIRM:	CT&E	LOCATION:	East of Cantiage Rock Rd. on North side of 140 building
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Larry Lynch	HYDROGEOLOGIST:	Emily Moshier
HELPER:	Larry Carlin		

Total depth of Profile: 500.1 ft — Total depth of Boring: 500 ft

GEOLOGIC INFORMATION



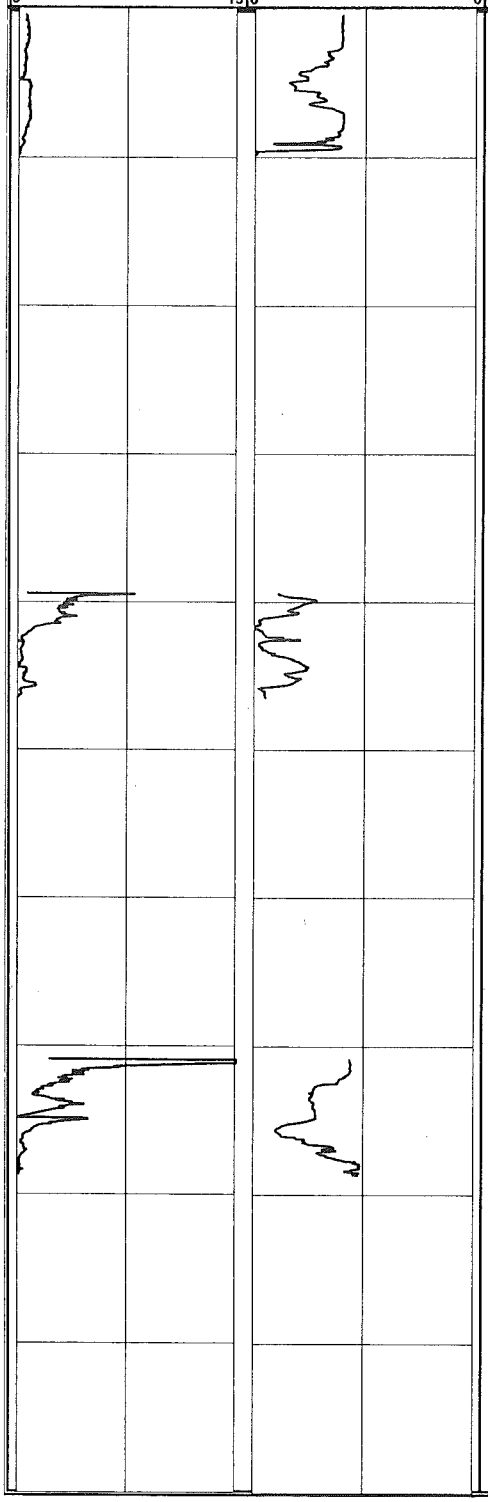
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200		SW		No penetration rate or IK data from 198.1 to 209.66 ft due to drilling activities, and from 209.66 to 211.61 due to blocked profiler ports
210	Poorly-graded SAND (medium to coarse) with trace gravel (fine); light brown	SP		
220				
230	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); light brown	SP-GP		
240				
250				
260	Poorly-graded SAND (medium) and GRAVEL (fine); light brown	SP-GP		
	Poorly-graded SAND (fine) with trace silt; light brown	SP		
270				
280				Profile data gaps due to poor KPRO equilibration
290				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-33

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	December 5, 2003
JOB NUMBER:	4563001	END DATE:	December 15, 2003
DRILLING FIRM:	CT&E	LOCATION:	East of Cantiage Rock Rd. on North 140 building
DRILLING METHOD:	Mud Rotary		
DRILLER:	Larry Lynch	DATUM:	Land Surface
HELPER:	Larry Carlin	HYDROGEOLOGIST:	Emily Moshier
Total depth of Profile:	500.1 ft	Total depth of Boring:	500 ft

GEOLOGIC INFORMATION



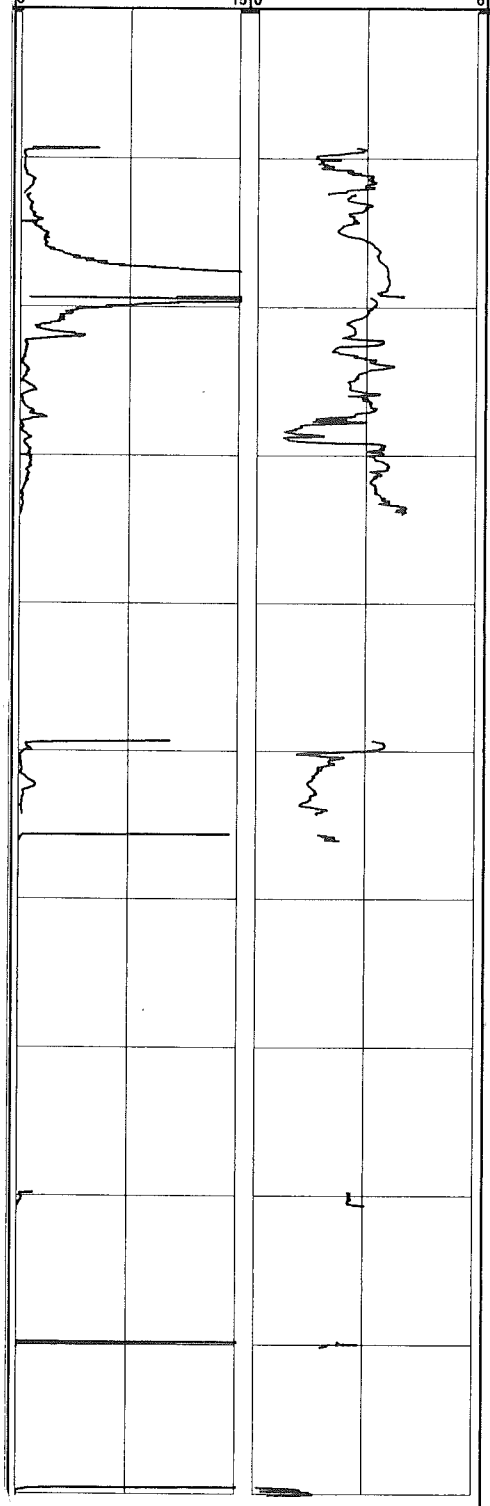
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300	CLAY;gray	CL		
310				Profiler refusal at 309.83 ft, no penetration rate or IK data from 309.83 to 339.4 ft due to drilling activities
320				
330				
	SAND	SW		No recovery, description based on rig response
340	CLAY with some sand (fine); gray	CL		
350				Profiler refusal at 346.41 ft, no penetration rate or IK data from 346.41 to 370.88 ft due to drilling activities
360	SAND	SW		No recovery, description based on rig response
				4" clay layer at 363 ft bgs
370	Poorly-graded SAND (fine); white	SP		
380				Profiler refusal at 378.65 ft, no penetration rate or IK data from 378.65 to 409.3 ft due to drilling activities
390	Poorly-graded SAND (medium to coarse); light brown	SP		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-33**

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	December 5, 2003
JOB NUMBER:	4563001	END DATE:	December 15, 2003
DRILLING FIRM:	CT&E	LOCATION:	East of Cantiage Rock Rd. on North side of 140 building
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Larry Lynch	HYDROGEOLOGIST:	Emily Moshier
HELPER:	Larry Carlin		
Total depth of Profile:	500.1 ft	Total depth of Boring:	500 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
400	Poorly-graded SAND (fine to medium); white	SP		
410	Poorly-graded SAND (fine); white	SP		No return of cuttings, description based on material in de-sander
420				
430				Profiler refusal at 433.9 ft, no penetration rate or IK data from 443.9 to 449.3 ft due to drilling activities
440				
450	No Recovery			Lost circulation, no return of cuttings Profile data gap due to poor KPRO equilibration
460				Profiler refusal at 456.06 ft, no penetration rate or IK data from 456.06 to 479.76 ft due to drilling activities
470				
480				Profiler refusal at 480.66 ft, no penetration rate or IK data from 480.66 to 489.8 ft due to drilling activities
490				Profiler refusal at 490.15 ft, no penetration rate or IK data from 490.75 to 499.55 ft due to drilling activities
500				Refusal at 500.1 ft, end of Profile

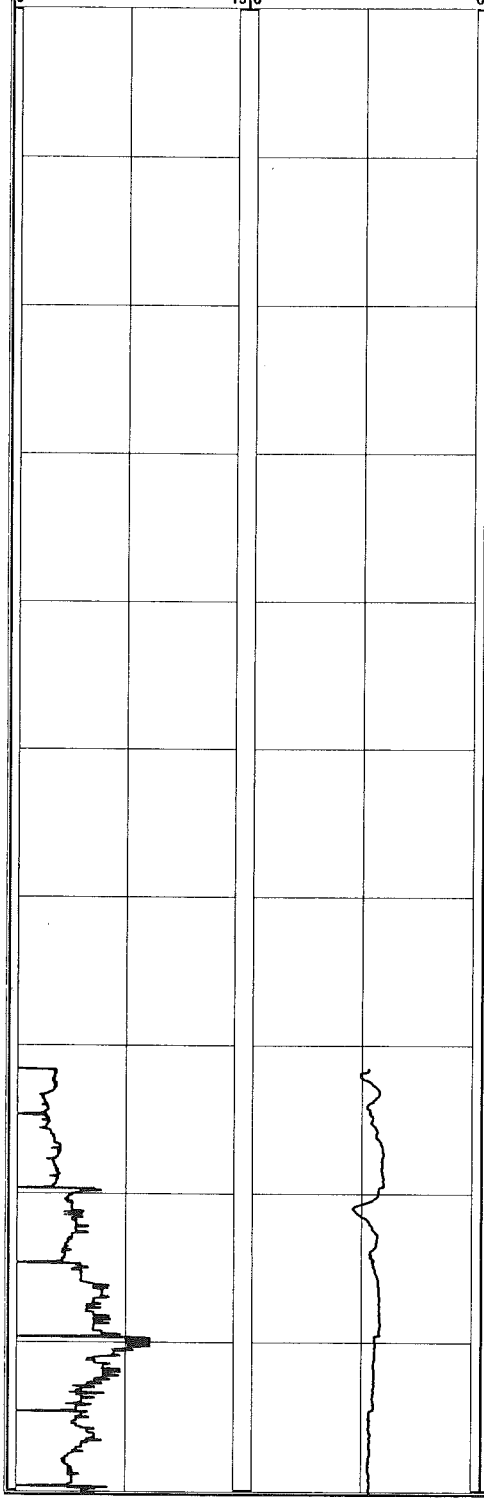
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-34

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	November 21, 2003
JOB NUMBER:	4563001	END DATE:	December 4, 2003
DRILLING FIRM:	CT&E	LOCATION:	East of Cantiague Rock Rd, near N edge of 140 Property
DRILLING METHOD:	Mud Rotary		
DRILLER:	Larry Lynch	DATUM:	Land Surface
HELPER:	Brian Selcker	HYDROGEOLOGIST:	Collen Sullivan

Total depth of Profile: 401.58 ft
Total depth of Boring: 380 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Poorly-graded SAND (medium to coarse) and GRAVEL ; brown	SP-GP		Blacktop and concrete from 0 to 6 inches.
10				Hollow stem augers used to drill from 0 to 15 ft. Begin mud rotary drilling at 15 ft.
20				
30				
40				
50	Silty CLAY and SAND (fine to medium) with some gravel (fine); red-orange	CL-SC		
60	Poorly-graded SAND with some silty clay and some gravel (fine); reddish-brown	SP-SC		
70	Well-graded SAND with some silt and trace gravel; white-yellow	SW		Begin profiling at 71.57 ft
80				
90	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); light brown to yellow	SP-GP		

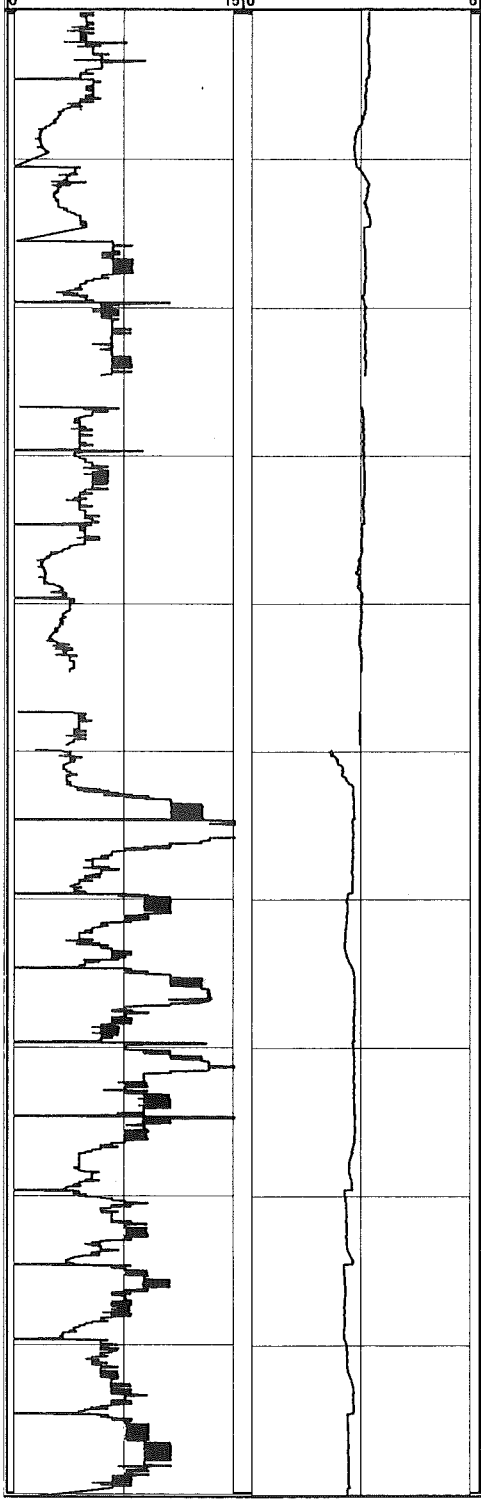
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-34

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	November 21, 2003
JOB NUMBER:	4563001	END DATE:	December 4, 2003
DRILLING FIRM:	CT&E	LOCATION:	East of Cantiague Rock Rd, near N-central edge of 140 Property
DRILLING METHOD:	Mud Rotary		
DRILLER:	Larry Lynch	DATUM:	Land Surface
HELPER:	Brian Selcker	HYDROGEOLOGIST:	Collen Sullivan

Total depth of Profile: 401.58 ft
Total depth of Boring: 380 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100	Poorly-graded SAND (medium to coarse); light brown to yellow	SP		
110	Poorly-graded SAND (medium to coarse) and well-graded GRAVEL; white, yellow, brown, orange, pink	SP-GP		
120				Profile data gap due to poor KPRO flow equilibration
130				
140				Profile data gap due to poor KPRO flow equilibration
150				Profile data gap due to poor KPRO flow equilibration
160				
170				
180				
190				

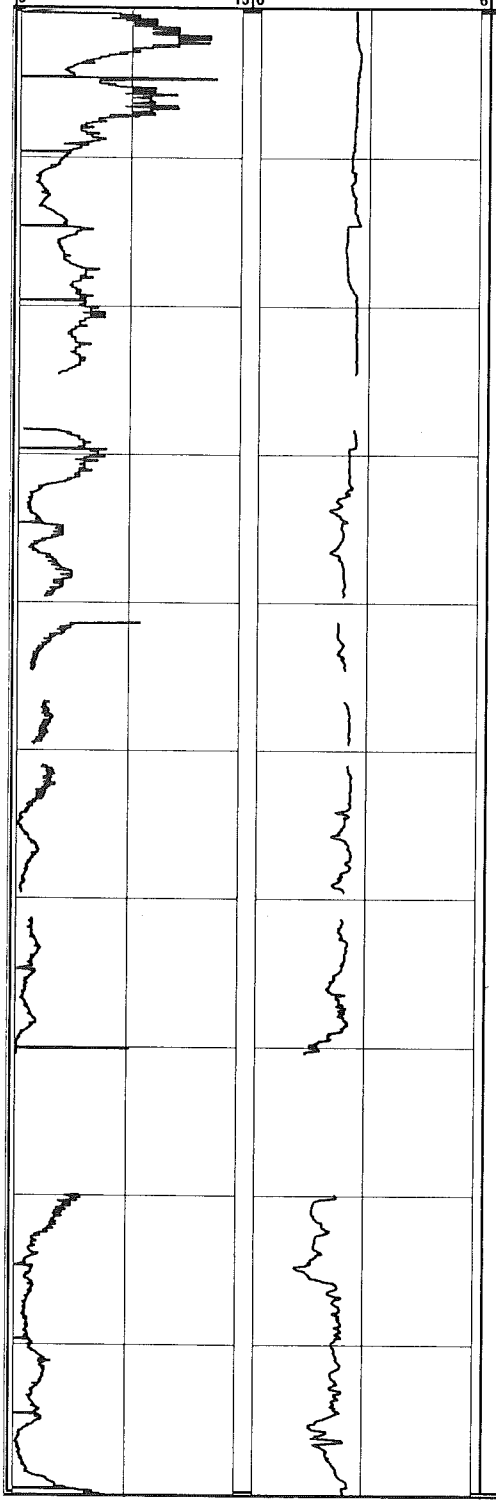
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-34

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Brian Selcker
START DATE:	November 21, 2003
END DATE:	December 4, 2003
LOCATION:	East of Cantiague Rock Rd, near N-c... edge of 140 Property
DATUM:	Land Surface
HYDROGEOLOGIST:	Collen Sullivan

Total depth of Profile: 401.58 ft
Total depth of Boring: 380 ft

GEOLOGIC INFORMATION



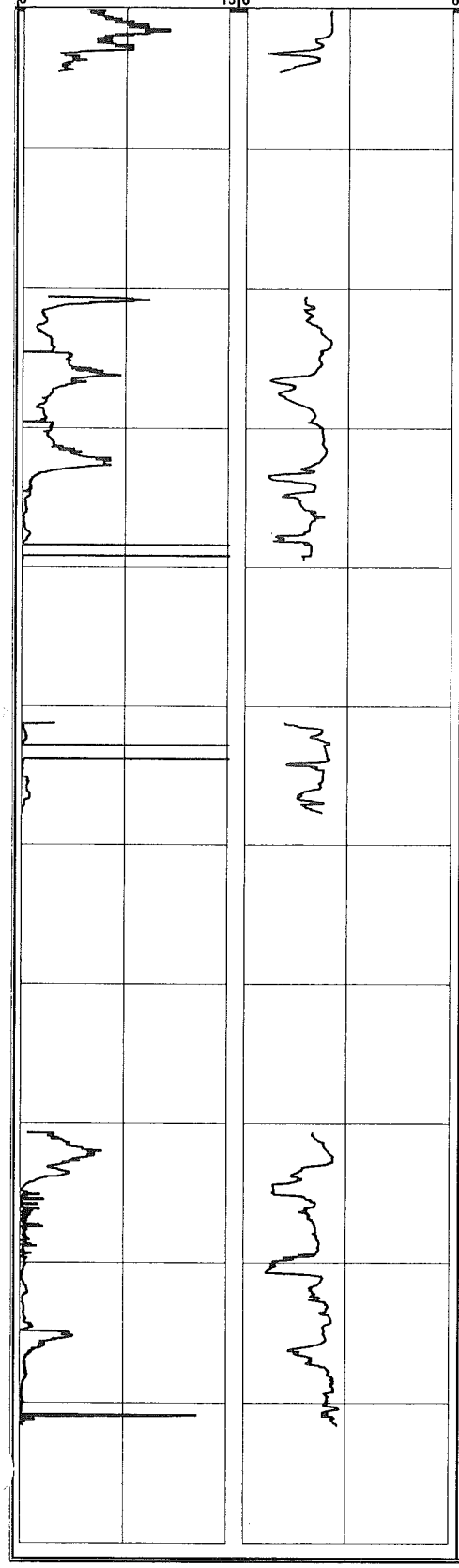
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200		SP-GP		
210				
220				No profile data from 224.6 to 228.26 ft due to plugged profile tip
230				
240				Profile data gaps due to poor KPRO flow equilibration from 224.6 to 228.26, 239.6 to 241.29, 244.6 to 246.64, 249.6 to 250.96, and 259.6 to 261.31 ft
250				
260				
270				Profiler refusal at 270.46 ft. No penetration rate or IK data from 270.46 to 279.85 ft due to drilling activities
280	Poorly-graded SAND with some gravel (fine); red-orange	SP		
290	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); red to light brown	SP-GP		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-34

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	November 21, 2003
JOB NUMBER:	4563001	END DATE:	December 4, 2003
DRILLING FIRM:	CT&E	LOCATION:	East of Cantiague Rock Rd, near N-central edge of 140 Property
DRILLING METHOD:	Mud Rotary		
DRILLER:	Larry Lynch	DATUM:	Land Surface
HELPER:	Brian Selcker	HYDROGEOLOGIST:	Collen Sullivan
Total depth of Profile:	401.58 ft	Total depth of Boring:	380 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300	Poorly-graded SAND with some clay and trace gravel (fine); light brown-red-black-gray	SP-SC		Pulled profiling equipment from 304.5 ft. No penetration rate or IK data from 304.5 to 320.52 ft due to drilling activities
310	Poorly-graded SAND (fine to medium) with trace clay; light brown to red	SP		
320	Poorly-graded SAND (medium to coarse) with trace clay; light brown to red	SP		
330	Poorly-graded SAND (medium to coarse); light brown-white-red-gray	SP		
340	Well-graded SAND; gray to light brown	SW		Profiler refusal at 339.37 ft. No penetration rate or IK data from 339.37 to 349.61 ft due to drilling activities or from 349.61 to 351.18 due to Profiler equipment problems
350	Poorly-graded SAND (medium to fine) and SILT; gray to light brown	SM-ML		
360				Profiler refusal at 357.6 ft. No penetration rate or IK data from 357.6 to 379.4 ft due to drilling activities and from 379.4 to 380.62 due to Profiler equipment problems
370				
380				
390				
400				Profiler refusal at 401.58 ft, End of profile.
410				

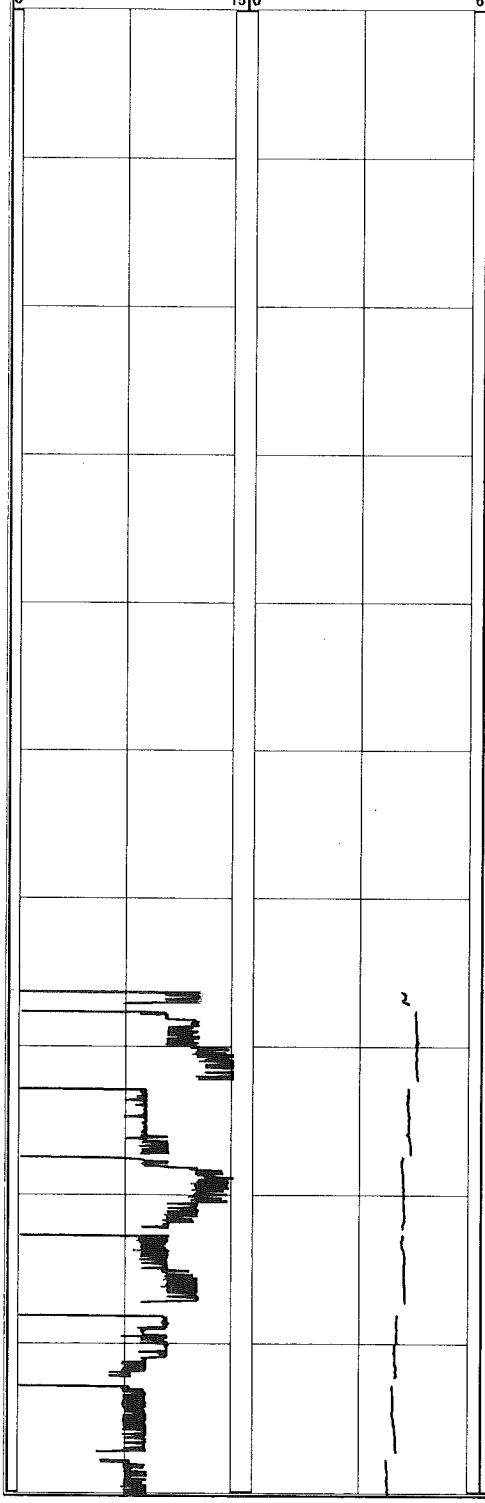
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-35

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	July 9, 2003
JOB NUMBER:	4563001	END DATE:	July 15, 2003
DRILLING FIRM:	CT&E	LOCATION:	East of Canitague Rock Rd.
DRILLING METHOD:	Mud Rotary	WEATHER:	North side of 70 building
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	Kevin Wheeler

Total depth of Profile: 347.2 ft
Total depth of boring: 340 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Well-graded SAND (fine to medium) with some gravel (fine to coarse) and trace silt; dark brown	SP		Fill from 0 to 2.5 ft bgs
10				
20	Poorly-graded SAND (medium) and GRAVEL (fine); light brown	SP-GP		Hollow stem auger used from 0 to 20 ft. Begin mud rotary drilling at 20 ft.
	Poorly-graded SAND (medium to coarse); light brown	SP		
30				
40	Poorly-graded SAND (medium) and GRAVEL (fine); light brown	SP-GP		
50				
	Poorly-graded SAND (fine to medium) with little gravel (fine); light brown	SP		
60				Coarsens with depth
				Loss of circulation of drilling fluids.
70				Begin Profiling at 62.88 ft
80				Profile data gaps due to poor KPRO equilibration
90				
				Loss of circulation of drilling fluids

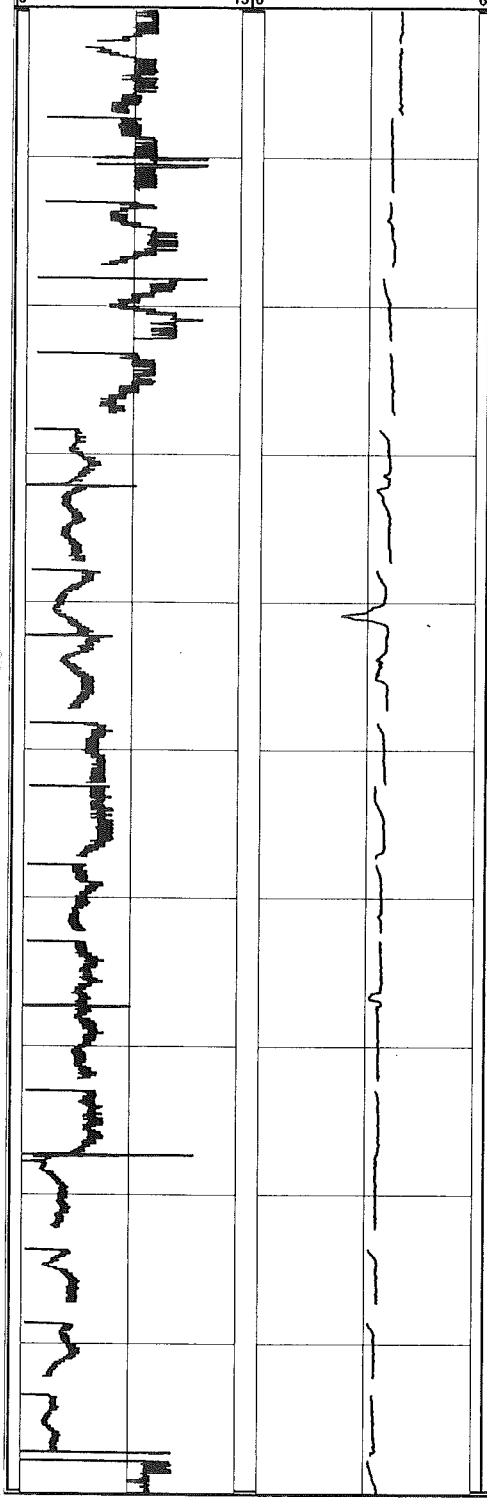
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-35

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	July 9, 2003
JOB NUMBER:	4563001	END DATE:	July 15, 2003
DRILLING FIRM:	CT&E	LOCATION:	East of Canitague Rock Rd.
DRILLING METHOD:	Mud Rotary	WEATHER:	North side of 70 building
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	Kevin Wheeler

Total depth of Profile: 347.2 ft
Total depth of boring: 340 ft

GEOLOGIC INFORMATION



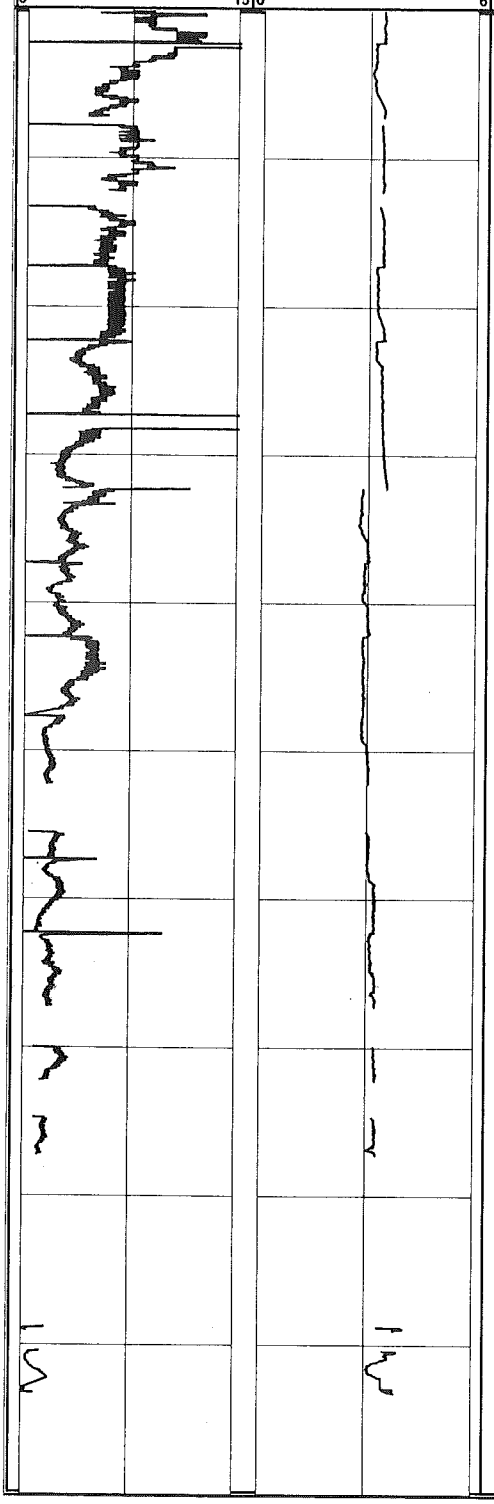
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100		SP		
110				Profile data gaps due to poor KPRO equilibration
120	Poorly-graded SAND (fine to medium) with little gravel (fine); brown	SP		
130	Poorly-graded SAND (fine to medium) with some gravel (fine) and little silt; brown	SM		Profile data gaps due to poor KPRO equilibration
140	Poorly-graded SAND (medium) with little gravel (fine); light brown to tan	SP		
150	Poorly-graded SAND (medium to coarse) with some gravel (fine); tan	SP		
160	Poorly-graded SAND (medium to coarse) with some gravel (fine); tan	SP		
170	Well-graded SAND (fine to coarse) and GRAVEL (fine); tan	SW-GP		
180	Well-graded SAND (fine to coarse) and GRAVEL (fine); light brown	SW-GP		Profile data gaps due to poor KPRO equilibration
190	Poorly-graded SAND (medium) with trace gravel (fine); brown	SP		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-35

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	July 9, 2003
JOB NUMBER:	4563001	END DATE:	July 15, 2003
DRILLING FIRM:	CT&E	LOCATION:	East of Canitague Rock Rd.
DRILLING METHOD:	Mud Rotary	WEATHER:	North side of 70 building
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	Kevin Wheeler
Total depth of Profile:	347.2 ft	Total depth of boring:	340 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200				
210	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); light brown	SP-GP		
220				Some hardpan
230				Profile data gaps due to poor KPRO equilibration
240				
250	Poorly-graded SAND (fine to medium) and GRAVEL (fine); tan	SP-GP		Profile data gaps due to poor KPRO equilibration
260	Poorly-graded SAND (fine to medium) with trace gravel; tan	SP		
270	Poorly-graded SAND (medium to coarse); tan	SP		Profile data gaps due to poor KPRO equilibration
280	Well-graded SAND; tan	SW		Profiler refusal at 280 ft, no penetration rate or IK data from 277 to 291 ft due to malfunctioning Profiling equipment and drilliing activities
290	Poorly-graded sand; orange	SP		Profiler refusal at 293.21ft

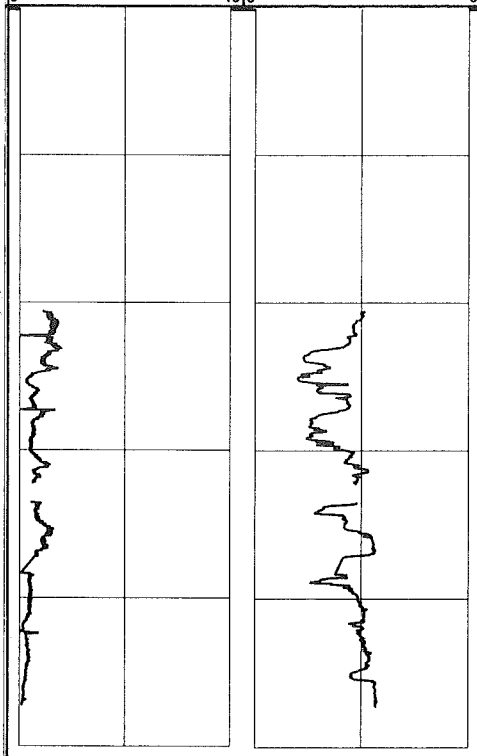
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-35**

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	July 9, 2003
JOB NUMBER:	4563001	END DATE:	July 15, 2003
DRILLING FIRM:	CT&E	LOCATION:	East of Canitague Rock Rd.
DRILLING METHOD:	Mud Rotary	WEATHER:	North side of 70 building
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	Kevin Wheeler

Total depth of Profile: 347.2 ft — Total depth of boring: 340 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300	Poorly-graded SAND (fine to medium); light brown	SP		No penetration rate or IK data from 293.21 to 319.3 ft due to drilling activities and from 319.3 to 320.6 ft due to poor KPRO equilibration
	Poorly-graded SAND (fine to medium) with trace gravel, trace clay, and trace silt	SP		
310	SILT and CLAY; gray	ML- CL		
	Poorly-graded SAND (fine to medium); brown	SP		
320	SILT and SAND (fine to coarse); tan to gray	ML-SM		
330				Profile data gap due to poor KPRO equilibration
340				End boring at 340 ft
				End of profile at 347.2 ft
350				

Boring ID:

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

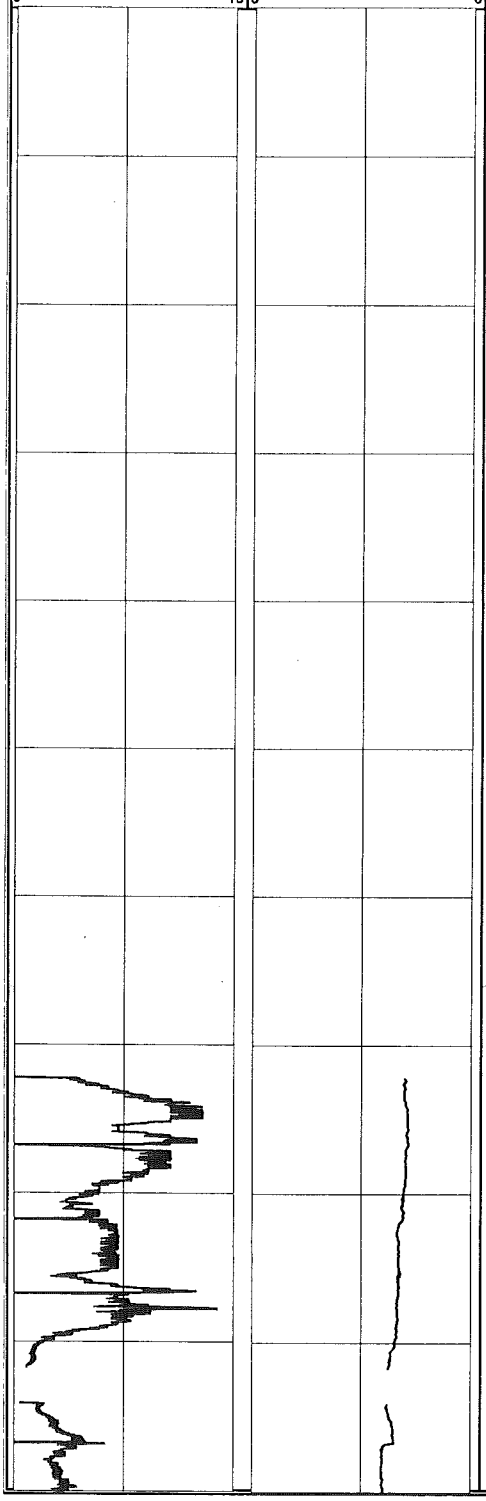
P-36

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	August 19, 2003
JOB NUMBER:	4563001	END DATE:	August 26, 2003
DRILLING FIRM:	CT&E	LOCATION:	On N edge of Property on S side of
DRILLING METHOD:	Mud Rotary	WEATHER:	St, across from BIT parking
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	Jon Turk

Total depth of Profile: 373.02 ft

Total depth of Boring: 470 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Well-graded SAND and GRAVEL with some to little cobbles; tan	SW-GW		
10				
20	Well-graded SAND and GRAVEL; tan	SW-GW		
30				
40				
50				
60	Well-graded SAND with trace gravel; tan	SW		6 in clay lens at ~65 ft
70	Poorly-graded SAND (medium to coarse) and GRAVEL (fine to medium); tan	SP-GP		Begin profiling at 72.21 ft
80				
90				Profile data gap due to poor KPRO equilibration
	CLAY and SAND (fine)	CL-SM		Gravel lens from 94 to 95 ft

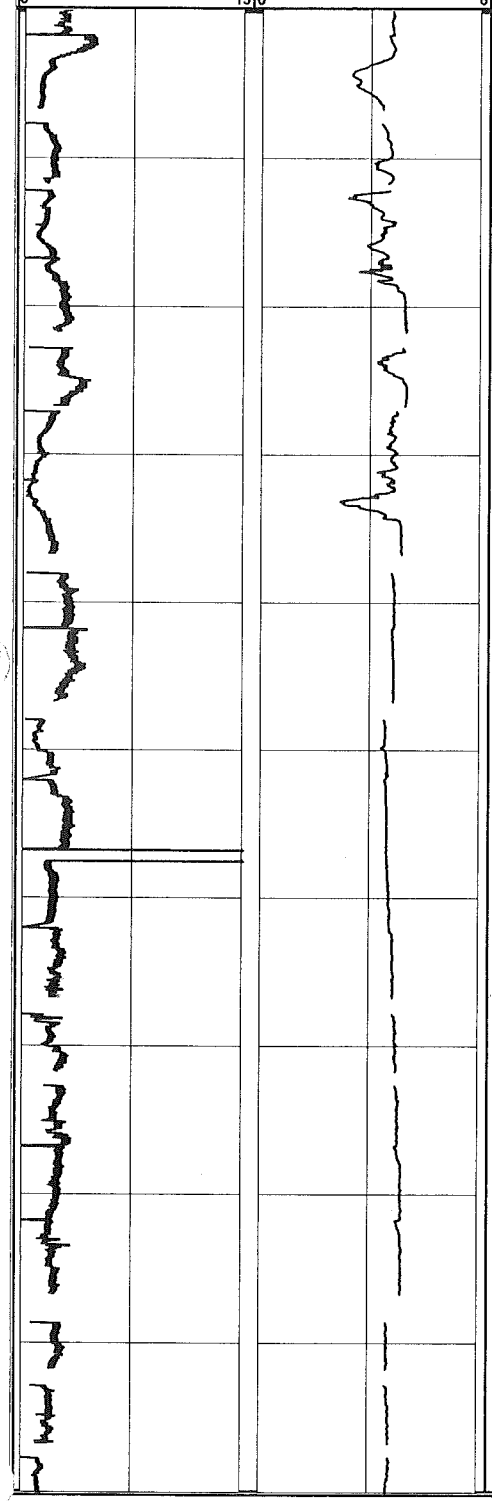
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-36

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	August 19, 2003
JOB NUMBER:	4563001	END DATE:	August 26, 2003
DRILLING FIRM:	CT&E	LOCATION:	On N edge of Property on S side of W John
DRILLING METHOD:	Mud Rotary	WEATHER:	St, across from BIT parking
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	Jon Turk

Total depth of Profile: 373.02 ft
Total depth of Boring: 470 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100	Well-graded clayey SAND with gravel; tan	SC		
	Poorly-graded SAND (medium to coarse) and GRAVEL (fine to medium); tan	SP-GP		Profile data gaps due to poor KPRO equilibration Much hardpan present from 105 to 195 ft Profile data gaps due to poor KPRO equilibration Profile data gaps due to poor KPRO equilibration
	Well-graded SAND and GRAVEL with trace silt and clay; tan	SW-GW		

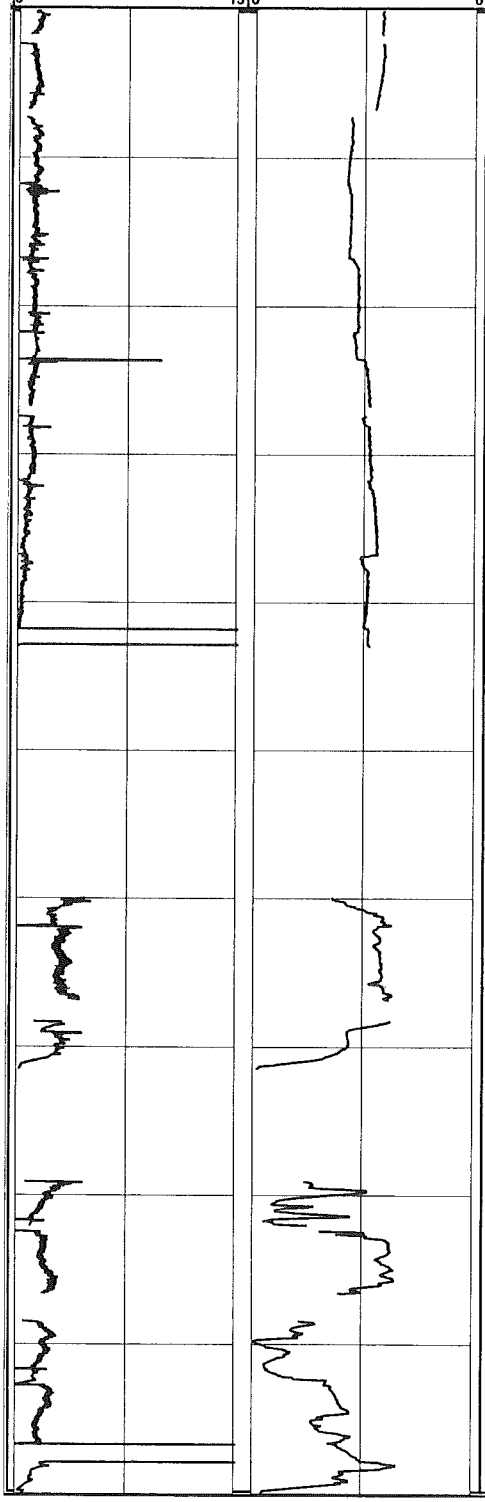
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-36

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	August 19, 2003
JOB NUMBER:	4563001	END DATE:	August 26, 2003
DRILLING FIRM:	CT&E	LOCATION:	On N edge of Property on S side of
DRILLING METHOD:	Mud Rotary	WEATHER:	St, across from BIT parking
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	Jon Turk

Total depth of Profile: 373.02 ft
Total depth of Boring: 470 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
		SW-GW		Profile data gaps due to poor KPRO equilibration
	Silty SAND with some clay; tan to orange	SM		Poor recovery of cuttings, most cutting pass through strainer, presumed interbedded silty sand and clay from 205 to 230 ft
	Silty SAND and CLAY; tan to white	SM-CL		Poor recovery of cuttings, most cutting pass through strainer from 230 to 255 ft
	Silty CLAY with some sand; tan to white-gray	CL		Profiler refusal at 242 .9 ft. Prof rods broke upon extraction. Pr probe and ~65 ft of geoprobe rods abandoned in hole. Off-set drilling location and resumed.
	Silty SAND with some to little clay; tan to gray	SM		No penetration rate or IK data from 242.9 to 259.98 ft due to drilling activity Poor recovery of cuttings, most cutting pass through strainer, presumed interbedded silty sand and clay from 255 to 300 ft Profiler refusal at 271.44 ft. No penetration rate or IK data from 271.44 to 279.06 ft due to drilling activities Profile data gaps due to poor KPRO equilibration

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

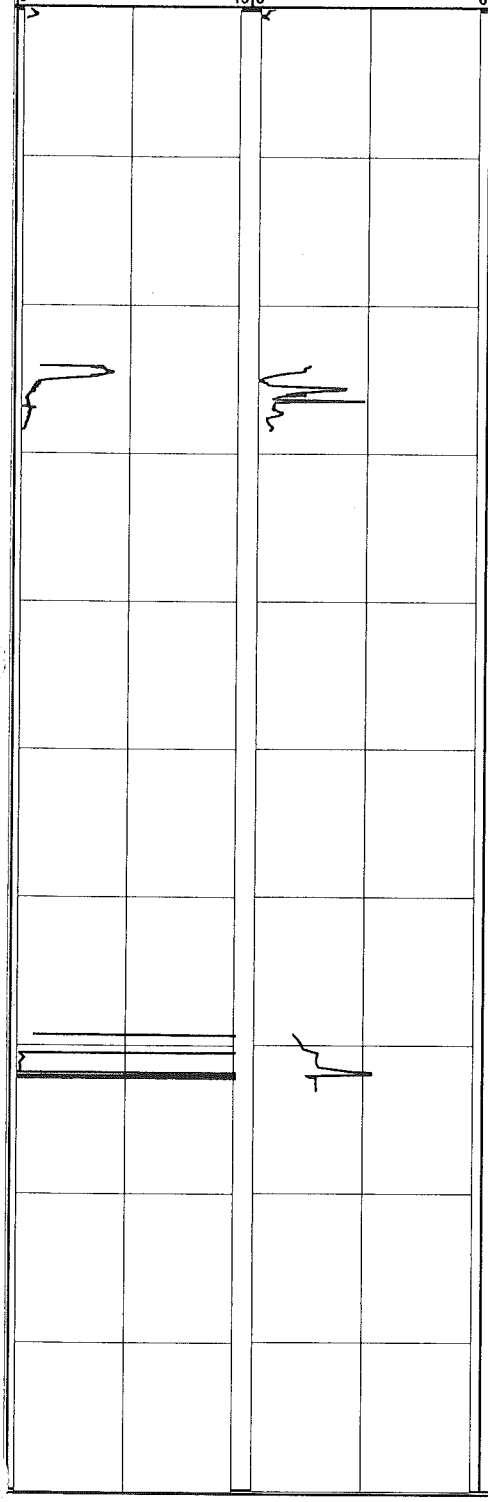
Boring ID: **P-36**

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Bill Petley
HELPER:	Ken Heinz

START DATE: August 19, 2003
END DATE: August 26, 2003
LOCATION: On N edge of Property on S side of W John
WEATHER: St, across from BIT parking
DATUM: Land Surface
HYDROGEOLOGIST: Jon Turk

Total depth of Profile: 373.02 ft
Total depth of Boring: 470 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300		SM		Profiler refusal at 300.74 ft. No penetration rate or IK data from 300.74 to 324.06 ft due to drilling activities
	SILT with some sand (fine); gray	ML		
310				
	Silty SAND; tan	SM		
320	Poorly-graded SAND (coarse); tan	SP		Profiler drove from 324.06 to 328.4 ft. Profiler refusal at 328.4 ft. No penetration rate or IK data from 328.4 to 369.23 ft due to drilling activities.
	SILT with some sand and trace gravel; gray to white	ML		
330				
	Silty CLAY and silty SAND; gray to white	CL-SM-SC		Interbedded silty clays and silty sands from 335 to 365 ft. Sand fraction increases downward
340				
350				
360				
	SILT with some sand (fine); gray to white	ML-SM		
370	SILT with trace sand and clay; white to gray	ML		Profiler drove from 368 to 373.02 ft. Profiler refusal at 373.02 ft. Broken String potentiometer cable at ~371.25 ft. No penetration rate or IK data from 371.25 to 373.02 ft.
	SILT and CLAY with trace sand; gray to white	ML- CL		
380	CLAY with some sand; gray to white	CL		
	SILT with little sand and clay; gray	ML		
390				Poor/little recovery of cuttings from 375 to 470 ft. Most cuttings pass through strainer.
400				

Boring ID:

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

P-36

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	August 19, 2003
JOB NUMBER:	4563001	END DATE:	August 26, 2003
DRILLING FIRM:	CT&E	LOCATION:	On N edge of Property on S side of W John
DRILLING METHOD:	Mud Rotary	WEATHER:	St, across from BIT parking
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	Jon Turk

Total depth of Profile: 373.02 ft

Total depth of Boring: 470 ft

GEOLOGIC INFORMATION						
Penetration Rate (ft/min) 0–15	Index of Hyd. Conductivity 0–6	Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
			CLAY with some silt; white to gray	CL		No penetration rate or IK data from 373.02 to 467.3 ft due to drilling activities. Mud log indicates the occurrence of lithologies that disallow profiling.
		410				
			SILT with some sand and trace clay; gray to white	ML		
		420	Clay; white to red-orange	CL		
		430	SILT; gray	ML		No recovery from 430 to 435 ft presumed silt
			CLAY; white, pink, red	CL		
		440				
		450				
			Silty CLAY; white	CL		
		460	Silty SAND with trace clay; white	SM		Attempted to drive profiler from 467.25 ft. Refused at 468.90.
			CLAY and silty SAND; white	CL-SM		Attempted to drive at 473.28, refused at 475.6 ft - end of Profile. End of boring at 470 ft.
		470				

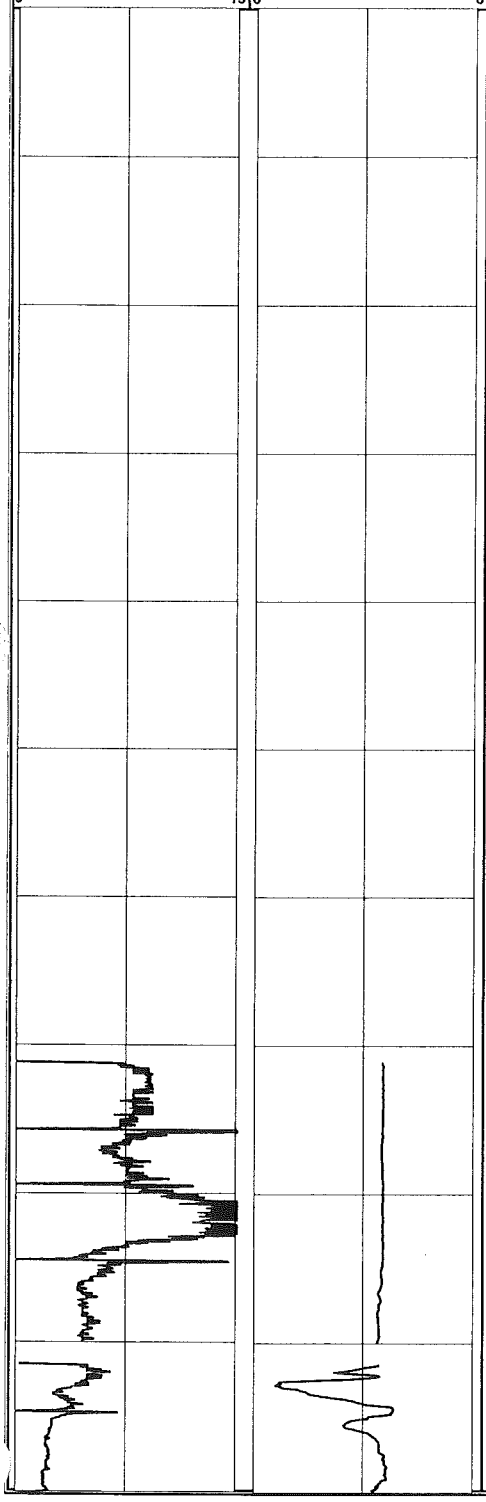
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-37

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	August 18, 2003
JOB NUMBER:	4563001	END DATE:	August 27, 2003
DRILLING FIRM:	CT&E	LOCATION:	NW corner of property on S side of W John St, just E of Cantigue Rock Rd
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Larry Lynch	HYDROGEOLOGIST:	John Hilton
HELPER:	Brian Siecker		

Total depth of Profile: 395.83
Total depth of Boring: 395 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Poorly-graded SAND (fine to medium) with some gravel (fine); light brown	SP		6 1/4 Hollow stem augers used from 0 to 15 ft
10				Begin mud rotary drilling at 15 ft
	Well-graded SAND with trace to little gravel (fine); light brown	SW		
20				
	Poorly-graded SAND (medium); light brown	SP		
30				
	Poorly-graded SAND (coarse); light brown	SP		
40				
50	Poorly-graded SAND (fine); light brown to white	SP		
60				Begin profiling at 71.16 ft
70	Well-graded SAND with some gravel (fine); light tan to brown	SW		Gravel occurs as thin interbeds within the sand
80				Profile data gap due to poor KPRO equilibration
90				Lost tricone roller bit and wire line assembly at ~90 ft

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

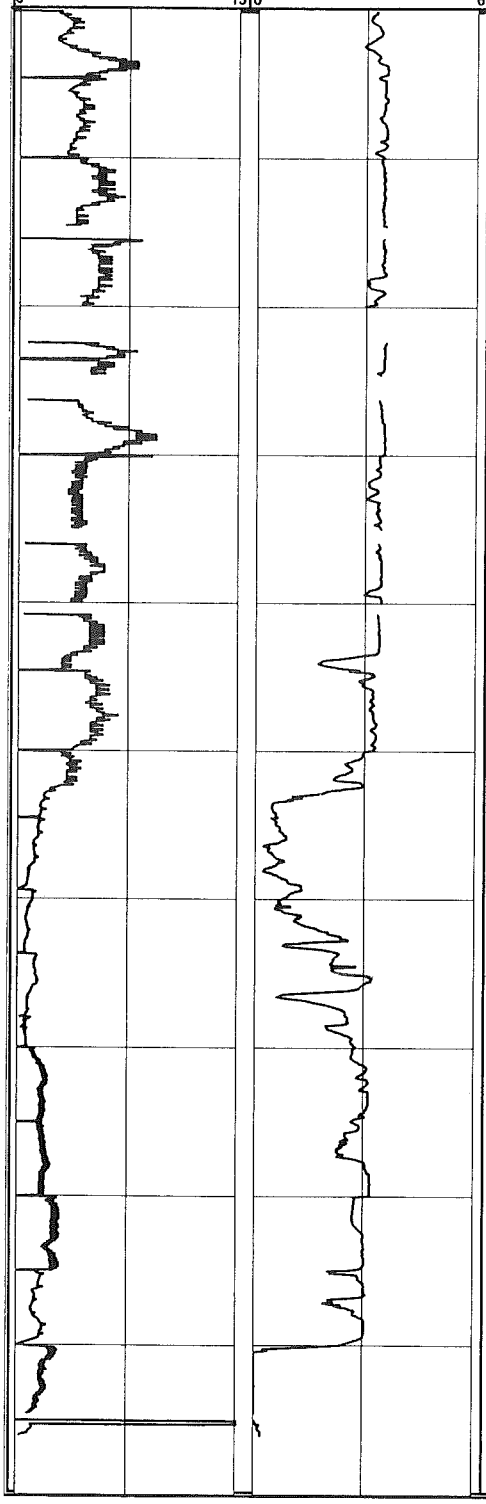
Boring ID:
P-37

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Brian Slecker

START DATE: August 18, 2003
END DATE: August 27, 2003
LOCATION: NW corner of property on S side of W[illegible]n St, just E of Cantigue Rock Rd
DATUM: Land Surface
HYDROGEOLOGIST: John Hilton

Total depth of Profile: 395.83
Total depth of Boring: 395 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100	Poorly-graded SAND (fine) with trace gravel (fine); light tan to white	SP		
110				
120				
130				Profile data gaps due to poor KPRO equilibration
140				
150	SAND (fine) and SILT with trace medium to coarse sand; orange to brown	SM-ML		
160				
170	Silty SAND	SM		No recovery of cuttings from 170 to 220 ft. Drilling characteristics indicative of silty sand
180				
190				Profiler refusal at 196.02 ft, no penetration rate or IK data from 196.02 to 219.65 ft due to drilling activities

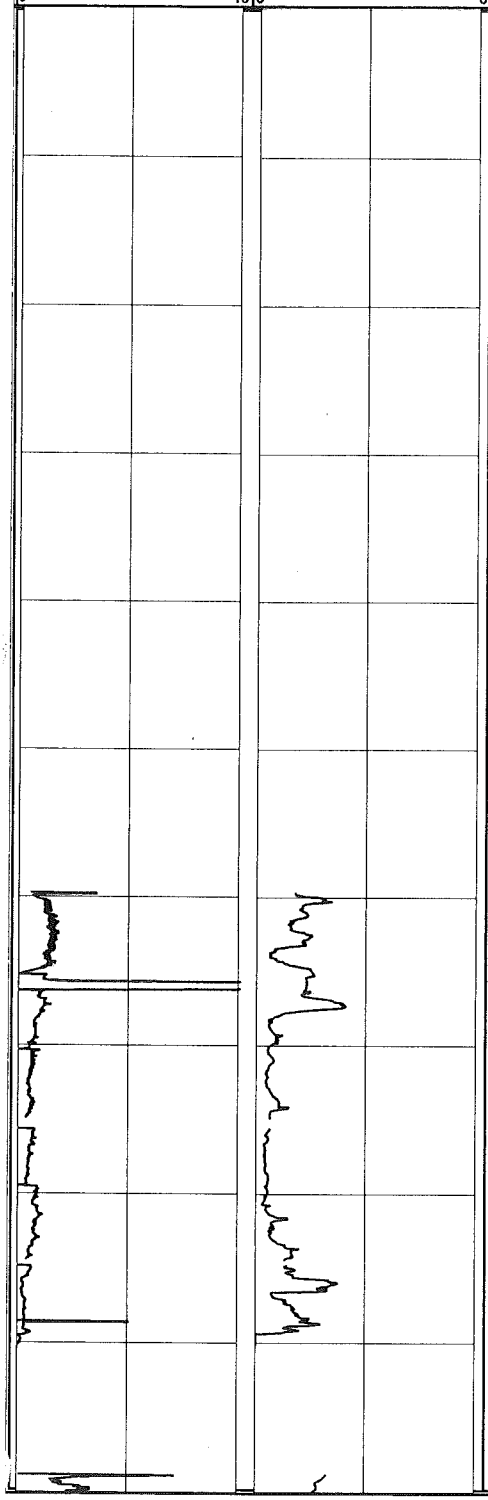
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-37

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	August 18, 2003
JOB NUMBER:	4563001	END DATE:	August 27, 2003
DRILLING FIRM:	CT&E	LOCATION:	NW corner of property on S side of W John St, just E of Cantigue Rock Rd
DRILLING METHOD:	Mud Rotary		
DRILLER:	Larry Lynch	DATUM:	Land Surface
HELPER:	Brian Siecker	HYDROGEOLOGIST:	John Hilton

Total depth of Profile: 395.83 | Total depth of Boring: 395 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200		SM		
210				No penetration rate or IK data from 219.65 to 234.75 ft due to Profiler malfunctions
220	Poorly-graded SAND (fine to medium) with some silt and clay; light gray	SM		
230				Profiler refusal at 234.75 ft
	CLAY and SILT with some sand (fine)	CL- ML		Interbedded clay and silt with some fine sand stringers. Lignite seam from 235 to 237 ft
240				
250				No penetration rate or IK data from 234.75 to 259.7 ft due to drilling activities
	Silty SAND to poorly-graded SAND (fine) with silt; light gray to white	SM-SP		
260				Some lignite present in cuttings
270				
280				Profile data gap due to poor KPRO equilibration
290	Poorly-graded SAND (fine) with some silt; light gray to white	SM-SP		Profiler refusal at 290.09 ft, no penetration rate or IK data from 290.09 to 298.81 ft due to drilling activities

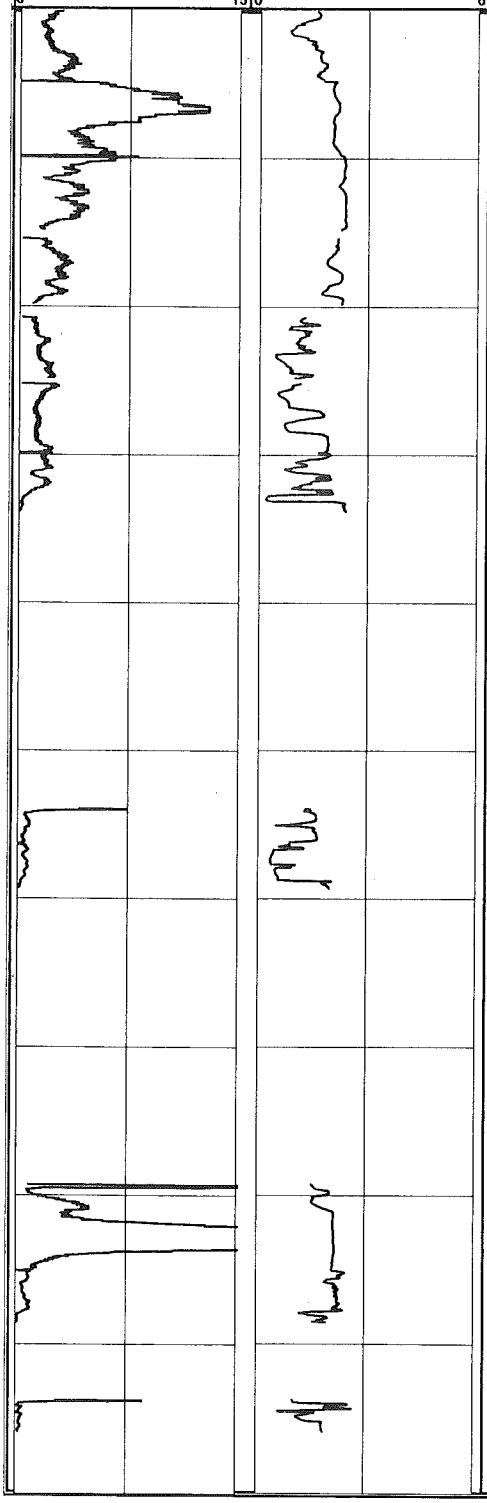
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-37

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	August 18, 2003
JOB NUMBER:	4563001	END DATE:	August 27, 2003
DRILLING FIRM:	CT&E	LOCATION:	NW corner of property on S side of W[illegible] St, just E of Cantigue Rock Rd
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Larry Lynch	HYDROGEOLOGIST:	John Hilton
HELPER:	Brian Slecker		

Total depth of Profile: 395.83 | Total depth of Boring: 395 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300				Mud rotary casing refused at ~290 ft. Thought to be on top of lost bit and line assembly. 10 ft of casing broke off in hole, abandoned bore hole and resumed drilling in offset location
310				Silt fraction increases with depth
320				Profile data gap due to poor KPRO equilibration
330				Profiler refusal at 333.8 ft, no penetration rate or IK data from 333.8 to 353.91 ft due to drilling activities
340	SAND (fine to medium) and SILT with few clay; light gray to white	SM-ML		Poor recovery of cuttings from [illegible] to 355 ft
350				
360	Well-graded SAND with trace to little silt and trace clay; gray to white	SW		Profiler refusal at 359.27 ft, no penetration rate or IK data from 359.27 to 379.26 ft due to drilling activities
370				
380				Profiler refusal at 388.52 ft, no penetration rate or IK data from 388.52 to 393.72 ft due to drilling activities.
390				End of profile at 395.83 ft bgs. End of boring at 395 ft.

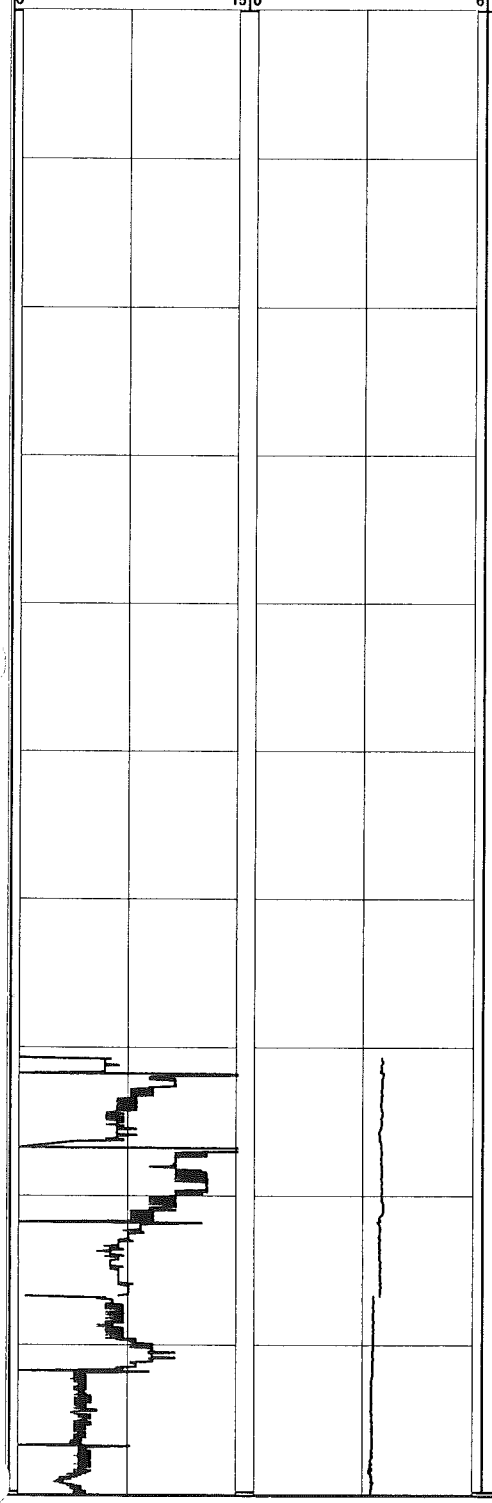
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-38

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	September 16, 2003
JOB NUMBER:	4563001	END DATE:	September 24, 2003
DRILLING FIRM:	CT&E	LOCATION:	On NE corner of property on S side of W
DRILLING METHOD:	Mud Rotary	WEATHER:	John St, W of Cantiague Ln
DRILLER:	Jim Lewis	DATUM:	Land Surface
HELPER:	Ken Heinz, Brian Seicker	HYDROGEOLOGIST:	Jeff Dekoskie

Total depth of Profile: 400.69 ft
Total depth of Boring: 365 ft

GEOLOGIC INFORMATION



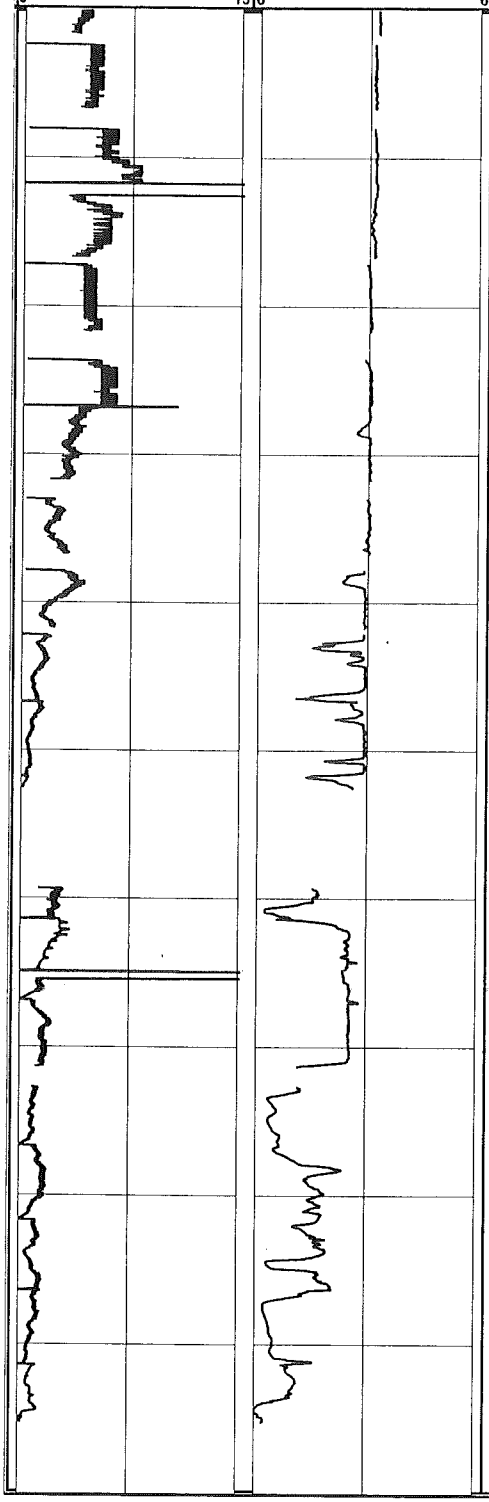
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Well-graded SAND with gravel (fine to coarse) and trace cobbles; brown	SW		7 1/4 hollow stem auger used to drill from 0 to 20 ft.
20	Well-graded SAND; light brown	SW		Begin mud rotary drilling at 20 ft
30	Poorly-graded GRAVEL with trace sand (coarse); very pale brown	GP		
40	Poorly-graded GRAVEL (fine) with trace sand (coarse); very pale brown	GP		
50	Poorly-graded SAND (fine to medium); very pale brown	SP		
70				Begin profiling at 69.45 ft
80	Poorly-graded GRAVEL and SAND; very pale brown	GP-SP		
	Well-graded SAND with trace gravel (fine); very pale brown	SW		Profile data gap due to poor KPRO equilibration
90				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-38

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	September 16, 2003
JOB NUMBER:	4563001	END DATE:	September 24, 2003
DRILLING FIRM:	CT&E	LOCATION:	On NE corner of property on S side
DRILLING METHOD:	Mud Rotary	WEATHER:	John St, W of Cantiague Ln
DRILLER:	Jim Lewis	DATUM:	Land Surface
HELPER:	Ken Heinz, Brian Selcker	HYDROGEOLOGIST:	Jeff Dekoskie
Total depth of Profile:	400.69 ft	Total depth of Boring:	365 ft

GEOLOGIC INFORMATION



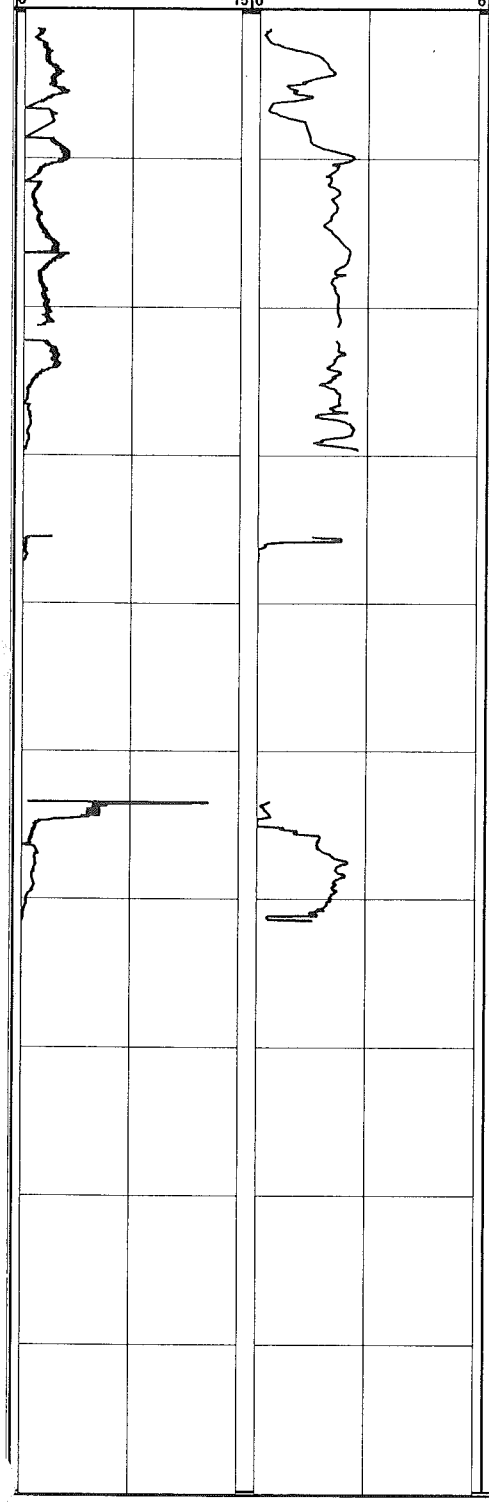
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100		SW		Profile data gaps due to poor KPRO equilibration
110				
120				
130				
140	Poorly-graded SAND (fine to medium); very pale brown	SP		
150	Well-graded SAND with little silt and trace gravel (fine); orange/light brown	SW		Profiler refusal at 152.52 ft. No penetration rate or IK data from 152.52 to 159.31 ft due to drilling activities
160				
170	Poorly-graded SAND (fine); orange/light brown	SP		
180				
190	Poorly-graded SAND (fine to medium); pale yellow-orange	SP		Profiler refusal at 195.18 ft. No penetration rate or IK data from 195.18 to 199.48 ft due to drilling activities. No data from 199.48 to 201.3 due to bad profiler connection.
	SILT and GRAVEL (fine); orange/light brown	ML-GM		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-38**

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	September 16, 2003
JOB NUMBER:	4563001	END DATE:	September 24, 2003
DRILLING FIRM:	CT&E	LOCATION:	On NE corner of property on S side of W
DRILLING METHOD:	Mud Rotary	WEATHER:	John St, W of Cantiague Ln
DRILLER:	Jim Lewis	DATUM:	Land Surface
HELPER:	Ken Heinz, Brian Selcker	HYDROGEOLOGIST:	Jeff Dekoskie
Total depth of Profile:	400.69 ft	Total depth of Boring:	365 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	Well-graded SAND with some silt and gravel; pale yellow-orange	SW		
	SILT with trace sand and gravel; pale yellow-orange	ML		
210	SILT with trace sand; yellow-orange	ML		
220				Profile data gaps due to poor KPRO equilibration
	SILT and SAND (fine); orange/light brown	ML SM		Profiler refusal at 229.61 ft. No penetration rate or IK data from 229.61 to 234.48 ft due to drilling activities.
230	Well-graded SAND (fine); orange/ light brown	SW		
	CLAY; pale yellow-brown	CL		Profiler refusal at 237.1 ft. No penetration rate or IK data from 237.1 to 253.41 ft due to drilling activities.
240				Some lignite fragments in the cuttings
250	Well-graded SAND and GRAVEL (fine); yellow orange to very pale brown	SW-GP		
260				Profiler refusal at 261.43 ft. No penetration rate or IK data from 261.43 to 309.51 ft due to drilling activities.
270				
280				
	CLAY with some sand; light brownish gray	CL		
290				

Boring ID:

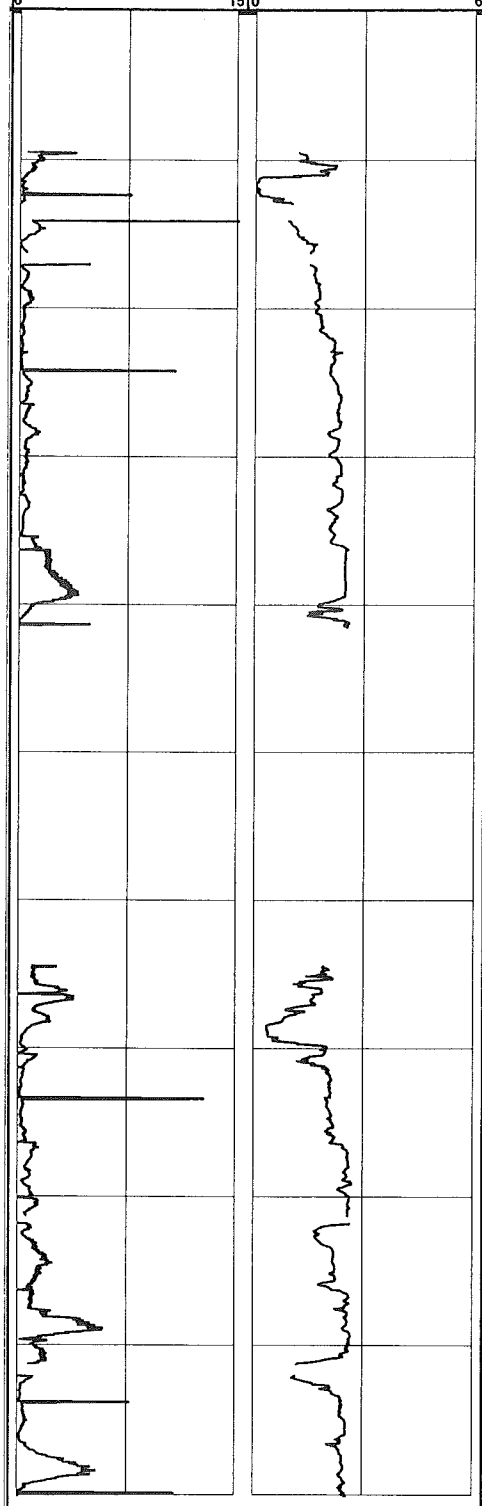
MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

P-38

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	September 16, 2003
JOB NUMBER:	4563001	END DATE:	September 24, 2003
DRILLING FIRM:	CT&E	LOCATION:	On NE corner of property on S side of W
DRILLING METHOD:	Mud Rotary	WEATHER:	John St, W of Cantiague Ln
DRILLER:	Jim Lewis	DATUM:	Land Surface
HELPER:	Ken Heinz, Brian Selcker	HYDROGEOLOGIST:	Jeff Dekoskie
Total depth of Profile:	400.69 ft	Total depth of Boring:	365 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300		CL		
	Well-graded SAND; light brownish gray	SW		
310	CLAY with some sand	CL		
	Poorly-graded GRAVEL with trace clay	GP		Profile data gaps due to poor KPRO equilibration
320				
	Well-graded SAND with trace gravel (fine) and trace clay	SW		
330				
340				Profiler refusal at 341.51 ft. No penetration rate or IK data from 341.51 to 364.45 ft due to drillir activities.
	Poorly-graded SAND (medium to coarse) and GRAVEL (fine)	SP-GP		
350				
360				End of Boring at 365 ft
370				
380				Profile data gap due to poor KPRO equilibration
390				
400				Profiler refusal at 400.69 ft. End Profile

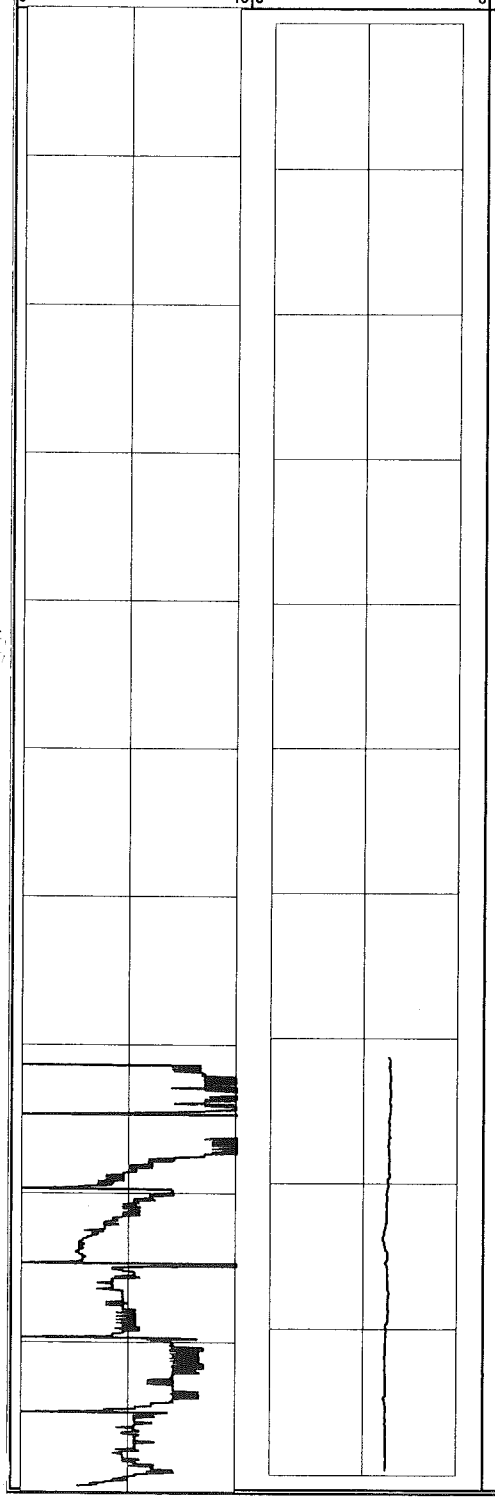
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-42

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	July 22, 2003
JOB NUMBER:	4563001	END DATE:	July 31, 2003
DRILLING FIRM:	CT&E	LOCATION:	In SE corner of property, S of W John St, W of Charlotte St, and N of RR tracks
DRILLING METHOD:	Mud Rotary		
DRILLER:	Wes Eicfeld	DATUM:	Land Surface
HELPER:	Karri Carly	HYDROGEOLOGIST:	Jeff Dekoskie, Garret Furguson

Total depth of Profile: 441.27 ft
Total depth of boring: 420 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Well-graded SAND and GRAVEL (fine to medium) with few silt; brown	SW-GP		Hollow stem augers used from 0 to 15 ft
10				
	Well-graded SAND with little gravel (fine); white and tan	SW		Begin mud rotary drilling at 15 ft
20				
30				
40				
50				
60				
70				Begin profiling at 69.75 ft
80				
90				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

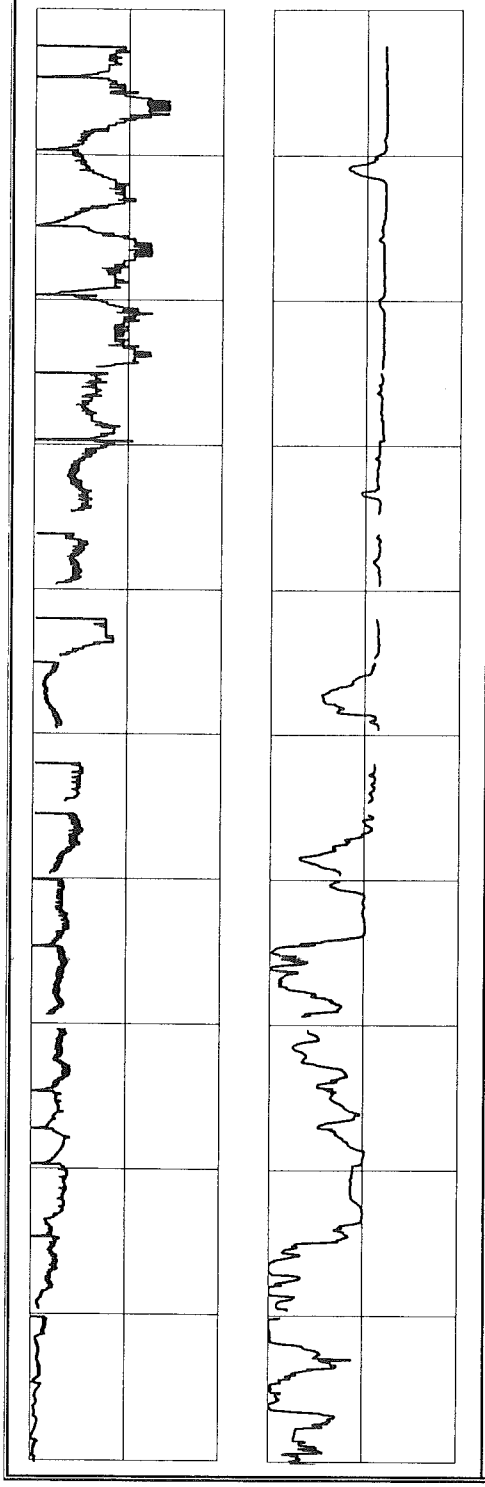
Boring ID:
P-42

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Wes Eicfeld
HELPER:	Karri Carly

START DATE: July 22, 2003
END DATE: July 31, 2003
LOCATION: In SE corner of property, S of W John [illegible] W of Charlotte St, and N of RR tracks
DATUM: Land Surface
HYDROGEOLOGIST: Jeff Dekoskie, Garret Furguson

Total depth of Profile: 441.27 ft
Total depth of boring: 420 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100		SW		Profile data gap due to poor KPRO equilibration
110				
120				
130				
140				Profile data gaps due to poor KPRO equilibration
150	Silty SAND with trace gravel (fine); gray, white, tan	SM		
	Well-graded SAND with some gravel (fine); gray, white, tan	SW		Profile data gaps due to poor KPRO equilibration
160				
170				Profile data gaps due to poor KPRO equilibration
180				
	Sandy CLAY; white, gray	CL		
190				Profile data gaps due to poor KPRO equilibration

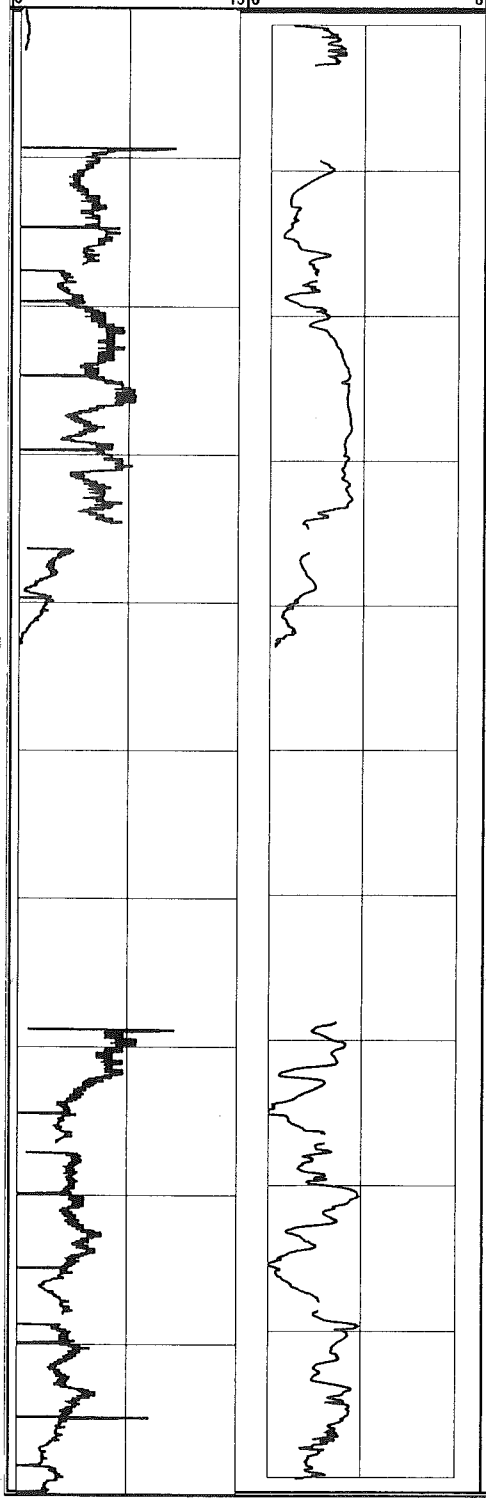
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-42

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	July 22, 2003
JOB NUMBER:	4563001	END DATE:	July 31, 2003
DRILLING FIRM:	CT&E	LOCATION:	In SE corner of property, S of W John St, W of Charlotte St, and N of RR tracks
DRILLING METHOD:	Mud Rotary		
DRILLER:	Wes Eicfeld	DATUM:	Land Surface
HELPER:	Karrl Carly	HYDROGEOLOGIST:	Jeff Dekoskie, Garret Furguson

Total depth of Profile: 441.27 ft
Total depth of boring: 420 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200		CL		
	Well-graded SAND with trace gravel (fine); white, tan	SW		Profiler refusal at 202.76 ft. No penetration rate or IK data from 202.76 to 209.31 ft due to drilling activities.
210				
220				
230				Profile data gap due to poor KPRO equilibration
240	Sandy, silty CLAY; gray, white	CL		Profiler refusal at 242.78 ft. No penetration rate or IK data from 242.78 to 268.76 ft due to drilling activities.
250				
260	Poorly-graded SAND (fine to medium) with trace silt; tan, gray, white	SP		
270				
280				Profile data gaps due to poor KPRO equilibration
290	Silty SAND (fine); tan	SM		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

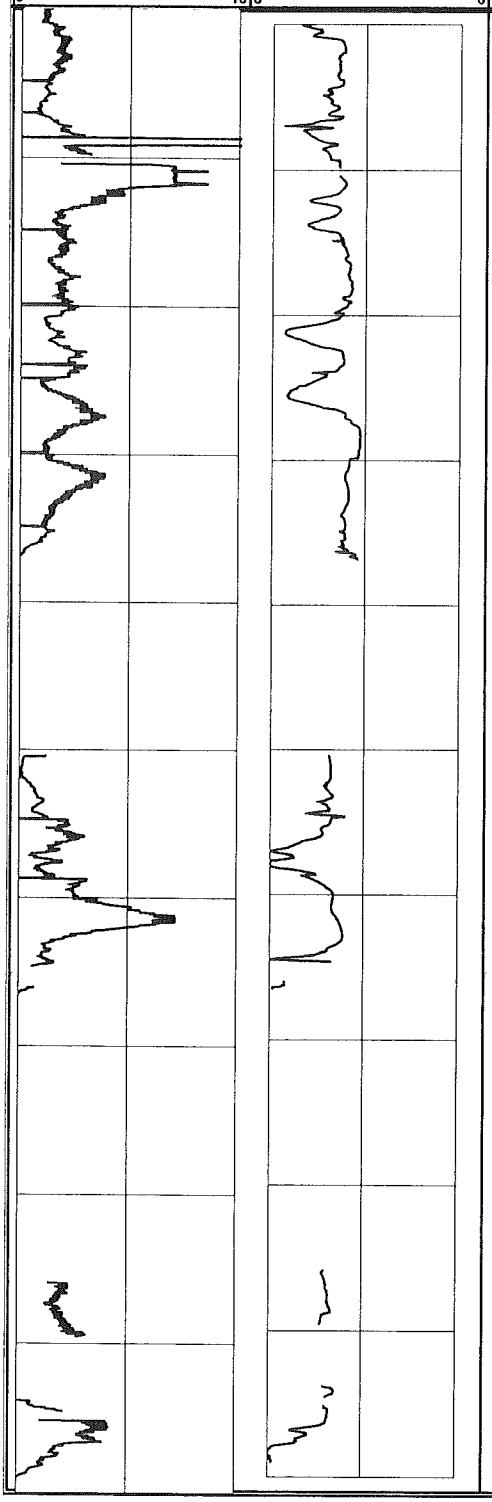
Boring ID:
P-42

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Wes Elcfeld
HELPER:	Karri Carly

START DATE: July 22, 2003
END DATE: July 31, 2003
LOCATION: In SE corner of property, S of W John [illegible] of Charlotte St, and N of RR tracks
DATUM: Land Surface
HYDROGEOLOGIST: Jeff Dekoskie, Garret Furguson

Total depth of Profile: 441.27 ft
Total depth of boring: 420 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300		SM		Profile data gap due to poor KPRO equilibration
330	Poorly-graded SAND (fine to medium); tan	SP		Profiler refusal at 336.82 ft. No penetration rate or IK data from 336.82 to 350.41 ft due to drilling activities.
340	Poorly-graded SAND (fine) with trace clay; tan	SP		Clay lens from 338 to 338.5 ft
350	Poorly-graded SAND with trace gravel (fine); tan, white	SP		
370	CLAY with few sand; gray	CL		Profiler refusal at 366.46 ft. No penetration rate or IK data from 366.46 to 385.88 ft due to drilling activities.
380	Poorly-graded SAND (fine to medium); gray	SP		
390				Profiler refusals at 389.5 and 398.94 ft. No penetration rate or IK data from 389.5 to 393.78 ft and from 398.94 to 405.85 ft due to drilling activities.

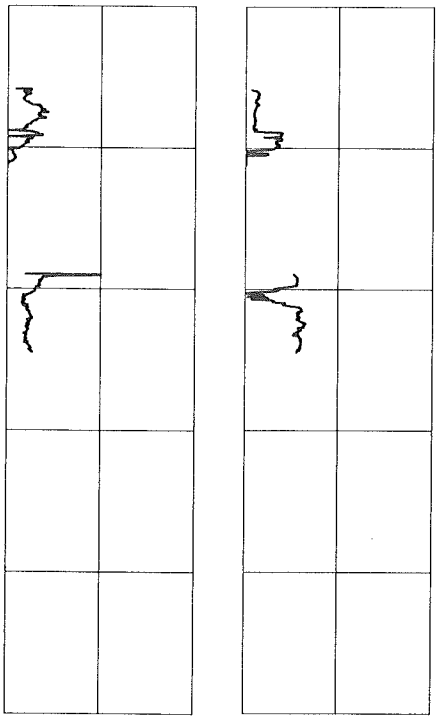
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-42

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Wes Eicfeld
HELPER:	Karri Carly
START DATE:	July 22, 2003
END DATE:	July 31, 2003
LOCATION:	In SE corner of property, S of W John St, W of Charlotte St, and N of RR tracks
DATUM:	Land Surface
HYDROGEOLOGIST:	Jeff Dekoskie, Garret Furguson

Total depth of Profile: 441.27 ft
Total depth of boring: 420 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
400		SP		
410				Profiler refusal at 411.17 ft. No penetration rate or IK data from 411.17 to 418.95 ft due to drilling activities.
420				End of boring at 420 ft
430				Profile data gap from 424.5 to 441.27 ft due to equipment malfunction
440				Profiler refusal at 441.27 ft. End of profile

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

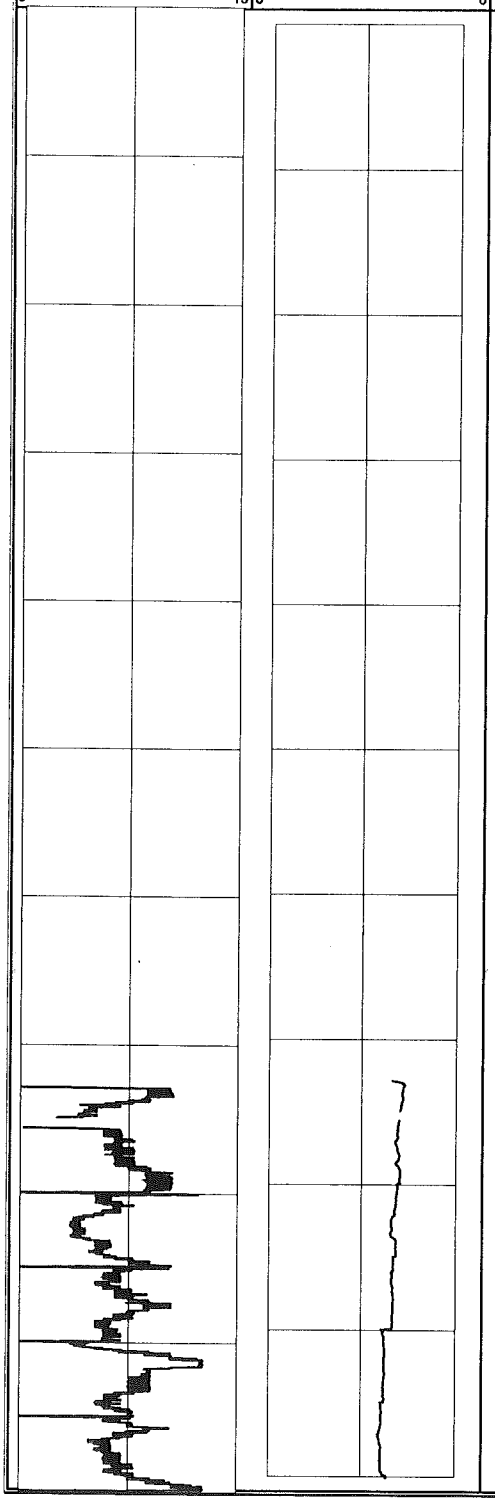
Boring ID:
P-43

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Karri Carly
HELPER:	Steve Somonski

START DATE: September 8, 2003
END DATE: September 24, 2003
LOCATION: Just N of RR tracks, W of Charlotte St, S of W John St, W of P-42
DATUM: Land Surface
HYDROGEOLOGIST: Colleen Sullivan

Total depth of Profile: 324 ft
Total depth of Boring: 250 ft

GEOLOGIC INFORMATION



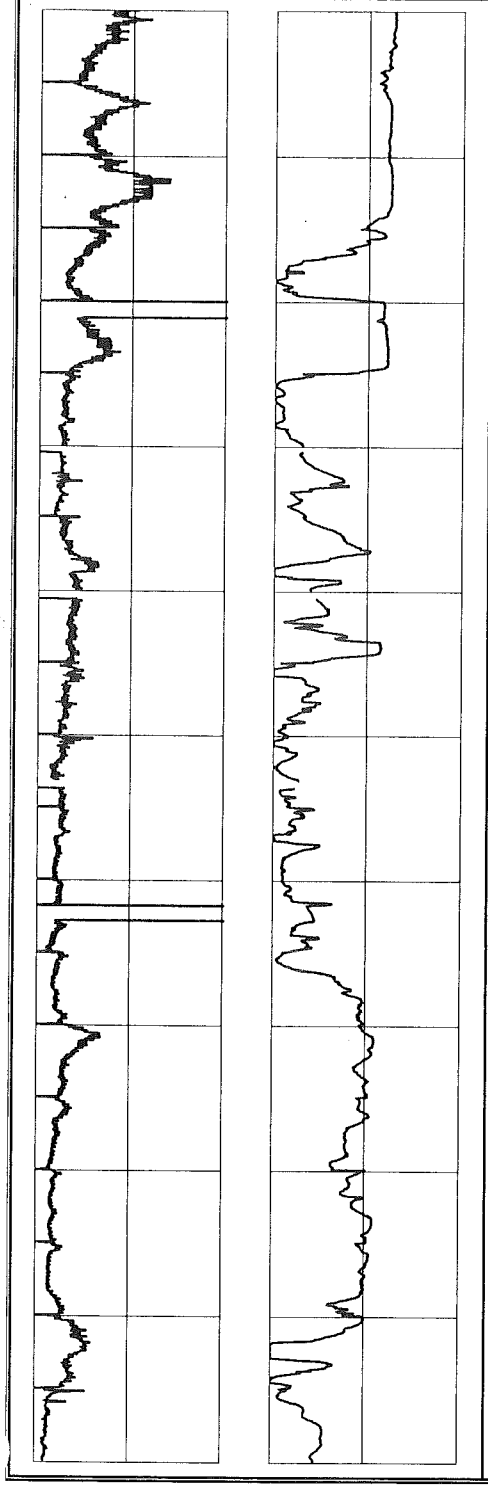
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	SAND (medium to coarse) and GRAVEL (fine); brown to dark brown	SP-GP		Hollow stem augers used from 0 to 15 ft
10				
15				Begin mud rotary drilling at 15 ft
20				
30	Poorly-graded SAND (medium to coarse) with trace gravel (fine); light brown	SP		
40	Well-graded GRAVEL and SAND (coarse); light brown	GW-SP		
	Poorly-graded SAND (medium to coarse) with little to some gravel (fine); light brown	SP		
50				
60				
70				Begin profiling at 72.84 ft
	Poorly-graded SAND (medium to coarse); light brown to white	SP		
80				
90				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-43

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Karri Carly
HELPER:	Steve Somonski
START DATE:	September 8, 2003
END DATE:	September 24, 2003
LOCATION:	Just N of RR tracks, W of Charlotte St, S of W John St, W of P-42
DATUM:	Land Surface
HYDROGEOLOGIST:	Colleen Sullivan
Total depth of Profile:	324 ft
Total depth of Boring:	250 ft

GEOLOGIC INFORMATION



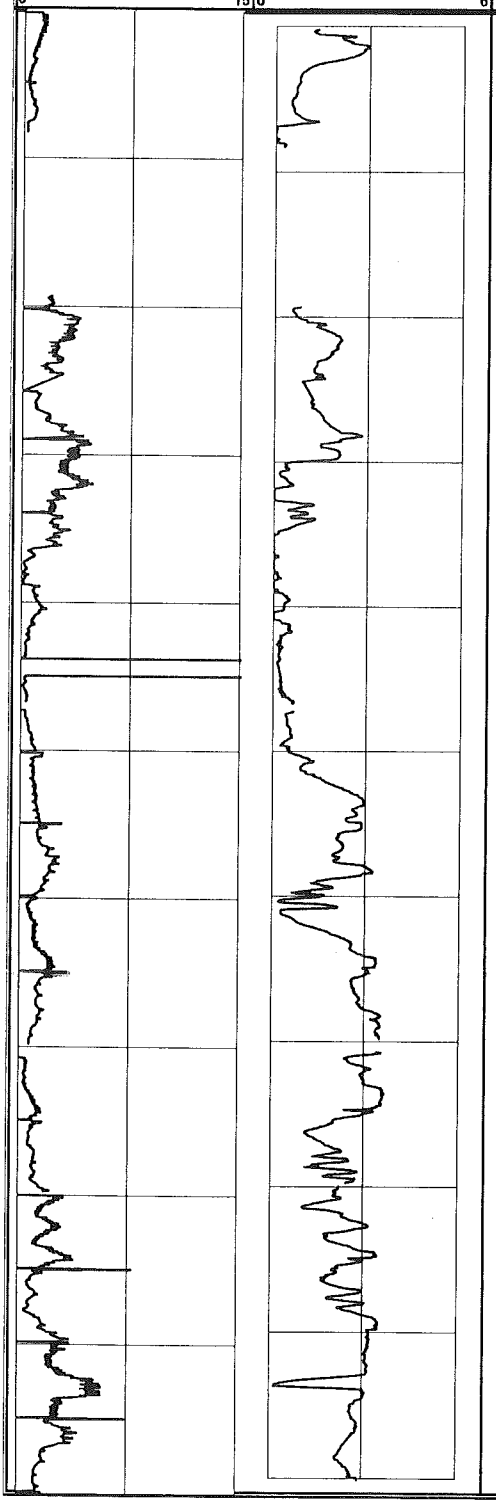
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); light brown to white	SP-GP		
110	Well-graded SAND with little gravel and trace silt and clay; light brown to white	SW		
120				Gravel fraction increases with depth
130				
140	Clayey SILT; yellow-orange-white	ML- CL		Profile data gap due to poor KPRO equilibration
150				Profile data gap due to poor KPRO equilibration
160	Poorly-graded SAND with trace clay; brown to gray	SP		
170				
180				
190				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-43

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Karri Carly
HELPER:	Steve Somonski
START DATE:	September 8, 2003
END DATE:	September 24, 2003
LOCATION:	Just N of RR tracks, W of Charlotte St, S of W John St, W of P-42
DATUM:	Land Surface
HYDROGEOLOGIST:	Colleen Sullivan
Total depth of Profile:	324 ft
Total depth of Boring:	250 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	Poorly-graded SAND (medium) with trace gravel (fine); brown to gray	SP		
				Clay lens from 207 to 208 ft
210				Profiler refusal at 208.25 ft. No penetration rate or IK data from 208.25 to 219.32 ft due to drilling activities
220				
				Loss of circulation of drilling fluid at 210 ft. No recovery of cuttings below 210 ft.
230				
240				End of boring at 250 ft
				Profile data gap due to poor KPRO equilibration
250				
260				
270				Profile data gap due to poor KPRO equilibration
280				
290				

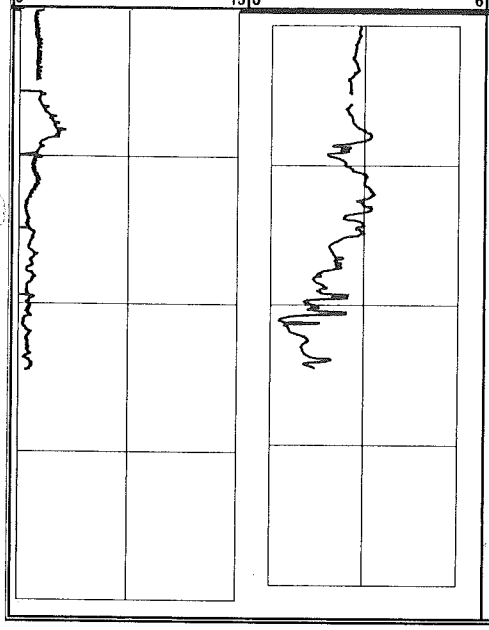
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-43

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Karri Carly
HELPER:	Steve Somonski
START DATE:	September 8, 2003
END DATE:	September 24, 2003
LOCATION:	Just N of RR tracks, W of Charlotte St, S of W John St, W of P-42
DATUM:	Land Surface
HYDROGEOLOGIST:	Colleen Sullivan

Total depth of Profile: 324 ft
Total depth of Boring: 250 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300				
				Profile data gap due to poor KPRO equilibration
310				
				Problems with profiling equipment, and heave within mud rotary casing from 309 to 338 ft.
320				
330				
				No Profile data available below 324.45 ft, end of Profile
340				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

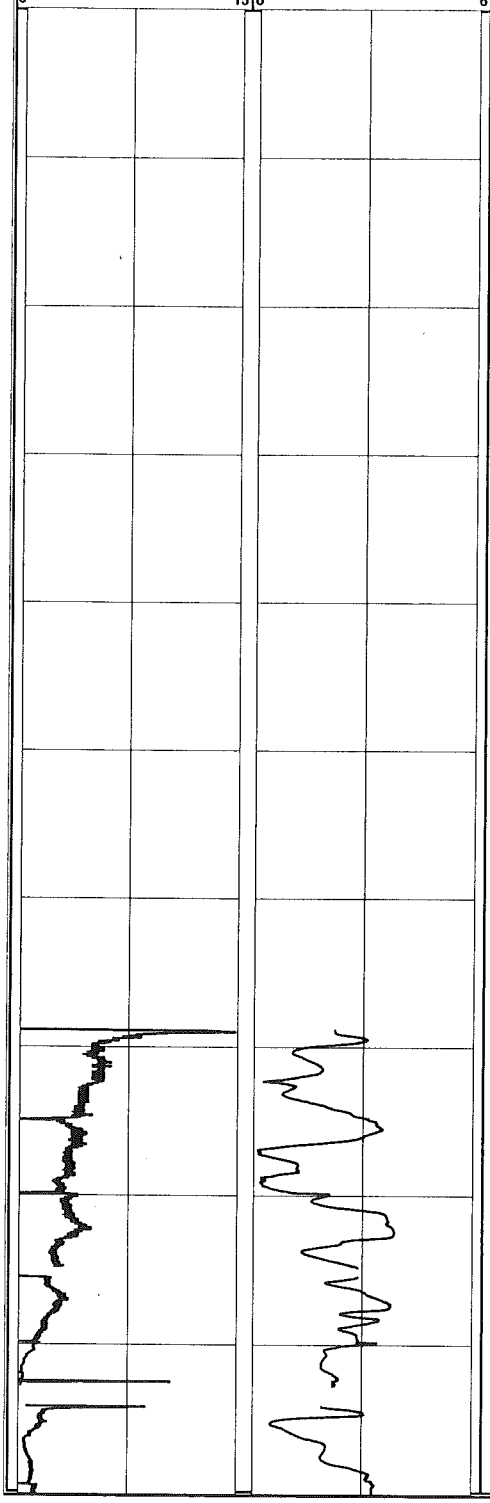
Boring ID:
P-44

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Brian Slecker

START DATE: September 2, 2003
END DATE: September 10, 2003
LOCATION: Just N of RR tracks, W of Charlotte St, S of W John St, W of P-43
DATUM: Land Surface
HYDROGEOLOGIST: J. Hilton, J. Ifkovits, K. Wheeler

Total depth of Profile:
Total depth of Boring: 365 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Well-graded SAND and GRAVEL (fine); medium to light brown	SW		6 1/4 hollow stem auger used from 0 to 14 ft.
10	Well-graded SAND with some gravel; light brown	SW		Begin mud rotary drilling at 14 ft.
20				
30				
40				Gravel occurs as interbeds <2 ft thick from 30 to 60 ft.
50				
60	SAND (fine to medium) with some silt; medium brown	SM		Begin profiling at 68.82 ft
70	Poorly-graded SAND (fine); light brown	SP		
80	Silty SAND; light orange-brown to medium gray-brown	SM		
90				Profiler refusal at 92.78 ft. No penetration rate or IK data from 92.78 to 94.05 ft due to drilling activities.
	SILT with trace sand (fine); medium to dark gray	ML		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

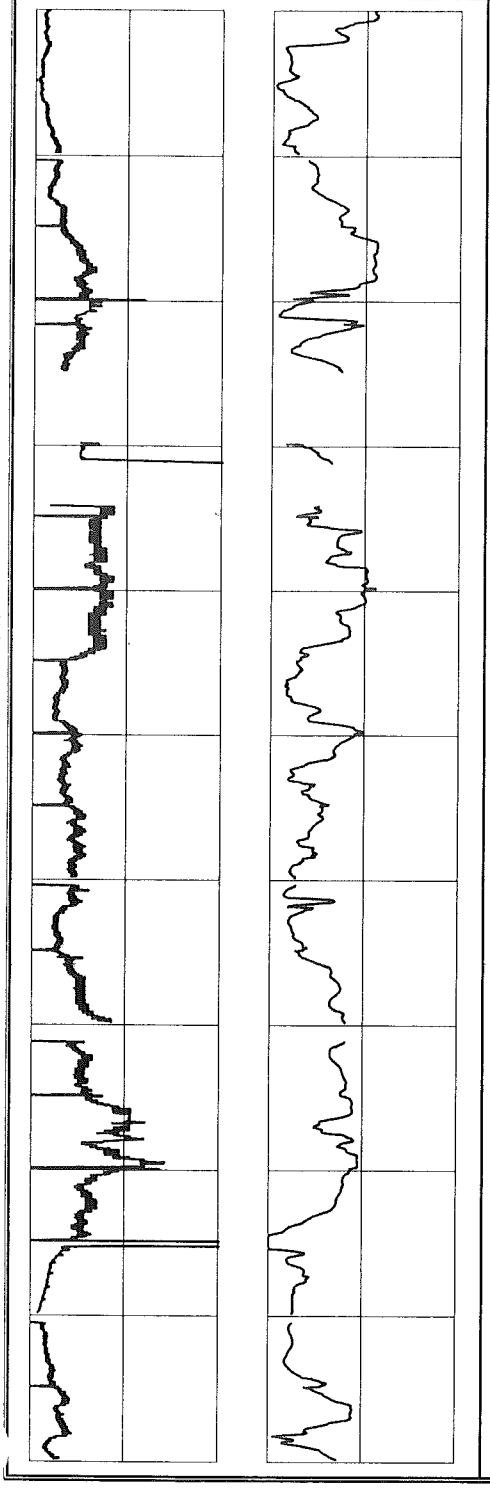
Boring ID: **P-44**

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Brian Slecker

START DATE: September 2, 2003
END DATE: September 10, 2003
LOCATION: Just N of RR tracks, W of Charlotte St, S of W John St, W of P-43
DATUM: Land Surface
HYDROGEOLOGIST: J. Hilton, J. Ifkovits, K. Wheeler

Total depth of Profile:
Total depth of Boring: 365 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100	Poorly-graded SAND (fine) with some to little silt and clay; light tan to brown	SM-SC		
110				
	SILT and SAND (fine); light orange	ML-SM		
120	Poorly-graded SAND (fine) with some silt and clay; light gray to white	SM-SC		
130				Profile data gap due to equipment malfunction Profile data gap due to poor KPRO equilibration
140	SILT and SAND (fine) with trace clay; tan to brown	ML-SM		
150				
160				Profile data gaps due to poor KPRO equilibration
170	SAND (fine to medium) and SILT; tan to light brown	SM-ML		
180	SILT and SAND; tan to reddish-brown	ML-SM		
190	Poorly-graded SAND (fine to medium) with some silt; tan to light brown	SM		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

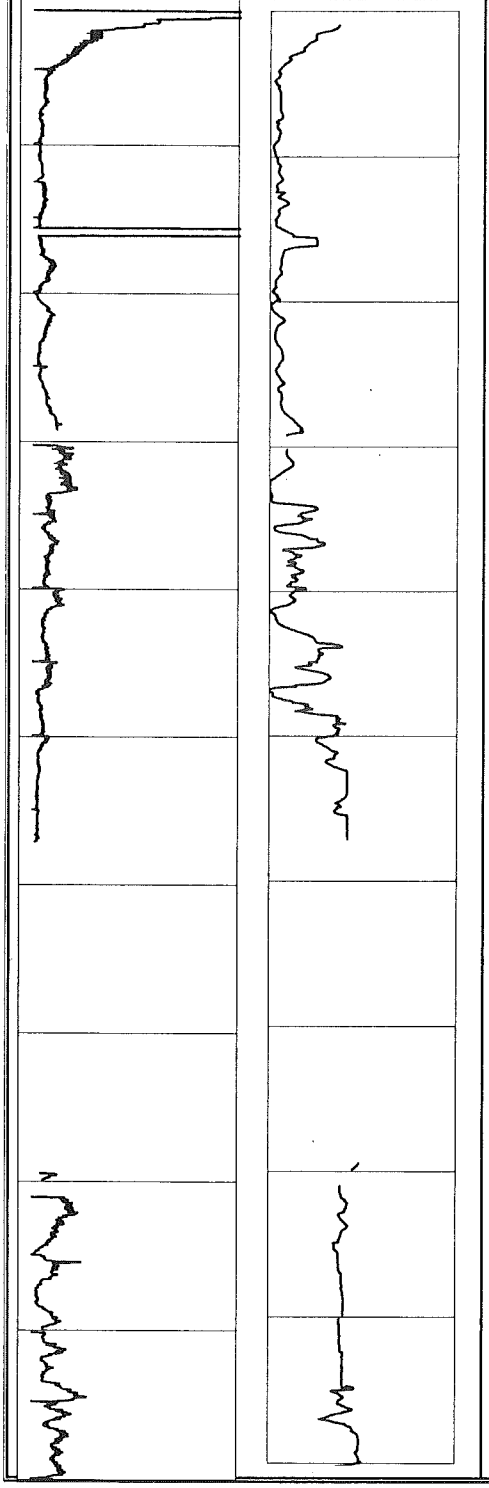
Boring ID:
P-44

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	September 2, 2003
JOB NUMBER:	4563001	END DATE:	September 10, 2003
DRILLING FIRM:	CT&E	LOCATION:	Just N of RR tracks, W of Charlotte St, [illegible] W John St, W of P-43
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Larry Lynch	HYDROGEOLOGIST:	J. Hilton, J. Ifkovits, K. Wheeler
HELPER:	Brian Slecker		

Total depth of Profile:

Total depth of Boring: 365 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	Clayey SILT; light brown to light gray	ML-CL		Profile data gap due to poor KPRO equilibration
210	CLAY with some silt and trace sand; gray	CL		
220				
230				
240	SAND and SILT with little clay and trace gravel (fine); light brown	SM-ML		
250				
260	Clayey SILT; light brown	ML- CL		Profiler refusal at 257.06 ft, no penetration rate or IK data from 257.06 to 279.42 ft due to drilling activities
270	Poorly-graded SAND (fine to medium) with little clayey silt; light brown	SP-SM		
280				No recovery of cuttings from 275 to 290 ft.
290	Poorly-graded SAND (fine to medium) with some silt and little gravel; tan	SP		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

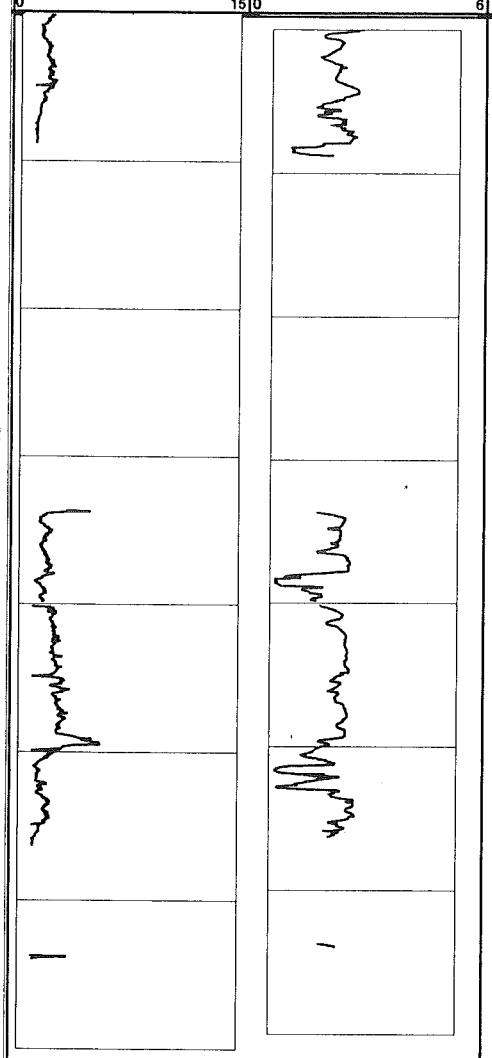
Boring ID:
P-44

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Brian Siecker

START DATE: September 2, 2003
END DATE: September 10, 2003
LOCATION: Just N of RR tracks, W of Charlotte St, S of W John St, W of P-43
DATUM: Land Surface
HYDROGEOLOGIST: J. Hilton, J. Ifkovits, K. Wheeler

Total depth of Profile:
Total depth of Boring: 365 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300		SP		
	Poorly-graded GRAVEL (fine) with trace clay; gray to white			
310	CLAY with little sand; gray	CL		Profiler refusal at 308.75 ft, no penetration rate or IK data from 308.75 to 333.66 ft due to drilling activities
320				
	Poorly-graded SAND (fine to medium); light gray	SP		
330				Sand coarsens with depth
340	Poorly-graded SAND (medium) with trace gravel (fine); light gray to light brown	SP		
350	Well-graded SAND with trace sandy clay; light gray	SW		
				Profile data gap due to drilling activities
360				End of profile at 363 ft
				End of boring at 365 ft
370				

Boring ID:

MALCOLM PIRNIE, INC.

P-45

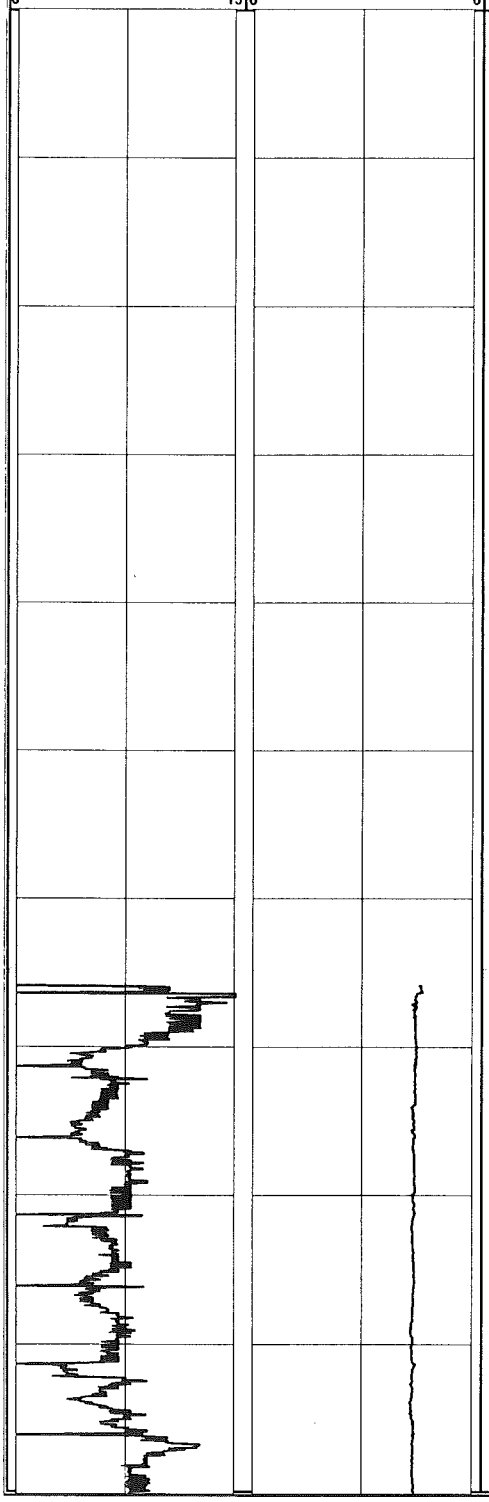
17-17 Route 208 North Fair Lawn, NJ 07401

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	August 4, 2003
JOB NUMBER:	4563001	END DATE:	August 14, 2003
DRILLING FIRM:	CT&E	LOCATION:	SE corner of intersection of Cantiague Rock Rd. and W John St.
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Bill Petley	HYDROGEOLOGIST:	Jon Turk
HELPER:	Ken Heinz		

Total depth of Profile: 390.37 ft

Total depth of Boring: 395 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Poorly-graded SAND (medium to coarse) with some gravel (fine); light brown	SP		
10				Hollow stem auger used from 0 to 18 ft. Begin mud rotary drilling at 18 ft.
20	Well-graded SAND with some gravel; tan	SW		
30				
40	Well-graded SAND and GRAVEL; tan	SW-GW		
	Poorly-graded SAND (medium to coarse) and GRAVEL (fine) with trace clay; light brown	SP-GP		
50	Poorly-graded SAND (fine to medium); tan	SP		
	Poorly-graded SAND (medium to coarse) with trace gravel (fine to coarse); tan	SP		
60	Well-graded GRAVEL and SAND; tan	GW-SW		
	Well-graded SAND; tan	SW		Begin Profiling at 65.85 ft
70	Well-graded SAND with trace gravel (fine); tan	SW		
80				
	Well-graded SAND; tan	SW		
90	Well-graded SAND; tan	SW		
	Well-graded SAND with trace gravel (fine); tan	SW		
	Well-graded SAND with some silt,	SW		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

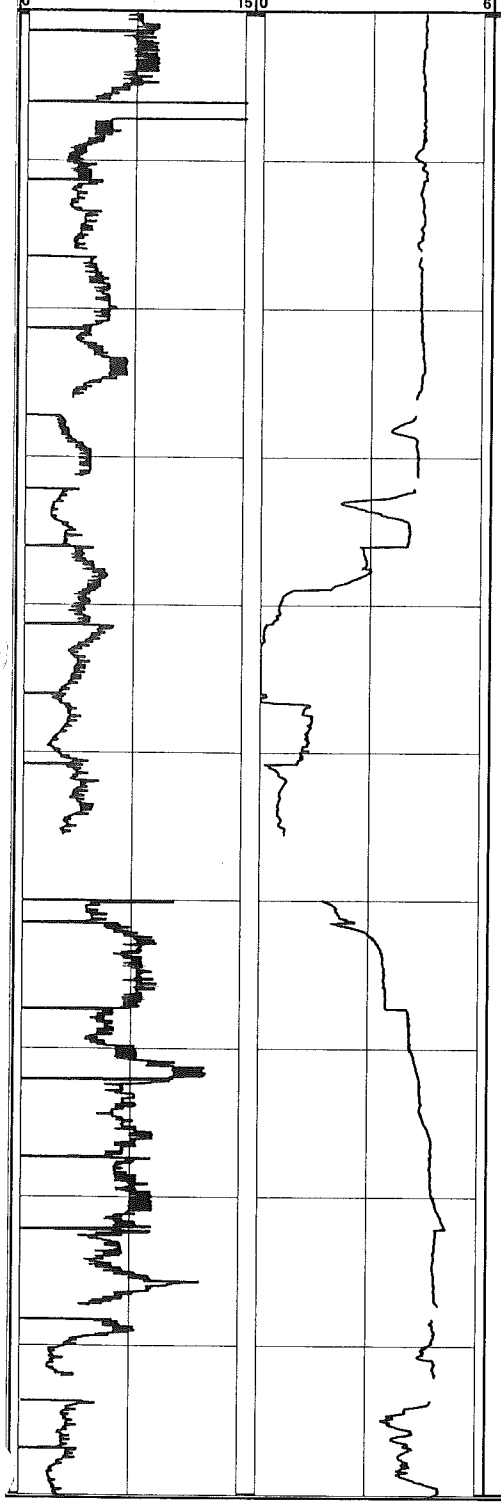
Boring ID:
P-45

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Bill Petley
HELPER:	Ken Heinz

START DATE: August 4, 2003
END DATE: August 14, 2003
LOCATION: SE corner of intersection of Cantiague Rock Rd. and W John St.
DATUM: Land Surface
HYDROGEOLOGIST: Jon Turk

Total depth of Profile: 390.37 ft
Total depth of Boring: 395 ft

GEOLOGIC INFORMATION



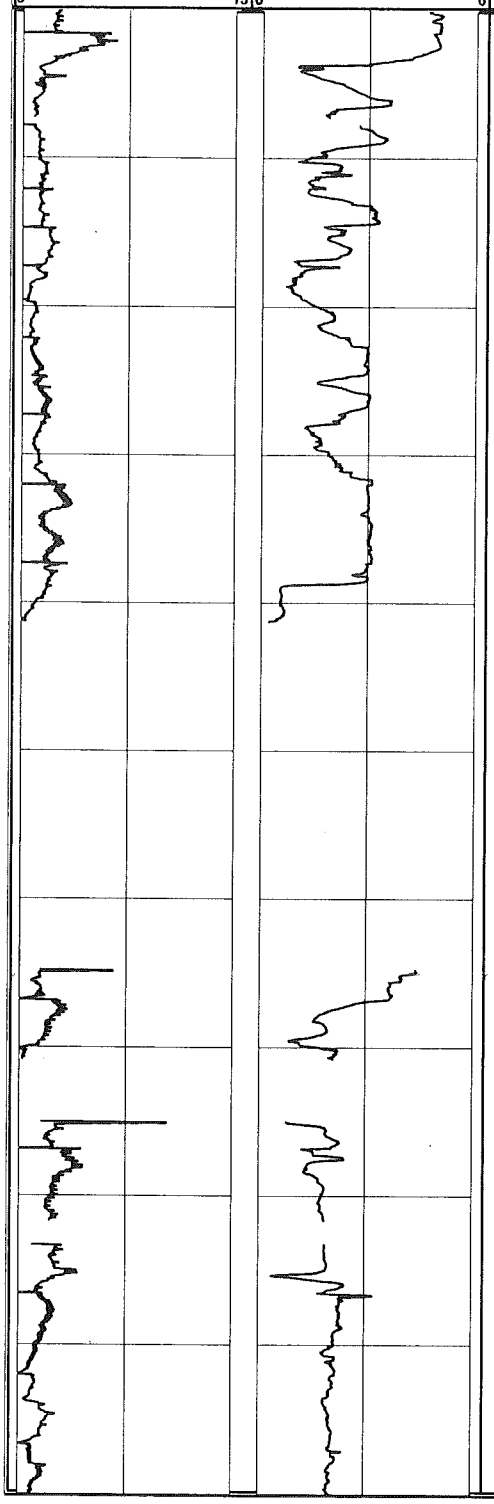
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100	trace gravel and trace clay; tan	SW		
	Poorly-graded SAND (coarse) and GRAVEL (fine); tan	SP-GP		
110				
	Poorly-graded SAND (fine to medium); tan	SP		
120				
	Well-graded SAND; tan	SW		
	Well-graded SAND and GRAVEL (fine); tan	SW-GP		Profile data gaps to poor KPRO equilibration
130	Well-graded SAND with trace gravel (fine); tan	SW		
	Well-graded SAND (fine to coarse) with some silt; tan	SM		
140				
	Well-graded SAND with some silt, some gravel; tan	SM		
150	Well -graded SAND with trace gravel (fine) and trace clay; tan	SW		
	Poorly-graded SAND (coarse) and GRAVEL (fine); tan	SP-GP		Sampler ports clogged from 155.55 to 159.99 ft. Pulled sampler to unclog.
160	Well-graded SAND and GRAVEL; tan	SW		
170				
	Poorly-graded SAND (medium to coarse and GRAVEL (fine); tan	SP-GP		
	Poorly-graded SAND (med to crs);tan	SP		
180	Poorly-graded SAND (med to crs);tan	SP		
	Poorly-graded SAND (coarse) and GRAVEL (fine); tan	SP-GP		
	Well-graded SAND with some silt and some clay; tan	SM		Profile data gaps to poor KPRO equilibration
190	Well-graded SAND and CLAY; orange-tan	SC-CL		
	SILT and CLAY with some sand	ML- CL		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-45

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Bill Petley
HELPER:	Ken Heinz
START DATE:	August 4, 2003
END DATE:	August 14, 2003
LOCATION:	SE corner of intersection of Cantiague Rock Rd. and W John St.
DATUM:	Land Surface
HYDROGEOLOGIST:	Jon Turk
Total depth of Profile:	390.37 ft
Total depth of Boring:	395 ft

GEOLOGIC INFORMATION



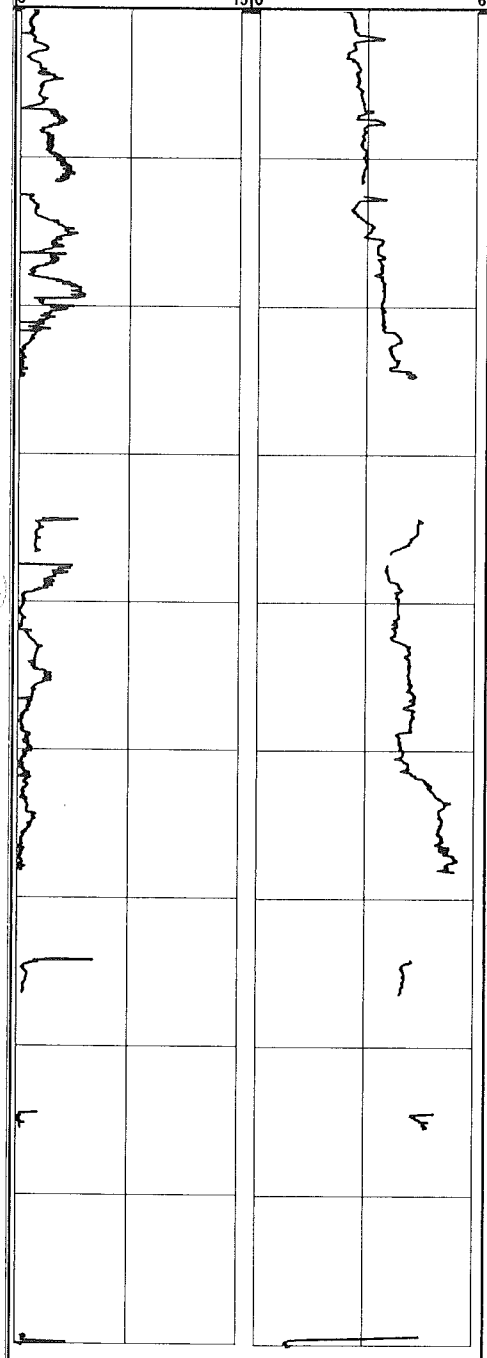
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	(fine to medium); tan to orange	ML- CL		
	Poorly-graded SAND (fine to medium) and CLAY; tan	SC-CL		
210	Poorly graded SAND (fine) and SILT with some clay; tan-orange	SM-ML		Profile data gap to poor KPRO equilibration
220	SILT and SAND (fine) with trace clay; tan	ML-SM		
	Poorly-graded SAND (fine) and CLAY with some silt; tan	SC-CL		
230				
240	Poorly-graded SAND (fine) and CLAY, with some lignite; gray to black	SC-CL		Profiler refusal at 241.26 ft. No penetration rate or IK data from 241.26 to 264.79 ft due to drilling activities.
250	SILT and CLAY with some lignite; gray	ML- CL		
	SILT and CLAY with trace sand (fine) and trace gravel (fine); gray	ML- CL		
	CLAY; gray to white	CL		
260	Poorly-graded SAND (fine to medium) and SILT; gray	SM-ML		
	CLAY with some lignite; gray to white	CL		
270	Poorly-graded SAND (fine) with some silt and trace gravel; tan	SM		Profiler refusal at 270.76 ft. No penetration rate or IK data from 270.76 to 275.01 ft due to drilling activities.
	Poorly-graded SAND (coarse) and GRAVEL (fine); tan	SP-GP		
280	Well-graded GRAVEL with some sand (fine to coarse) and little silt; tan	GW		3-inch casing broke off. Move to alternate location (P-45B). Approximately 10 ft south
	Well-graded GRAVEL with some sand; tan	GW		
	Poorly-graded SAND (medium to coarse) and CLAY with trace gravel (medium); gray	SC-CL		Profile data gap to poor KPRO equilibration
290	CLAY and LIGNITE with some sand (medium) and trace gravel (fine);gray	CL-PT		
	Poorly-graded SAND (coarse) and CLAY with trace gravel (fine); gray	SC-CL		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-45

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Bill Petley
HELPER:	Ken Heinz
START DATE:	August 4, 2003
END DATE:	August 14, 2003
LOCATION:	SE corner of intersection of Cantiague Rock Rd. and W John St.
DATUM:	Land Surface
HYDROGEOLOGIST:	Jon Turk
Total depth of Profile:	390.37 ft
Total depth of Boring:	395 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300	Poorly-graded SAND (coarse) and CLAY with some gravel (fine); tan to gray	SC-CL		
310	Poorly-graded SAND (medium to coarse) with trace gravel (fine) and trace clay; tan	SP		Profile data gap to poor KPRO equilibration
	Well-graded SAND with trace gravel (fine) and trace clay; gray	SW		
320	CLAY with some sand (medium to coarse) and trace lignite; gray	CL		Profiler refusal at 324.77 ft. No penetration rate or IK data from 324.77 to 334.36 ft due to drilling activities.
	No recovery			Lost circulation of drilling fluids from 325 to 395 ft
330				
				Profile data gap to poor KPRO equilibration
340				
350				
360				Profiler rod broke at 358 ft. Pulled rods to fix problem
				Profile rod broken between 364.78 and 366.4 ft bgs. Was not noticed until profiler was pulled at 375.46. Probably caused the inability to drive the profiler
370				Profiler refusals at 366.4 ft and 375.46 ft, no penetration rate or IK data due to drilling activities
380				
390				Profiler refusal at 390.37 ft, end of profile

Boring ID:

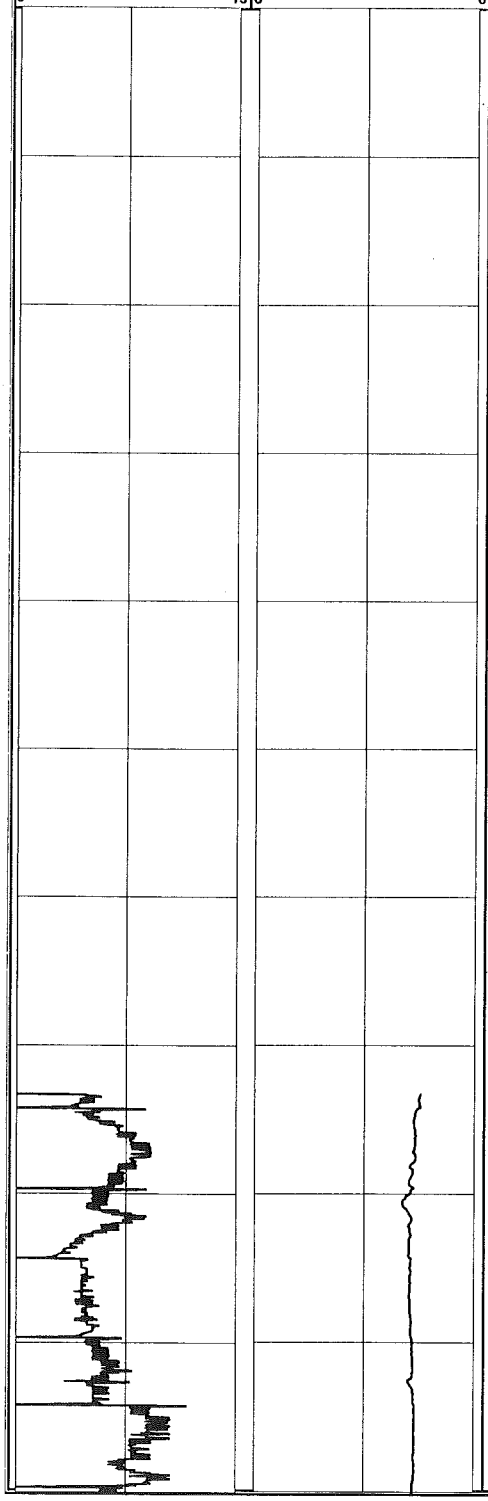
MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

P-46

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	August 19, 2003
JOB NUMBER:	4563001	END DATE:	September 8, 2003
DRILLING FIRM:	CT&E	LOCATION:	On S side of W John St, between Carnegie Ln and Charlotte St
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Karri Carley	HYDROGEOLOGIST:	Colleen Sullivan
HELPER:	Steve Somonski		
Total depth of Profile:	500.07 ft	Total depth of Boring:	465 ft

GEOLOGIC INFORMATION



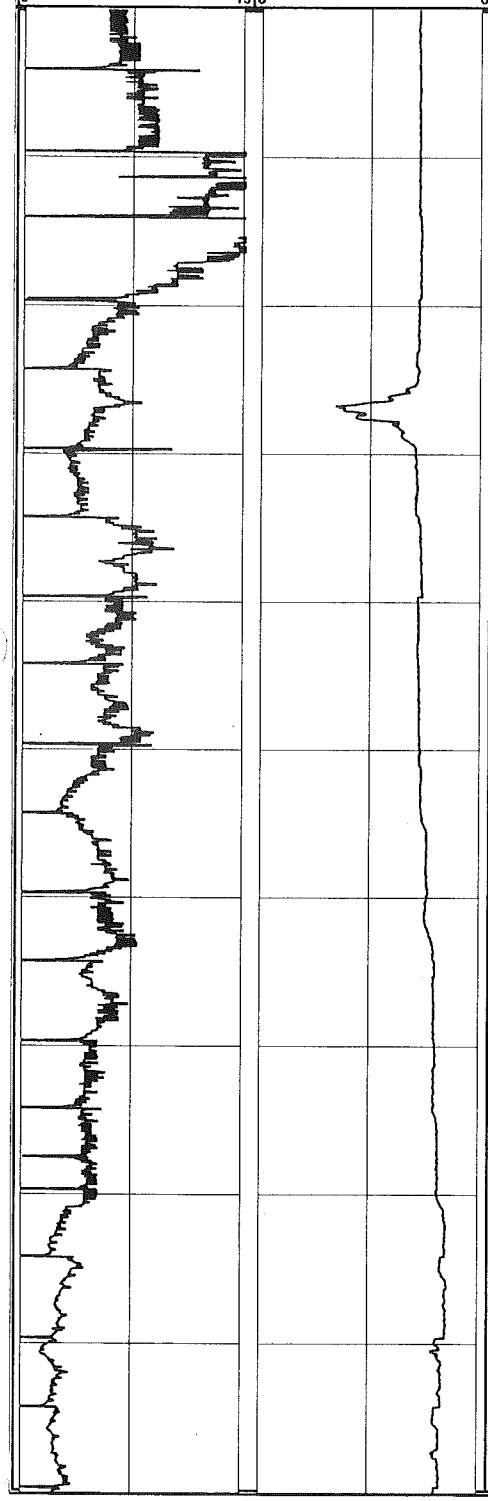
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Well-graded SAND with trace to little gravel (fine to coarse); brown	SP		
10				Hollow stem auger used from 0 to 15 ft. Begin mud rotary drilling at 15 ft.
	Poorly-graded SAND (medium to coarse) with some gravel (fine); light brown	SP		
20				
30				
40	Poorly-graded SAND (medium to coarse); light brown	SP		
50	Poorly-graded SAND (coarse) with some gravel (fine); light brown to yellow	SP		
	Poorly-graded SAND (medium to coarse) with some silt and trace clay and gravel; yellowish-brown	SM		
60				
70	Poorly-graded SAND (medium); light brown	SP		Begin Profiling at 73.29 ft
80				Micaceous
90	Poorly-graded SAND (medium to coarse); light brown	SP		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-46

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	August 19, 2003
JOB NUMBER:	4563001	END DATE:	September 8, 2003
DRILLING FIRM:	CT&E	LOCATION:	On S side of W John St, between Cantiague Ln and Charlotte St
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Karri Carley	HYDROGEOLOGIST:	Colleen Sullivan
HELPER:	Steve Somonski		
Total depth of Profile:	500.07 ft	Total depth of Boring:	465 ft

GEOLOGIC INFORMATION



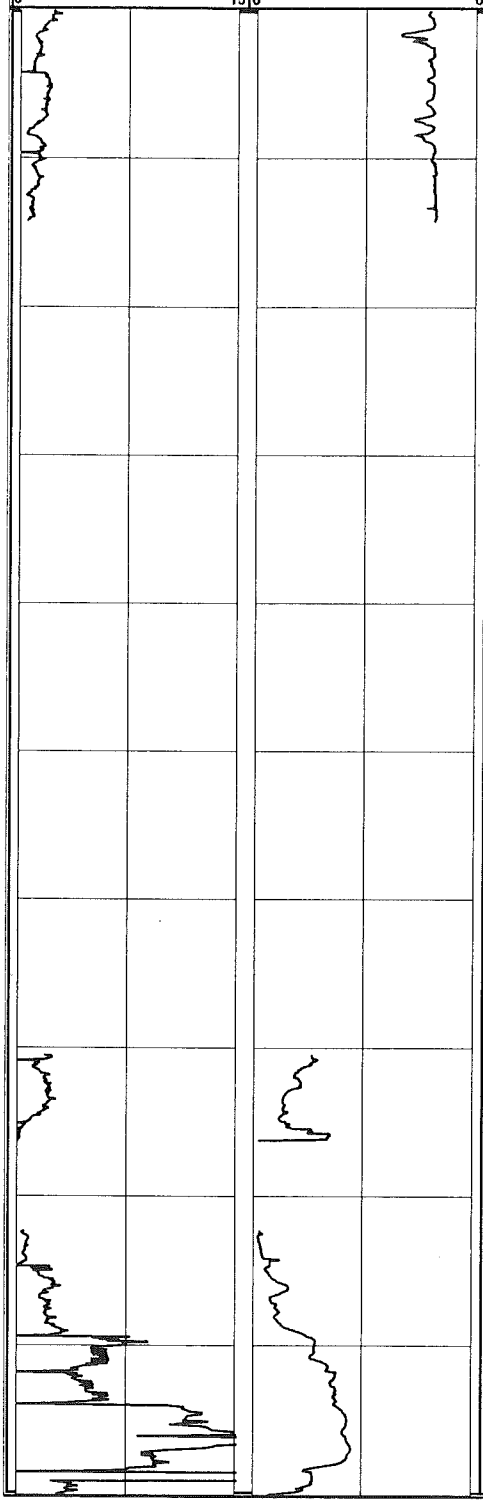
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100	Poorly-graded SAND (medium to coarse) with trace gravel (fine); white-yellow-tan	SP		
110	Poorly-graded SAND (medium to coarse) with some gravel (fine to coarse); light brown	SP		
120	Poorly-graded SAND (medium to coarse) with trace silt ; light brown	SP		
130	Poorly-graded SAND (medium to coarse) with little gravel (fine); light brown to tan	SP		
140				
150	Poorly-graded SAND (medium to coarse); light brown to gray	SP		
160	Poorly-graded SAND (medium to coarse) with trace gravel (fine); light brown to gray	SP		
170				
180	Poorly-graded SAND (medium to coarse) with little gravel (fine) and trace lignite; light brown to gray	SP		
190	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); light brown to gray	SP-GP		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-46

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Karri Carley
HELPER:	Steve Somonski
START DATE:	August 19, 2003
END DATE:	September 8, 2003
LOCATION:	On S side of W John St, between Cal...de Ln and Charlotte St
DATUM:	Land Surface
HYDROGEOLOGIST:	Colleen Sullivan
Total depth of Profile:	500.07 ft
Total depth of Boring:	465 ft

GEOLOGIC INFORMATION



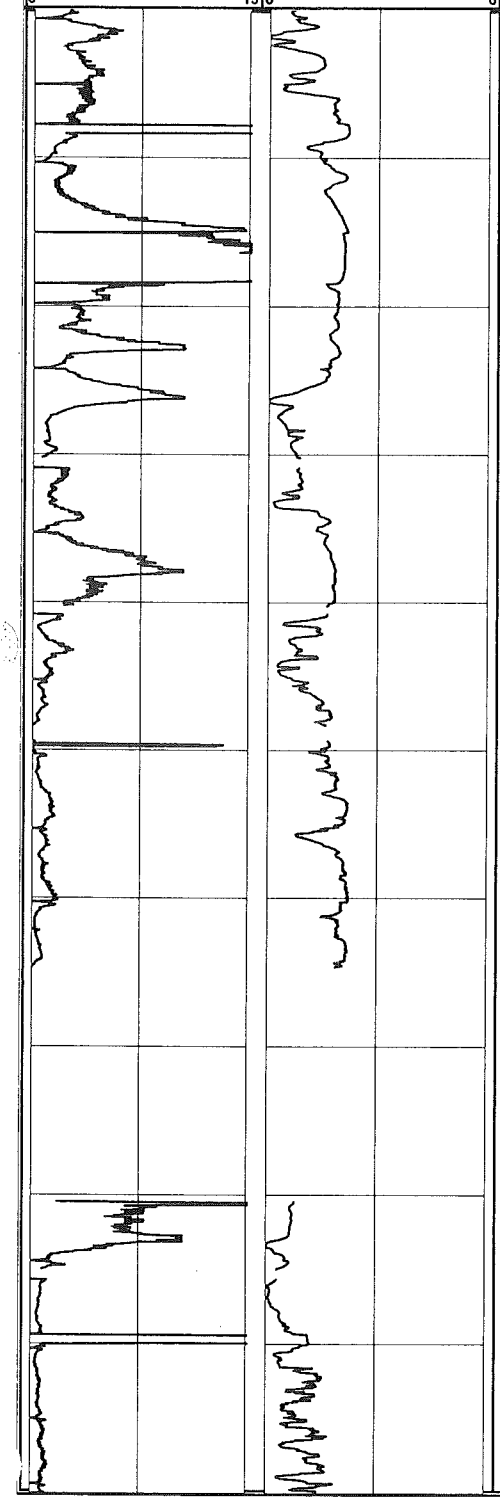
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	Poorly-graded SAND (medium to coarse) with trace gravel (fine); light reddish-brown	SP		
210	Poorly-graded SAND (medium); light reddish-brown	SP		Profiler refusal 214.19 ft, no penetration rate or IK data from 214.19 to 270.5 ft due to drilling activities
	Well-graded SAND with some silt and trace clay; light brown to red	SM		
220	Well-graded SAND with some silt, some clay, and trace lignite; light brown to red	SM		
230	Poorly-graded SAND (fine) and CLAY with trace lignite; white-gray-yellow	SC-CL		
240	CLAY and SILT with some sand (fine) and some lignite; white-yellow-gray	CL- ML		Micaceous
250	CLAY and LIGNITE with some sand (fine to medium); dark gray	CL-PT		
260	Poorly-graded SAND (fine to medium) with some lignite; light brown	SP		
270	Poorly-graded SAND (fine to medium) with some silt; light brown to gray	SM		Micaceous Profiler refusal at 276.22 ft, no penetration rate or IK data from 276.22 to 282.36 ft due to drilling activities
280				
290	Poorly-graded SAND (medium); light tan	SP		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-46

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	August 19, 2003
JOB NUMBER:	4563001	END DATE:	September 8, 2003
DRILLING FIRM:	CT&E	LOCATION:	On S side of W John St, between Cantiague Ln and Charlotte St
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Karri Carley	HYDROGEOLOGIST:	Colleen Sullivan
HELPER:	Steve Somonski		
Total depth of Profile:	500.07 ft	Total depth of Boring:	465 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300		SP		
310	Poorly-graded SAND (medium to coarse) with trace clay; tan-pink	SP		
320	Poorly-graded SAND (fine to medium) with trace clay; light gray to brown	SP		
330	Poorly-graded SAND (fine to medium); light gray	SW		Micaceous Profile data gaps due to poor KPRO equilibration
340				
350				
360	Poorly-graded SAND (fine to medium) with trace clay; light gray	SP		Profiler refusal at 364.63 ft, no penetration rate or IK data from 364.63 to 380.43 ft due to drilling activities
370	Poorly-graded SAND (fine to medium) with trace gravel (fine); light gray	SP		
	Poorly-graded SAND (fine to medium); light gray	SP		
380	No Recovery of Cuttings			Lost circulation of drilling fluids from 380 to 410 ft. No recovery of cuttings. Profile data gap due to poor KPRO equilibration
390				

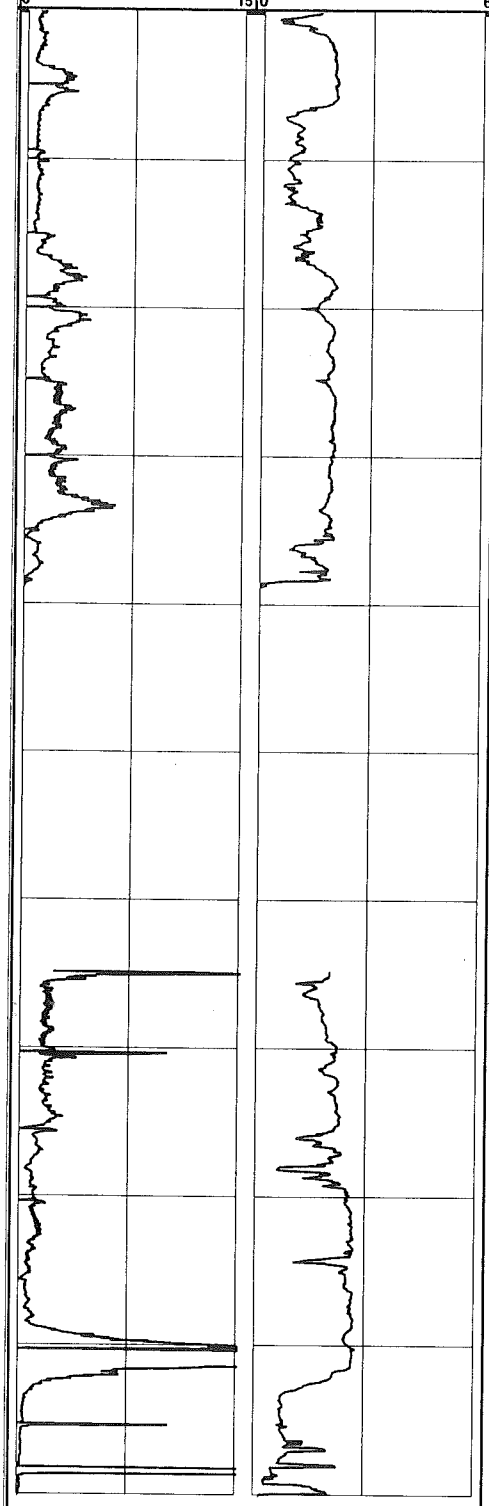
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-46

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Karri Carley
HELPER:	Steve Somonski
START DATE:	August 19, 2003
END DATE:	September 8, 2003
LOCATION:	On S side of W John St, between C[illegible]e Ln and Charlotte St
DATUM:	Land Surface
HYDROGEOLOGIST:	Colleen Sullivan

Total depth of Profile: 500.07 ft
Total depth of Boring: 465 ft

GEOLOGIC INFORMATION



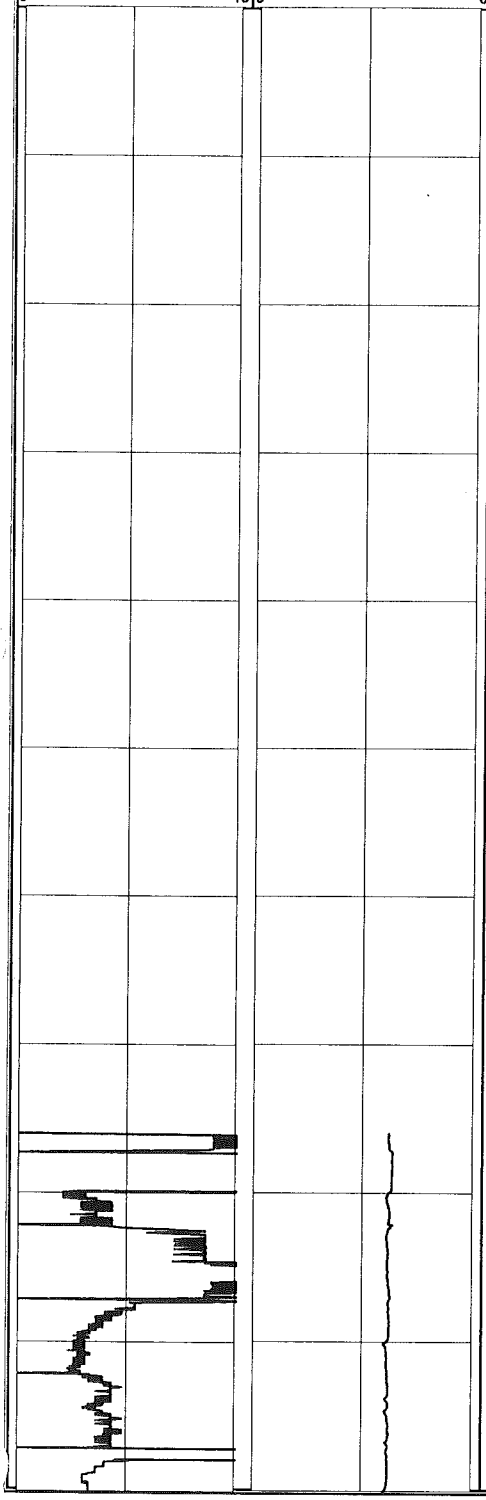
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
400				
410	Poorly-graded SAND (fine); gray	SP		
420				
430	Poorly-graded SAND (medium to coarse); red	SP		Clay lens at ~438 ft
440	SILT and CLAY	ML- CL		Profiler refusal at 438.81 ft, no penetration rate or IK data from 438.81 to 464.87 ft due to drilling activities
	Poorly-graded SAND (fine to medium); gray	SP		Little recovery of cuttings
450	Poorly-graded SAND (fine) and SILT, trace clay, trace lignite; gray	SM-ML		
460	Poorly-graded SAND (fine to medium); gray	SP		End of boring at 465 ft
470				
480				
490				
500				Profiler refusal at 500.07 ft, end Profile

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-47

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Bill Petley
HELPER:	Ken Heinz
START DATE:	September 2, 2003
END DATE:	September 11, 2003
LOCATION:	SW corner of intersection of W John St,
WEATHER:	Cantiague Rock Rd, and Cantigue Ln
DATUM:	Land Surface
HYDROGEOLOGIST:	Jeff Dekoskie
Total depth of Profile:	397 ft
Total depth of Boring:	370 ft

GEOLOGIC INFORMATION



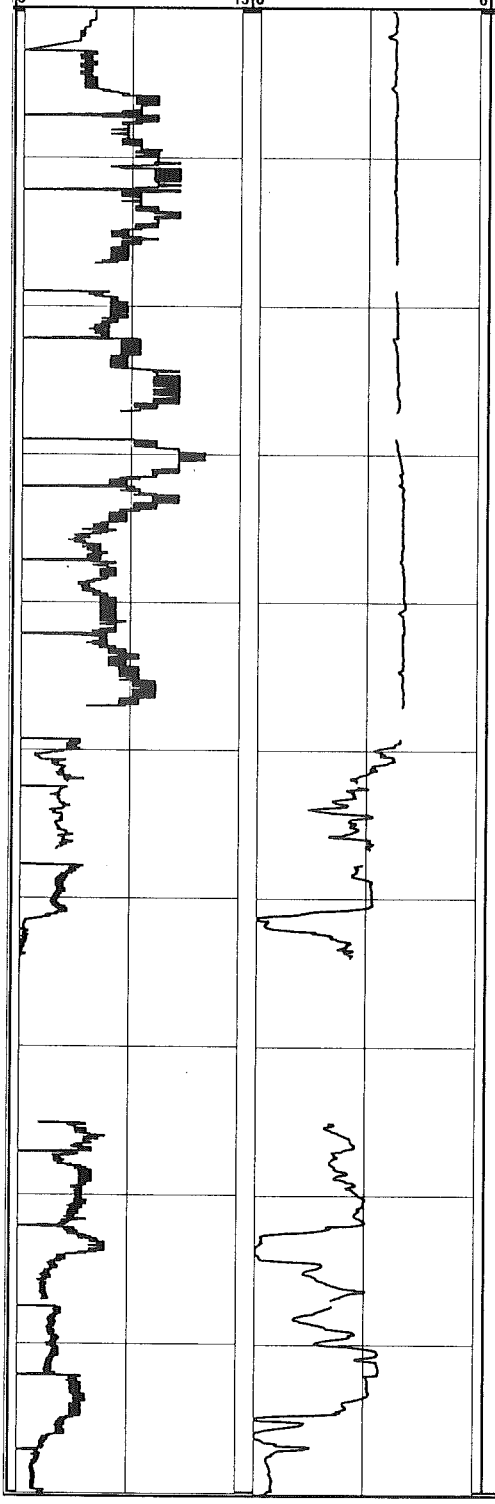
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Poorly-graded SAND (medium to coarse) with some gravel (fine); light brown	SP		
10	Poorly-graded SAND (medium to coarse) with little gravel (fine); light brown	SP		Hollow stem auger used from 0 to 20 ft. Begin mud rotary drilling at 20 ft.
20	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); white and tan	SP-GP		
30				
40				
50	Poorly-graded SAND (medium to coarse) with little gravel (fine); white and tan	SP		
60				
70	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); white and tan	SP-GP		Micaceous Begin profiling at 76.01 ft.
80				
90				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-47

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	September 2, 2003
JOB NUMBER:	4563001	END DATE:	September 11, 2003
DRILLING FIRM:	CT&E	LOCATION:	SW corner of Intersection of W John St,
DRILLING METHOD:	Mud Rotary	WEATHER:	Cantiague Rock Rd, and Cantigue Ln
DRILLER:	Bill Petley	DATUM:	Land Surface
HELPER:	Ken Heinz	HYDROGEOLOGIST:	Jeff Dekoskie
Total depth of Profile:	397 ft	Total depth of Boring:	370 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100		SP-GP		
110	Well-graded SAND and GRAVEL (fine); white and tan	SW-GP		
120				Profile data gaps due to poor KPRO equilibration
130				
140				
	Poorly-graded SAND (medium to coarse) with little gravel (fine); white-tan	SP		
150				Profile data gaps due to poor KPRO equilibration
160				
	Poorly-graded GRAVEL (fine) and CLAY with some silt; white-tan	GC-CL		Profiler refusal at 163.96 ft, no penetration rate or IK data from 163.96 to 175.12 ft due to drilling activities
170	Poorly-graded SAND (medium to coarse) with trace gravel (fine); white-tan	SP		
	Poorly-graded SAND (medium to coarse) with trace gravel (fine) and trace silt; white and tan	SP		Micaceous
180				
	Poorly-graded SAND (medium to coarse) with little gravel (fine); white and tan	SP		Micaceous
190				Profile data gaps due to poor KPRO equilibration

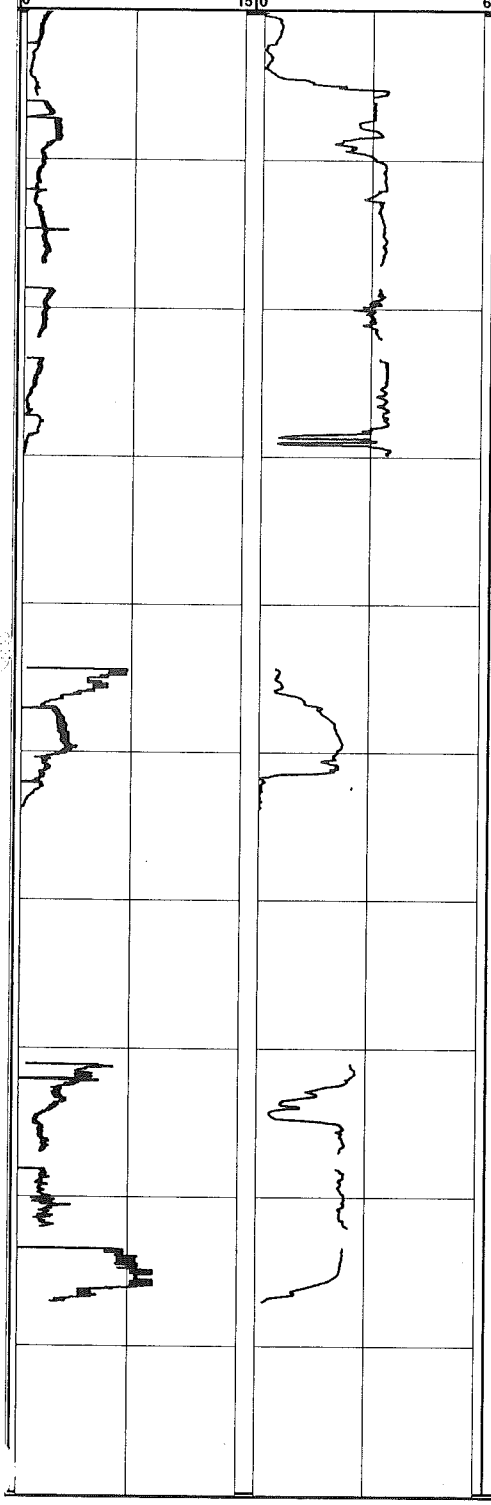
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-47**

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Bill Petley
HELPER:	Ken Heinz
Total depth of Profile:	397 ft
Total depth of Boring:	370 ft

START DATE: September 2, 2003
END DATE: September 11, 2003
LOCATION: SW corner of intersection of W John St, and Cantigue Rd, and Cantigue Ln
WEATHER: Cantiague Rock Rd, and Cantigue Ln
DATUM: Land Surface
HYDROGEOLOGIST: Jeff Dekoskie

GEOLOGIC INFORMATION



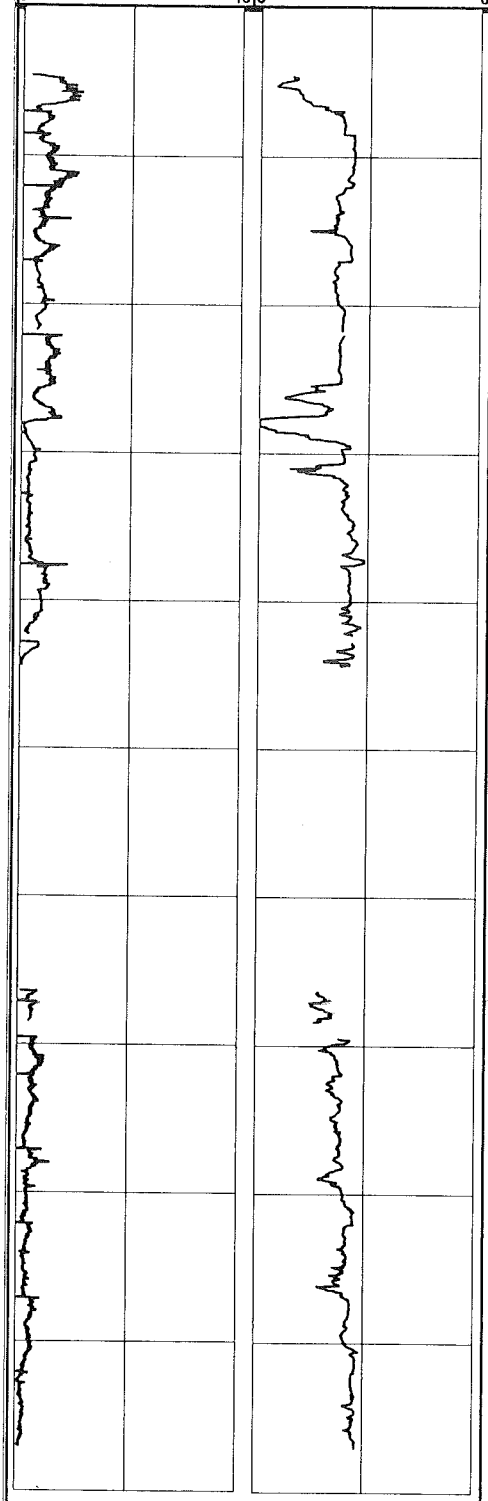
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200		SP		
	Silty SAND with some gravel, and trace clay; white-gray	SM		Micaceous
210				
220	Well-graded SAND and GRAVEL (fine) with some silt; white and gray	SM-GM		Profile data gaps due to poor KPRO equilibration
230	Silty SAND and CLAY with some gravel (fine); white to gray.	SM-CL		Interbedded clay Profiler refusal at 229.82 ft, no penetration rate or IK data from 229.82 to 244.35 ft due to drilling activities
240	Poorly-graded SAND (medium) with trace gravel (fine); white to tan	SP		
	CLAY with some silt; gray	CL		
250	CLAY and LIGNITE with some silt;	CL-PT		
	Poorly-graded GRAVEL (fine) with some silt and trace sand; dark gray	GM		Profiler refusal at 253.81 ft, no penetration rate or IK data from 253.81 to 271.05 ft due to drilling activities
260				
270	Poorly-graded SAND (medium) and GRAVEL (fine); white and tan	SP		Profile data gaps due to poor KPRO equilibration
280	PEAT with trace gravel (fine); brown	PT		Brown wood chips
	SILT and CLAY with trace sand (fine); gray	ML- CL		Micaceous Profiler refusal at 287 ft, no penetration rate or IK data from 287 to 304.61 ft due to drilling activities
290				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-47

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Bill Petley
HELPER:	Ken Heinz
START DATE:	September 2, 2003
END DATE:	September 11, 2003
LOCATION:	SW corner of intersection of W John St, Cantiague Rock Rd, and Cantigue Ln
WEATHER:	
DATUM:	Land Surface
HYDROGEOLOGIST:	Jeff Dekoskie
Total depth of Profile:	397 ft
Total depth of Boring:	370 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300		ML- CL		
	Poorly-graded SAND (medium) and GRAVEL (fine); white and tan	SP		
310				
320				Profile data gap due to poor KPRO equilibration
330				
340				Profiler refusal at 344.35 ft, no penetration rate or IK data from 344.35 to 366.38 ft due to drilling activities
350	SILT and SAND (fine to medium); white and tan	ML-SM		Interbedded silt and sand
	Poorly-graded SAND (medium to coarse) with some gravel (fine); white and tan	SP		
360				End of boring at 370 ft
370				Profile data gap to to equipment malfunctions
380				
390				End of profile at 397.0 ft
400				

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:

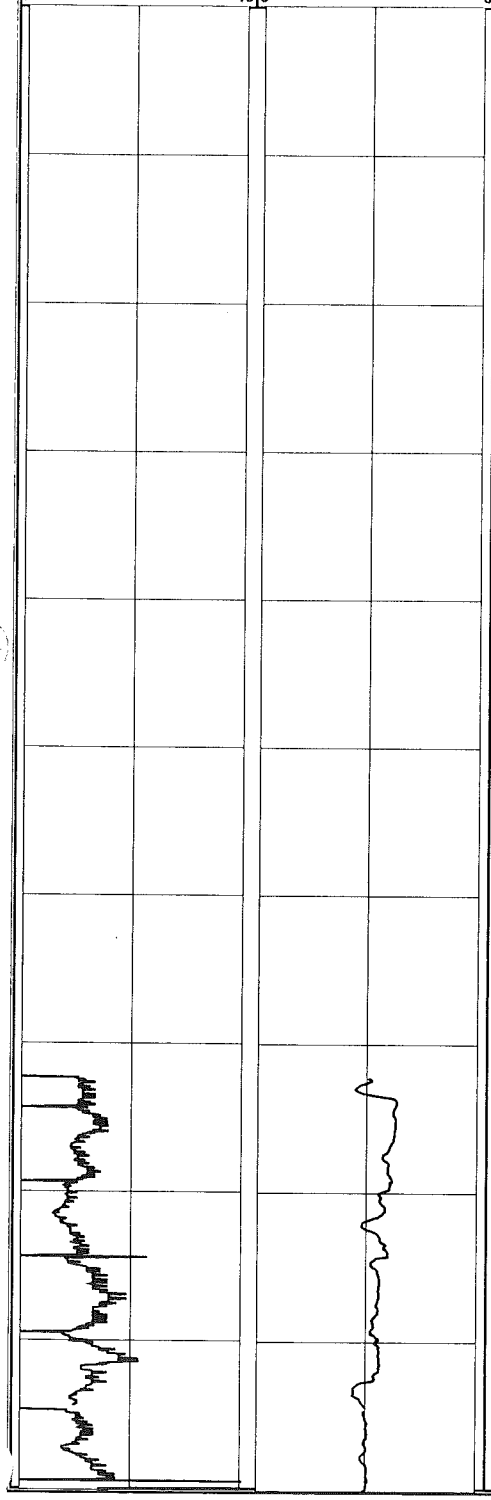
P-49

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	October 21, 2003
JOB NUMBER:	4563001	END DATE:	October 31, 2003
DRILLING FIRM:	CT&E	LOCATION:	On W side of Charlotte St, S of W John St, and N of railroad tracks
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Kari Carley	HYDROGEOLOGIST:	Emily Moshier
HELPER:	Larry Lynch		

Total depth of Profile: 465.6 ft

Total depth of Boring: 460 ft

GEOLOGIC INFORMATION



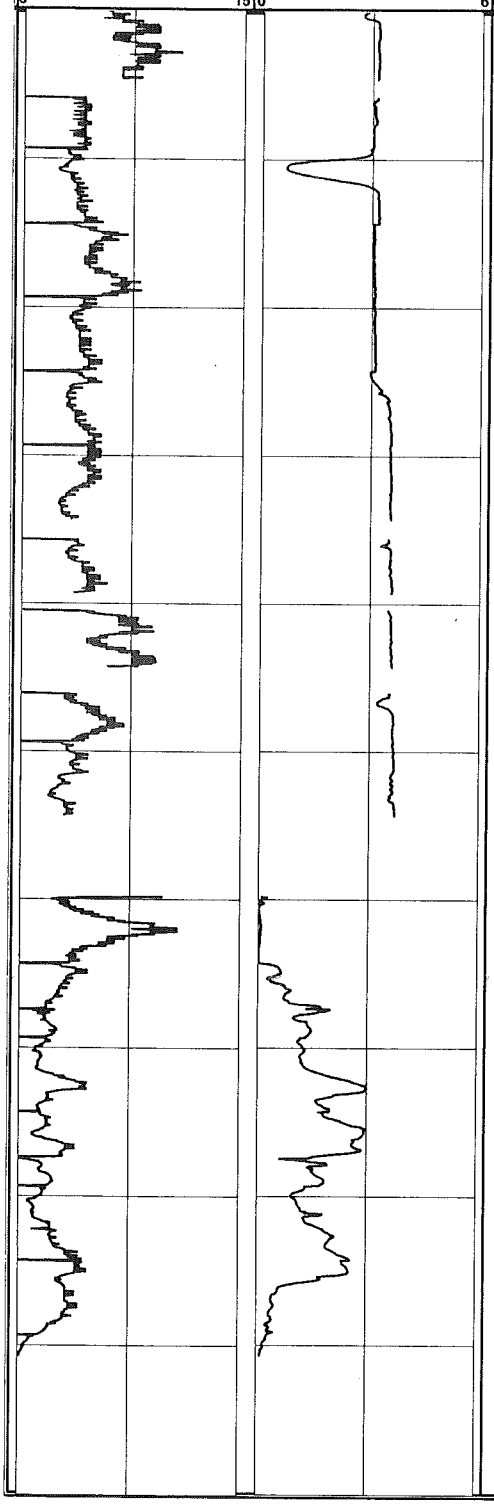
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Well-graded SAND (fine to coarse) and GRAVEL (fine to coarse); dark brown	SW-GW		
10				Hollow stem auger used to drill for 0 to 15 ft, begin mud rotary drilling at 15 ft
	Poorly-graded GRAVEL (fine); light brown	GP		
20				
30	Poorly-graded SAND (coarse) with some gravel (fine); light brown	SP		
40				
50				
60				
				Begin profiling at 72.27 ft
70	Poorly-graded SAND (medium to coarse) and SILT; light brown	SM-ML		
	Poorly-graded SAND (fine) with trace gravel (fine); light brown	SP		
80	Well-graded SAND (fine to coarse) with trace gravel (fine); light brown	SW		
90				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-49

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Kari Carley
HELPER:	Larry Lynch
START DATE:	October 21, 2003
END DATE:	October 31, 2003
LOCATION:	On W side of Charlotte St, S of W Jo... and N of railroad tracks
DATUM:	Land Surface
HYDROGEOLOGIST:	Emily Moshier
Total depth of Profile:	465.6 ft
Total depth of Boring:	460 ft

GEOLOGIC INFORMATION



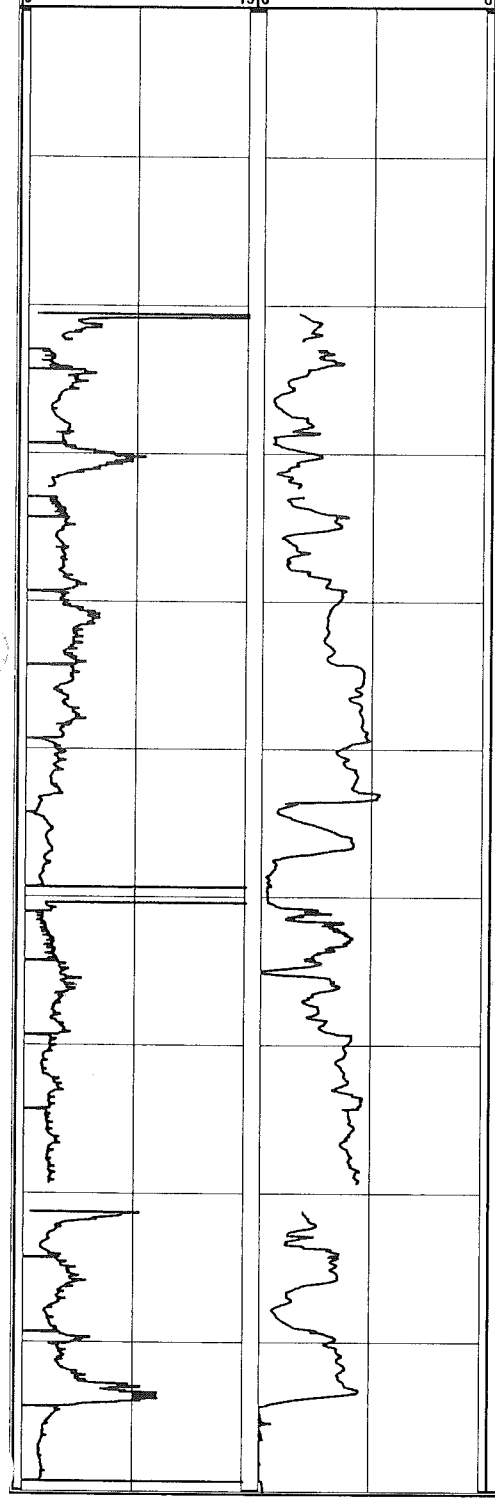
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100		SW		Profile data gap due to equipment malfunction
110				
120				
130	Well-graded GRAVEL (fine to coarse) with some sand (coarse); light brown	GW		Profile data gap due to equipment malfunction
140				Profile data gaps due to poor I equilibration
150				No penetration rate or IK data from 154.34 to 159.81 ft due to drilling activities and malfunctioning Profiling equipment
160	Poorly-graded SAND (coarse) and GRAVEL (fine); brown	SP-GP		
170	CLAY and SAND (fine to medium); light brown	CL-SC		
180				
	CLAY and SAND (coarse); light brown	CL-SC		
190				Profiler refusal at 190.66 ft, no penetration rate or IK data form 190.66 to 220.56 ft due to drilling activities

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-49

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Kari Carley
HELPER:	Larry Lynch
START DATE:	October 21, 2003
END DATE:	October 31, 2003
LOCATION:	On W side of Charlotte St, S of W John St, and N of railroad tracks
DATUM:	Land Surface
HYDROGEOLOGIST:	Emily Moshier
Total depth of Profile:	465.6 ft
Total depth of Boring:	460 ft

GEOLOGIC INFORMATION



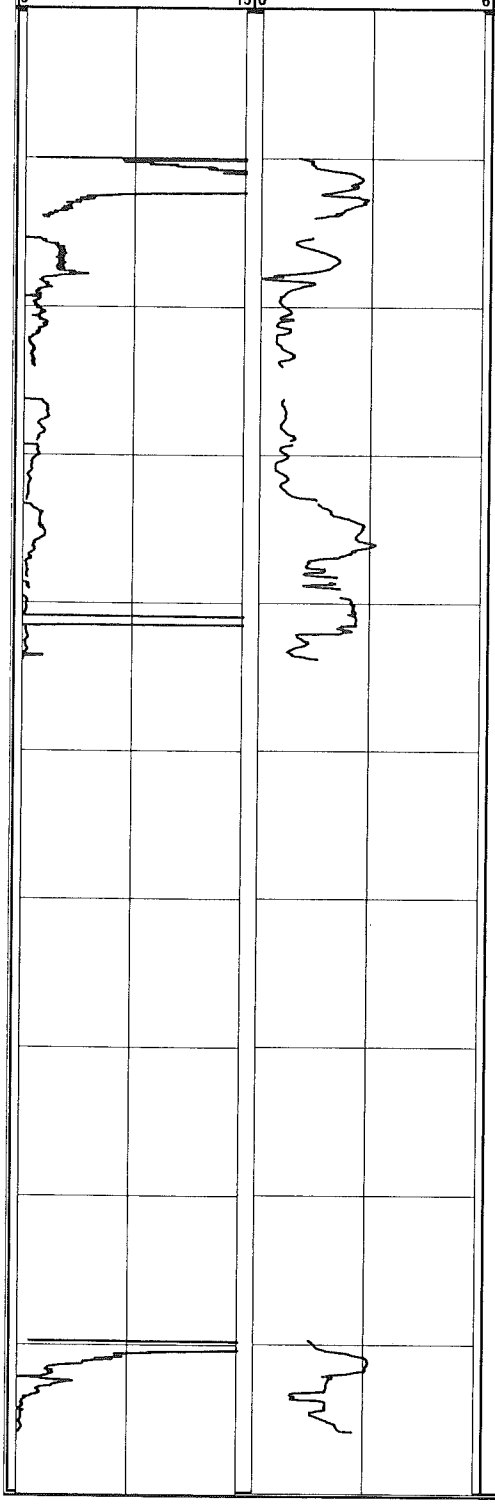
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	Well-graded SAND (fine to coarse) with some silt; brown	SM		
210				
	CLAY; white to gray	CL		
220	Poorly-graded SAND (fine to medium) and CLAY; light brown to white	SC-CL		Profile data gap due to poor KPRO equilibration
230				Profile data gap due to poor KPRO equilibration
240				
	Well-graded SAND (fine to coarse) and CLAY; light brown to white	SC-CL		
250				
260				
	Poorly-graded SAND (fine) and CLAY; light brown to white	SC-CL		
270				
	Poorly-graded SAND (fine); light brown	SP		
280	Poorly-graded SAND (medium) and CLAY; light brown to white	SC-CL		Profile data gap due to equipment malfunction
290				
	CLAY; light brown to white	CL		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-49

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Kari Carley
HELPER:	Larry Lynch
START DATE:	October 21, 2003
END DATE:	October 31, 2003
LOCATION:	On W side of Charlotte St, S of W John ..., and N of railroad tracks
DATUM:	Land Surface
HYDROGEOLOGIST:	Emily Moshier
Total depth of Profile:	465.6 ft
Total depth of Boring:	460 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300	Poorly-graded SAND (fine to medium) with some clay; brown	SC		Profiler refusal at 300.0 ft, no penetration rate or IK data from 300.0 to 309.98 ft due to drilling activities
310	Poorly-graded SAND (fine) with some silt; light brown to orange	SM		
320				Profile data gaps due to poor KPRO equilibration
330	Poorly-graded SAND (fine to medium) with trace silt; light brown	SP		
340	Poorly-graded SAND (fine to medium); white	SP		Profiler refusal at 343.79 ft, no penetration rate or IK data from 343.79 to 389.71 ft due to drilling activities
350				
360				
370				
380				
390	Poorly-graded SAND (medium to coarse); white	SP		Profiler efusal at 395.83 ft, no penetration rate or IK data from 395.83 to 419.66 ft due to drilling activities

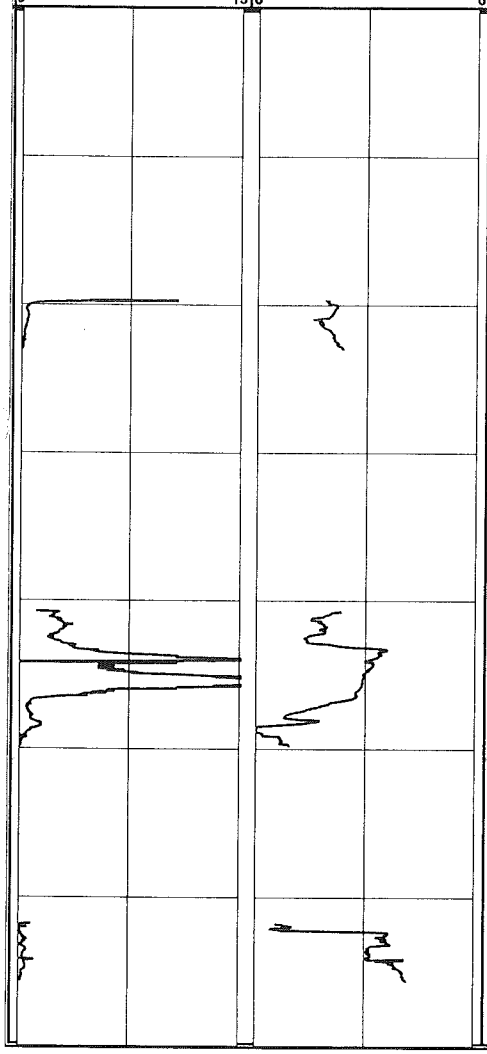
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-49

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Kari Carley
HELPER:	Larry Lynch
START DATE:	October 21, 2003
END DATE:	October 31, 2003
LOCATION:	On W side of Charlotte St, S of W John St, and N of railroad tracks
DATUM:	Land Surface
HYDROGEOLOGIST:	Emily Moshier

Total depth of Profile: 465.6 ft
Total depth of Boring: 460 ft

GEOLOGIC INFORMATION



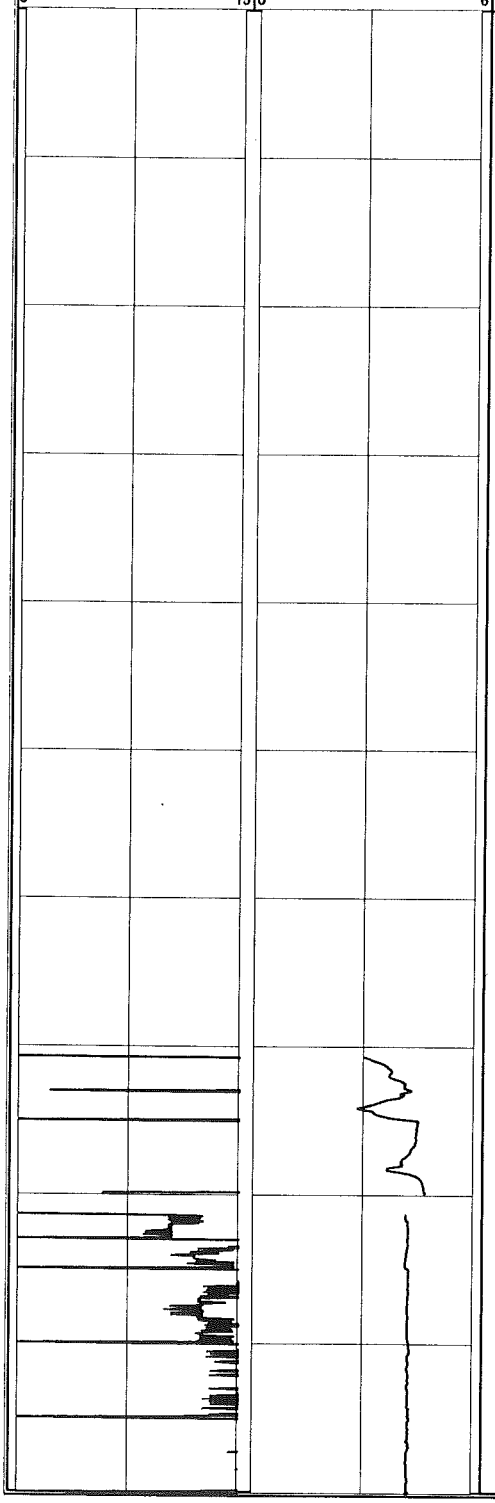
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
400		SP		
410	Poorly-graded SAND (medium to coarse) with trace clay; white	SP		
420				Profiler refusal at 422.95 ft, no penetration rate or IK data from 422.95 to 440.72 ft due to drilling activities
430	Poorly-graded SAND (coarse), withtrace clay; orange	SP		
440	Well-graded SAND (fine to coarse) with trace clay; orange	SW		
450	CLAY	CL		Profiler refusal at 449.75 ft, no penetration rate or IK data from 449.75 to 461.77 ft due to drilling activities
	Poorly-graded SAND (fine)	SP		
460				End of boring at 460 ft
				Profiler refusal at 465.6 ft, end of Profile

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-50

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Brian Sieker
START DATE:	October 21, 2003
END DATE:	October 29, 2003
LOCATION:	On E side of Charlotte St, S of W John St, N of railroad tracks, and E of P-51
DATUM:	Land Surface
HYDROGEOLOGIST:	Colleen Sullivan, Arnas Nemikas
Total depth of Profile:	445.09
Total depth of Boring:	410

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Poorly-graded SAND (medium) with some gravel and brick fragments; dark brown	SP		Hollow stem augers used to drill from 0 to 15 ft.
10	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); brown	SP-GP		Begin mud rotary drilling at 15 ft
20	Poorly-graded SAND (coarse); light brown to yellow-orange	SP		
30	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); light brown to yellow-white	SP-GP		
40	Poorly-graded SAND (medium to coarse); brown-white	SP		
50	Poorly-graded SAND (coarse) and GRAVEL (fine); light brown to yellow-white	SP-GP		
60	Poorly-graded GRAVEL (fine) with some sand (medium)	GP		Begin profiling at 69.38 ft, problems with equipment. Removed profiler at 69.9 ft.
70	Poorly-graded SAND (medium to coarse); light brown	SP		Resume profiling at 70.71 ft
80				Profile data gap due to poor KPRO equilibration
90				

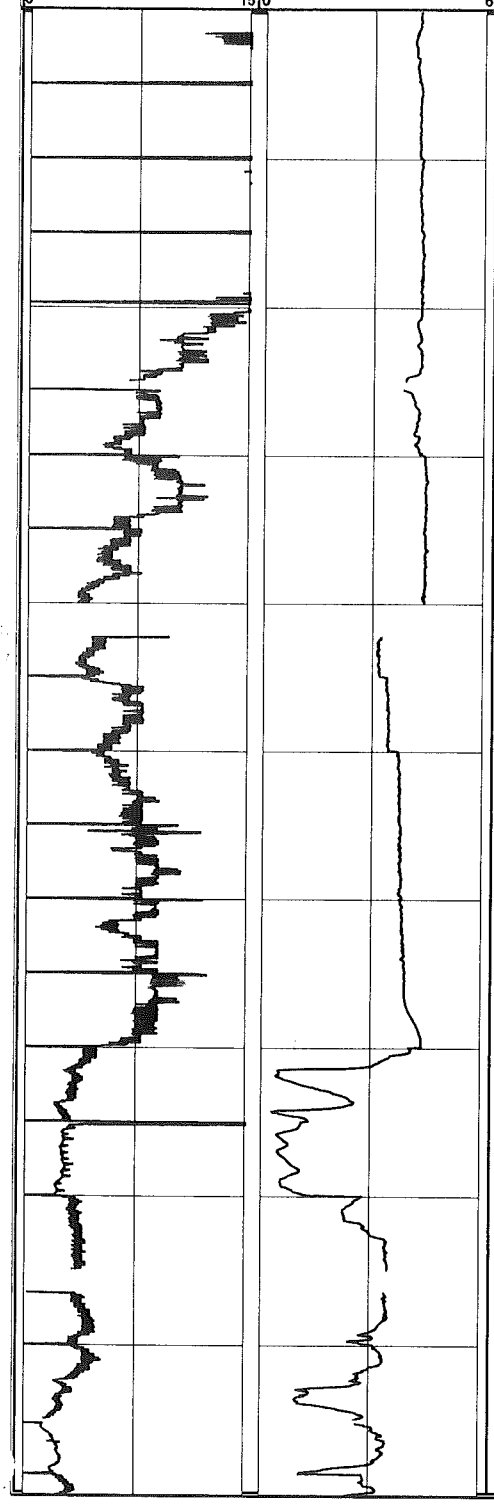
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-50

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	October 21, 2003
JOB NUMBER:	4563001	END DATE:	October 29, 2003
DRILLING FIRM:	CT&E	LOCATION:	On E side of Charlotte St, S of W John St, N of railroad tracks, and E of P-51
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Larry Lynch	HYDROGEOLOGIST:	Colleen Sullivan, Arnas Nemikas
HELPER:	Brian Sieker		

Total depth of Profile: 445.09
Total depth of Boring: 410

GEOLOGIC INFORMATION



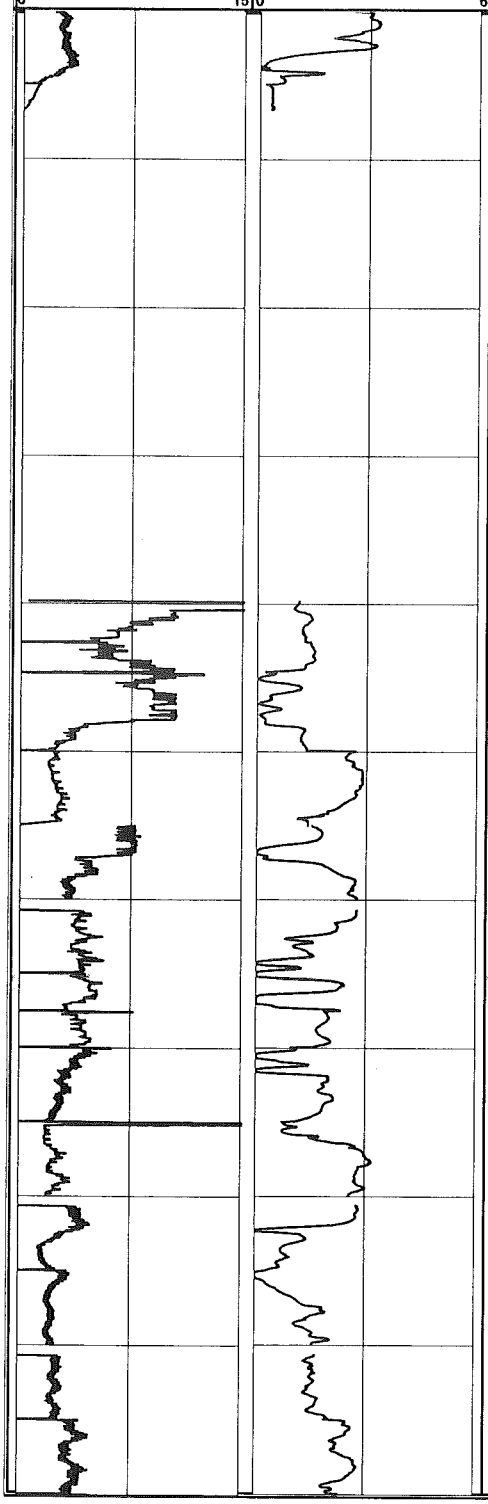
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100	Poorly-graded SAND (medium to coarse) with trace gravel (fine); light brown	SP		
110	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); light brown to white	SP-GP		
120	Poorly-graded SAND (medium to coarse) with some gravel (fine); light brown	SP		
130	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); light brown to yellowish-white	SP-GP		Profile data gaps due to poor KPRO equilibration
140				
150				
160				
170	Poorly-graded SAND (fine to medium) and SILT with trace clay; orange-brown	SM-ML		
180				
190				Profile data gaps due to poor KPRO equilibration

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-50

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Brian Sieker
START DATE:	October 21, 2003
END DATE:	October 29, 2003
LOCATION:	On E side of Charlotte St, S of W Joh..., N of railroad tracks, and E of P-51
DATUM:	Land Surface
HYDROGEOLOGIST:	Colleen Sullivan, Arnas Nemikas
Total depth of Profile:	445.09
Total depth of Boring:	410

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	SILT and CLAY; orange-white-brown	ML- CL		Profiler refusal at 206.64 ft, no penetration rate or IK data from 206.64 to 239.81 ft due to drilling activities
210				
220	Poorly-graded SAND and SILT with some clay; orange-white	SM-ML		
230	Well-graded SAND; brown	SW		
240	Poorly-graded SAND with trace clay and silt; light brown	SP		
250				Lost circulation of drilling fluids from 250 to 270 ft. No recovery of cuttings.
260				Profile data gaps due to poor KPRO equilibration
270	Poorly-graded SAND (medium to coarse) with trace clay; white to light brown	SP		
280				Lost circulation of drilling fluids from 280 to 410 ft. No recovery of cuttings.
290				

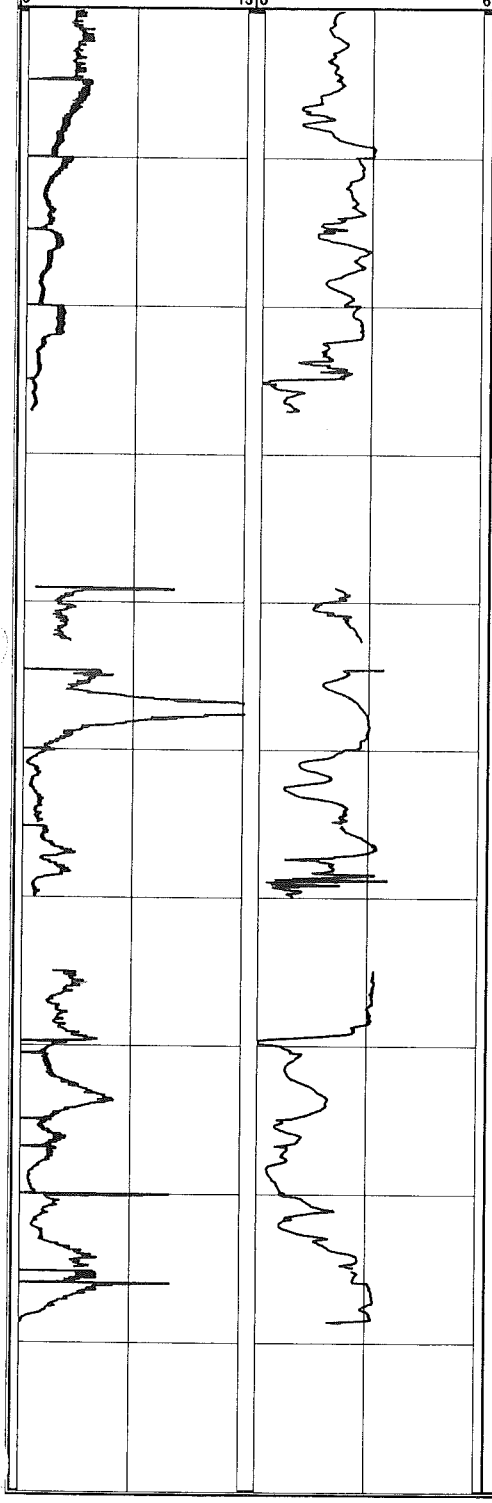
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-50

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Brian Sieker
START DATE:	October 21, 2003
END DATE:	October 29, 2003
LOCATION:	On E side of Charlotte St, S of W John St, N of railroad tracks, and E of P-51
DATUM:	Land Surface
HYDROGEOLOGIST:	Colleen Sullivan, Arnas Nemikas

Total depth of Profile: 445.09
Total depth of Boring: 410

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300				
310				
320				Drilling characteristics indicative of clay/silt layer at 323 ft
330				Profiler refusal at 327.07 ft, no penetration rate or IK data from 327.07 to 339.02 ft due to drilling activities
340				
350				
360				Profile data gap due to equipment malfunction
370				Drilling characteristics indicative of clay/silt layer at 368 ft
380				Drilling characteristics indicative of clay/silt layer at 388 ft. Profiler refusal at 388.61 ft, no penetration rate or IK data form 388.61 to 409.22 ft due to drilling activities
390				

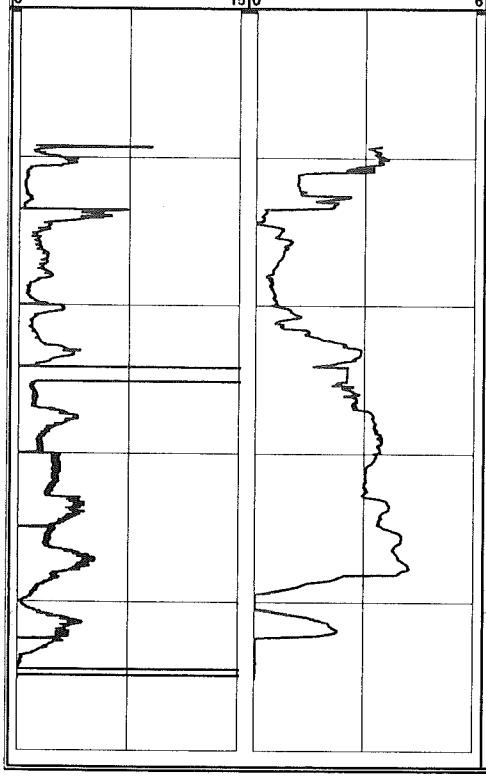
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-50

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Brian Sieker
Total depth of Profile:	445.09
Total depth of Boring:	410

START DATE: October 21, 2003
END DATE: October 29, 2003
LOCATION: On E side of Charlotte St, S of W John St, N of railroad tracks, and E of P-51
DATUM: Land Surface
HYDROGEOLOGIST: Colleen Sullivan, Arnas Nemikas

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
400				
410				End of boring at 410 ft
420				
430				
440				Profiler refusal at 445.09 ft end of profile
450				

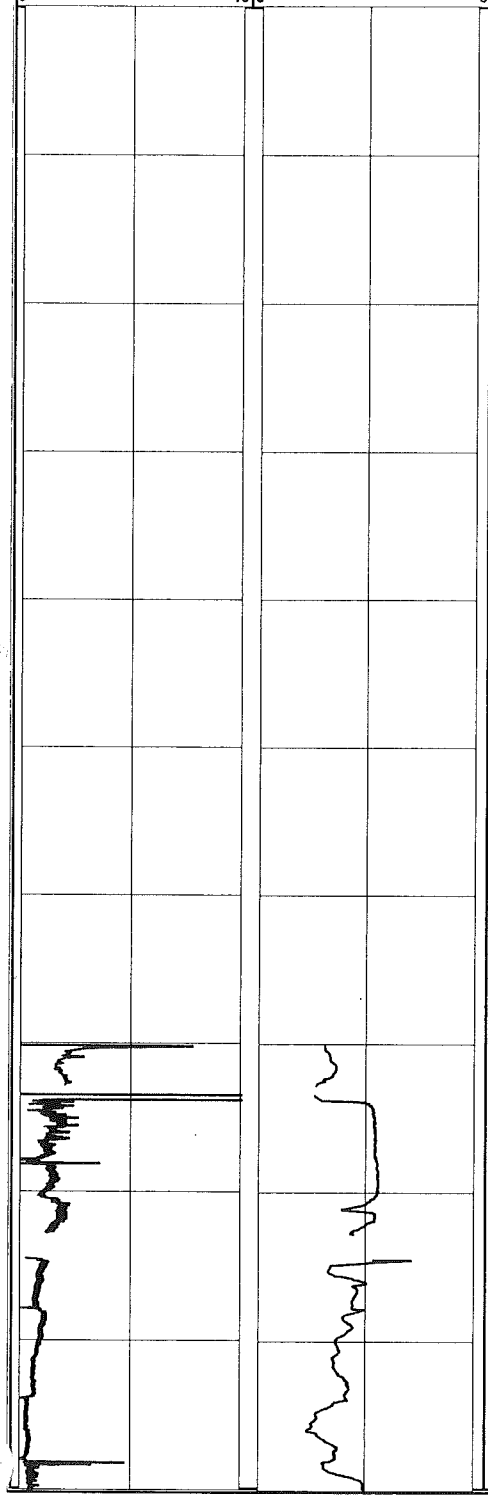
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-51

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	October 21, 2003
JOB NUMBER:	4563001	END DATE:	October 31, 2003
DRILLING FIRM:	CT&E	LOCATION:	South of W John St., West of Charlotte St., North of RR tracks
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Jim Lewis	HYDROGEOLOGIST:	Jeff Dekoskie
HELPER:	Tony Alexander		

Total depth of Profile: 381.8 ft
Total depth of Boring: 360 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); white to tan	SP-GP		
10				
20				Hollow stem auger used from 0 to 19 ft. Begin mud rotary drilling at 19 ft.
	Poorly-graded SAND (medium to coarse) with some silt; white to tan	SM		
	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); white to tan	SP-GP		
30				
40				
50				
60				
70	Poorly-graded SAND (medium to coarse) with some gravel (fine); white to tan	SP		Begin profiling at 70.13 ft
80	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); white to tan	SP-GP		Profile data gap due to poor KPRO equilibration
	Poorly-graded SAND (medium to coarse) with little gravel (fine); white to tan	SP		
90	Poorly-graded SAND (medium to coarse) with trace gravel (fine); white to tan	SP		
	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); white to tan	SP-GP		

Boring ID:

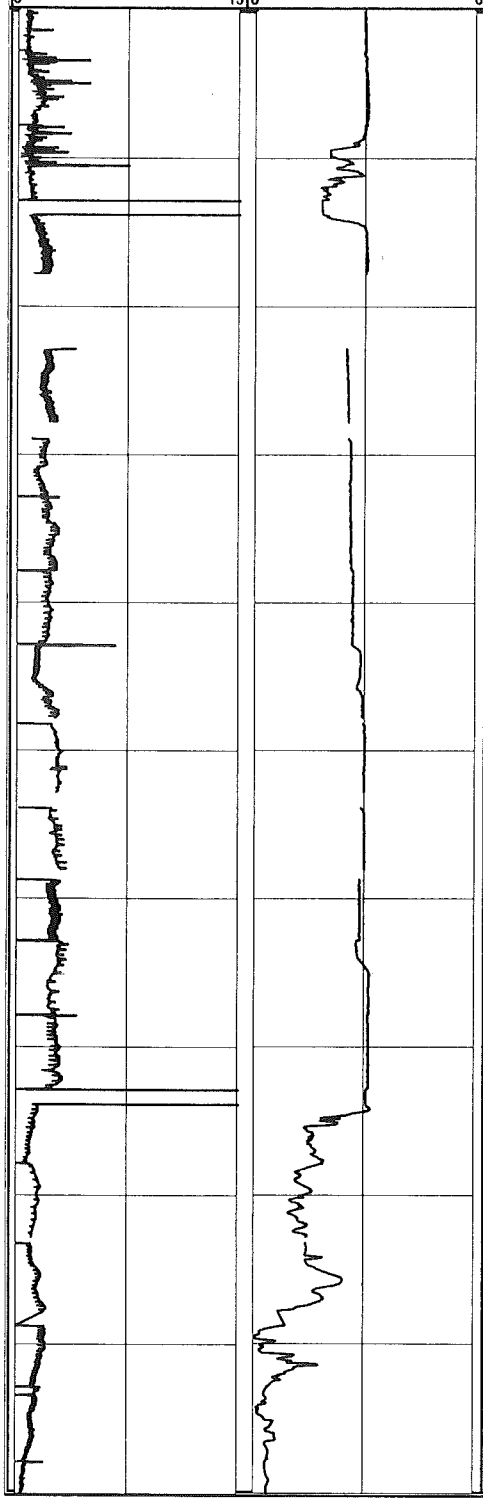
MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

P-51

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	October 21, 2003
JOB NUMBER:	4563001	END DATE:	October 31, 2003
DRILLING FIRM:	CT&E	LOCATION:	South of W John St., West of Charlot... North of RR tracks
DRILLING METHOD:	Mud Rotary		
DRILLER:	Jim Lewis	DATUM:	Land Surface
HELPER:	Tony Alexander	HYDROGEOLOGIST:	Jeff Dekoskie
Total depth of Profile:	381.8 ft	Total depth of Boring:	360 ft

GEOLOGIC INFORMATION



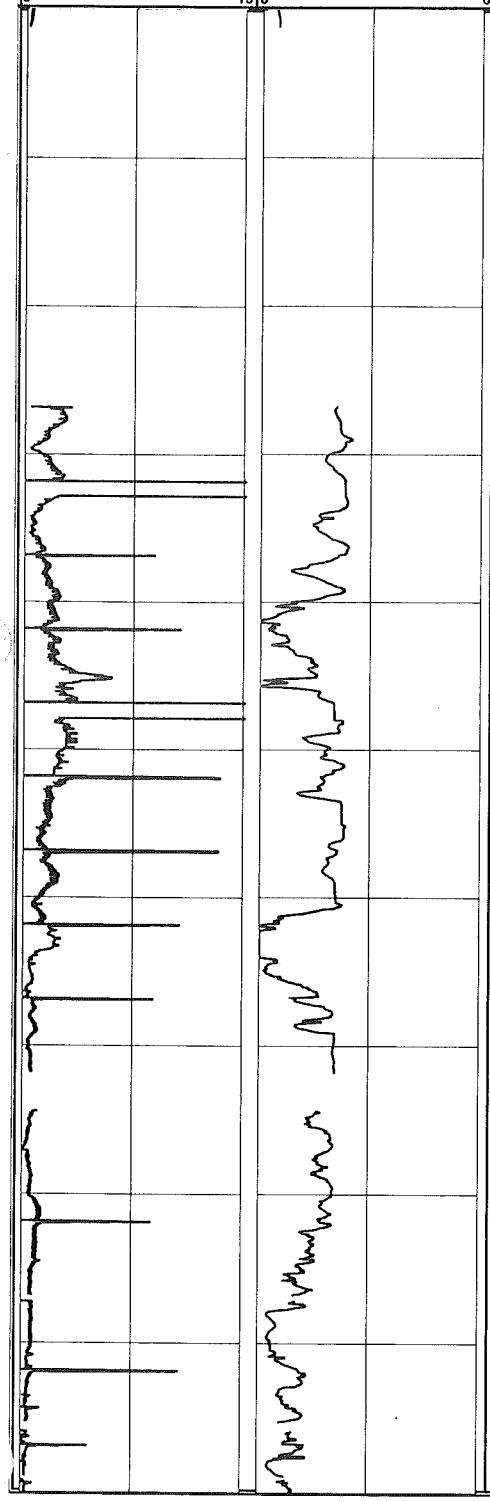
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100	Poorly-graded SAND (medium to coarse) with some gravel (fine); white to tan	SP		
	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); white to tan	SP-GP		
110				
				Profile data gap due to equipment malfunction
120				
	CLAY; gray to tan	CL		
	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); brown to gray	SP-GP		Profile data gap due to poor KPRO equilibration
130				
140	Poorly-graded SAND (medium to coarse) with little gravel (fine); brown to gray	SP		
150				
				Profile data gaps due to poor KPRO equilibration
160				
170				
	CLAY with some silt and trace sand (medium); gray to tan	CL		Micaceous
180	Poorly-graded SAND (fine to medium) with some silt; light brown	SM		Micaceous
190				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-51**

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	October 21, 2003
JOB NUMBER:	4563001	END DATE:	October 31, 2003
DRILLING FIRM:	CT&E	LOCATION:	South of W John St., West of Charlotte St., North of RR tracks
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Jim Lewis	HYDROGEOLOGIST:	Jeff Dekoskie
HELPER:	Tony Alexander		
Total depth of Profile:	381.6 ft	Total depth of Boring:	360 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200		SM		Profiler refusal at 201.2 ft, no penetration rate or IK data from 201.2 to 226.8 ft due to drilling activities
210				
	Poorly-graded SAND (fine); light brown	SP		
220	Poorly-graded SAND (fine to medium) with trace silt	SP		
230				
240				
	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); tan	SP-GP		
	Poorly-graded SAND (fine to medium) with some silt and trace gravel (fine); light tan	SM		
250				
260				
270				Profile data gap due to equipment malfunction
280	Poorly-graded SAND (fine to medium) with some silt; brown to tan	SM		
	Poorly-graded SAND (medium to coarse) with some gravel (fine); light tan	SP		
290				Profile data gap due to poor KPRO equilibration
	Poorly-graded SAND (fine to medium) with some silt and some lignite; light tan to brown	SM		

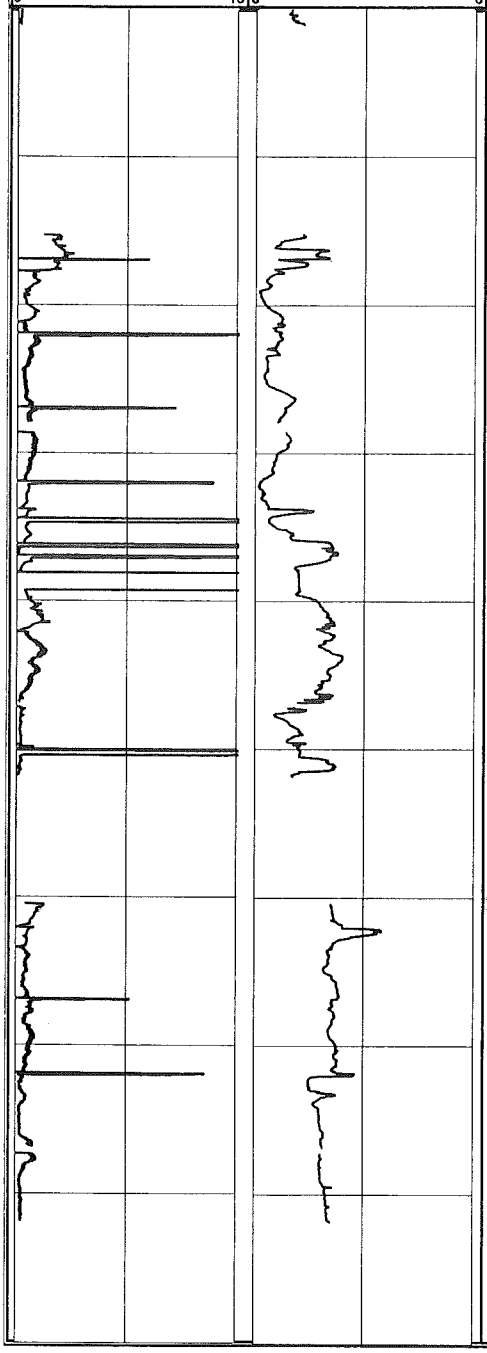
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-51

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	October 21, 2003
JOB NUMBER:	4563001	END DATE:	October 31, 2003
DRILLING FIRM:	CT&E	LOCATION:	South of W John St., West of Charlotte St., North of RR tracks
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Jim Lewis	HYDROGEOLOGIST:	Jeff Dekoskie
HELPER:	Tony Alexander		

Total depth of Profile: 381.8 ft
Total depth of Boring: 360 ft

GEOLOGIC INFORMATION



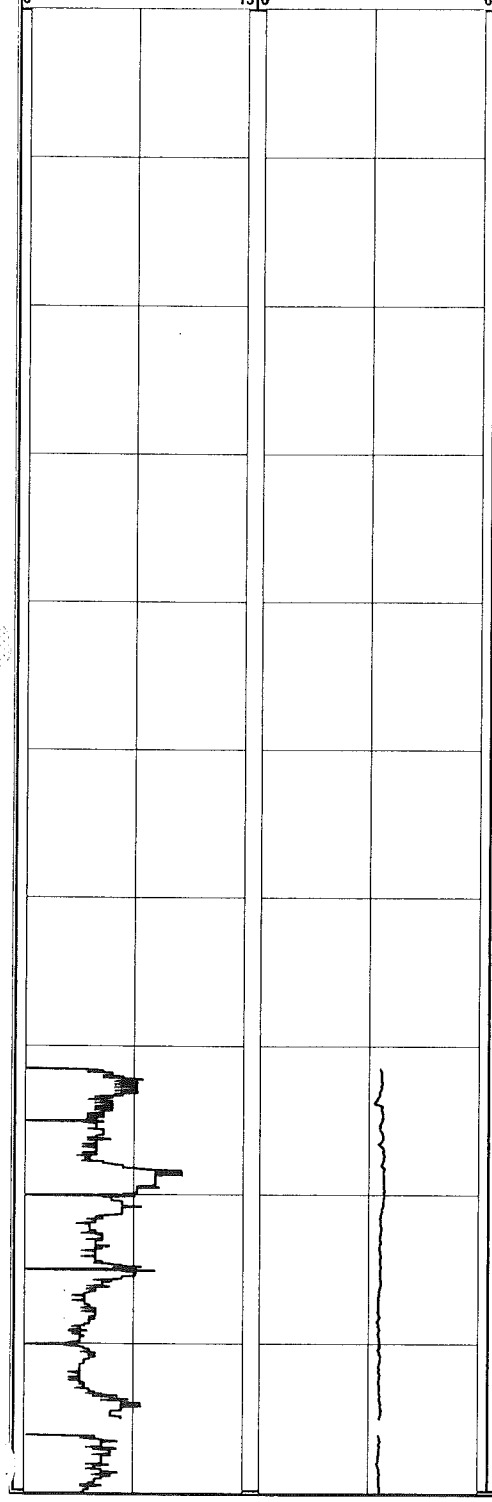
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300		SM		Profiler refusal at 301.12 ft, no penetration rate or IK data from 301.12 to 315.27 ft due to drilling activities
	Poorly-graded SAND (coarse); light tan	SP		
310	Poorly-graded SAND (medium to coarse); light tan	SP		
	Well-graded SAND (fine to coarse) and GRAVEL (fine); tan	SW-GP		
320				
330				
340				Lost circulation of drilling fluids from 345 to 360 ft.
	No Recovery			
350				Profiler refusal at 351.8 ft, no penetration rate or IK data from 351.8 to 360.45 ft due to drilling activities
				End of boring at 360 ft
360				
370				
380				End of profile at 381.8 ft

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-52

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Kari Carley
HELPER:	Larry Lynch
START DATE:	November 14, 2003
END DATE:	November 20, 2003
LOCATION:	On E side of Charlotte St, S of W John St, and N of railroad tracks
DATUM:	Land Surface
HYDROGEOLOGIST:	Emily Moshier/Colleen Sullivan
Total depth of Profile:	486.06 ft
Total depth of Boring:	470 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Poorly-graded SAND (medium) and GRAVEL (fine); brown	SP-GP		
10				Auger to 15 ft bgs
	Poorly-graded SAND (coarse) with some gravel (fine); brown	SP		Begin mud rotary drilling at 15 ft
20				
30	Poorly-graded SAND (medium) and GRAVEL (fine); brown	SP-GP		
40	Poorly-graded SAND (coarse) with little gravel (fine); brown	SP		
50	Poorly-graded SAND (coarse) with some gravel (fine); brown	SP		
60	Poorly-graded SAND (medium) and GRAVEL (fine); brown	SP-GP		
70	Poorly-graded SAND (fine to medium); light brown to white	SP		Begin Profiling at 71.93 ft
80				
90				Profile data gap due to poor KPRO equilibration

Boring ID:

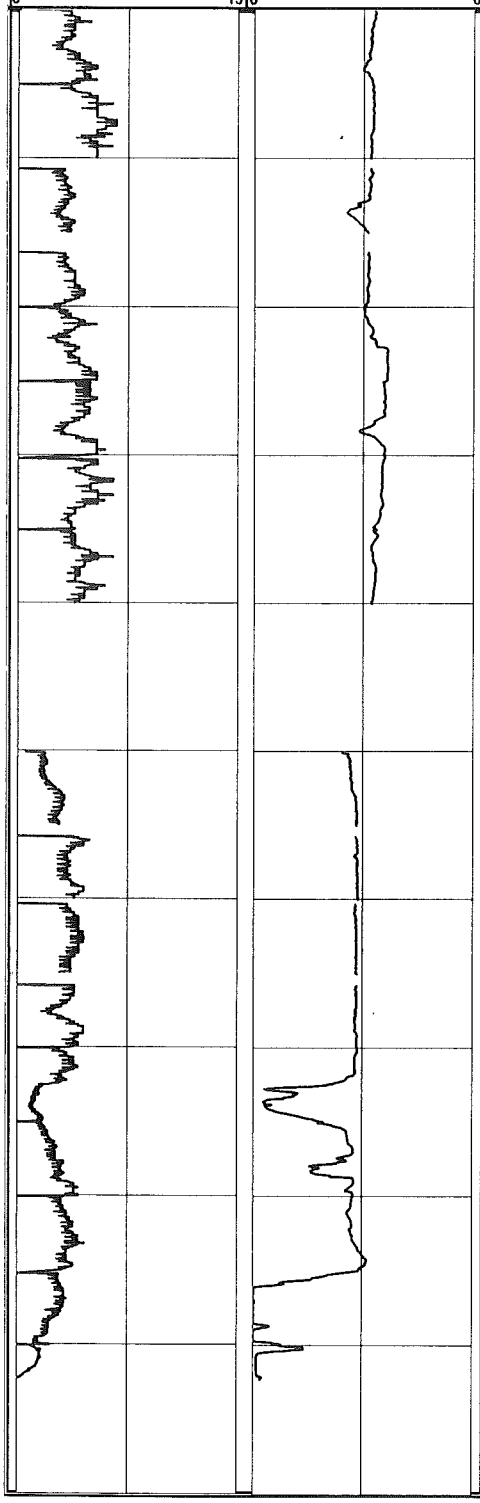
MALCOLM PIRNIE, INC.

P-52

17-17 Route 208 North Fair Lawn, NJ 07401

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	November 14, 2003
JOB NUMBER:	4563001	END DATE:	November 20, 2003
DRILLING FIRM:	CT&E	LOCATION:	On E side of Charlotte St, S of W John... and N of railroad tracks
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Kari Carley	HYDROGEOLOGIST:	Emily Moshier/Colleen Sullivan
HELPER:	Larry Lynch		
Total depth of Profile:	486.06 ft	Total depth of Boring:	470 ft

GEOLOGIC INFORMATION



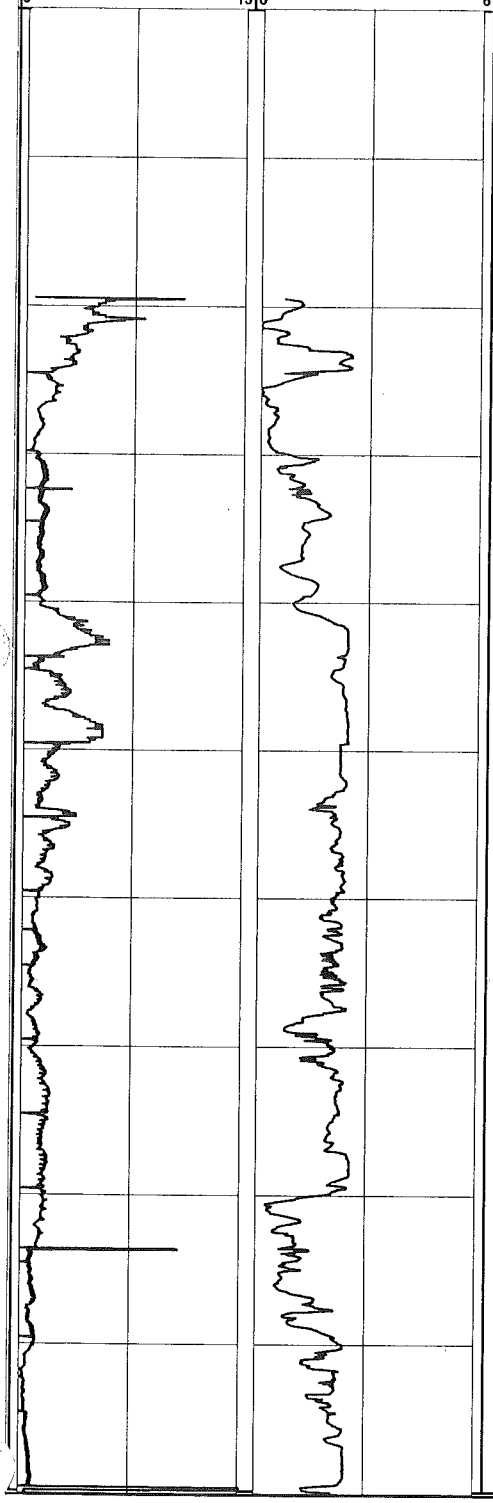
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100		SP		
110	Poorly-graded SAND (fine to medium); light brown to white	SP		Profile data gaps due to poor KPRO equilibration
120				
130				
140	Poorly-graded SAND (medium) with little gravel (fine); light brown to white	SP		Profile data gap due to equipme... malfunction
150				
160				Profile data gaps due to poor KPRO equilibration
170				
180	Poorly-graded SAND (medium) with little gravel (fine) and trace silt; light brown	SP		
	SILT; brown	ML		
190	Poorly-graded SAND (medium) with some clay; light brown	SC		Profiler refusal at 192.28 ft, no penetration rate or IK data form 192.28 to 219.45 ft due to drilling activities
	CLAY and LIGNITE; dark gray	CL-PT		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-52

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Kari Carley
HELPER:	Larry Lynch
START DATE:	November 14, 2003
END DATE:	November 20, 2003
LOCATION:	On E side of Charlotte St, S of W John St, and N of railroad tracks
DATUM:	Land Surface
HYDROGEOLOGIST:	Emily Moshier/Colleen Sullivan
Total depth of Profile:	486.06 ft
Total depth of Boring:	470 ft

GEOLOGIC INFORMATION



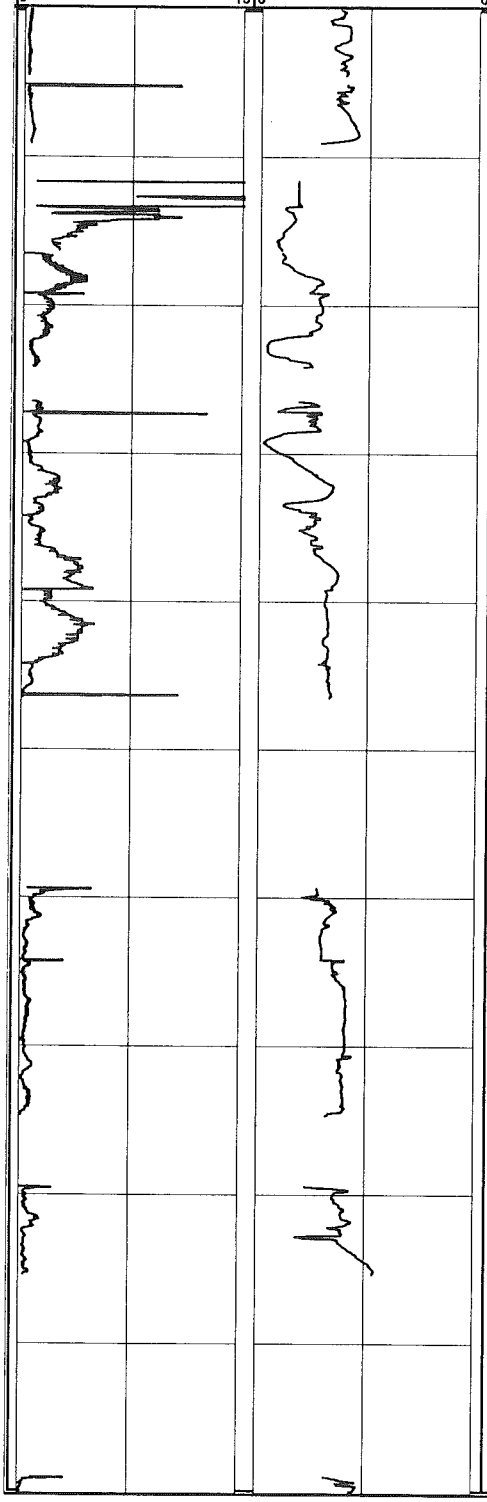
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	Poorly-graded SAND (medium); light brown	SP		Interbedded clay
210	Poorly-graded SAND (fine to medium) with trace clay; light brown	SP		
220	Poorly-graded SAND (fine to medium) with little clay; brown	SC		Micaceous
230				
240				
250	Poorly-graded SAND (fine to medium); brown	SP		
260				
270	Well-graded SAND (fine to coarse); brown	SW		
280	Poorly-graded SAND (fine to medium) and GRAVEL (fine); brown	SP-GP		
290	Poorly-graded SAND (medium); light brown to white	SP		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-52

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Kari Carley
HELPER:	Larry Lynch
START DATE:	November 14, 2003
END DATE:	November 20, 2003
LOCATION:	On E side of Charlotte St, S of W John St, and N of railroad tracks
DATUM:	Land Surface
HYDROGEOLOGIST:	Emily Moshier/Colleen Sullivan
Total depth of Profile:	486.06 ft
Total depth of Boring:	470 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300		SP		Lignite and clay at 300 ft bgs
				Profile data gap due to poor KPRO equilibration
310				Profile data gap due to equipment malfunction
320	Poorly-graded SAND (fine to medium); with trace lignite; light brown	SP		Micaceous
				Profile data gap due to equipment malfunction
330				
340				
				Profiler refusal at 346.48 ft, no penetration rate or IK data from 346.48 to 359.35 ft due to drilling activities
350				
360	Poorly-graded SAND (medium) with trace gravel; white	SP		Micaceous
370				Profiler refusal at 374.65 ft, no penetration rate or IK data from 374.65 to 379.45 ft due to drilling activities
380				Profile data gap due to equipment malfuntion
390	Poorly-graded SAND (medium to coarse) with trace gravel (fine) and clay; white-gray	SP		Pulled profile rods at 395.4 ft bgs. End of work shift

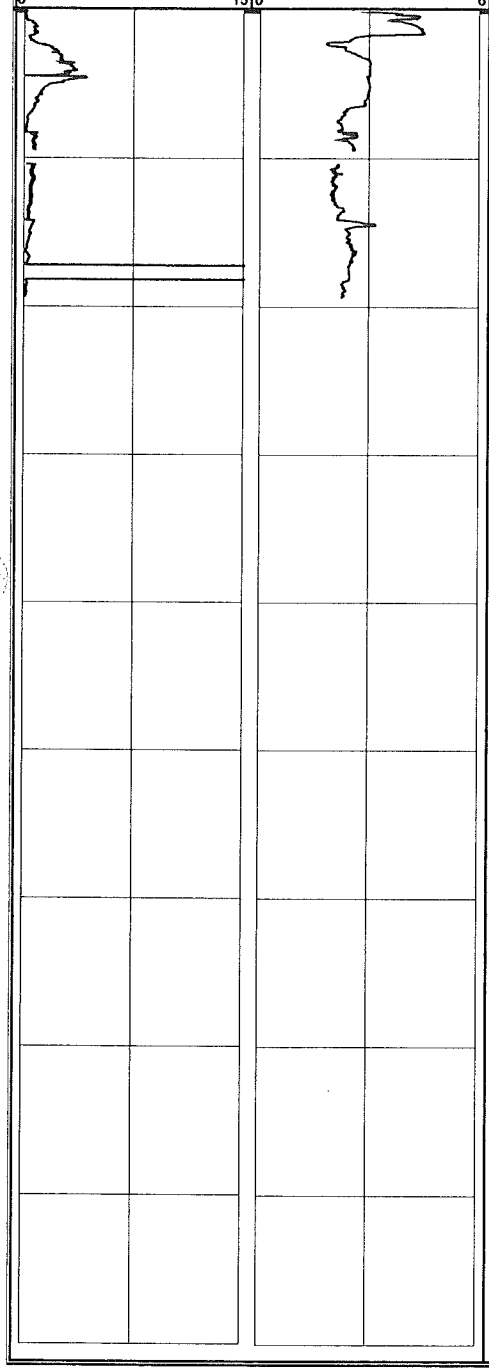
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-52

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	November 14, 2003
JOB NUMBER:	4563001	END DATE:	November 20, 2003
DRILLING FIRM:	CT&E	LOCATION:	On E side of Charlotte St, S of W John St, and N of railroad tracks
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Kari Carley	HYDROGEOLOGIST:	Emily Moshier/Colleen Sullivan
HELPER:	Larry Lynch		

Total depth of Profile: 486.06 ft
Total depth of Boring: 470 ft

GEOLOGIC INFORMATION



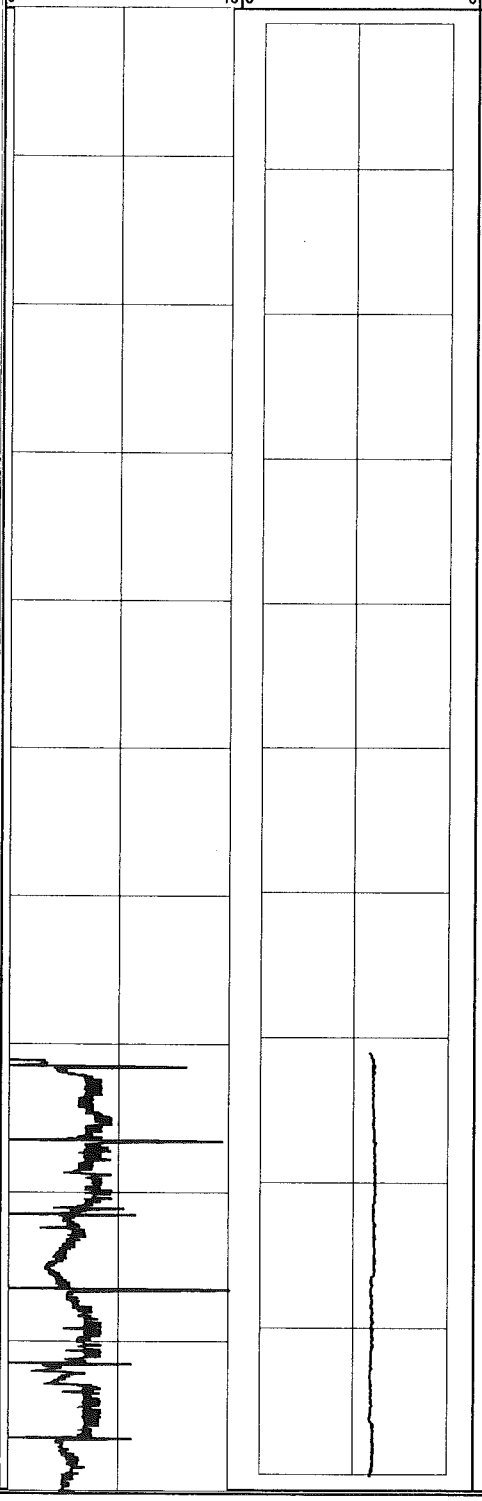
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
400		SP		
410				Profile data gap due to poor KPRO equilibration
420				Profiler refusal at 419.33 ft
430				No profile dat from 419.33 to 486 ft due to equipment malfunction
440	Poorly-graded SAND (medium) with trace gravel (fine) and clay; white-gray	SP		Refusal at 447.8 ft bgs
450	Poorly-graded SAND (medium) and CLAY; white to gray	SC-CL		Micaceous
460	Poorly-graded SAND (medium) with trace clay; white	SP		Micaceous
470				End of boring at 470 ft bgs
480				Refusal at 486.06 ft bgs. End of profile
490				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-53

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	November 19, 2003
JOB NUMBER:	4563001	END DATE:	December 13, 2003
DRILLING FIRM:	CT&E	LOCATION:	South of W John St., West of Charlotte St., North of RR tracks
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Jim Lewis	HYDROGEOLOGIST:	Scott Niekamp, John Hilton
HELPER:	Tony Alexander		
Total depth of Profile:	534.5 ft	Total depth of Boring:	530 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	SILT with trace sand (fine to medium) and gravel (fine); brown-yellow	ML		
10	Well-graded SAND (fine to coarse) with some gravel (fine to coarse) and some silt; light brown	SM		Auger to 20 ft bgs
20	Well-graded SAND (fine to coarse) and GRAVEL (fine); tan to brown	SW-GP		Begin mud rotary drilling - 3 inch hole
30	Well-graded SAND (fine to coarse) with few gravel (fine); tan to brown	SW		
40				
	Well-graded GRAVEL (fine to coarse) and SAND (fine to coarse); tan to brown	GW-SW		
50	Well-graded SAND (fine to coarse) with little gravel (fine); tan to brown	SW		
60				
	Well-graded SAND (fine to coarse) and GRAVEL (fine); tan to brown	SW-GP		
70	Poorly-graded SAND (medium to coarse) with trace gravel (fine); tan to brown	SP		Begin profiling at 71.06 ft
	Well-graded SAND (fine to coarse) with little gravel (fine); tan to brown	SW		
80	Well-graded SAND (fine to coarse) with trace gravel (fine); tan to brown	SW		
	Poorly-graded SAND (medium to coarse) with trace gravel (fine); tan to brown	SP		
90	Well-graded SAND (fine to coarse); tan to brown	SW		

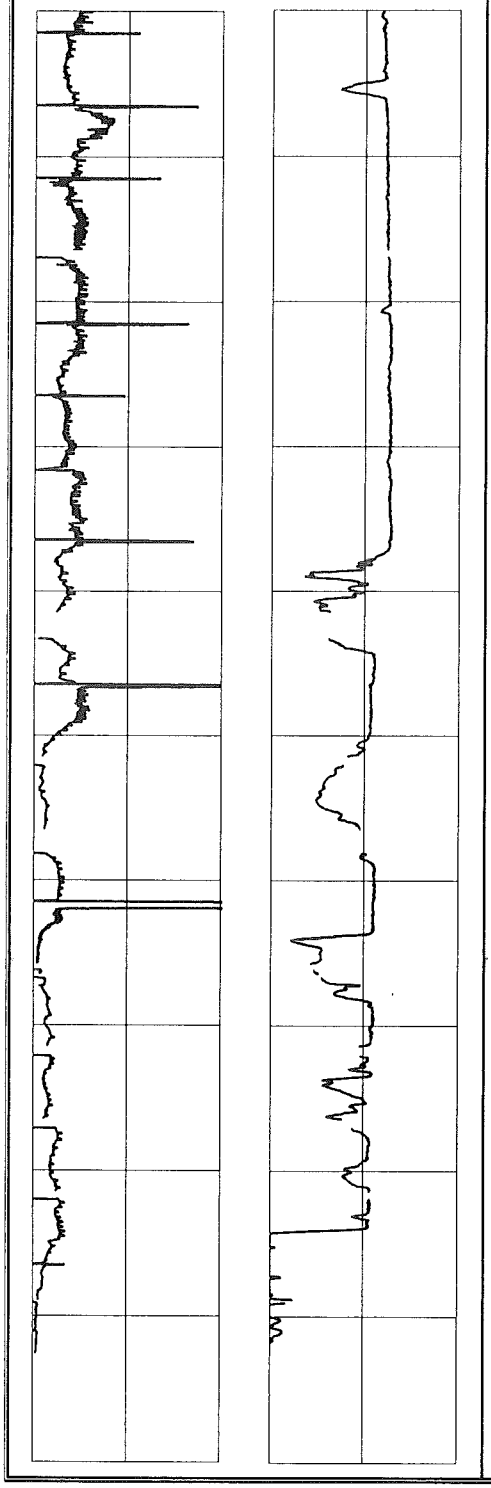
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-53

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	November 19, 2003
JOB NUMBER:	4563001	END DATE:	December 13, 2003
DRILLING FIRM:	CT&E	LOCATION:	South of W John St., West of Charlotte St., North of RR tracks
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Jim Lewis	HYDROGEOLOGIST:	Scott Niekamp, John Hilton
HELPER:	Tony Alexander		

Total depth of Profile: 534.5 ft
Total depth of Boring: 530 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100	Well-graded SAND (fine to coarse) with little gravel (fine); tan to brown	SW		
110	Well-graded SAND (fine to coarse) with trace gravel (fine); tan to brown	SW		
	Poorly-graded GRAVEL (fine) with little sand (fine to coarse); brown to tan	GP		Profile data gap due to poor KPRO equilibration
120	Well-graded SAND (fine to coarse) with little gravel (fine); tan to brown	SW		
130				
	Poorly-graded GRAVEL (fine) with little sand (fine to medium); brown to tan	GP		
140				Profile data gap due to poor K equilibration
	Poorly-graded SAND (fine to medium) with little gravel (fine); tan to brown	SP		
150	Poorly-graded GRAVEL (fine) with some sand (fine to coarse); brown to tan	GP		Profile data gaps due to poor KPRO equilibration
160				
	Well-graded SAND (fine to coarse) and GRAVEL (fine); tan to brown	SW-GP		
170	Well-graded SAND (fine to coarse) with some silt and little gravel (fine); brown	SM		
180	Poorly-graded SAND (fine to medium) with some silt and trace gravel (fine): tan	SP		Profile data gaps due to poor KPRO equilibration
	CLAY with trace sand (fine to medium); tan-white	CL		
190	CLAY with some silt and sand (fine to coarse); tan-white	CL		Profiler refusal at 192.52 ft, no penetration rate or IK data from 192.52 to 210.15 ft due to drilling activities

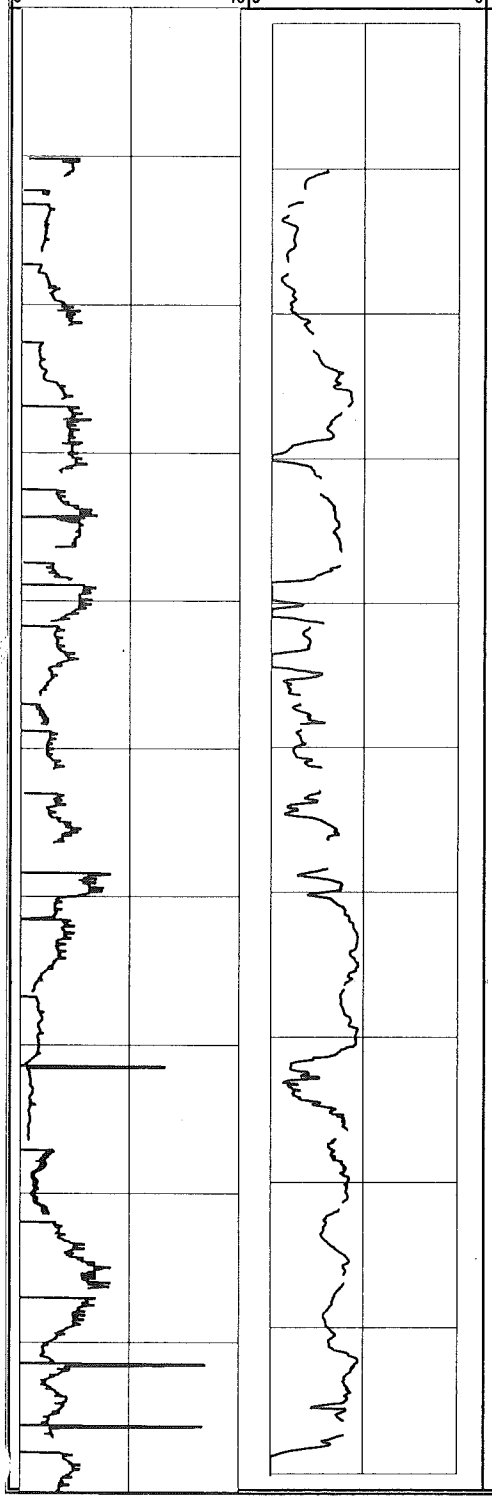
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-53

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	November 19, 2003
JOB NUMBER:	4563001	END DATE:	December 13, 2003
DRILLING FIRM:	CT&E	LOCATION:	South of W John St., West of Charlotte St., North of RR tracks
DRILLING METHOD:	Mud Rotary		
DRILLER:	Jim Lewis	DATUM:	Land Surface
HELPER:	Tony Alexander	HYDROGEOLOGIST:	Scott Niekamp, John Hilton

Total depth of Profile: 534.5 ft
Total depth of Boring: 530 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200		CL		
	Poorly-graded SAND (fine to medium) with some clay and silt; gray	SC		
210	Well-graded SAND (fine to coarse) with some clay and silt and little gravel (fine); gray	SC		
220				Profile data gaps due to poor KPRO equilibration
230				
	Poorly-graded SAND (fine) with some silt; gray	SM		Micaceous
240	SILT with some sand (fine to coarse) and trace gravel (fine); gray	ML		Clay Interbeds
				Micaceous
250				Profile data gaps due to poor KPRO equilibration
260				
270				
280				Profile data gaps due to poor KPRO equilibration
290				
	Poorly-graded SAND (fine); gray	SP		

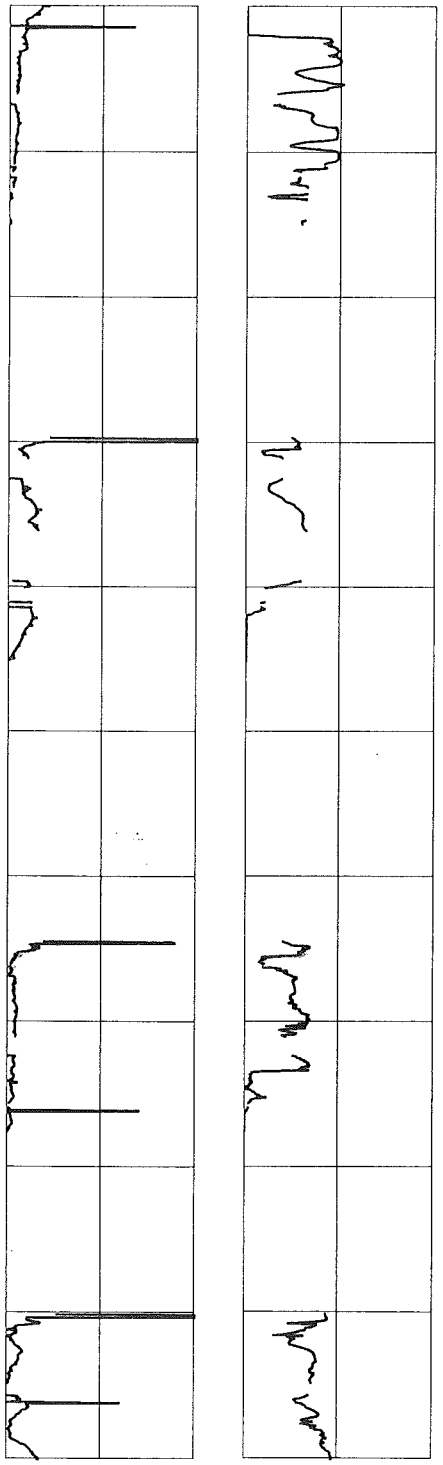
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-53

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	November 19, 2003
JOB NUMBER:	4563001	END DATE:	December 13, 2003
DRILLING FIRM:	CT&E	LOCATION:	South of W John St., West of Charlotte St., North of RR tracks
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Jim Lewis	HYDROGEOLOGIST:	Scott Niekamp, John Hilton
HELPER:	Tony Alexander		

Total depth of Profile: 534.5 ft
Total depth of Boring: 530 ft

GEOLOGIC INFORMATION



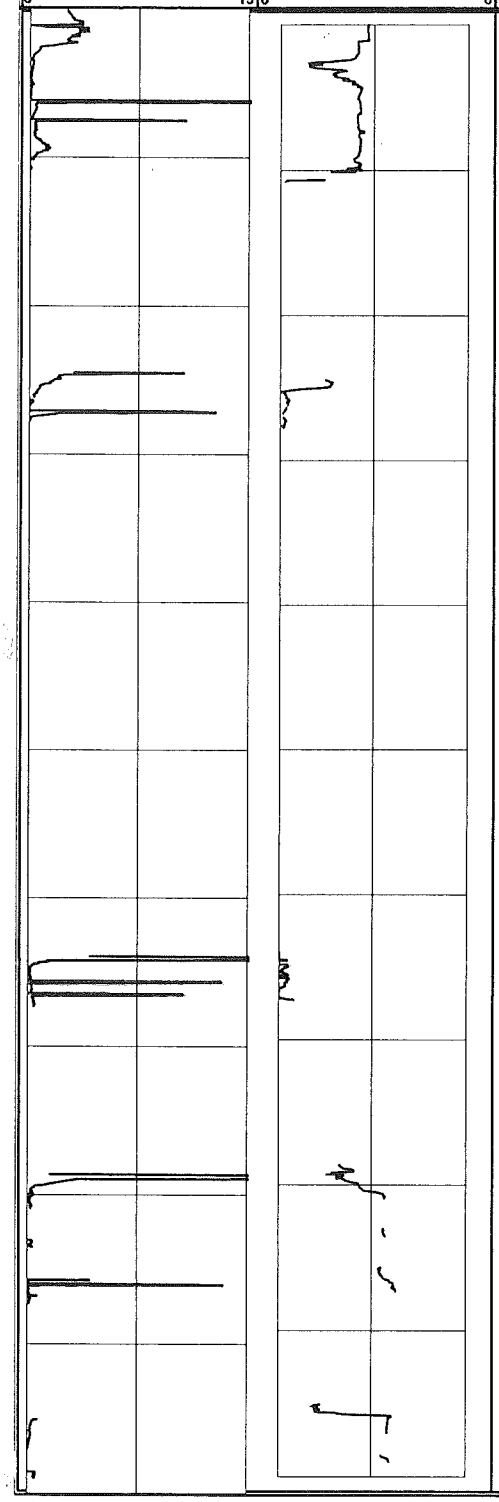
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300	CLAY with some silt; gray	CL		
	SILT with some clay and little sand (fine); gray	ML		
310	Poorly-graded SAND (fine) with some silt; gray	SM		Profiler refusal at 314.96 ft, no penetration rate or IK data from 314.96 to 329.7 ft due to drilling activities
320				
330	Poorly-graded SAND (fine); gray	SP		Profile data gaps due to poor KPRO equilibration
340	SILT and CLAY, trace sand (fine); gray	ML-CL		
	CLAY with trace silt; gray	CL		Profiler refusal at 345.10 ft, no penetration rate or IK data from 345.10 to 364.5 ft due to drilling activities
350	SILT and CLAY, some sand (fine); gray	ML-CL		
	SILT and SAND (medium); gray to tan	ML-SM		
360	Poorly-graded SAND (medium); gray to tan	SP		
	SAND and GRAVEL; white to gray	SW-GW		Based on rig response
370				Profile data gap due to poor KPRO equilibration
	SILT with some clay and trace sand (medium); gray to white	ML		Micaceous
380				Profiler refusal at 377.57 ft, no penetration rate or IK data form 377.57 to 390.15 ft due to drilling activities
	Poorly-graded SAND (coarse) with some silt; gray	SM		
	Poorly-graded SAND (medium to coarse) with trace silt; gray to tan	SP		
390				Profile data gap due to poor KPRO equilibration

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-53**

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	November 19, 2003
JOB NUMBER:	4563001	END DATE:	December 13, 2003
DRILLING FIRM:	CT&E	LOCATION:	South of W John St., West of Charlotte St., North of RR tracks
DRILLING METHOD:	Mud Rotary		
DRILLER:	Jim Lewis	DATUM:	Land Surface
HELPER:	Tony Alexander	HYDROGEOLOGIST:	Scott Niekamp, John Hilton
Total depth of Profile:	534.5 ft	Total depth of Boring:	530 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
400		SP		Refusal at 405.21 ft bgs. Tried to pull rod back 3 feet and drive again. Refused again at 410.81 ft bgs. No penetration rate or IK data from 410.81 to 424.86 ft due to drilling activities
410	Poorly-graded SAND (medium to coarse) and GRAVEL; gray to tan	SP-GW		
420	Poorly-graded SAND (fine to medium) with some gravel (fine); gray to tan	SP		
	Poorly-graded GRAVEL (fine) with some silt, little sand, and little lignite; tan to white	GM		Profiler refusal at 427.72 ft, no penetration rate or IK data from 427.72 to 463.93 ft due to drilling activities
430	Poorly-graded SAND (fine to medium), some gravel (fine) and some silt; tan to white	SM		
440	SILT with some clay and little gravel (fine); gray to tan;	ML		
	Poorly-graded SAND (fine to medium) and LIGNITE with trace	SP-PT		
	Poorly-graded GRAVEL (fine) and SAND (fine to coarse); tan to red	GP-SW		
450	CLAY; gray	CL		
	Well-graded SAND (fine to coarse) with some gravel; tan to white	SW		
460	Poorly-graded SAND (fine to medium) with trace silt; gray	SP		Micaceous
	CLAY with some silt and sand (fine) and trace lignite; gray	CL		Gravel zone from 468 to 469 ft, based on rig response
470	Well-graded SAND (fine to coarse) and CLAY with some silt; gray	SC-CL		Profiler refusal at 467.25 ft, no penetration rate or IK data from 467.25 to 478.61 ft due to drilling activities
	SILT and GRAVEL (fine) with some sand (fine); gray	ML-GM		
	Poorly-graded SAND (fine to med.) with some gravel (fine); tan	SP		
480	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); tan	SP-GP		Profiler refusal at 487.31 ft, no penetration rate or IK data from 487.31 to 495.04 ft due to drilling activities
490	Poorly- graded SAND (fine to medium); tan to brown	SP		Clay layer from 493 to 493.5 ft
	Well-graded SAND (fine to coarse) with little gravel (fine); white to tan	SW		Micaceous

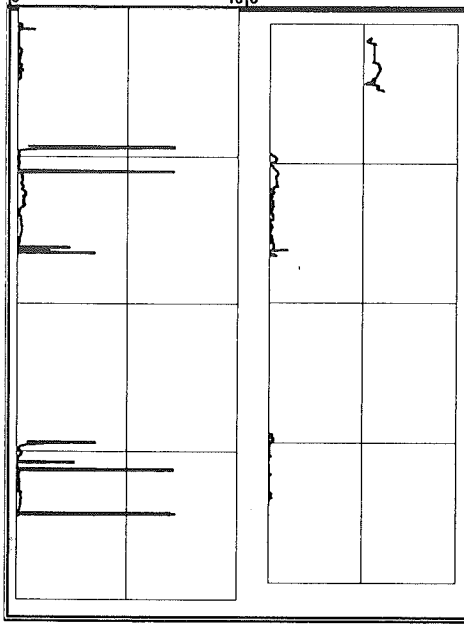
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-53

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	November 19, 2003
JOB NUMBER:	4563001	END DATE:	December 13, 2003
DRILLING FIRM:	CT&E	LOCATION:	South of W John St., West of Charlotte St., North of RR tracks
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Jim Lewis	HYDROGEOLOGIST:	Scott Niekamp, John Hilton
HELPER:	Tony Alexander		

Total depth of Profile: 534.5 ft
Total depth of Boring: 530 ft

GEOLOGIC INFORMATION



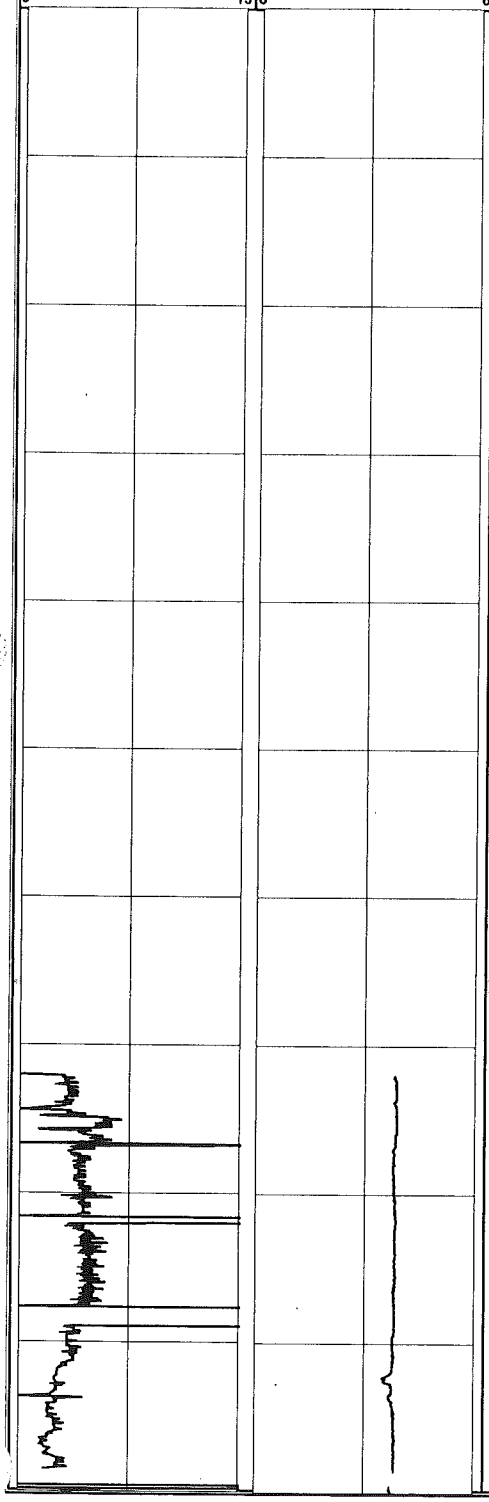
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
500		SW		Profiler refusal at 504.8 ft, no penetration rate or IK data from 504.8 to 509.3 ft due to drilling activities
				2 inch clay seam at 512 ft
510				
	Well-graded SAND (fine to coarse) with some silt and some gravel (fine); tan to brown	SM		Profiler refusal at 516.6 ft, no penetration rate or IK data from 516.6 to 529.34 ft due to drilling activities
520				
	Poorly-graded SAND (medium to coarse) with some gravel, trace silt	SP		
530				End of boring at 530 ft
				End of profile at 534.5
540				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-54

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Jim Lewis
HELPER:	Tony Alexander
START DATE:	November 4, 2003
END DATE:	November 19, 2003
LOCATION:	South of W John St., West of Charlotte St., North of RR tracks
DATUM:	Land Surface
HYDROGEOLOGIST:	Scott Niekamp, Jeff Dekoskie
Total depth of Profile:	437.5 ft
Total depth of Boring:	415 ft

GEOLOGIC INFORMATION



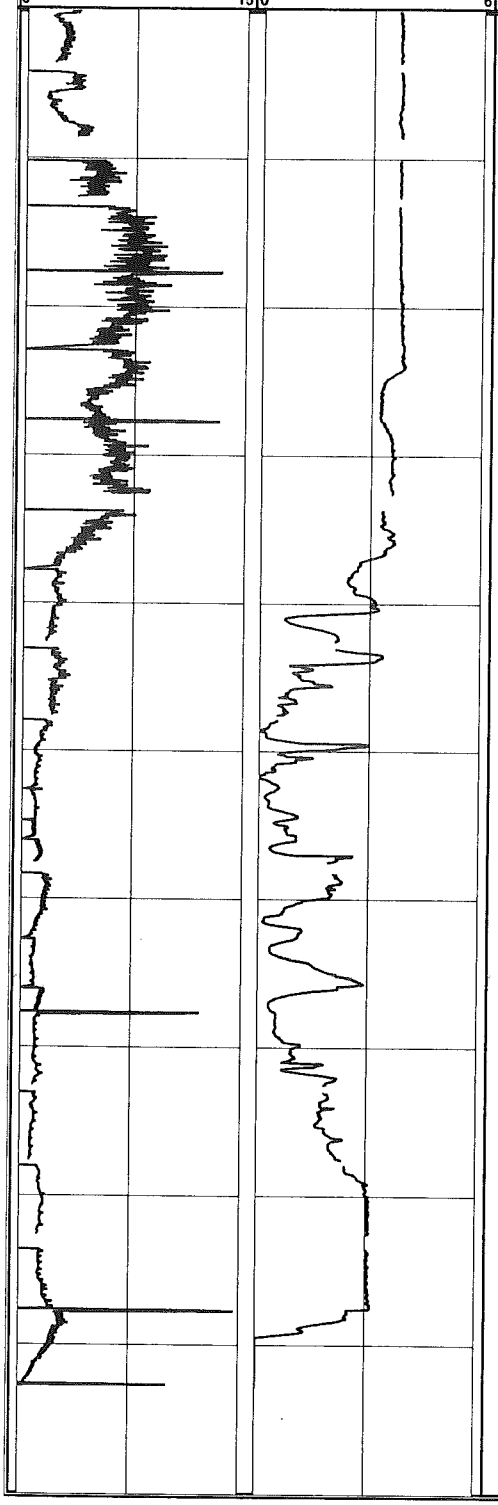
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Poorly-graded SAND (medium) and GRAVEL (fine); brown	SP		
10	Poorly-graded SAND (medium to coarse) with some gravel (fine); light brown to tan	SP		Hollow stem auger used to drill from 0 to 19 ft
20	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); tan to brown	SP-GP		Begin mud rotary drilling at 19 ft
30				
40				
50	Poorly-graded SAND (medium to coarse) with some gravel (fine); tan to brown	SP		
60				
	Poorly-graded SAND (medium to coarse) with little gravel (fine) and trace silt; tan to brown	SP		
70	Well-graded SAND (fine to coarse) with little gravel (fine); tan to brown	SW		Begin Profiling at 72.02 ft
	Well-graded SAND (fine to coarse) with some gravel (fine); tan to brown	SW		
80	Well-graded SAND (fine to coarse); tan to brown	SW		
	Well-graded SAND (fine to coarse) with trace gravel (fine); tan to brown	SW		
90	Well-graded SAND (fine to coarse) and GRAVEL (fine); tan to brown	SW		No IK data from 98.5 to 99.57, string potentiometer disconnected from drill rig
	Well-graded SAND (fine to coarse) with few gravel (fine); tan to brown	SW		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-54

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Jim Lewis
HELPER:	Tony Alexander
Total depth of Profile:	437.5 ft
START DATE:	November 4, 2003
END DATE:	November 19, 2003
LOCATION:	South of W John St., West of Charlotte ..., North of RR tracks
DATUM:	Land Surface
HYDROGEOLOGIST:	Scott Niekamp, Jeff Dekoskie
Total depth of Boring:	415 ft

GEOLOGIC INFORMATION



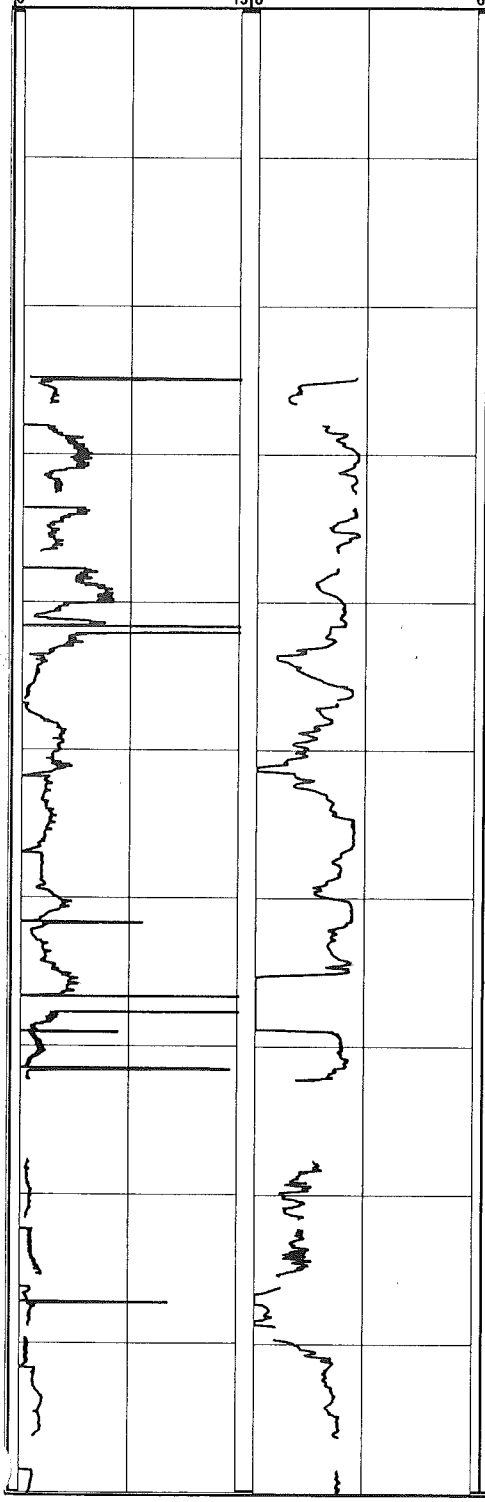
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100	Well-graded SAND (fine to coarse) with little gravel (fine); tan to brown	SW		
	Well-graded SAND (fine to coarse); tan to brown	SW		Profile data gaps due to poor KPRO equilibration
110				
120	Well-graded GRAVEL (fine to coarse) with little sand (fine to medium); light tan to brown	GW		
	Poorly-graded SAND (fine to medium) with trace gravel (fine); tan to brown	SP		
130	SILT and SAND (fine to coarse) with trace gravel (fine); brown	ML-SM		
	SILT and SAND (fine to coarse) with some clay and trace gravel (fine); brown	ML-SM		Profile data gaps due to poor KPRO equilibration
140	SILT and SAND (fine) with some clay; brown	ML-SM		Thin clay layers at 145, 148, 15 and 153 ft bgs
	SILT and SAND (fine to coarse) with some clay and trace gravel (fine); brown	ML-SM		
150				
				Profile data gaps due to poor KPRO equilibration
160				
170				
	Well-graded SAND (fine to coarse) with some silt; brown	SM		
180	Well-graded SAND (fine to coarse) with some silt and trace gravel (fine); brown	SM		Profile data gaps due to poor KPRO equilibration
	Well-graded SAND (fine to coarse) and GRAVEL (fine to coarse); tan	SW-GW		
190	CLAY with some silt, some sand (fine to coarse) and gravel (fine) and little lignite; gray	CL		Profiler refusal at 192.76 ft, no penetration rate or IK data from 192.76 to 224.81 ft due to drilling activities

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-54**

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	November 4, 2003
JOB NUMBER:	4563001	END DATE:	November 19, 2003
DRILLING FIRM:	CT&E	LOCATION:	South of W John St., West of Charlotte St., North of RR tracks
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Jim Lewis	HYDROGEOLOGIST:	Scott Niekamp, Jeff Dekoskie
HELPER:	Tony Alexander		
Total depth of Profile:	437.5 ft	Total depth of Boring:	415 ft

GEOLOGIC INFORMATION



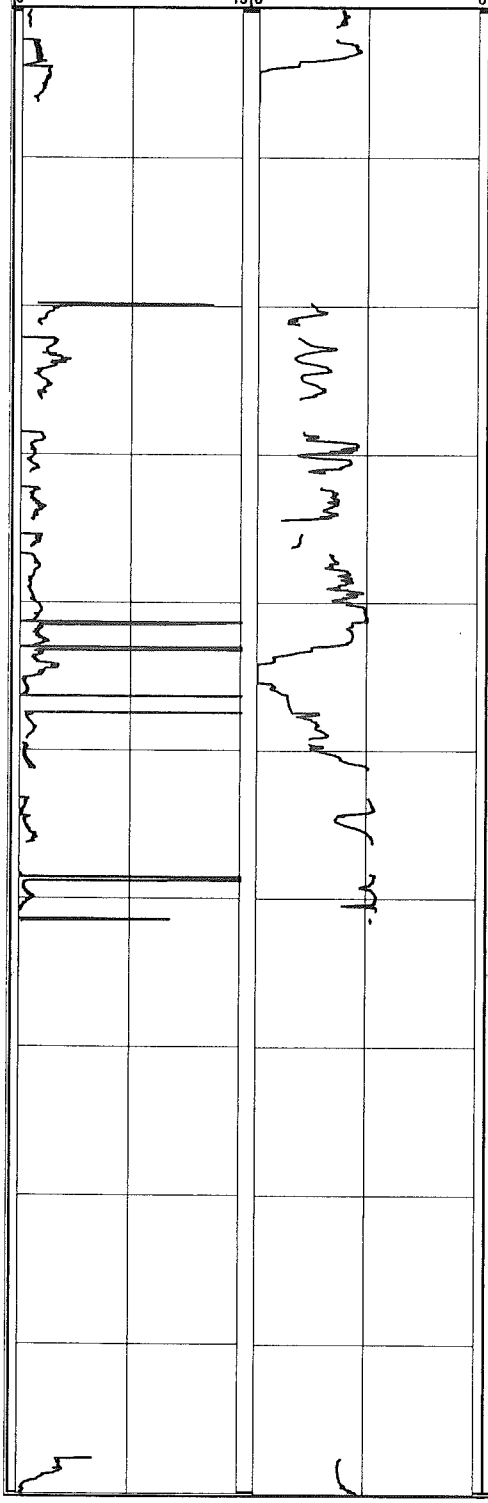
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200		CL		
210				
220	Poorly-graded SAND (fine to medium) and GRAVEL (fine to coarse); tan	SP-GW		
	Well-graded GRAVEL (fine to coarse) with some sand (fine to coarse) and clay; light tan to brown	GC		
230	Poorly-graded SAND (fine to medium) and GRAVEL (fine to coarse); tan	SP-GW		Profile data gaps due to poor KPRO equilibration
240	Well-graded GRAVEL (fine to coarse) with some sand (fine to coarse) and silt; light tan	GM		
	Well-graded SAND (fine to coarse) with some gravel (fine) and silt; light tan	SM		
250	Poorly-graded GRAVEL (fine) with some sand (fine to coarse) and silt; light tan	GM		
	Well-graded SAND (fine to coarse) with some gravel (fine) and trace clay; tan to brown	SW		
260	Poorly-graded SAND (medium); brown	SP		
	CLAY with trace lignite	CL		
	Poorly-graded SAND (medium) with some clay and trace lignite: brown	SC		Profile data gaps due to poor KPRO equilibration
270	Poorly-graded GRAVEL (fine) with some sand (medium), some clay and some silt; light tan	GC		
	Poorly-graded SAND (fine to medium), some clay and silt; light tan	SC		Profile data gaps due to equipment malfunction
280	Well-graded SAND (fine to coarse) and CLAY, with some silt;	SC-CL		
	CLAY; white	CL		Based on rig response
290	Well-graded SAND (fine to coarse) and some gravel (fine); tan	SW		Profile data gaps due to poor KPRO equilibration
	Well-graded SAND (fine to coarse) and little gravel (fine); tan	SW		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-54

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	November 4, 2003
JOB NUMBER:	4563001	END DATE:	November 19, 2003
DRILLING FIRM:	CT&E	LOCATION:	South of W John St., West of Charlotte..., North of RR tracks
DRILLING METHOD:	Mud Rotary		
DRILLER:	Jim Lewis	DATUM:	Land Surface
HELPER:	Tony Alexander	HYDROGEOLOGIST:	Scott Niekamp, Jeff Dekoskie
Total depth of Profile:	437.5 ft	Total depth of Boring:	415 ft

GEOLOGIC INFORMATION



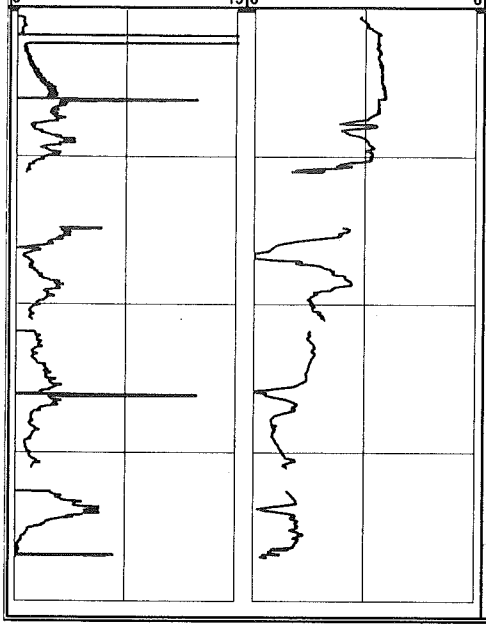
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300		SW		Clay layer 304 to 305 ft
	Poorly-graded SAND (fine) and CLAY; gray	SC-CL		
310	Poorly-graded SAND (fine) with little clay and trace gravel (fine); gray	SC		Profiler refusal at 306.25 ft, no penetration rate or IK data from 306.25 to 319.8 ft due to drilling activities
	Poorly-graded SAND (fine); tan	SP		
320	Poorly-graded SAND (fine) with some silt and trace gravel (fine); tan	SM		
	Well-graded SAND (fine to coarse) with some silt and trace gravel (fine); tan	SM		Profile data gap due to incorrect pressure setting
330	Poorly-graded SAND (fine) with some silt and gravel (fine); tan	SM		Profile data gaps due to poor KPRO equilibration
340				
350	Poorly-graded SAND (fine); tan	SP		Micaceous Profile data gaps due to poor KPRO equilibration
360	Poorly-graded SAND (fine), trace gravel (fine)	SP		Profiler refusal at 361.57 ft, no penetration rate or IK data form 361.57 to 397.61 ft due to drilling activities
	SILT and SAND (fine) with little clay; tan	ML-SM		
370				Micaceous
380				
390	Poorly-graded SAND (fine to medium) with trace gravel (fine); tan to brown	SP		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-54

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	November 4, 2003
JOB NUMBER:	4563001	END DATE:	November 19, 2003
DRILLING FIRM:	CT&E	LOCATION:	South of W John St., West of Charlotte St., North of RR tracks
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Jim Lewis	HYDROGEOLOGIST:	Scott Niekamp, Jeff Dekoskie
HELPER:	Tony Alexander		
Total depth of Profile:	437.5 ft	Total depth of Boring:	415 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
400		SP		
410	Well-graded SAND (fine to coarse) and GRAVEL (fine to coarse); tan	SW-GW		Profile data gap due to equipment malfunction End of boring at 415 ft
420				
430				Profile data gaps due to poor KPRO equilibration Profiler refusal at 437.5 ft, end of Profile
440				

Boring ID:

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

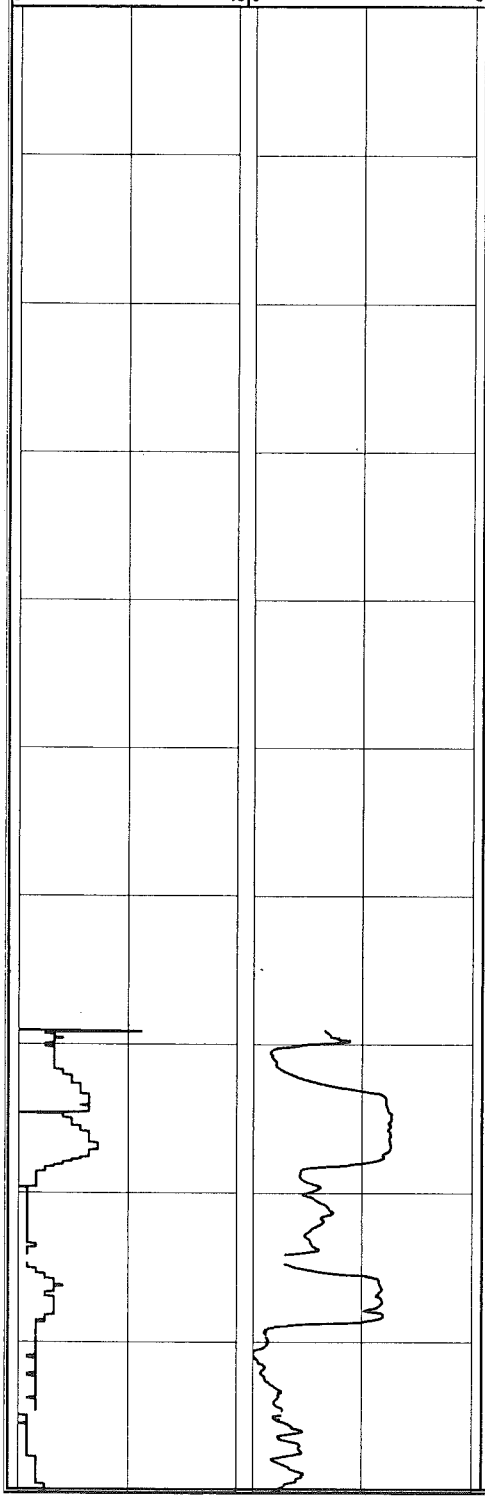
P-55

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	January 10, 2004
JOB NUMBER:	4563001	END DATE:	February 6, 2004
DRILLING FIRM:	CT&E	LOCATION:	Just N of RR tracks, Approx. 500 feet [illegible] of the Wantagh Pkwy.
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Jim Lewis	HYDROGEOLOGIST:	C. Sullivan, J. Ifkovits, K. Wheeler
HELPER:	Kerri Carley		

Total depth of Profile: 480.73 ft

Total depth of Boring: 470 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Sandy SILT with some gravel; dark brown	ML		
	Poorly-graded silty SAND (fine) with some gravel; brown	SM		6 1/4 hollow stem auger used from 0 to 20 ft
10				
	Poorly-graded SAND (fine) with some gravel and little silt; light brown	SM		Begin mud rotary drilling at 20 ft
20	Poorly-graded SAND (medium to coarse and GRAVEL (fine); light brown	SP-GP		
30				
	Well-graded SAND (fine to coarse) with trace gravel (fine); light brown	SW		
40	Poorly-graded SAND (fine) and GRAVEL (fine); brown	SP-GP		Some Iron oxides
	Sandy SILT with some gravel (fine to medium); brown	ML		
50				
	Poorly-graded SAND (fine) with little silt and little gravel; light brown	SM		
60				
	Poorly-graded SAND (fine to medium) with some clay; light brown to tan	SC		Begin Profiling at 69 ft
70	Poorly-graded SAND (fine) with little clay; tan	SC		
80	Poorly-graded SAND (fine to medium) with some clay and little gravel (fine); tan	SC		Profile data gap due to poor KPRO equilibriation
	Poorly-graded SAND (fine) with some clay and trace lignite; brown	SC		
90	Silty CLAY with little sand (fine) and little lignite; yellow to gray	CL		Profile data gaps due to poor KPRO equilibriation

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

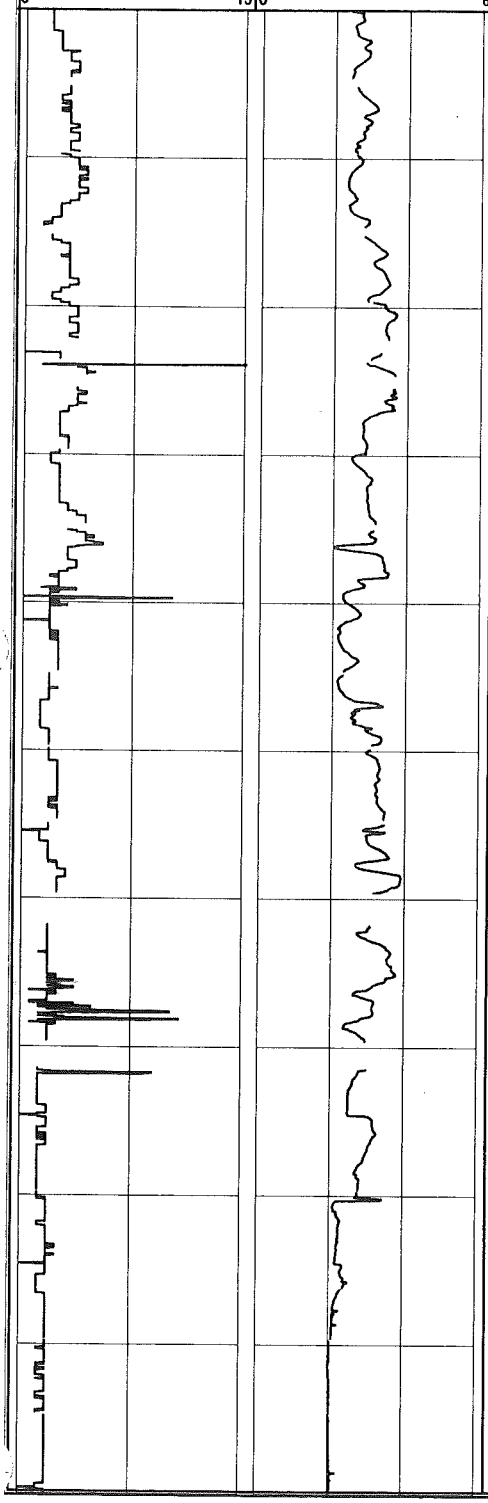
Boring ID: **P-55**

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Jim Lewis
HELPER:	Kerri Carley

START DATE: January 10, 2004
END DATE: February 6, 2004
LOCATION: Just N of RR tracks, Approx. 500 feet east of the Wantagh Pkwy.
DATUM: Land Surface
HYDROGEOLOGIST: C. Sullivan, J. Ifkovits, K. Wheeler

Total depth of Profile: 480.73 ft
Total depth of Boring: 470 ft

GEOLOGIC INFORMATION



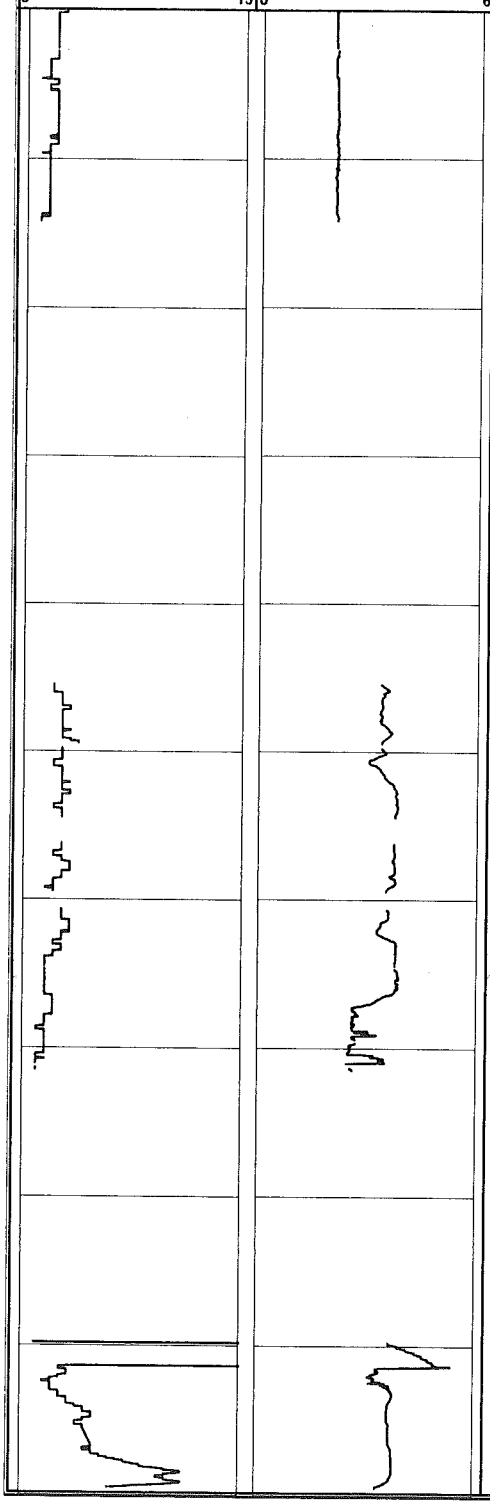
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100	Sandy CLAY with trace lignite; tan	CL		Micaceous
				Profile data gap due to poor KPRO equilibriation
	Poorly-graded SAND (fine to medium) and CLAY with some gravel (fine); light brown	SC-CL		Iron oxides, Micaceous
110	Poorly-graded SAND (fine); light brown	SP		Poor Recovery of Cuttings
				Profile data gaps due to poor KPRO equilibriation
120				Temporary power losses. No penetration rate or IK data from 122.15 to 123.02 ft and 123.64 to 123.68 ft
	Poorly-graded SAND (fine to medium) with little gravel and trace clay; tan to light brown	SP		Micaceous
130				Profile data gaps due to poor KPRO equilibriation
	Poorly-graded SAND (fine) with some clay; tan	SC		Minor oxides
140				
	Sandy CLAY with some gravel (fine); tan to light brown	CL		Some Iron oxides
150				Profile data gaps due to poor KPRO equilibriation
160	Poorly-graded SAND (fine) with some gravel (fine) and little clay; orange to brown	SC		Some iron oxides
				Profile data gaps due to poor KPRO equilibriation
170				
	Sandy SILT with some clay, some lignite, and trace gravel (fine); brown	ML		Trace iron oxides
180				
	SILT with some clay and little lignite; brown	ML		
190				Profile data gaps due to poor KPRO equilibriation

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-55**

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Jim Lewis
HELPER:	Kerri Carley
START DATE:	January 10, 2004
END DATE:	February 6, 2004
LOCATION:	Just N of RR tracks, Approx. 500 feet East of the Wantagh Pkwy.
DATUM:	Land Surface
HYDROGEOLOGIST:	C. Sullivan, J. Ifkovits, K. Wheeler
Total depth of Profile:	480.73 ft
Total depth of Boring:	470 ft

GEOLOGIC INFORMATION



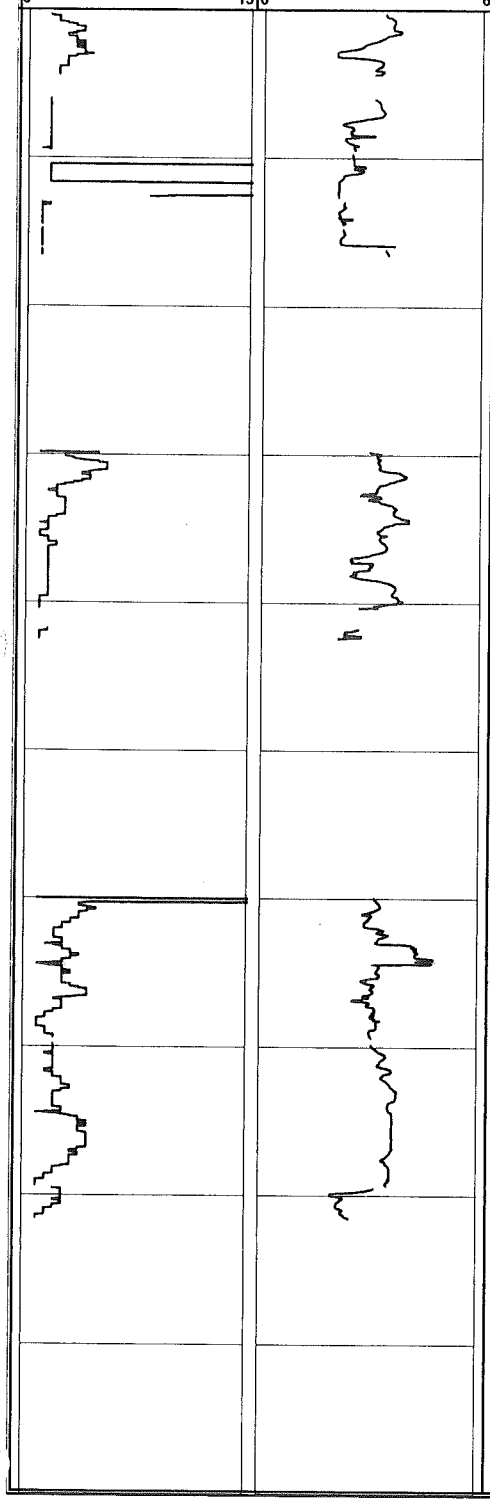
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	SILT with some clay and little lignite; brown	ML		Temporary power losses. No penetration rate or IK data from 202.58 to 202.73.02 ft
	Poorly-graded GRAVEL (fine) with some some sand and clay and trace lignite; orange to brown	GC		
210	Silty CLAY; white	CL		Profiler refusal at 214.55 ft. No penetration rate or IK data from 214.55 to 238.85 due to drilling activities
220	CLAY; white to light gray	CL		210-220 ft, Interbedded sand lenses (<1 foot)
230	Poorly-graded SAND (medium); brown	SP		
240	Poorly-graded SAND (fine); tan to orange	SP		Micaceous No penetration rate or IK data 238.85 to 244.40 ft due to frozen KPRO line.
250	Poorly-graded SAND (fine) with little clay and trace gravel; brown-orange-tan	SC		No penetration rate or IK data from 244.40 to 245.42 ft, profiler sock on during beginning of drive. Profile data gaps due to poor KPRO equilibriation
260	Poorly-graded SAND (fine) with trace clay; brown-tan to yellow	SP		Profile data gaps due to poor KPRO equilibriation
270	Poorly-graded SAND (fine to medium); tan	SP		Small gravel layer at 271 ft bgs
	CLAY and SILT; white to gray	CL-ML		Profiler refusal at 271.45 ft. No penetration rate or IK data from 271.45 to 289.65 due to drilling activities
280	Poorly-graded SAND (fine) with trace clay; tan-gray-white	SP		
290	Poorly-graded SAND (fine to medium) with little clay; tan-white-yellow	SC		Micaceous Profile data gaps due to poor KPRO equilibriation

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-55

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Jim Lewis
HELPER:	Kerri Carley
START DATE:	January 10, 2004
END DATE:	February 6, 2004
LOCATION:	Just N of RR tracks, Approx. 500 feet east of the Wantagh Pkwy.
DATUM:	Land Surface
HYDROGEOLOGIST:	C. Sullivan, J. Ifkovits, K. Wheeler
Total depth of Profile:	480.73 ft
Total depth of Boring:	470 ft

GEOLOGIC INFORMATION



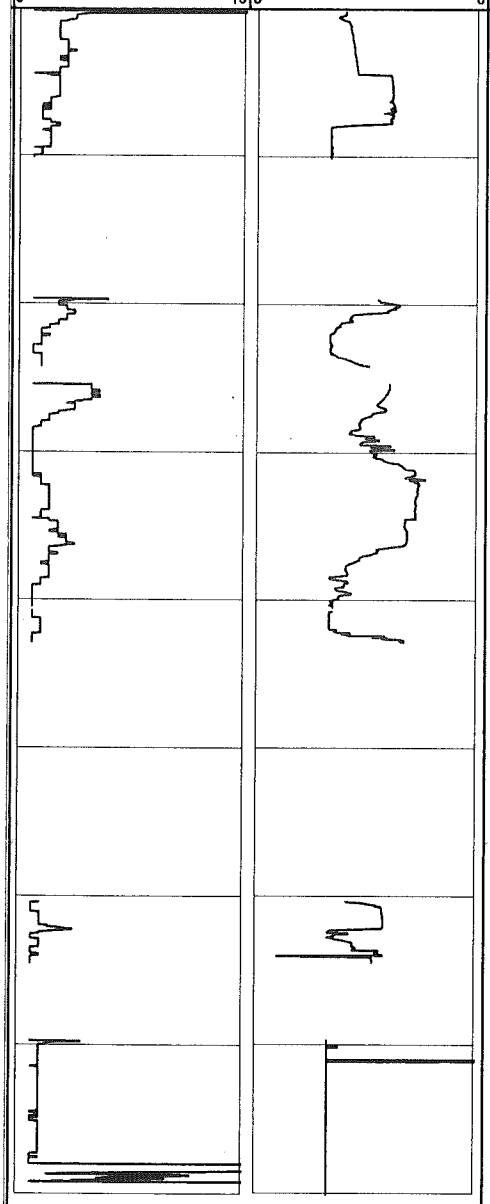
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300	Poorly-graded SAND (fine) with little silt and clay; tan to gray	SM		Profile data gaps due to poor KPRO equilibriation
310	Poorly-graded SAND (fine to medium) with little clay; tan-gray-white-yellow	SC		Profiler refusal at 316.5. No penetration rate or IK data from 316.5 to 329.75 due to drilling activities
320	Poorly-graded SAND (fine to medium) with trace clay and silt; tan-gray-white-yellow	SP		Micaceous
330	Poorly-graded SAND (fine to medium); tan to white	SP		Profile data gap due to poor KPRO equilibriation
340				Profiler refusal at 342.4 ft. No penetration rate or IK data from 342.4 to 359.89 due to drilling activities
350	Poorly-graded SAND (fine to medium) with trace silt; tan	SP		
360	Poorly-graded SAND (medium) with little clay; white to gray	SC		
370	Poorly-graded SAND (medium to coarse) with trace clay; tan-white-orange	SP		Profile data gaps due to poor KPRO equilibriation
380	Poorly-graded SAND (medium) and silty CLAY; tan-dark gray-white	SC-CL		Profiler refusal at 381.57 ft. No penetration rate or IK data from 381.57 to 400.2 ft due to drilling activities
390	Poorly-graded SAND (medium) and CLAY; orange to brown	SC-CL		Little recovery of cuttings

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-55

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	January 10, 2004
JOB NUMBER:	4563001	END DATE:	February 6, 2004
DRILLING FIRM:	CT&E	LOCATION:	Just N of RR tracks, Approx. 500 feet east of the Wantagh Pkwy.
DRILLING METHOD:	Mud Rotary		
DRILLER:	Jim Lewis	DATUM:	Land Surface
HELPER:	Kerri Carley	HYDROGEOLOGIST:	C. Sullivan, J. Ifkovits, K. Wheeler
Total depth of Profile:	480.73 ft	Total depth of Boring:	470 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
400	Poorly-graded SAND (medium to coarse); gray-white-light tan	SP		
				Silty clay layers at 408 ft
410	Poorly-graded SAND (fine to medium); tan to light brown	SP		Profiler refusal at 410.1 ft. No penetration rate or IK data from 410.1 to 419.6 ft due to drilling activities
420	No Recovery			No Recovery of cuttings from 420 to 450 ft
430				
				Profile data gap due to poor KPRO equilibriation
440				No penetration rate and IK data from 442.88 to 443.40 ft due to incorrect pressure reading
450	Poorly-graded SAND (fine); tan to gray	SP		Profiler refusal at 443.4 ft. No penetration rate or IK data from 443.4 to 460.36 ft due to drilling activities
460	No Recovery			No Recovery of Cuttings from 460 to 470 ft
				Profiler refusal at 464.45 ft. No penetration rate or IK data from 464.45 to 469.65 ft due to drilling activities
470				End of Boring at 470 ft
				End of Profile at 480.73 ft
480				

Boring ID:

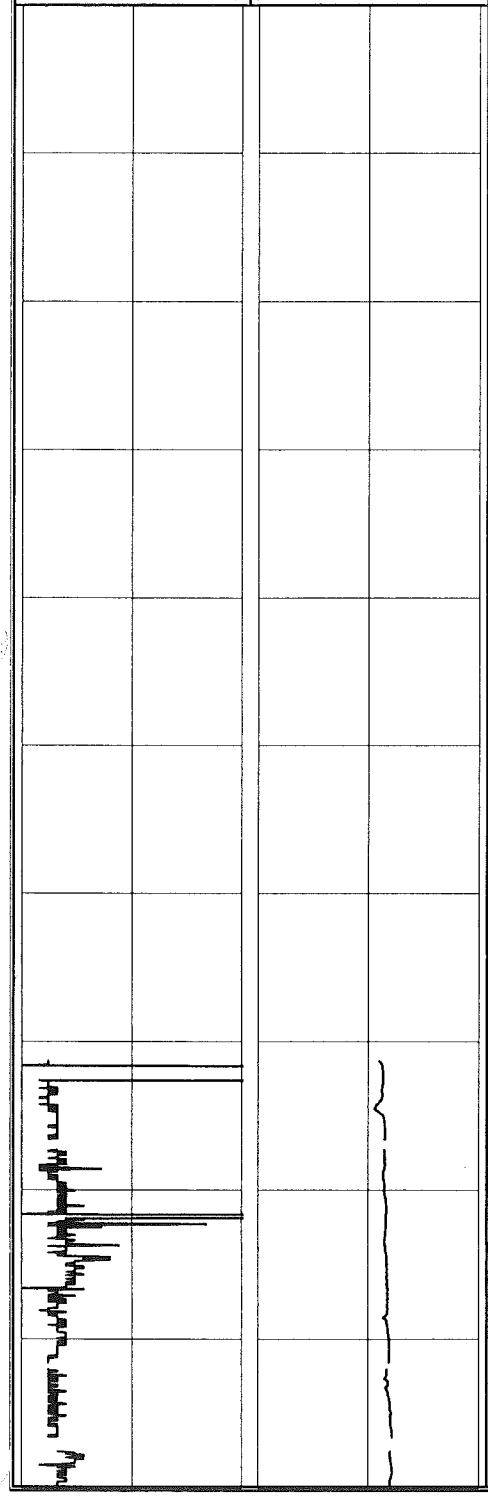
MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

P-56

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	January 20, 2004
JOB NUMBER:	4563001	END DATE:	January 30, 2004
DRILLING FIRM:	CT&E	LOCATION:	East of Cantiage Rock Rd. on Nassau County Golf Course Driving Range
DRILLING METHOD:	Mud Rotary		
DRILLER:	Jim Lewis	DATUM:	Land Surface
HELPER:	Karrey Carley	HYDROGEOLOGIST:	Garret Furgeson
Total depth of Profile:	390.15 ft	Total depth of Boring:	385 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Well-graded SAND (fine to coarse) with some gravel (fine to coarse); brown	SW		Hollow stem augers used form 0 to 20 ft
	Well-graded SAND (fine to coarse) with some gravel (fine); brown to tan-brown	SW		
10				
				Begin mud rotary drilling at 20 ft
20	Poorly-graded SAND (medium to coarse with gravel (fine); brown	SP		
30				
40				
50	Well-graded SAND (fine to coarse) with gravel; brown	SW		
60				
70	Well-graded SAND (fine to coarse) with some gravel; brown	SW		Begin profiling at 69.50 ft
	Well-graded SAND (fine to coarse) with trace gravel and trace silt; tan to gray	SW		Profile data gaps due to poor KPRO equilibriation
80				
	Well-graded SAND (fine to coarse) with trace silt; tan	SW		
90				Profile data gaps due to poor KPRO equilibriation

Boring ID:

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

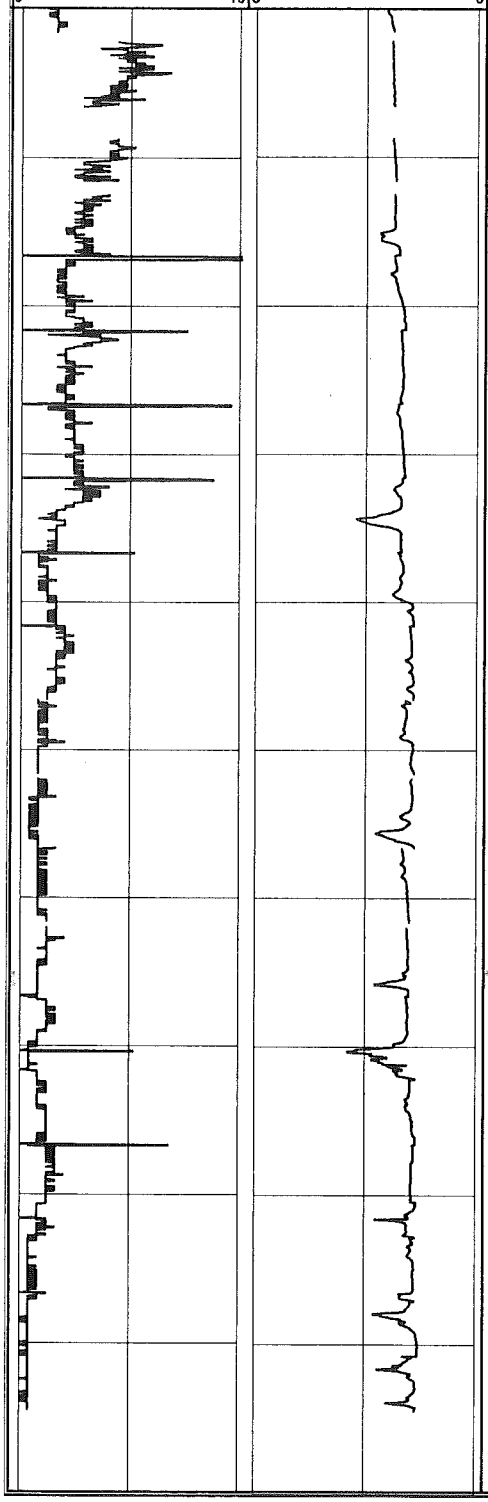
P-56

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	January 20, 2004
JOB NUMBER:	4563001	END DATE:	January 30, 2004
DRILLING FIRM:	CT&E	LOCATION:	East of Cantiage Rock Rd. on Nassau County Golf Course Driving Range
DRILLING METHOD:	Mud Rotary		
DRILLER:	Jim Lewis	DATUM:	Land Surface
HELPER:	Karrey Carley	HYDROGEOLOGIST:	Garret Furgeson

Total depth of Profile: 390.15 ft

Total depth of Boring: 385 ft

GEOLOGIC INFORMATION



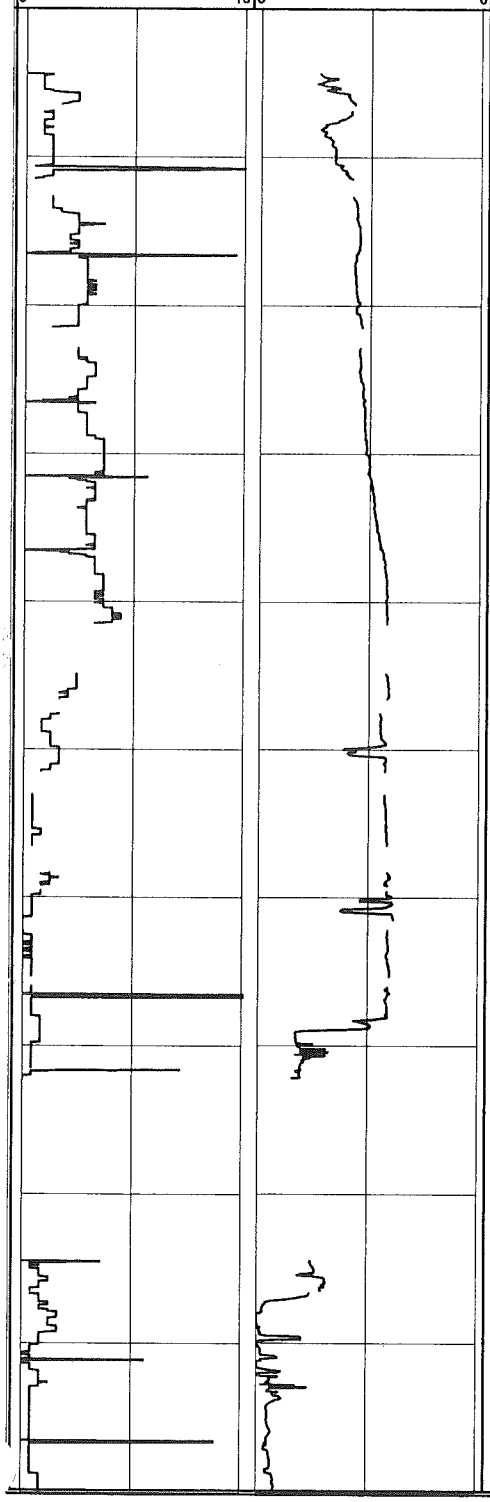
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100	Well-graded SAND (fine to coarse) with trace silt; tan	SW		Profile data gaps due to poor KPRO equilibriation
	Poorly-graded SAND (fine to medium with trace silt; tan	SP		
110				
	Poorly-graded SAND (fine to medium) with trace silt and trace gravel; tan	SP		
120	Poorly-graded SAND (fine to medium) with trace silt; tan	SP		Micaceous
130	Poorly-graded SAND (fine to medium) with trace silt and trace gravel; tan	SP		Micaceous
140	Poorly-graded SAND (fine to medium) with trace silt; tan	SP		Micaceous
150				Profile data gaps due to poor KPRO equilibriation
160				
170				
	Well-graded SAND (fine to coarse) with trace gravel (fine) and trace silt; tan	SW		Micaceous
180				
	Well-graded SAND (fine to coarse) with gravel (fine); tan	SW		Micaceous
190				Profiler refusal at 194.4 ft. No penetration rate or IK data from 194.4 to 204.35 due to drilling activities

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-56

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	January 20, 2004
JOB NUMBER:	4563001	END DATE:	January 30, 2004
DRILLING FIRM:	CT&E	LOCATION:	East of Cantiage Rock Rd. on Nassau County Golf Course Driving Range
DRILLING METHOD:	Mud Rotary		
DRILLER:	Jim Lewis	DATUM:	Land Surface
HELPER:	Karrey Carley	HYDROGEOLOGIST:	Garret Furgeson
Total depth of Profile:	390.15 ft	Total depth of Boring:	385 ft

GEOLOGIC INFORMATION



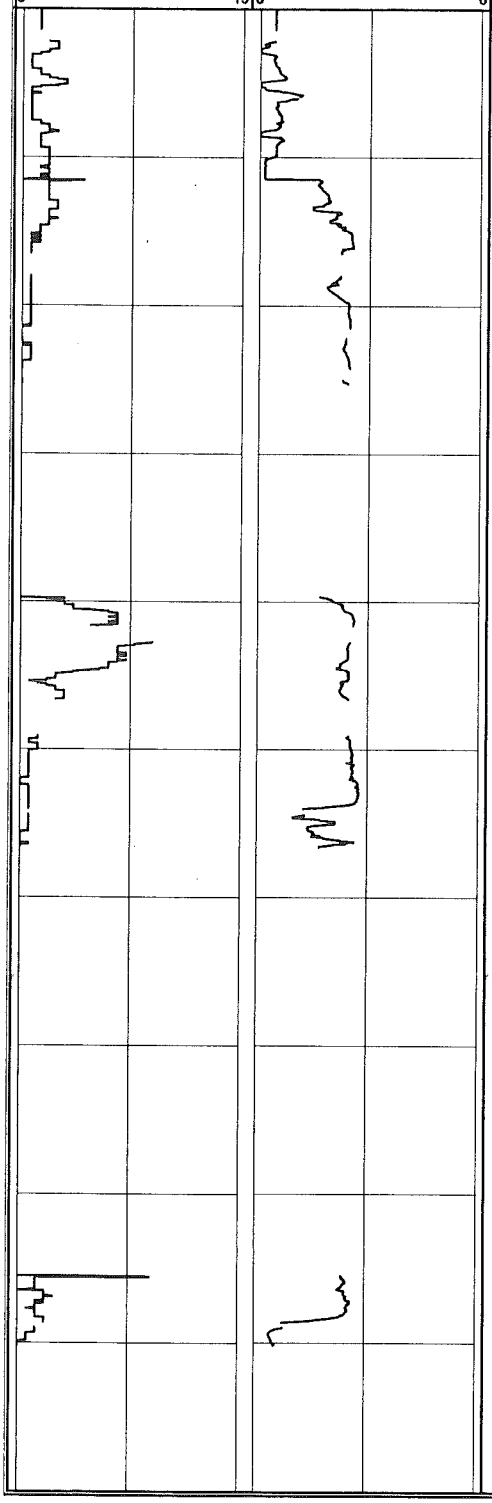
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	Well-graded SAND (fine to coarse) with gravel (fine); tan	SW		Micaceous
	Poorly-graded SAND (fine to medium with some gravel (fine); tan	SP		Micaceous
210	Well-graded SAND (fine to coarse) with gravel (fine); tan	SW		Profile data gaps due to poor KPRO equilibriation
	Poorly-graded SAND (coarse) and GRAVEL (fine) with trace silt; tan	SP-GP		
220	Poorly-graded SAND (coarse) with gravel (fine) and trace silt	SP		
	Well-graded SAND (fine to coarse); dark red to white	SW		
230	Well-graded SAND (fine to coarse) with gravel (fine); dark red to white	SW		
240				
	Poorly-graded SAND (medium to coarse) with gravel (fine); tan-gray-white	SP		Profile data gaps due to poor KPRO equilibriation
250	Well-graded SAND (fine to coarse) with silt and clay and trace gravel; tan to gray	SW		
	No Recovery			Lost circulation, no return of cuttings
260				
270				Profiler refusal at 272.17 ft. No penetration rate or IK data from 272.17 to 284.40 due to drilling activities
280				
290				Profile data gaps due to poor KPRO equilibriation

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-56

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Jim Lewis
HELPER:	Karrey Carley
START DATE:	January 20, 2004
END DATE:	January 30, 2004
LOCATION:	East of Cantiage Rock Rd. on Nassau County Golf Course Driving Range
DATUM:	Land Surface
HYDROGEOLOGIST:	Garret Furgeson
Total depth of Profile:	390.15 ft
Total depth of Boring:	385 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
				Profile data gaps due to poor KPRO equilibriation
				No penetration rate or IK data at 324.93 ft. KPRO flow shut off prior to termination of data acquisition
				Profiler refusal at 325.24 ft. No penetration rate or IK data from 325.24 to 339.65 due to drilling activities
				Profile data gaps due to poor KPRO equilibriation
				Profiler refusal at 356.60 ft. No penetration rate or IK data from 356.60 to 384.85 due to drilling activities
				Profiler rods fell to 385.45. No penetration rate or IK data from 384.80 to 385.45
		CL		Rig response indicated clay at 374 ft
		SM		Rig response indicated primarily sand with some clay from 375 to 385 ft
				End of boring at 385 ft
				Profile data gap due to poor KPRO equilibriation
				End of profile at 390.15

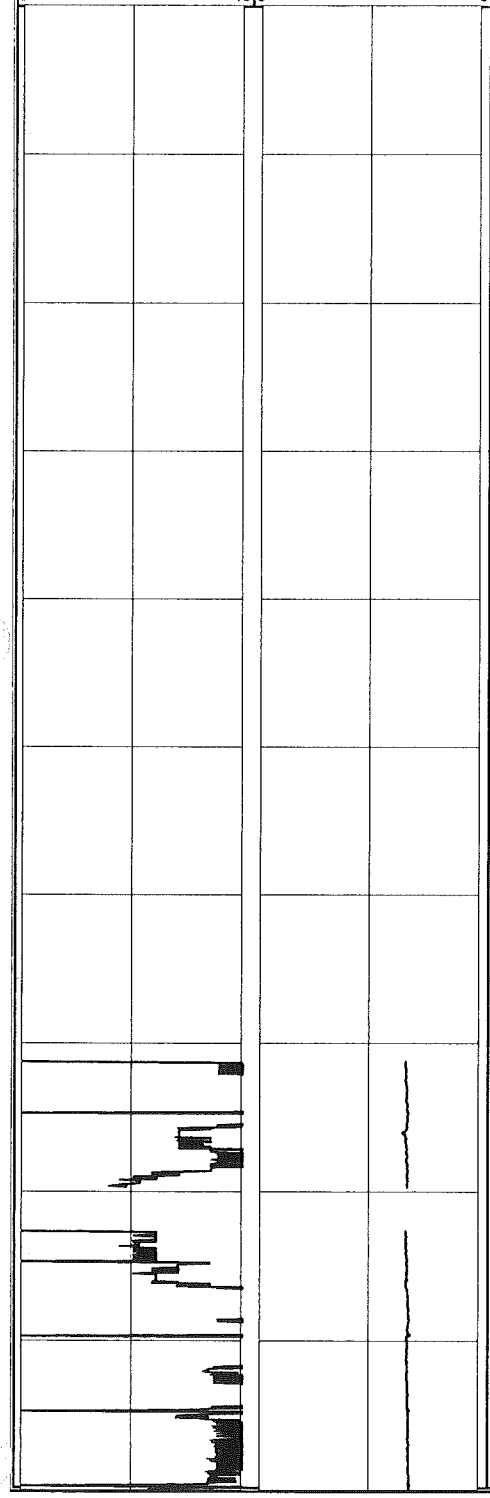
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-58

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	November 4, 2003
JOB NUMBER:	4563001	END DATE:	November 13, 2003
DRILLING FIRM:	CT&E	LOCATION:	SW corner of intersection of Charlotte St. and W. John St.
DRILLING METHOD:	Mud Rotary		
DRILLER:	Larry Lynch	DATUM:	Land Surface
HELPER:	Steve Somonski	HYDROGEOLOGIST:	Colleen Sullivan

Total depth of Profile: 510.94 ft
Total depth of Boring: 510 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Poorly-graded SAND (medium to coarse) and GRAVEL (fine to coarse); dark brown	SP-GW		
10	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); light brown	SP-GP		Hollow stem auger used from 0 to 15 ft, begin mud rotary drilling at 15 ft
	Poorly-graded GRAVEL (fine) and SAND (medium to coarse); light brown	GP-SP		Micaceous
20	Poorly-graded SAND (medium to coarse) and GRAVEL (coarse); light brown	SP-GP		
30				
40	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); light brown	SP-GP		
50				
60				
70				Begin Profiling at 71.25 ft
80				Profile data gap due to poor KPRO equilibration
90	Poorly-graded SAND (coarse) and GRAVEL (fine to coarse); light brown	SP-GW		

Boring ID:

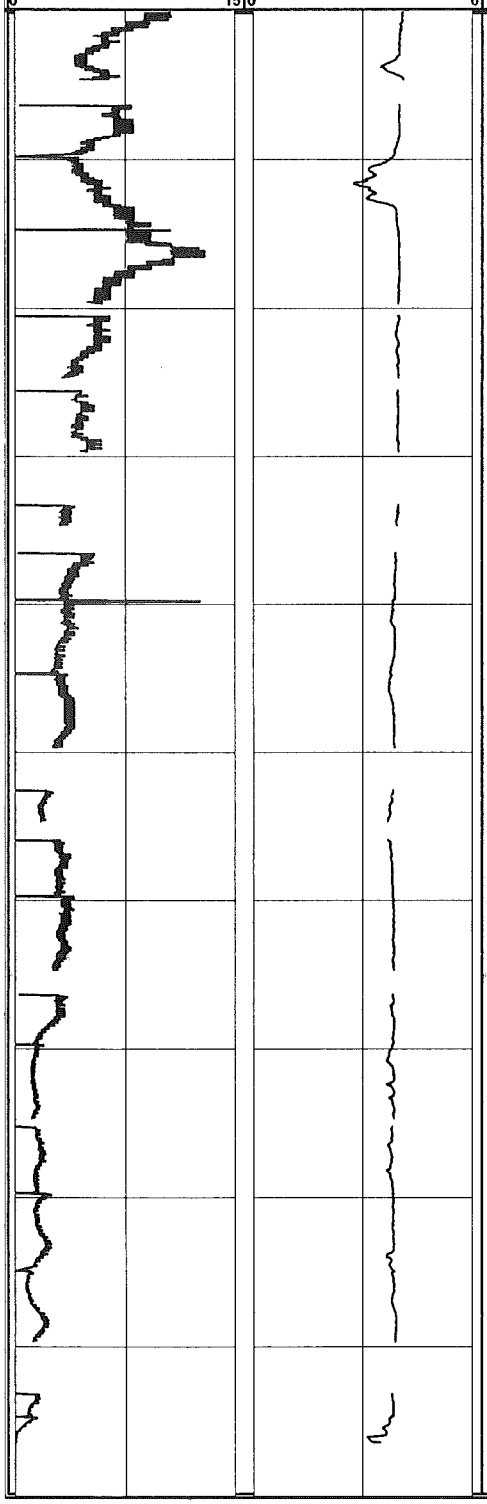
MALCOLM PIRNIE, INC.

P-58

17-17 Route 208 North Fair Lawn, NJ 07401

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	November 4, 2003
JOB NUMBER:	4563001	END DATE:	November 13, 2003
DRILLING FIRM:	CT&E	LOCATION:	SW corner of intersection of Charlott... and W. John St.
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Larry Lynch	HYDROGEOLOGIST:	Colleen Sullivan
HELPER:	Steve Somonski		
Total depth of Profile:	510.94 ft	Total depth of Boring:	510 ft

GEOLOGIC INFORMATION



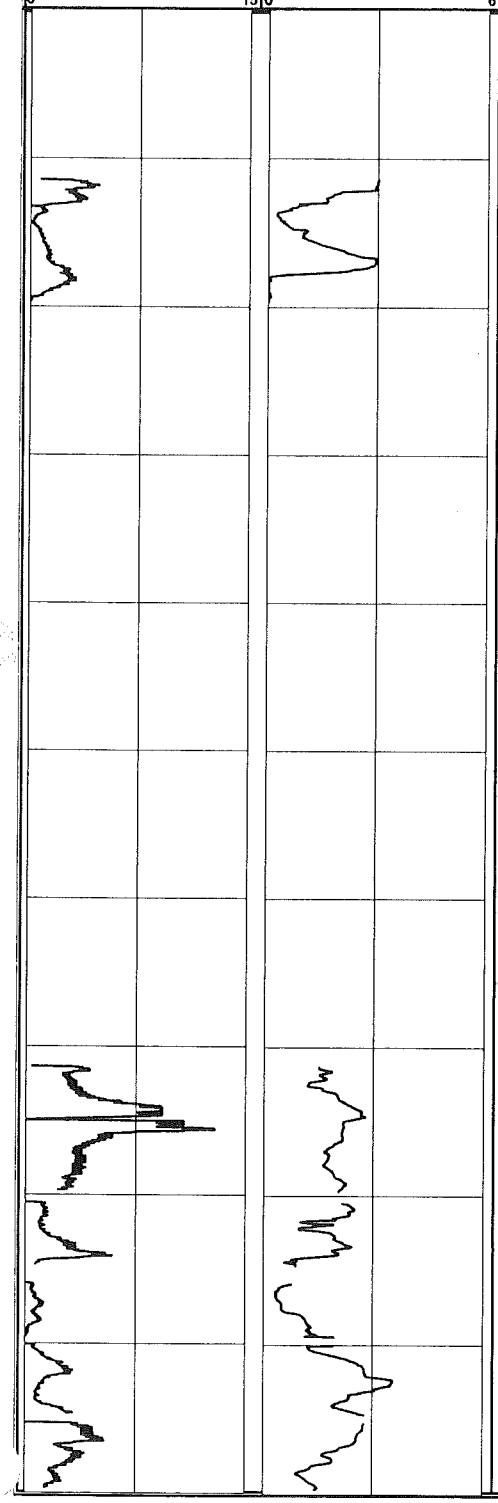
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100	Poorly-graded SAND (medium to coarse) with little gravel (fine to coarse) and trace lignite; light brown to gray	SP		Profile data gap due to poor KPRO equilibration
110	Poorly-graded SAND (medium to coarse) with some silt and clay and trace gravel (fine); brown to orange	SM		
120				
130	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); light brown	SP-GP		Profile data gaps due to poor KPRO equilibration
140	Poorly-graded SAND (coarse) and GRAVEL (fine); light brown	SP-GP		
150	Poorly-graded SAND (medium to coarse) and GRAVEL (fine); light brown	SP-GP		
160	Poorly-graded SAND (medium to coarse) with little gravel (fine) and trace clay; light brown	SP		Profile data gaps due to poor KPRO equilibration
170	Poorly-graded SAND (medium to coarse) and GRAVEL (fine) and trace clay; light brown	SP-GP		
180				Profile data gaps due to poor KPRO equilibration
190	Poorly-graded SAND (medium to coarse) with some gravel (fine) and trace clay; light brown	SP		Profiler refusal at 196.42 ft, no penetration rate or IK data from 196.42 to 211.43 ft due to drilling activities

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-58

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	November 4, 2003
JOB NUMBER:	4563001	END DATE:	November 13, 2003
DRILLING FIRM:	CT&E	LOCATION:	SW corner of intersection of Charlotte St. and W. John St.
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Larry Lynch	HYDROGEOLOGIST:	Colleen Sullivan
HELPER:	Steve Somonski		
Total depth of Profile:	510.94 ft	Total depth of Boring:	510 ft

GEOLOGIC INFORMATION



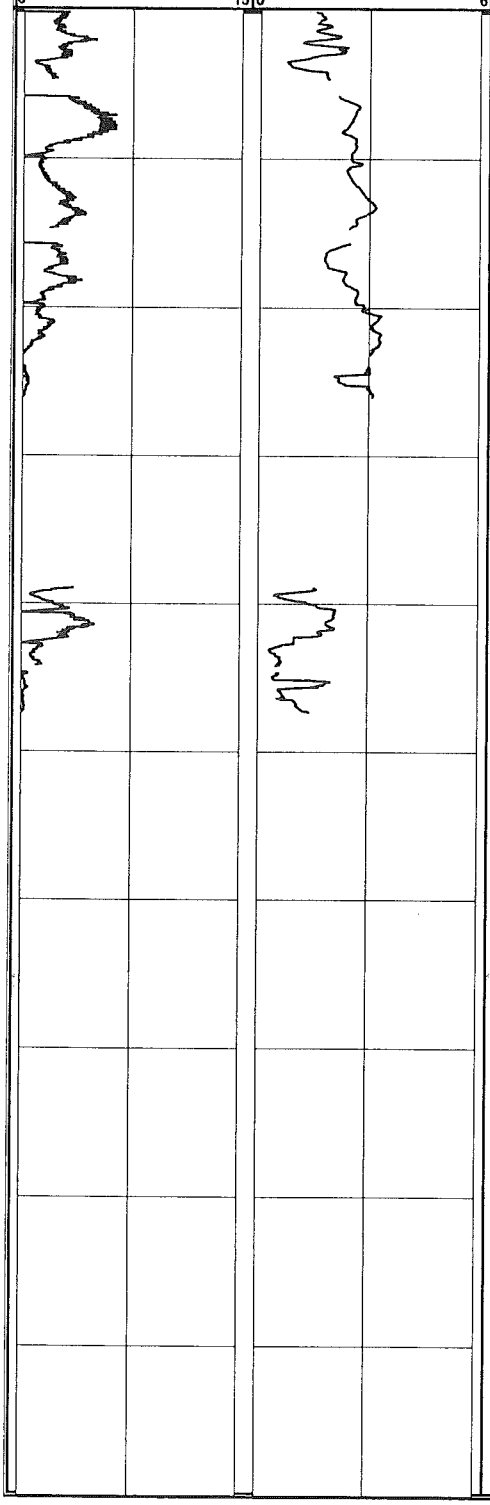
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	Poorly-graded SAND (coarse) and GRAVEL (fine); light brown	SP-GP		
210	Poorly-graded SAND (medium to coarse) with trace gravel; brown to red	SP		
220	CLAY and SAND (fine to medium); gray to white to yellow	CL-SC		Profiler refusal at 219.58 ft, no penetration rate or IK data from 219.58 to 271.32 ft
230	CLAY and SAND (fine) with some silt; white to gray	CL-SC		
240				
250	Poorly-graded SAND (fine) and SILT with some clay; white to gray	SM-ML		
260	Poorly-graded SAND (fine) and SILT with some clay; white to gray	SM-ML		
270	Poorly-graded SAND (fine to medium) with trace lignite; white	SP		
280	Poorly-graded SAND (fine) and SILT with some clay; white to gray	SM-ML		Profile data gaps due to poor KPRO equilibration
290				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-58**

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Steve Somonski
START DATE:	November 4, 2003
END DATE:	November 13, 2003
LOCATION:	SW corner of intersection of Charlotte St. and W. John St.
DATUM:	Land Surface
HYDROGEOLOGIST:	Colleen Sullivan
Total depth of Profile:	510.94 ft
Total depth of Boring:	510 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300	No Recovery			Lost circulation, no recovery of cuttings
310				Profile data gaps due to poor KPRO equilibration
320	Poorly-graded SAND (fine to medium); gray to white	SP		Much water lost to formation
330	SILT and SAND (fine); gray to white	ML-SM		Profiler refusal at 326.0 ft, no penetration rate or IK data from 326.0 to 338.93 ft due to drilling activities
340	Poorly-graded SAND (fine) and SILT; gray to white	SM-ML		
350				Profiler refusal at 347.33 ft, no penetration rate or IK data from 347.33 to 402.45
360	Poorly-graded SAND (fine to medium) and SILT; white to light	SM-ML		
	CLAY and SAND; white to light brown	CL-SC		
370	Well-graded SAND (fine to coarse); white to light brown	SW		Micaceous
380	Poorly-graded SAND (fine to medium); white to light brown	SP		Refusal at 381.28 ft bgs Clay at 381, 383, and 387 ft bgs
390	Poorly-graded SAND (fine) with trace clay; white	SP		

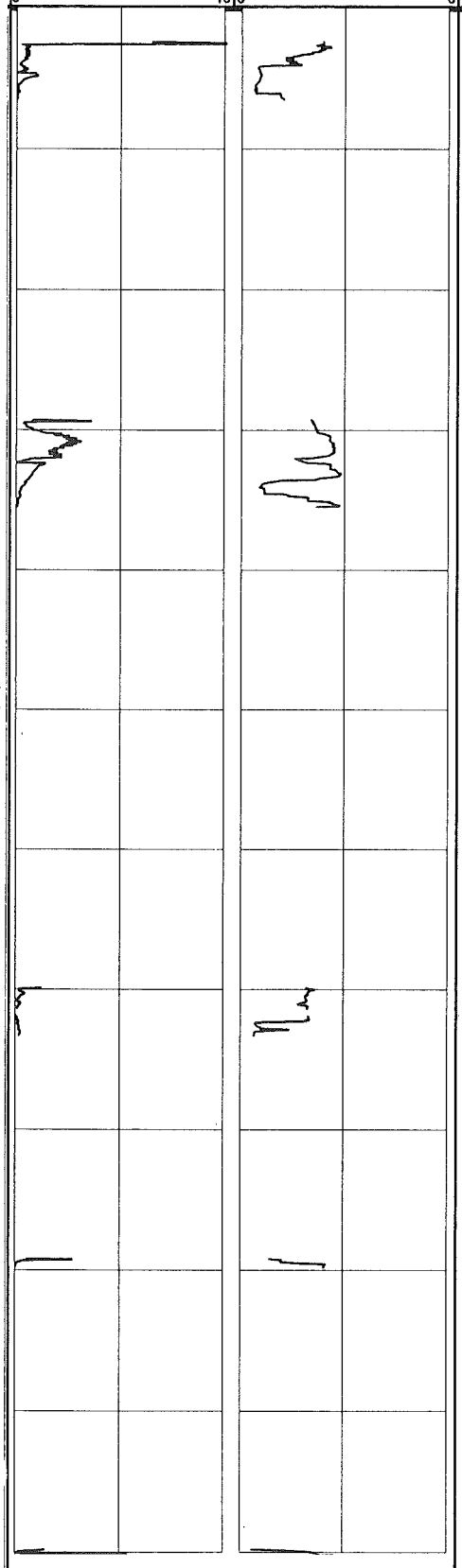
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-58

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	November 4, 2003
JOB NUMBER:	4563001	END DATE:	November 13, 2003
DRILLING FIRM:	CT&E	LOCATION:	SW corner of intersection of Charlotte St. and W. John St.
DRILLING METHOD:	Mud Rotary		
DRILLER:	Larry Lynch	DATUM:	Land Surface
HELPER:	Steve Somonski	HYDROGEOLOGIST:	Colleen Sullivan

Total depth of Profile: 510.94 ft
Total depth of Boring: 510 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
400	Poorly-graded SAND (fine to medium) with some clay, silt, and lignite; gray to white	SC		Profiler refusal at 406.51 ft, no penetration rate or IK data from 406.51 to 429.3 ft due to drilling activities
410	Poorly-graded SAND (fine) and SILT with trace clay; gray to white	SM-ML		
420	Poorly-graded SAND (medium); white to gray	SP		
430	Poorly-graded SAND (medium to coarse) with little gravel (fine); white to gray	SP		Micaceous Profiler refusal at 435.5 ft, no penetration rate or IK data from 435.5 to 469.9 ft due to drilling activities
440	Poorly-graded SAND (medium to coarse and CLAY with some silt; white to gray	SC-CL		
450	Poorly-graded SAND (fine) and LIGNITE with some clay; dark gray	SC-PT		
460	Poorly-graded SAND (fine to medium) with little lignite and trace clay; white to gray	SP		Micaceous
470	SILT and SAND (fine to medium) with trace clay and lignite; gray to white	ML-SM		Profiler refusal at 473.25 ft, no penetration rate or IK data from 473.25 to 489.2 ft due to drilling activities
480	Poorly-graded SAND (fine to medium) with trace clay and lignite; white to gray	SP		
490	SILT with some sand (medium) and clay and trace lignite; white to gray	ML		Profiler refusal at 489.75, no penetration rate or IK data from 489.75 to 509.79 ft due to drilling activities
500	SILT with some sand (medium) and clay; white to gray	ML		End of boring at 510 ft bgs Refusal at 511.0 ft bgs. End of profile
510				

Boring ID:

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

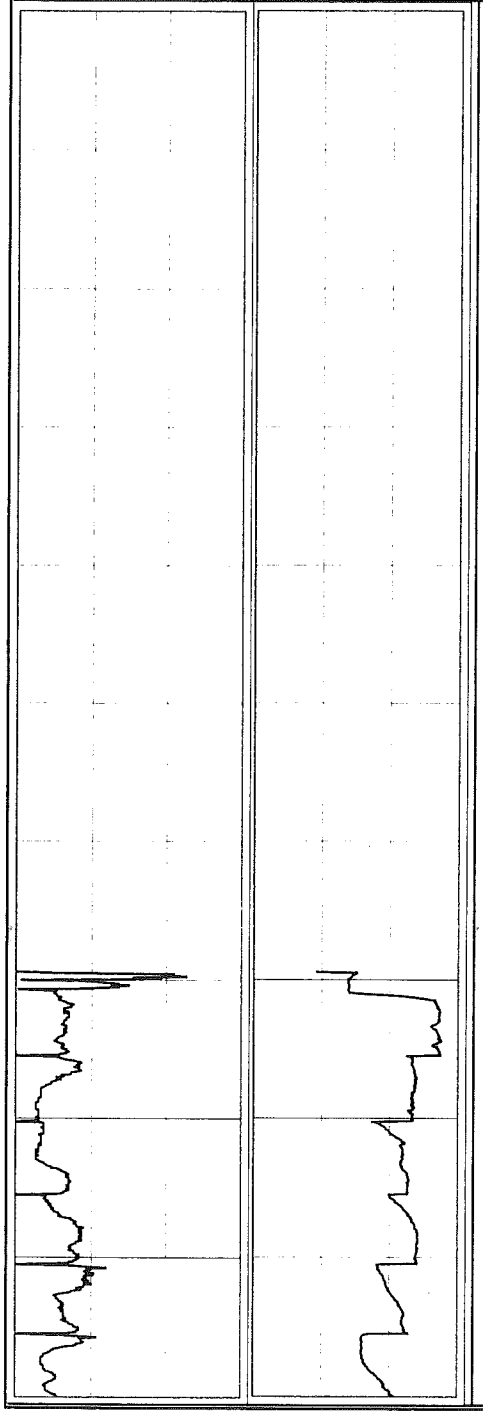
P-102

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	February 1, 2007
JOB NUMBER:	4563001	END DATE:	February 27, 2007
DRILLING FIRM:	SGS	LOCATION:	Intersection of Charlotte Ave. and Duffy Ave. on Winter Brothers property
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Larry Lynch	LOGGED BY:	J. Hilton, C. Goldsmith
HELPER:	Tom Lynch		

Total depth of Profile: 474.25

Total depth of boring: 420 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
0	SAND (fine to coarse) and SILT with trace Gravel (fine); dark brown-black, sub-round.	SM		Hollow stem augers used from 0 to 20 ft
10	SAND (medium to coarse), little Gravel (fine); light-moderate brown.	SW		
20				Begin mud rotary drilling at 20 ft
30				
40				
50	SAND (fine to medium), trace Gravel (fine); light-moderate brown.	SW		
60				
70	SAND (fine to medium), trace Gravel (fine); white.	SW		Begin profiling at 70.20 ft
80				
90	SAND (fine to medium), trace Gravel (fine); light brown.	SW		

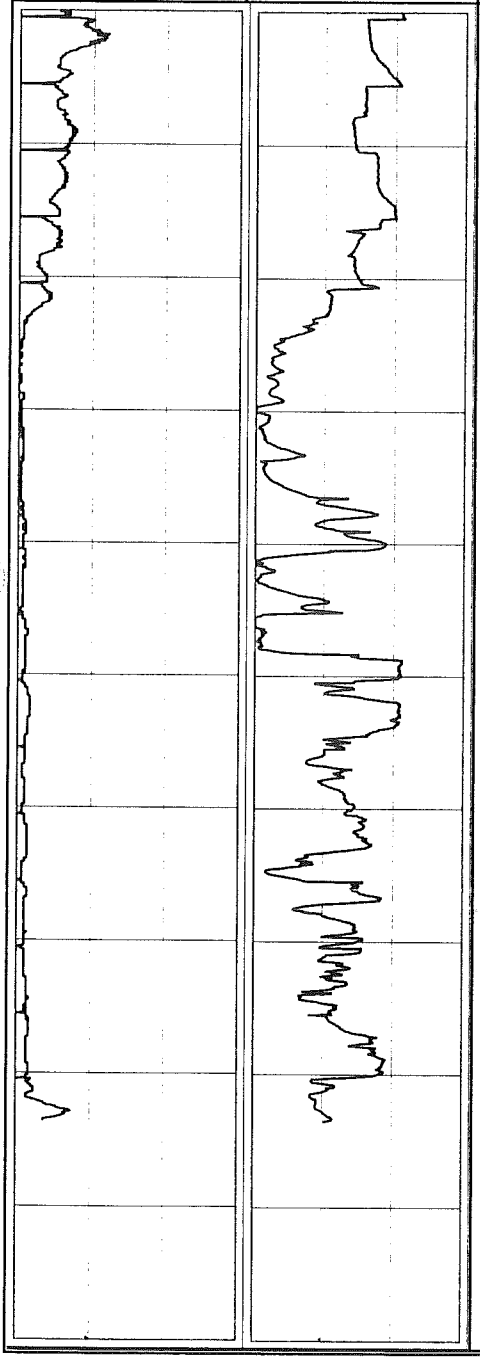
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-102

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	SGS
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Tom Lynch
START DATE:	February 1, 2007
END DATE:	February 27, 2007
LOCATION:	Intersection of Charlotte Ave. and Duffy Ave. on Winter Brothers property
DATUM:	Land Surface
LOGGED BY:	J. Hilton, C. Goldsmith

Total depth of Profile: 474.25
Total depth of boring: 420 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
100	SAND (fine-coarse), little Gravel; light brown.	SW		
110				
120	SAND (medium) with some Silt; moderate brown.	SP		
130				
140				
150				
160				
170				
180	SAND (fine to coarse), with Silt and Clay; moderate brown	SM		Pulled Profiler at 180' bgs, advanced casing from 70' bgs to 180'
190	SAND (fine) and SILT, trace Clay; white.	SM		Pulled Profiler at 191' bgs. Problems with sample line. Advanced casing from 180' bgs to 200'

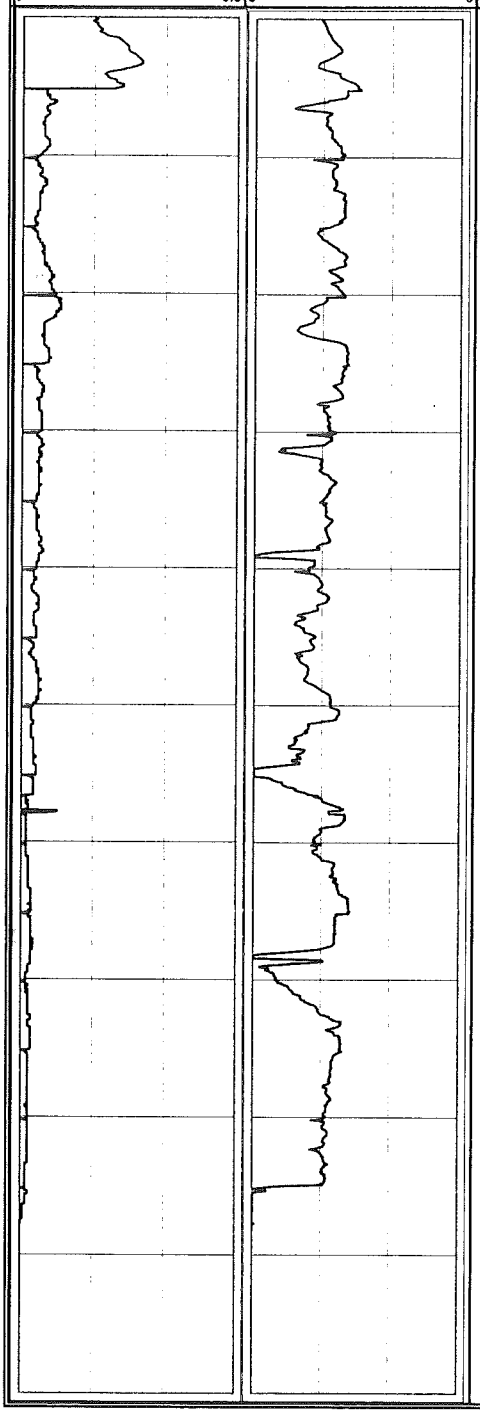
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-102

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	February 1, 2007
JOB NUMBER:	4563001	END DATE:	February 27, 2007
DRILLING FIRM:	SGS	LOCATION:	Intersection of Charlotte Ave. and Duffy Ave. on Winter Brothers property
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Larry Lynch	LOGGED BY:	J. Hilton, C. Goldsmith
HELPER:	Tom Lynch		

Total depth of Profile: 474.25 | Total depth of boring: 420 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
200	SAND (fine-coarse) with some Silt; moderate brown.	SM		
210				
220	SAND (fine-medium) with some Silt; light brown.	SM		
230				
240				
250	SAND (fine-Medium) with some Clay; dark gray.	SC		
	SAND (fine); light brown.	SP		
260	SAND (fine-medium), some Clay and Silt; white.	SC		
270	SILT with Sand (fine); white.	ML-SM		
280	CLAY with Sand (fine); gray-white.	CL		Mud loss. No cuttings return. Appears to be Clay from 284' to approx. 292' based on drilling character. Clay found on profiler indicated a stiff, gray-white clay. Refusal at 287' bgs. Profiler pulled out and advanced casing from 200' bgs to 290'
290	SILT with Sand (fine); white.	ML-SM		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

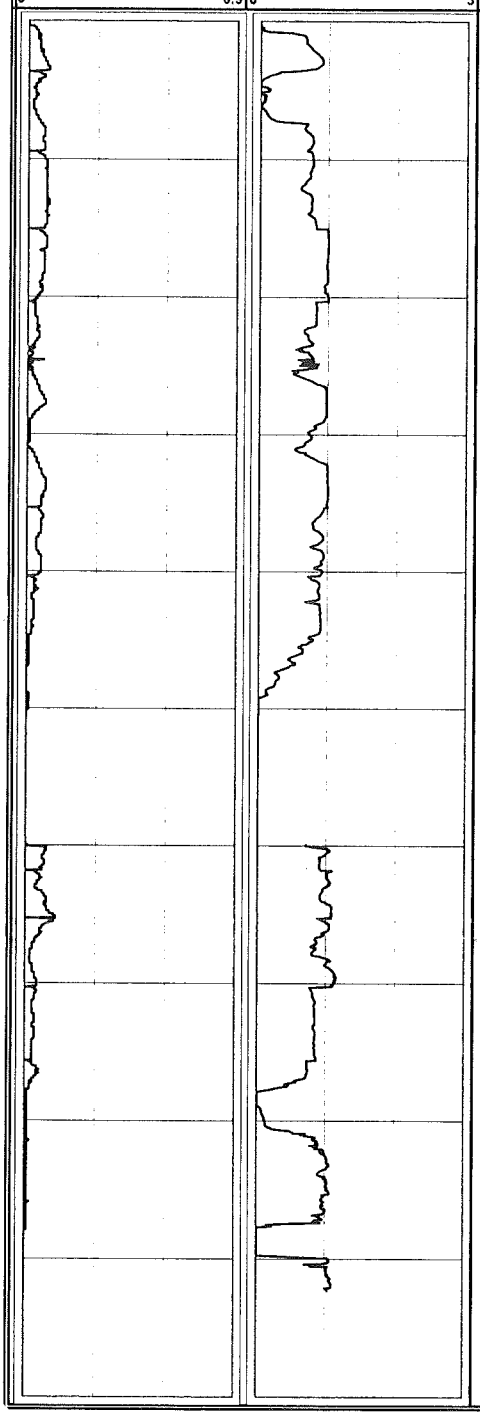
Boring ID:
P-102

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	SGS
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Tom Lynch
START DATE:	February 1, 2007
END DATE:	February 27, 2007
LOCATION:	Intersection of Charlotte Ave. and Duffy Ave. on Winter Brothers property
DATUM:	Land Surface
LOGGED BY:	J. Hilton, C. Goldsmith

Total depth of Profile: 474.25

Total depth of boring: 420 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
300	SAND (fine-medium) with trace Silt; light brown to white.	SW		
310				
320				
330	SAND (fine to medium), trace Silt and Clay interbeds; light brown to white.	SW		
340				
350	SAND (fine to medium), trace Silt and Clay; light brown to white, micaceous.	SW		Profiler refusal at 350.55' bgs, pulled rods and advanced casing from 290' bgs to 360'
360	SAND (fine to medium), trace Silt and Clay; light brown to white.	SW		
370				
380				
390	SAND (medium-coarse), trace Silt; gray to white, micaceous.	SW		Profiler refusal at 392.30' bgs, pulled rods and advanced casing from 360' bgs to 420'

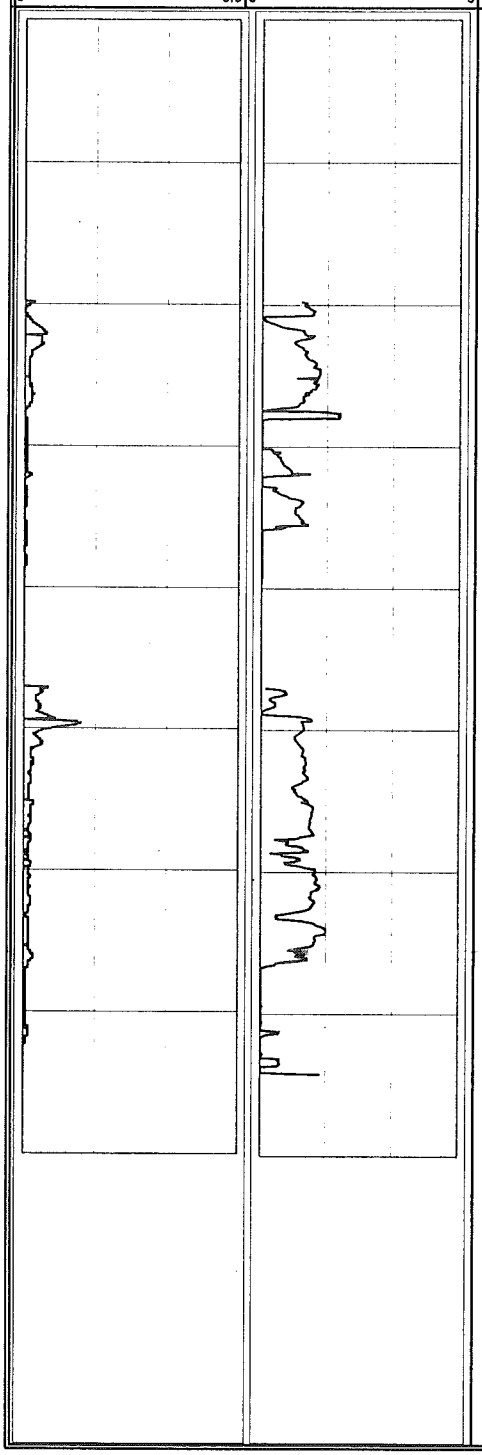
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-102

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	February 1, 2007
JOB NUMBER:	4563001	END DATE:	February 27, 2007
DRILLING FIRM:	SGS	LOCATION:	Intersection of Charlotte Ave. and Duffy Ave. on Winter Brothers property
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Larry Lynch	LOGGED BY:	J. Hilton, C. Goldsmith
HELPER:	Tom Lynch		

Total depth of Profile: 474.25
Total depth of boring: 420 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
400				
410	SAND (fine-coarse) with interbedded Silt and Clay; white to gray to gray-brown.	SW		
420				
430				
440	SAND (fine-coarse), trace Silt; white to gray.	SW		Profiler refusal at 439.38' bgs, pulled rods and advanced casing from 420' bgs to 447'
450				End of mud logging at 447.15 ft
460				
470				End of profile at 474.25 ft
480				
490				

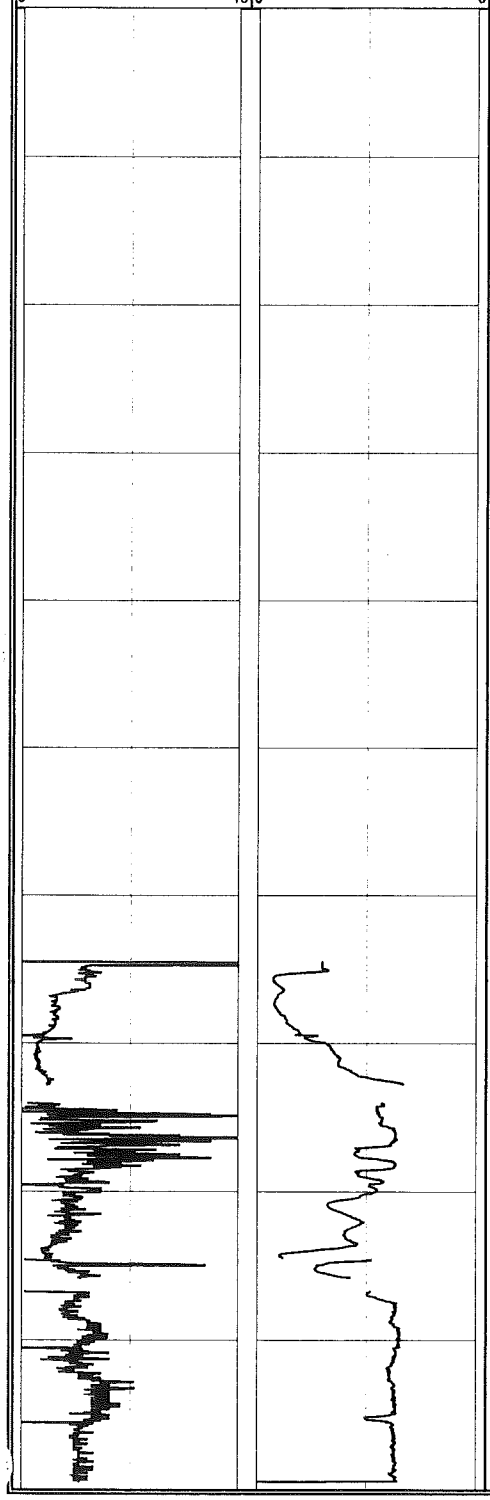
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-103**

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	April 18, 2005
JOB NUMBER:	4563001	END DATE:	April 28, 2005
DRILLING FIRM:	CT&E	LOCATION:	GTEOSI Property South of Building 100
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Jim Lewis	HYDROGEOLOGIST:	John Hilton
HELPER:	Larry Carlin		

Total depth of Profile: 404.2 ft — Total depth of Boring: 375 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Site Backfill			
10				
20				Hollow stem augers used to drill from 0 to 29.5 ft. Begin mud rotary drilling at 29.5 ft.
30	Poorly graded GRAVEL (fine, subrounded) with some sand (fine to medium)	GP - SP		
40				
50	Poorly graded SAND (fine to medium) with trace to little gravel (fine, to 1/4", subrounded); light brown	SP		
60	Poorly graded SAND (fine) with trace to little silt; light brown	SP - SM		
	Poorly graded SAND (medium) with little silt; light brown to gray brown	SP - SM		
70				Begin profiling at 74'
	Poorly graded SAND (medium to coarse, sub-angular); light brown to white	SP		Micaceous
80				
90	Poorly-graded SAND (fine); light brown	SP		

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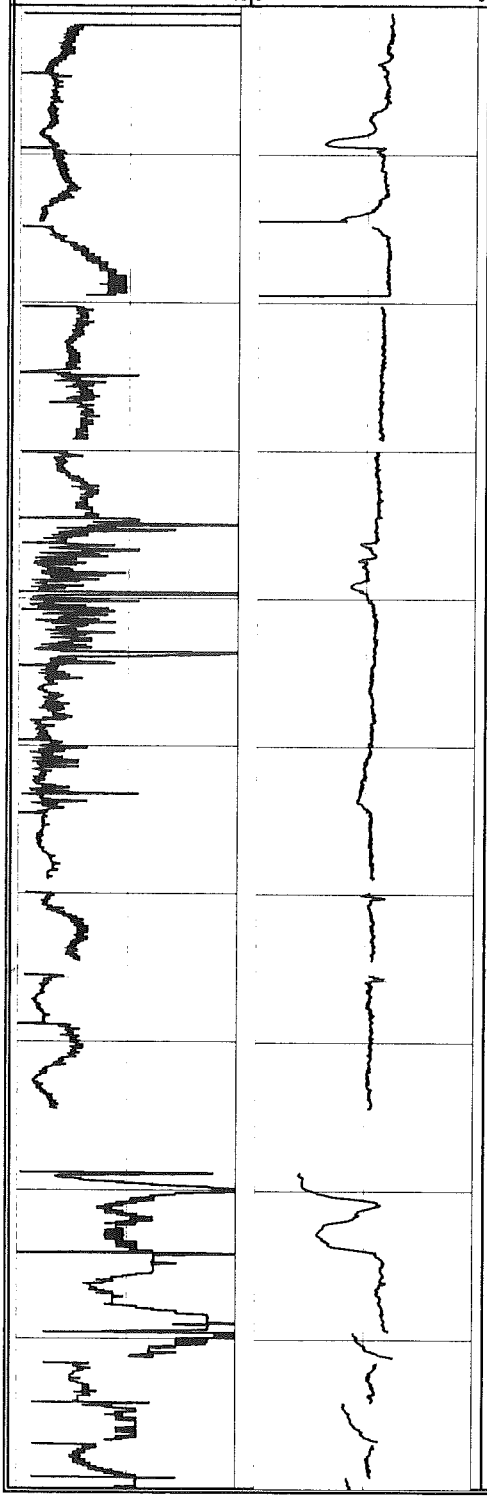
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-103

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	April 18, 2005
JOB NUMBER:	4563001	END DATE:	April 28, 2005
DRILLING FIRM:	CT&E	LOCATION:	GTEOSI Property South of Building 100
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Jim Lewis	HYDROGEOLOGIST:	John Hilton
HELPER:	Larry Carlin		

Total depth of Profile: 404.2 ft
Total depth of Boring: 375 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100				
	Poorly graded SAND (medium to coarse, sub-rounded); light brown	SP		
110				
120				
	Poorly graded SAND (as above) with gravel interbeds (fine, sub-rounded)	SP - GP		
130				
	Poorly graded SAND (fine to medium) with trace gravel (fine, sub-rounded); light brown to white	SP		
140				
150				
160				
170				
180	Poorly graded SAND (medium to coarse) with trace gravel (fine, to 1/4", sub-rounded); light brown to white	SP		Pulled profiling equipment at 174.5 ft. No penetration rate or IK data from 174.5 to 179.75 due to drilling activities.
190				

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MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

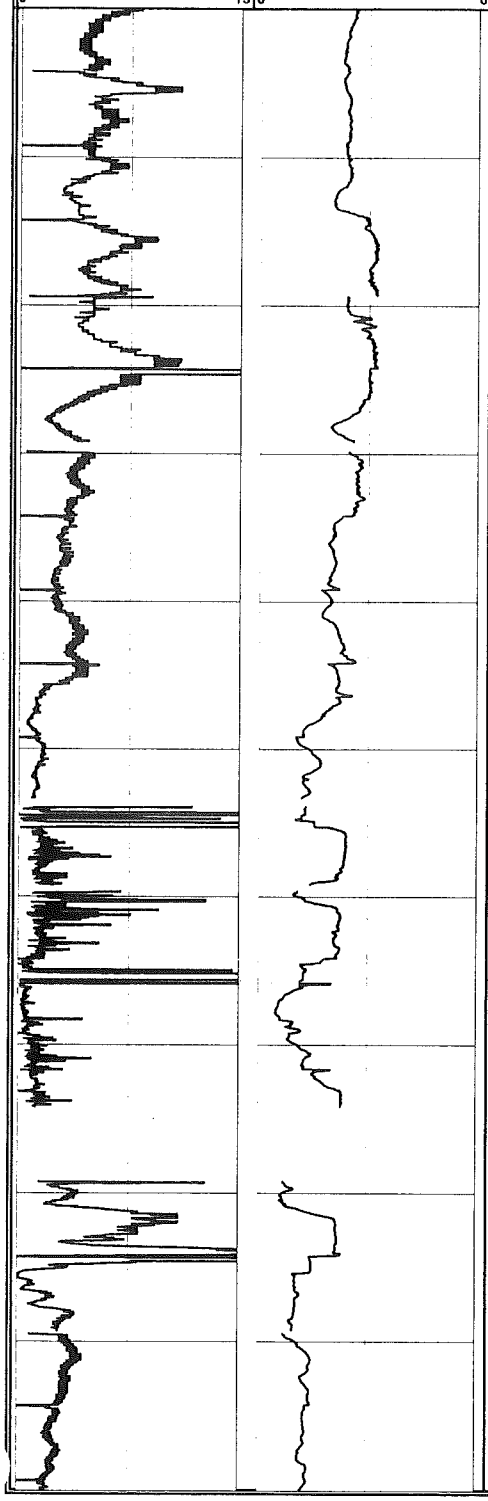
Boring ID:
P-103

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Jim Lewis
HELPER:	Larry Carlin

START DATE: April 18, 2005
END DATE: April 28, 2005
LOCATION: GTEOSI Property South of Building 100
DATUM: Land Surface
HYDROGEOLOGIST: John Hilton

Total depth of Profile: 404.2 ft
Total depth of Boring: 375 ft

GEOLOGIC INFORMATION



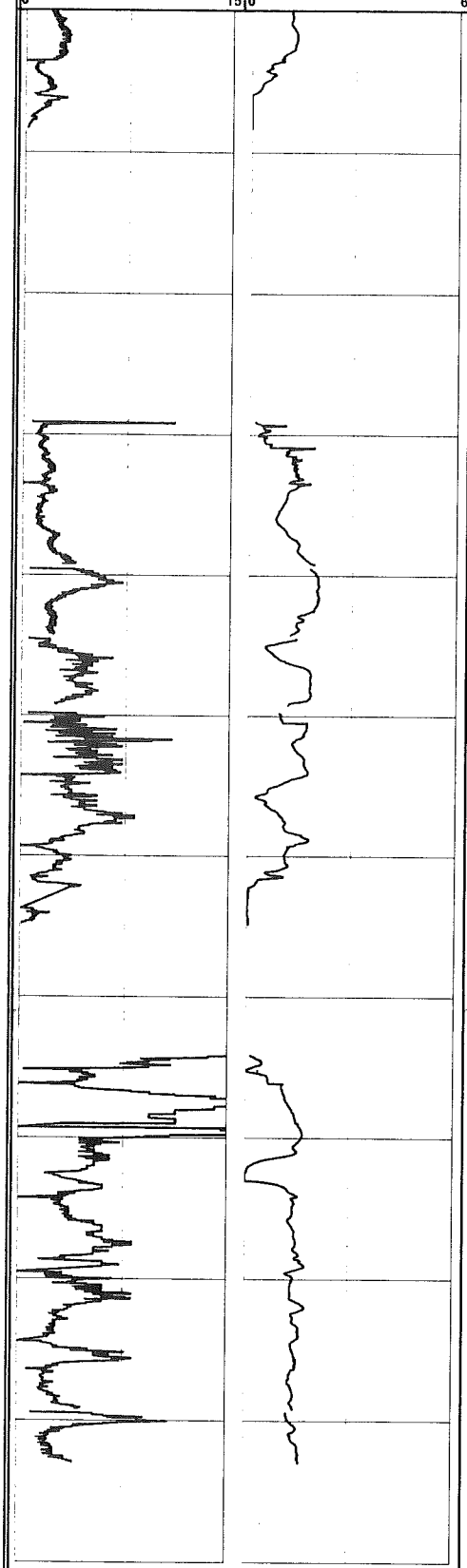
Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200				
210				
220	Poorly graded SAND (fine to medium); light brown to white	SP		
230				
240				
250	Poorly graded SAND (fine) with trace to little silt; light brown to white	SP - SM		
260	Poorly graded SAND (fine to medium) trace gravel (fine); pink to orange	SP		
270				Pulled profiling equipment at 274.2 ft. No penetration rate or IK data from 274.2 to 279.5 ft due to drilling activities
280	Poorly graded SAND (medium to coarse) with extensive Fe stained sand (coarse) and gravel (fine) component, trace silt; dark brown-gray to dark gray	SP - GP		
290	Poorly graded SAND (fine to medium, micaceous) with silt partings; medium gray-brown to dark gray	SP - SM		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-103

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Jim Lewis
HELPER:	Larry Carlin
START DATE:	April 18, 2005
END DATE:	April 28, 2005
LOCATION:	GTEOSI Property South of Building 100
DATUM:	Land Surface
HYDROGEOLOGIST:	John Hilton
Total depth of Profile:	404.2 ft
Total depth of Boring:	375 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300	CLAY stratified with silt and SAND (fine) at 300-305'; dark gray brown	CL-SM		Profiler refusal at 308.3 ft. No penetration rate or IK data from 308.3 to 329 ft due to drilling activities.
310	CLAY, dense with interbedded sand lenses; gray white	CL-SC		Clay noted at 305-312' and 317-322'
320				
	Poorly graded SAND/SILT (fine, micaceous) gray white	SM		
330	Poorly graded SAND (fine) with little silt; gray white	SP - SM		
	Poorly graded SAND (As above) with clay; gray white	SC		
340	Poorly graded SAND (fine to medium) with trace to little silt; gray white	SP - SM		
350				
360	Poorly graded SAND (fine) and SILT with trace clay as interbed	SM		
	CLAY (stiff) with lignite, sand interbeds; black brown	CL - SC		Carbonaceous
370				Sand unit at 370'
380				
390				
400				Pulled profiling equipment at 404.2 ft. End of profile.
410				

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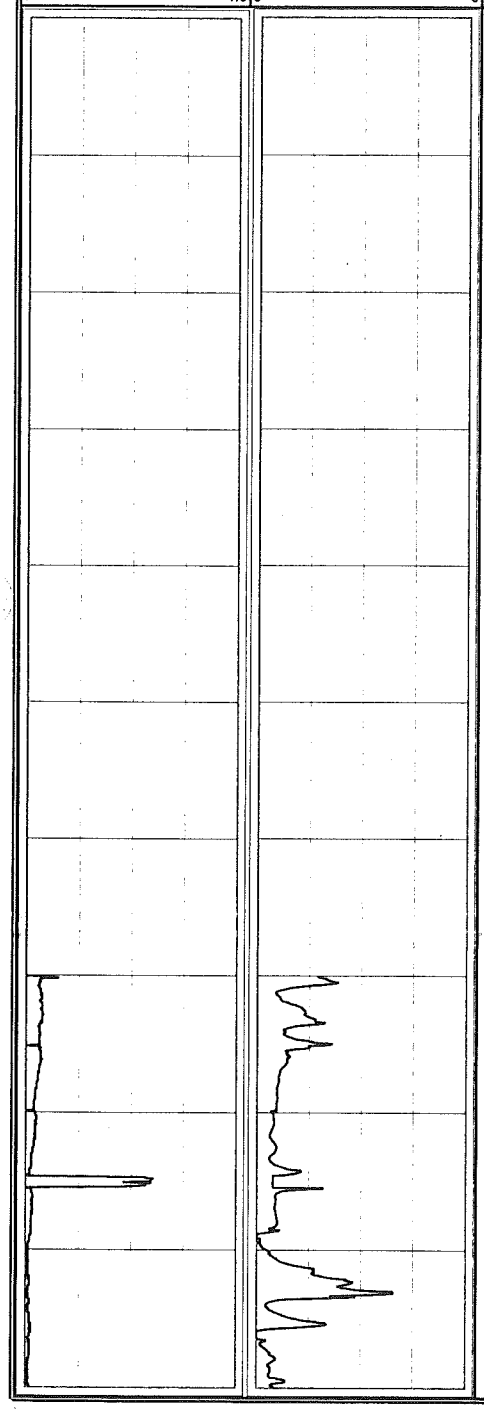
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-104

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	February 28, 2007
JOB NUMBER:	4563001	END DATE:	March 21, 2007
DRILLING FIRM:	SGS	LOCATION:	550 Old Country Road, northeast corner of parking lot
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Larry Lynch	LOGGED BY:	J. Hilton, C. Goldsmith
HELPER:	Tom Lynch		

Total depth of Profile: 491.70 ft
Total depth of boring: 480 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
0	SAND (medium-coarse) w/ little sub-rounded white quartz Gravel (fine-coarse) to 2" dia., moderate-dark brown.	SW-GW		Hollow stem augers used from 0 to 20 ft
20	SAND (medium-coarse); light brown.	SW-GW		Begin mud rotary drilling at 20 ft
70	SAND (medium) with little Silt; gray to brown.	SM		Begin profiling at 69.70 ft
90	SAND (medium-coarse) with some Silt, trace Gravel; light brown.	SW-SM		

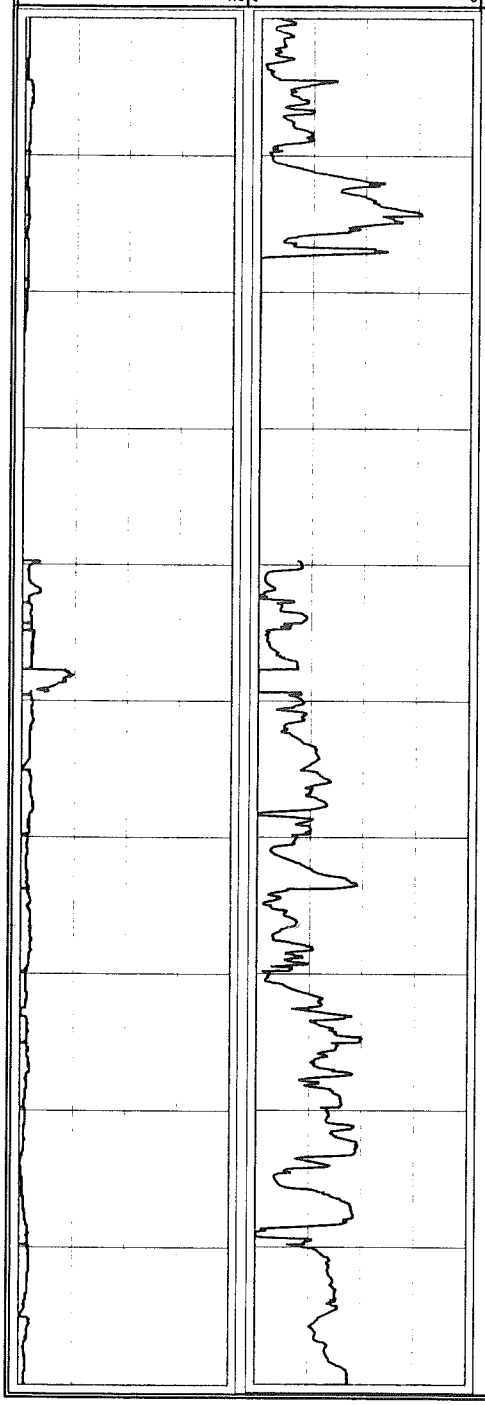
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-104

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	SGS
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Tom Lynch
START DATE:	February 28, 2007
END DATE:	March 21, 2007
LOCATION:	550 Old Country Road, northeast corner of parking lot
DATUM:	Land Surface
LOGGED BY:	J. Hilton, C. Goldsmith

Total depth of Profile: 491.70 ft
Total depth of boring: 480 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
100				
110				
120	SAND (fine-medium) and SILT, w/ thin black carbonaceous clay and lignite interbeds (117 - 125' bgs); black.	SW-SM		Profiler refusal at 124' bgs, pulled rods and advanced casing from 70' bgs to 140'
130	SAND (medium-coarse) with some Silt; brown.	SW-SM		
140	SAND (fine) and SILT; gray to brown.	SM		
150	SAND (fine-coarse) with some Silt; brown.	SM		
160				
170	SAND (fine), trace Silt and Clay interbedded; brown to white.	SP		
180	SAND (fine) with Silt, some interbedded white Clay; brown to white.	SM		
190				

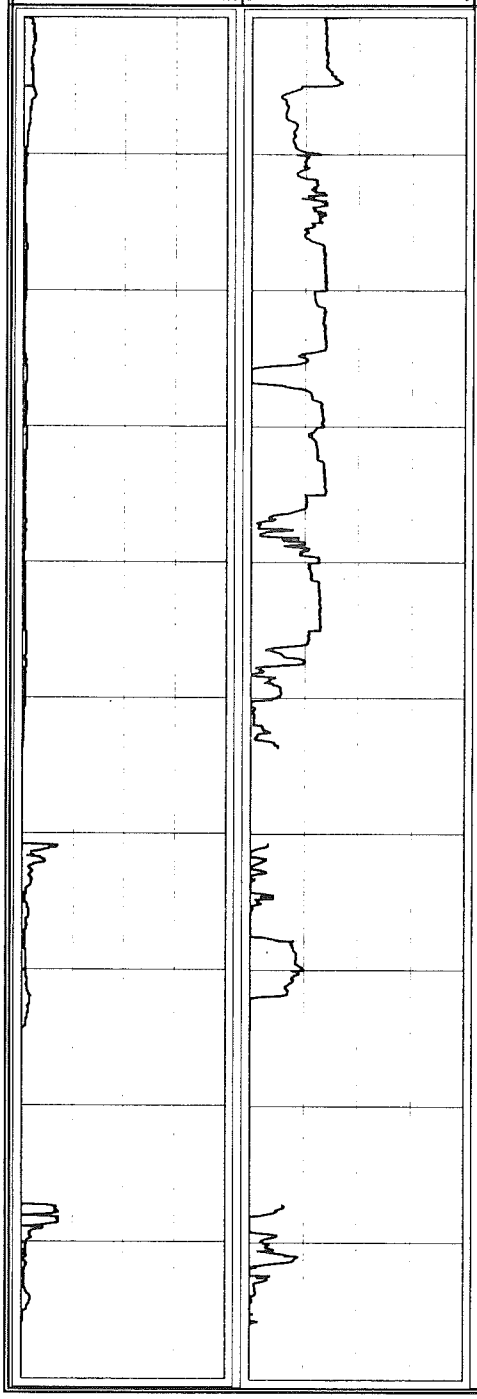
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-104**

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	February 28, 2007
JOB NUMBER:	4563001	END DATE:	March 21, 2007
DRILLING FIRM:	SGS	LOCATION:	550 Old Country Road, northeast corner of parking lot
DRILLING METHOD:	Mud Rotary		
DRILLER:	Larry Lynch	DATUM:	Land Surface
HELPER:	Tom Lynch	LOGGED BY:	J. Hilton, C. Goldsmith

Total depth of Profile: 491.70 ft — Total depth of boring: 480 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
200	SAND (fine) with Silt, trace interbedded Clay; white.	SM		
210				
220	SAND (fine) and SILT, trace white interbedded Clay; brown to gray.	SM		
230				
240	SILT, some Sand (fine), trace interbedded carbonaceous Clay and lignite (272-278); gray to brown.	ML		
250				Pulled profiling rods from 253.65 and advanced casing from 140' to 260' bgs
260				
270				Profiler refusal at 274' bgs, pulled rods and advanced casing from 260' bgs to 287'
280				
290	SAND (fine) with little-some Silt, trace imterbedded Clay; light gray to brown.	SM		Profiler refusal at 296' bgs, pulled rods and advanced casing from 287' bgs to 312'

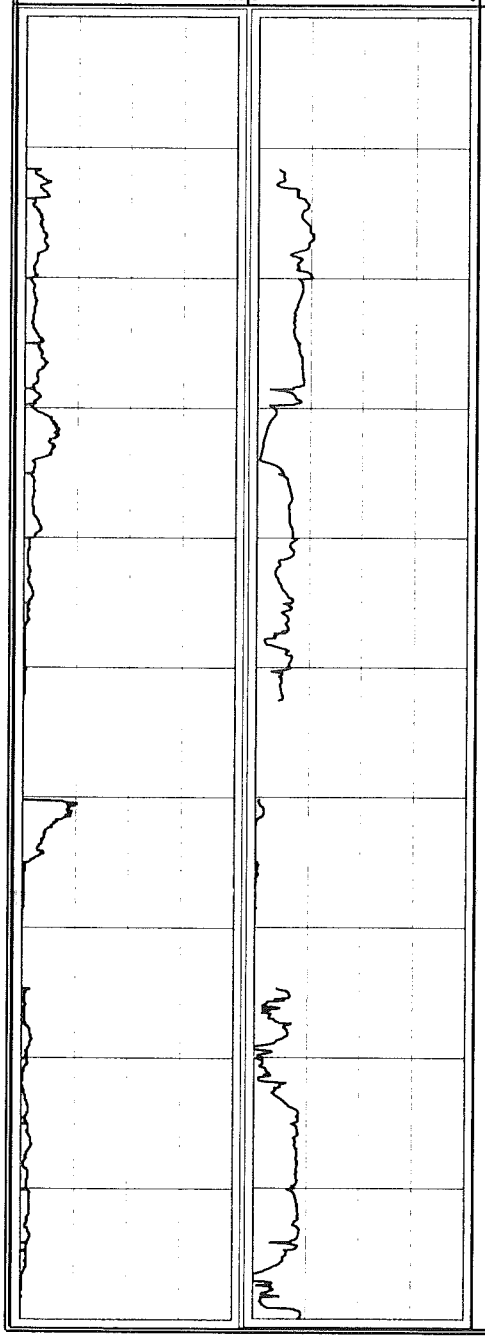
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-104

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	SGS
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Tom Lynch
START DATE:	February 28, 2007
END DATE:	March 21, 2007
LOCATION:	550 Old Country Road, northeast corner of parking lot
DATUM:	Land Surface
LOGGED BY:	J. Hilton, C. Goldsmith

Total depth of Profile: 491.70 ft
Total depth of boring: 480 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
300	SAND (fine) with little-some Silt; brown	SM		
310				
320				
330				
340				
350	SAND (fine-medium) with little-some Silt, trace interbedded Clay <.5'; light brown to white.	SM		Profiler refusal at 353' bgs, pulled rods and advanced casing from 312' bgs to 365'
360	SAND (fine-coarse) with little-some Silt, trace Clay; light brown to white.	SM		
370	SAND (fine-coarse) with little-some Silt and dense angular Sand interbeds, trace Clay lenses <.5' thick; light brown to white.	SM		Profiler refusal at 370' bgs, pulled rods and advanced casing from 365' bgs to 375'
380				
390				

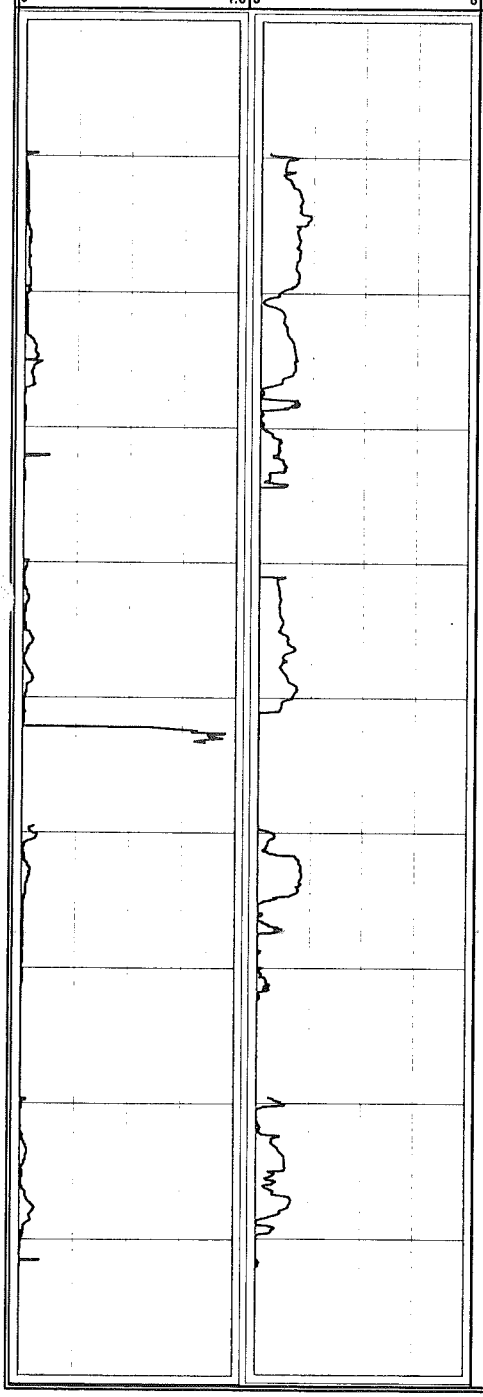
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-104

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	SGS
DRILLING METHOD:	Mud Rotary
DRILLER:	Larry Lynch
HELPER:	Tom Lynch
START DATE:	February 28, 2007
END DATE:	March 21, 2007
LOCATION:	550 Old Country Road, northeast corner of parking lot
DATUM:	Land Surface
LOGGED BY:	J. Hilton, C. Goldsmith

Total depth of Profile: 491.70 ft
Total depth of boring: 480 ft

GEOLOGIC INFORMATION

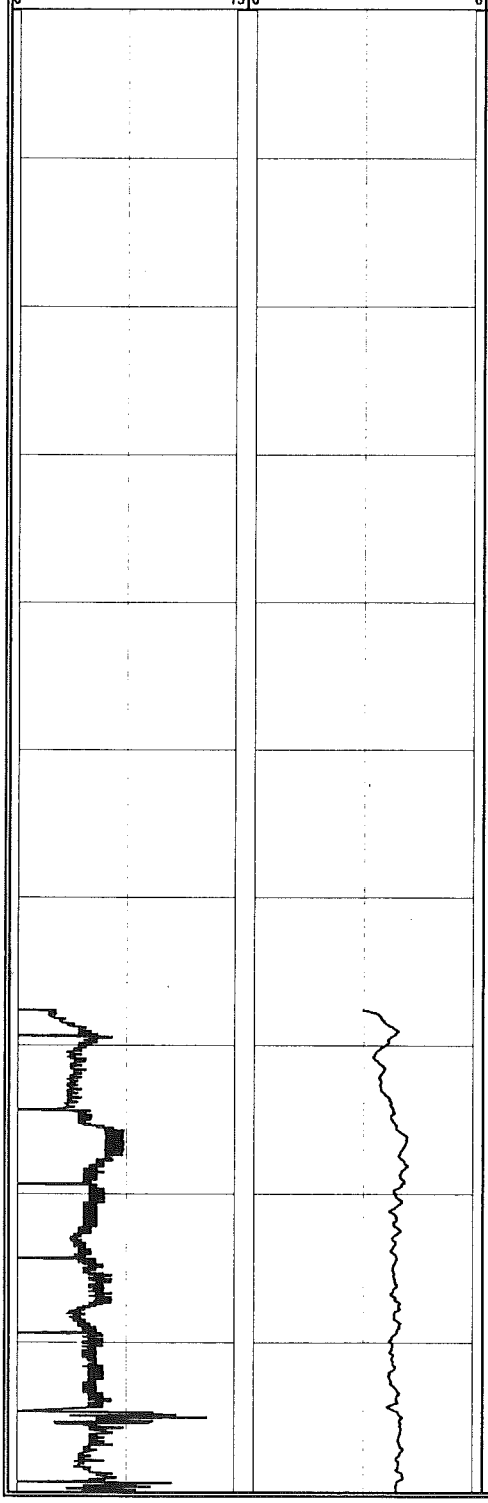


Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
400				Profiler refusal at 400' bgs, pulled rods and advanced casing from 375' bgs to 410'
410	CLAY with interbedded carbonaceous lenses <0.5' thick; dark gray.	CL		
420				
430	SAND (fine-medium) and SILT, trace Clay interbeds <0.5' thick; light brown to white.	SM		Profiler malfunction at 435' bgs, pulled rods and advanced casing from 410' bgs to 440'
440	SAND (fine-medium), trace Clay; light brown to white.	SW		
450	SAND (fine-medium) and SILT, with dense stiff interbedded Clay at approx. 453-455; light brown to white.	SW-SM		Profiler refusal at 453' bgs, pulled rods and advanced casing from 440' bgs to 460'
460	SAND (fine), trace Clay; gray to white.	SP		
470	SAND (fine-medium) and SILT, trace interbedded gray-white Clay esp.at 472-473'; gray to white.	SW-SM		Profiler refusal at 472' bgs, pulled rods and advanced casing from 460' bgs to 480'
480				End of mud logging at 480.0 ft
490				End of profile at 491.70 ft
				Profiler refusal at 492' bgs, pulled rods and casing to abandon borehole P-104

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-107**

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 16, 2005
JOB NUMBER:	4563001	END DATE:	May 26, 2005
DRILLING FIRM:	CT&E	LOCATION:	GTEOSI Property East of Building 100
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Jim Lewis	HYDROGEOLOGIST:	Collen Sullivan / John Hilton
HELPER:	Larry Lynch		
Total depth of Profile:	395.5 ft	Total depth of Boring:	350 ft



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Site Backfill			Hollow stem augers used to drill from 0 to 14 ft. Begin mud rotary at 14 ft
40	Poorly graded SAND (medium) with some gravel (fine, subrounded); light brown	SP		
50	Poorly graded SAND (medium to coarse) with some gravel (fine, subrounded); light brown to tan	SP		
60	Poorly graded SAND (medium) with trace gravel (fine, subrounded); tan	SP		
70	Well graded SAND with some gravel (fine, subrounded) trace gravel (medium, rounded); tan	SW		Begin profiling at 74.30'
90	Poorly graded SAND (medium to coarse) with some gravel (fine, subrounded); tan	SP		

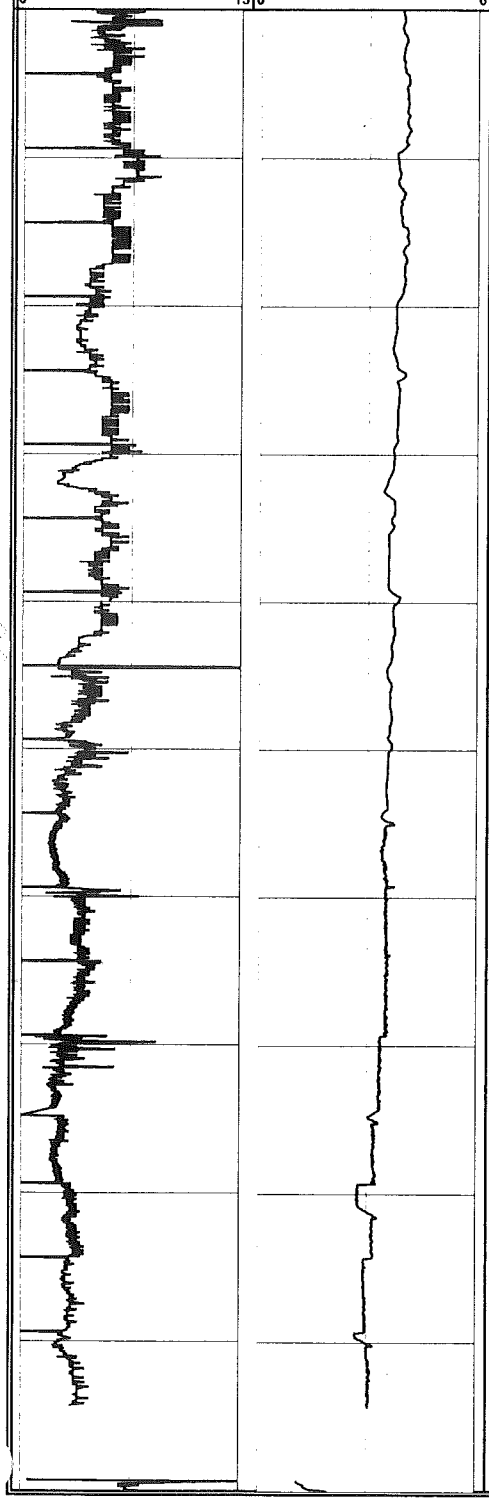
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-107

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 16, 2005
JOB NUMBER:	4563001	END DATE:	May 26, 2005
DRILLING FIRM:	CT&E	LOCATION:	GTEOSI Property East of Building 100
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Jim Lewis	HYDROGEOLOGIST:	Collen Sullivan / John Hilton
HELPER:	Larry Lynch		

Total depth of Profile: 395.5 ft
Total depth of Boring: 350 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100				
110	Poorly graded SAND (medium to coarse) and GRAVEL (fine to medium, subrounded)	SP - GP		
120				
130	Poorly graded SAND (medium to coarse) with some gravel (fine to medium, subrounded); tan to white pink	SP		
140				
150	Poorly graded SAND (medium to coarse) and GRAVEL (fine to medium, subrounded); white pink. Trace Fe stained gravel	SP - GP		
160				
170	Poorly graded SAND (medium) with some gravel (fine to medium, subrounded); tan to white yellow	SP		
180				
190	Poorly graded SAND (medium to coarse) with little gravel (fine, subrounded); tan to white yellow	SP		Pulled profiling equipment at 194.30'. No penetration rate or IK data from 194.30 to 199.25 ft due to drilling operations.

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

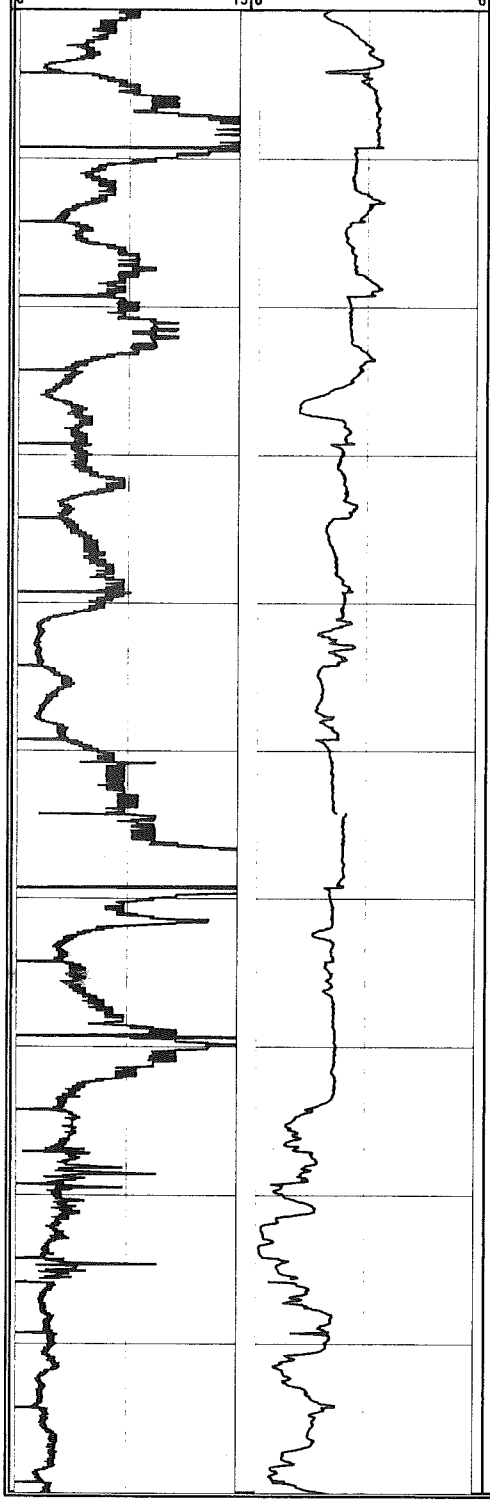
Boring ID:
P-107

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Jim Lewis
HELPER:	Larry Lynch

START DATE: May 16, 2005
END DATE: May 26, 2005
LOCATION: GTEOSI Property East of Building 100
DATUM: Land Surface
HYDROGEOLOGIST: Collen Sullivan / John Hilton

Total depth of Profile: 395.5 ft
Total depth of Boring: 350 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	Poorly graded SAND (medium to coarse) with trace gravel (fine); light gray to white	SP		
210	Poorly graded SAND (medium to coarse) with some gravel (fine, subrounded); light tan to gray	SP		
220				
	Poorly graded SAND (medium to coarse); light gray to white	SP		
230	Poorly graded SAND (coarse) with little gravel (fine); tan to brown	SP		
240	Poorly graded SAND (medium to coarse); red to brown	SP		
250	Well graded SAND and GRAVEL (fine, subrounded); red to brown	SW - GP		
	Well graded SAND and GRAVEL (fine); light tan to brown	SW - GP		
260				Lost circulation of drilling fluids from 260' - 275'. No recovery of cuttings
270				
	Poorly graded SAND (fine) with trace to little silt; gray to white	SP - SM		
280				
	Poorly graded SAND (fine) and SILT with trace clay; gray white to white	SM		
290				

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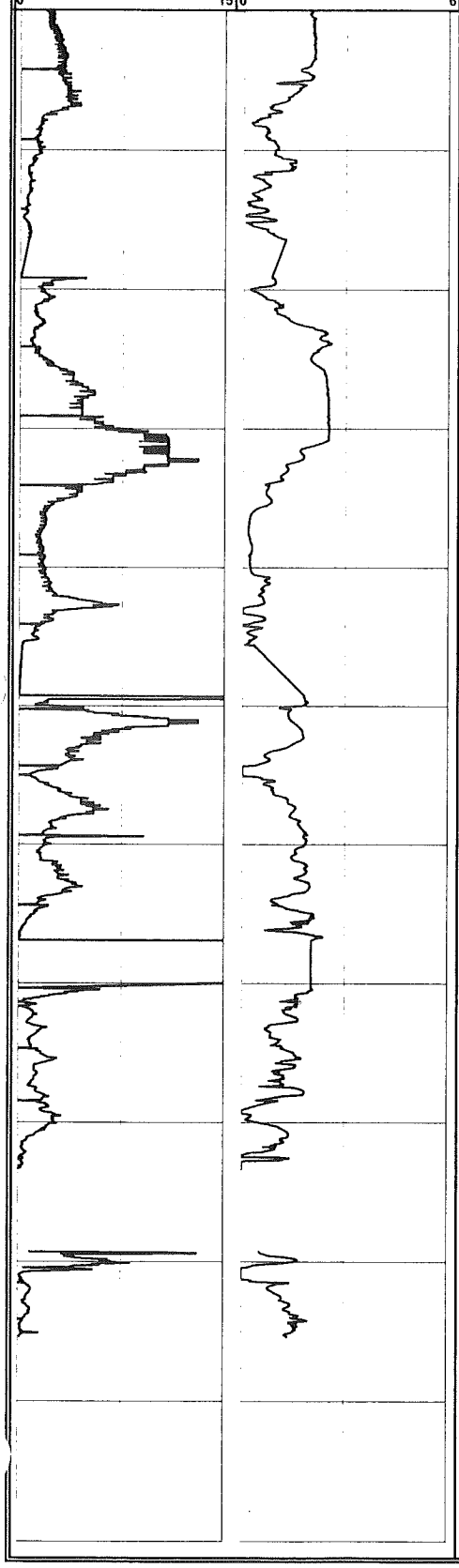
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-107

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 16, 2005
JOB NUMBER:	4563001	END DATE:	May 26, 2005
DRILLING FIRM:	CT&E	LOCATION:	GTEOSI Property East of Building 100
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Jim Lewis	HYDROGEOLOGIST:	Collen Sullivan / John Hilton
HELPER:	Larry Lynch		

Total depth of Profile: 395.5 ft
Total depth of Boring: 350 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300				
310	Well graded SAND and SILT; gray brown to white	SM		Pulled profiling equipment at 316.4. Now penetration rate or IK data from 316.4 to 319.15 due to drilling operations
320	No return: likely silt and fine sand with occasional clay lenses based on drilling characteristics.			
330				
340				Profiler refusal at 345 ft. No penetration rate or IK data from 345 to 349.2 ft due to drilling activities.
350				
360				Profiler refusal at 367.7 ft. No penetration rate or IK data from 367.7 to 369.7 due to drilling activities.
370				
380				Profiler refusal at 383.3 ft. No penetration rate or IK data from 383.3 to 389.3 due to drilling activities
390				Profiler refusal at 395.5. End of profile.
400				
410				

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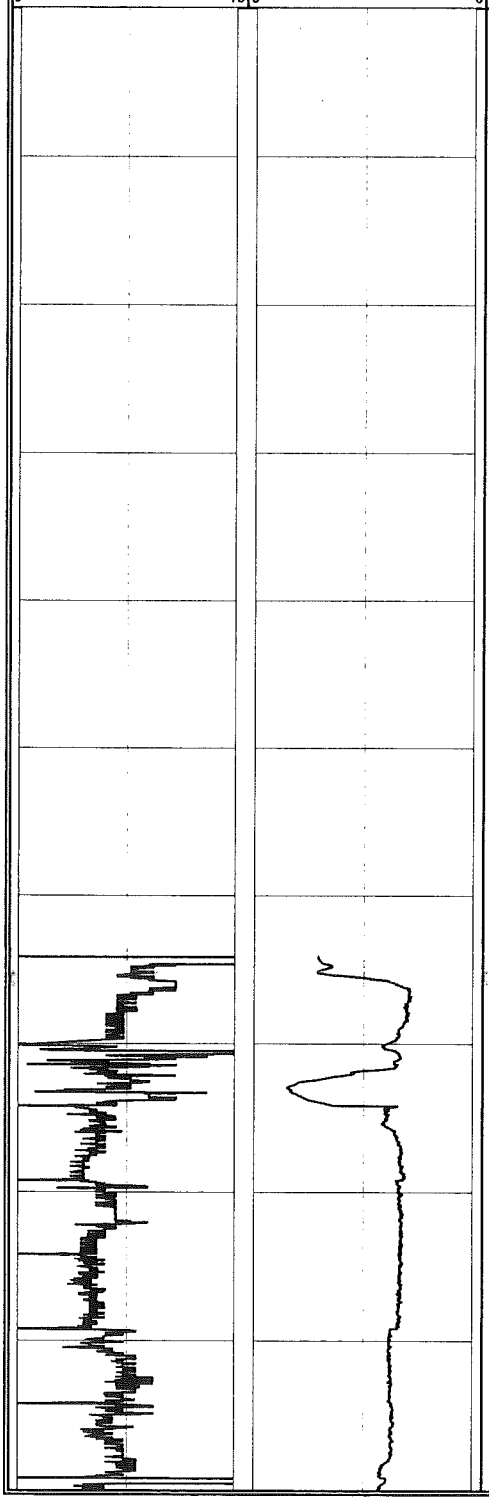
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-108

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	April 29, 2005
JOB NUMBER:	4563001	END DATE:	May 13, 2005
DRILLING FIRM:	CT&E	LOCATION:	GTEOSI Property East of Building 100
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Jim Lewis	HYDROGEOLOGIST:	Collen Sullivan
HELPER:	Larry Carlin		

Total depth of Profile: 394.3 ft
Total depth of Boring: 380 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
0	Site Backfill			Hollow stem augers used to drill from 0 to 14 ft. Begin mud rotary at 14 ft
10				
20	Poorly graded GRAVEL (fine, subrounded) and well graded SAND; light brown	GP - SW		
30				
40	Poorly graded SAND (fine to medium) with some gravel (fine, subrounded); light brown to brown	SP		
50	Poorly graded SAND (fine to medium) and clayey SILT; light brown to yellow	SM		
	Poorly graded SAND (fine to medium) and GRAVEL (fine, subrounded; light brown, yellowish	SP - GP		
60	Poorly graded SAND (fine to medium) with trace gravel (fine); light brown	SP		
	Poorly graded SAND (fine to medium) with trace silt; light brown to dark gray	SP		Begin profiling at 74.15'
70				
80	Poorly graded SAND (fine to medium) with trace gravel (fine, subrounded); light brown	SP		
90				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

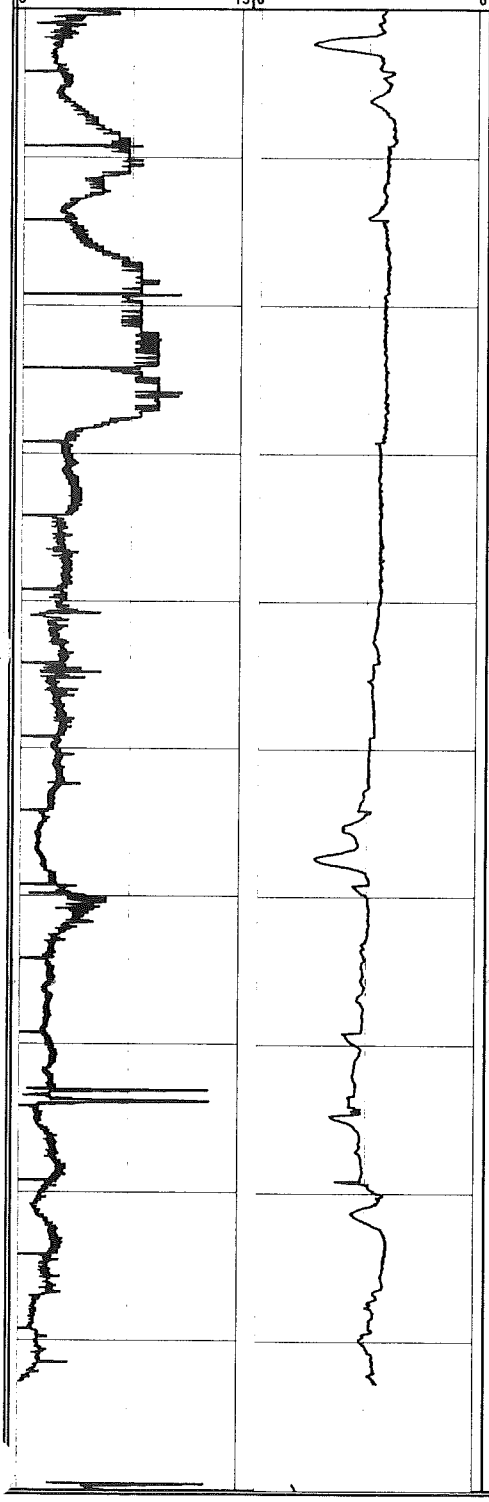
Boring ID:
P-108

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	CT&E
DRILLING METHOD:	Mud Rotary
DRILLER:	Jim Lewis
HELPER:	Larry Carlin

START DATE: April 29, 2005
END DATE: May 13, 2005
LOCATION: GTEOSI Property East of Building 100
DATUM: Land Surface
HYDROGEOLOGIST: Collen Sullivan

Total depth of Profile: 394.3 ft
Total depth of Boring: 380 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
100	Poorly graded SAND (medium) with trace gravel (fine, subrounded); light brown	SP		
110				
120	Poorly graded SAND (medium to coarse) with trace gravel (fine, subrounded); trace fine sand at 135-140'; light brown to brown	SP		
130				
140	Poorly graded SAND (medium) with trace gravel (fine, subrounded) and trace coarse sand; light brown to brown	SP		
150	Well graded SAND with little gravel (fine, subangular); trace fine sand at 165-170'; light brown	SP		
160				
170	Poorly graded SAND (medium) with trace gravel (fine, subrounded); light brown	SP		
180				
190	Poorly graded SAND (medium to coarse) with little gravel (fine, subrounded); light brown	SP		Profiler refusal at 192.8 ft. No penetration rate or IK data from 192.9 to 200 ft due to drilling activities

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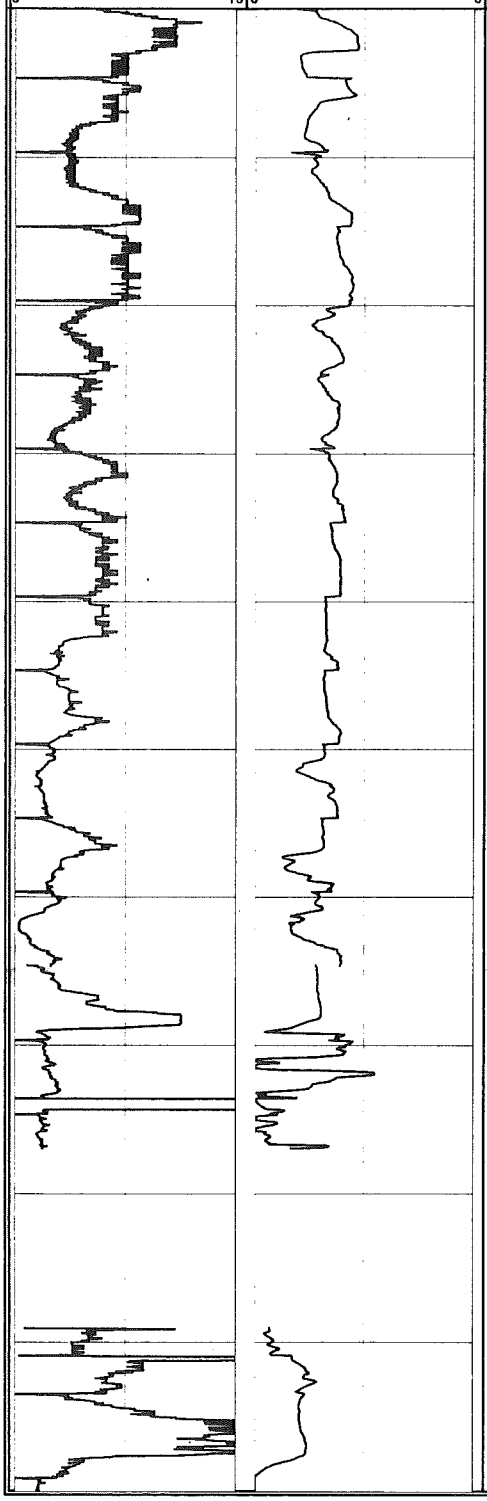
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-108**

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	April 29, 2005
JOB NUMBER:	4563001	END DATE:	May 13, 2005
DRILLING FIRM:	CT&E	LOCATION:	GTEOSI Property East of Building 100
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Jim Lewis	HYDROGEOLOGIST:	Collen Sullivan
HELPER:	Larry Carlin		

Total depth of Profile: 394.3 ft — Total depth of Boring: 380 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
200	Poorly graded SAND (medium to coarse) with some gravel (fine, subrounded); white-orange to tan	SP		
210				
220	Poorly graded SAND (medium to coarse) with trace gravel (fine, subrounded); tan to light brown	SP		
230				
240				
250	Poorly graded SAND (medium to coarse) with trace gravel (fine, subrounded) and trace fine sand; pink	SP		
260	Poorly graded SAND (medium) and Fe stained GRAVEL (fine, subrounded) with trace clayey silt; orange-light brown to pink	SP - GP		
	Silty CLAY, thin layers interbedded with poorly graded SAND (medium) and GRAVEL (fine, subrounded); white-dark gray to tan	CL - SP		
270	Poorly graded SAND (fine-medium), with little very fine sand and silt, trace gravel (fine); tan to gray	SP - SM		Pulled profiling equipment at 276.95 ft. No penetration rate or IK data from 276.95 to 289 ft due to drilling activities.
280	Poorly graded SAND (fine) with little silt; gray	SP - SM		
290	Little recovery; Likely poorly graded GRAVEL (medium to coarse)	GP		290-300' Poor recovery. Significant loss of drilling fluid.
	Dense CLAY; brown black	CL		

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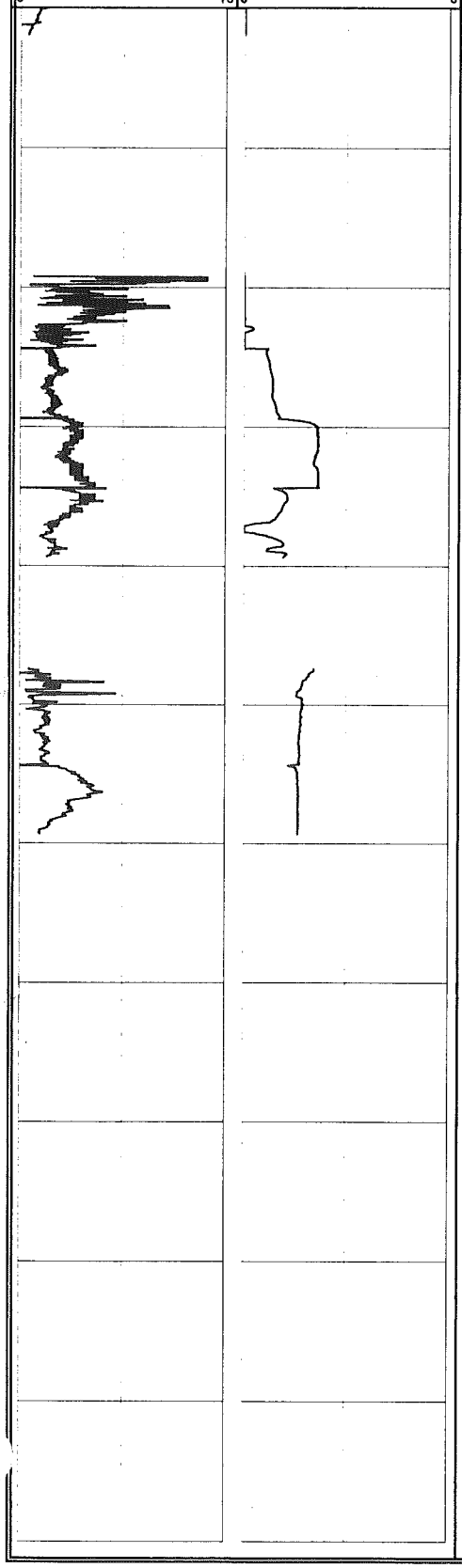
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-108

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	April 29, 2005
JOB NUMBER:	4563001	END DATE:	May 13, 2005
DRILLING FIRM:	CT&E	LOCATION:	GTEOSI Property East of Building 100
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Jim Lewis	HYDROGEOLOGIST:	Collen Sullivan
HELPER:	Larry Carlin		

Total depth of Profile: 394.3 ft
Total depth of Boring: 380 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	USCS Description	USCS Symbol	Stratigraphic Column	REMARKS
300				Profiler refusal at 301.9 ft. No penetration rate or IK data from 301.9 to to 319.15 ft due to drilling activities
310	Poorly graded SAND (fine) with soft interbeds of clay, traces of lignite; gray.	SP -SC		Clay layers noted at 311' and 313'
	Poorly graded SAND (fine) with trace mica; gray	SP		
320	Poorly graded SAND (fine) with trace silty clay; gray to white	SP		Invaid IK data from 319.15 to 324.35 due to air in line or plugged Kpro.
330	Poorly graded SAND (fine to medium) with trace coarse sand; gray to white	SP		
340	No recovery. Likely silty SAND based on drilling characteristics	SM		No IK or penatration rate data from 339.35 to 347.65 due to problems with lines and controls.
350				
360				Pulled profiling equipment at 359.30. No IK or penatration rate data from 359.30 to 379.20 ft due to drilling activities.
	No recovery. Likely same as above	SM		Little circulation, poor recovery
370				
380				
390				Pulled profiling equipment at 394.30 ft. End of profile.
400				
410				

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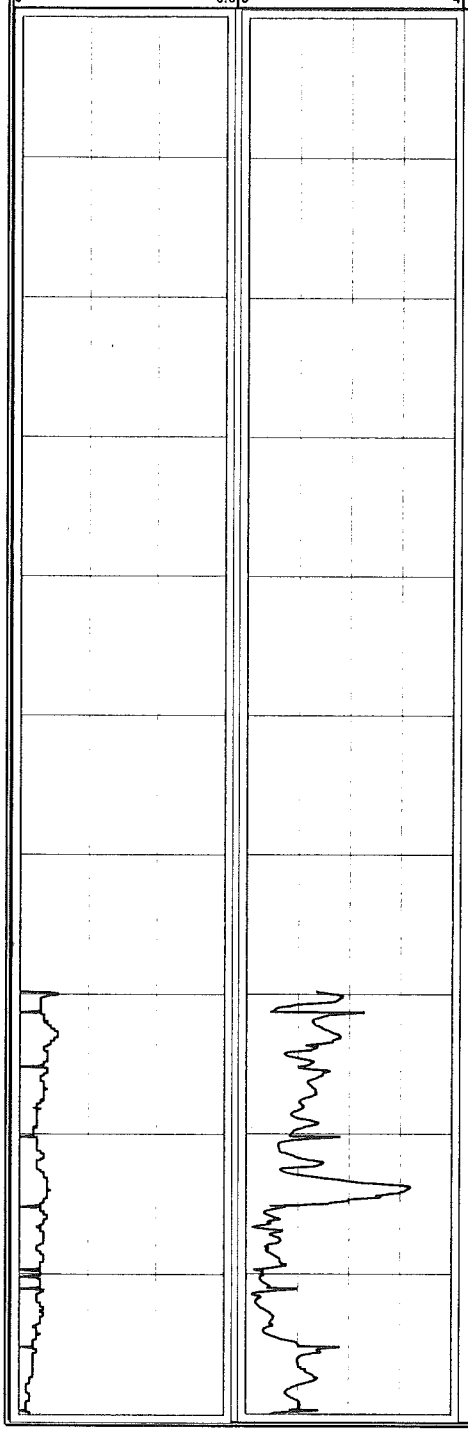
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-110

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	SGS
DRILLING METHOD:	Mud Rotary
DRILLER:	Tom Lynch
HELPER:	Julio Cancel
START DATE:	June 13, 2007
END DATE:	July 3, 2007
LOCATION:	West of Levittown park and Acre Lane.
DATUM:	Land Surface
LOGGED BY:	J. Hilton

Total depth of Profile: 513.35 ft.
Total depth of boring: 510 ft.

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
0	SAND (fine-coarse) w/ little sub-rounded white quartz Gravel (fine-coarse) to 2" dia.; light-moderate gray-brown.	SW		Hollow stem augers advanced from 0 to 20 ft bgs
10	SAND (fine to medium) w/ little-some fine-crs sub-rnd Gravel 1/4-1/2"dia.; light tan-brown,	SW		
20	SAND (medium-coarse); light brown.	SW		Begin mud rotary drilling at 20 ft
30				
40				
50				
60	SAND (fine-medium); light tan-brown.	SW		
70	SAND (fine) with trace interbedded white Silt; light. tan-pink.	SP		Begin profiling at 69.75 ft
80	SAND (fine) with red-brown Silt , trace Clay; light gray-brown.	SM		
90	SAND (fine-med) with trace Silt; light tan, micaceous.	SW		

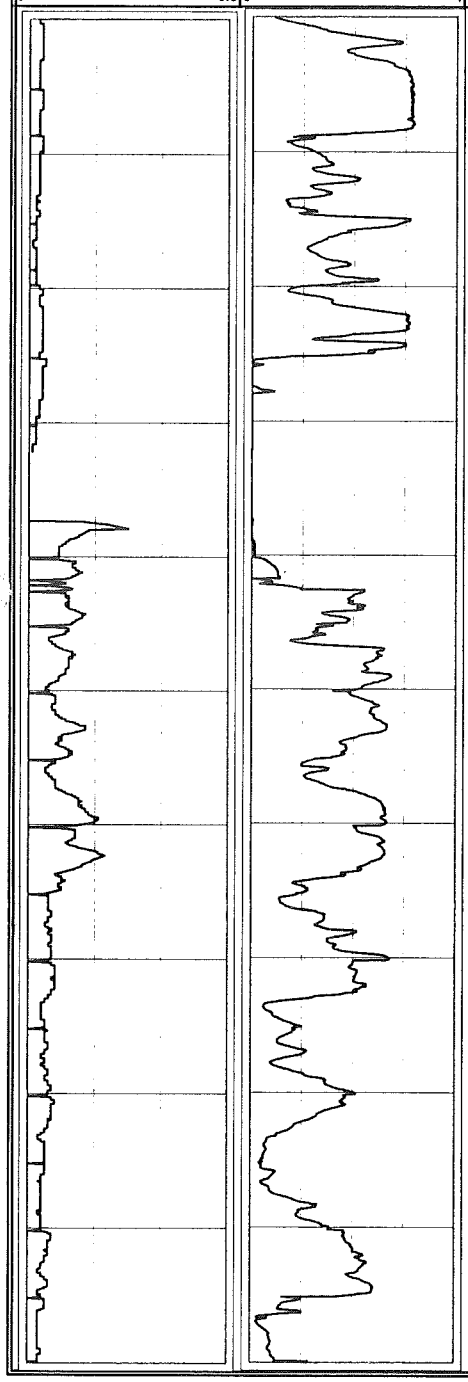
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-110

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	June 13, 2007
JOB NUMBER:	4563001	END DATE:	July 3, 2007
DRILLING FIRM:	SGS	LOCATION:	West of Levittown park and Acre Lane.
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Tom Lynch	LOGGED BY:	J. Hilton
HELPER:	Julio Cancel		

Total depth of Profile: 513.35 ft.
Total depth of boring: 510 ft.

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
100–120				Profiler refusal at 132' bgs, pulled rods and advanced casing from 70' bgs to 140'. Start Profiler at 137.25.
120–130	SILT and CLAY, dark gray-black, carbonaceous, with interbedded lignite <0.5' thick	ML-CL		
130–150	SAND (fine); light gray-white, micaceous.	SP		
150–190	SAND (fine) w/ trace-little Silt; light tan, micaceous.	SM		

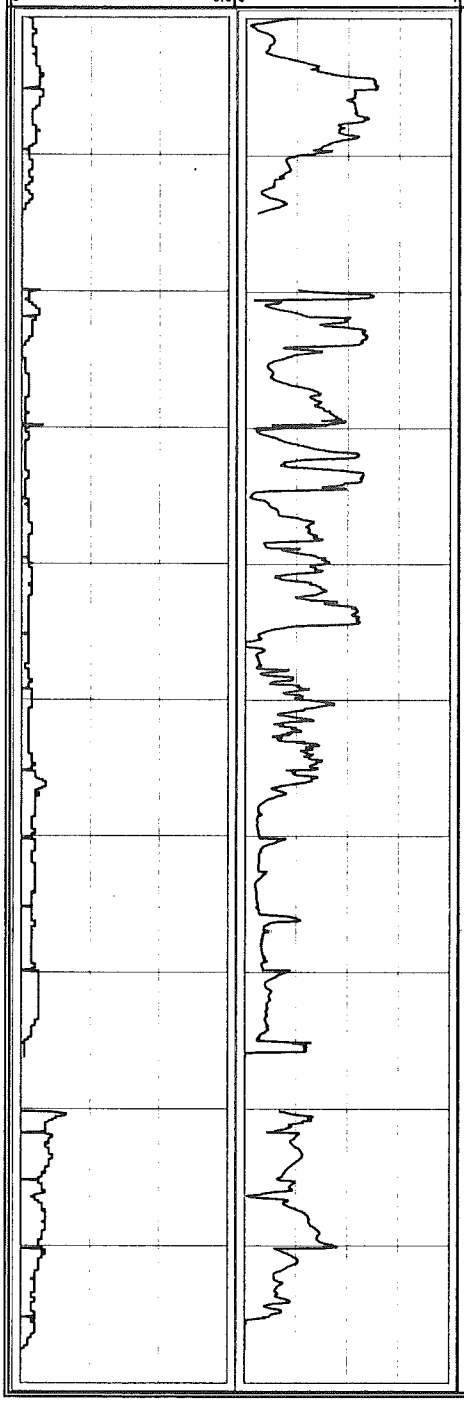
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-110

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	June 13, 2007
JOB NUMBER:	4563001	END DATE:	July 3, 2007
DRILLING FIRM:	SGS	LOCATION:	West of Levittown park and Acre Lane.
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Tom Lynch	LOGGED BY:	J. Hilton
HELPER:	Julio Cancel		

Total depth of Profile: 513.35 ft.
Total depth of boring: 510 ft.

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
				Profiler tripped out at 215' bgs, pulled rods and advanced casing from 140' bgs to 220'
260	SAND (fine) with little-some Silt, trace Clay; light gray-white, micaceous.	SM		
				Profiler refusal at 276.2' bgs, pulled rods and advanced casing from 220' bgs to 280'
280	SAND (fine) with interbedded Silt lenses, trace Clay; light gray-white.	SP		
290	SAND, gray-white with little to some interbedded white Silt.	SM		

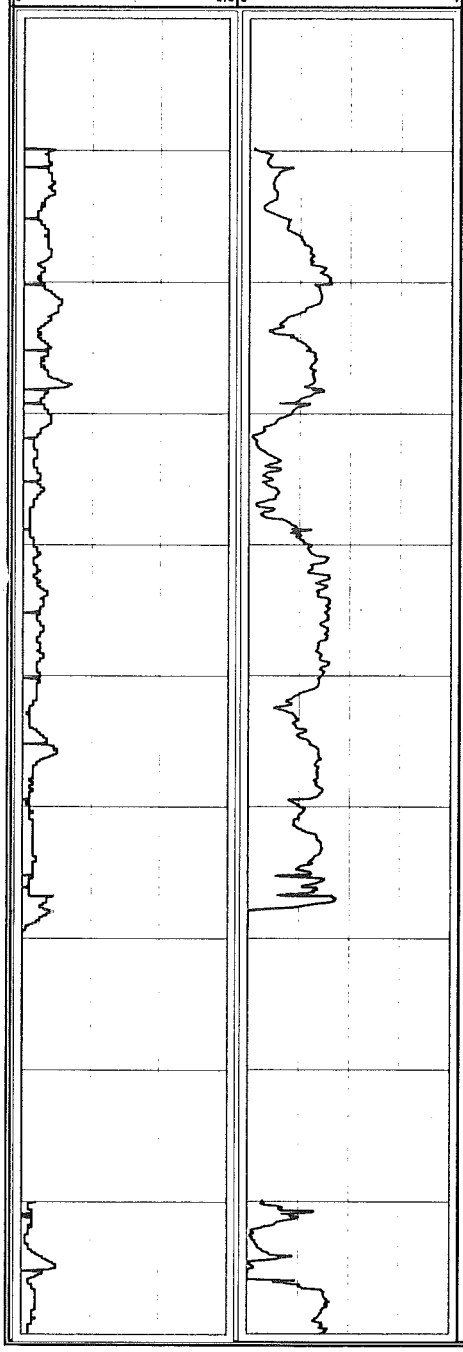
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-110

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	June 13, 2007
JOB NUMBER:	4563001	END DATE:	July 3, 2007
DRILLING FIRM:	SGS	LOCATION:	West of Levittown park and Acre Lane.
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Tom Lynch	LOGGED BY:	J. Hilton
HELPER:	Julio Cancel		

Total depth of Profile: 513.35 ft.
Total depth of boring: 510 ft.

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
300	SILT, white with little fine Sand, micaceous.	ML		Profiler refusal at 297.5' bgs, pulled rods and advanced casing from 280' bgs to 310'
310	SAND (fine); light gray-white.	SP		
320				
330	SAND (fine) with trace Silt; light gray-white to dark gray.	SP		
340	SAND (medium); gray-white.	SP		
350	SAND (fine-medium); light brown-white.	SW		
360				
370	CLAY and SILT, dark gray, trace carbonaceous interbeds grading to white interbedded Silt at approx. 382'	CL-ML		Profiler refusal at 369.5' bgs, pulled rods and advanced casing from 310' bgs to 390'
380				
	SAND (fine-medium); light tan-white.	SW		
390	SAND (fine-medium) with Silt, trace Clay; light tan-white.	SM		

Boring ID:

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

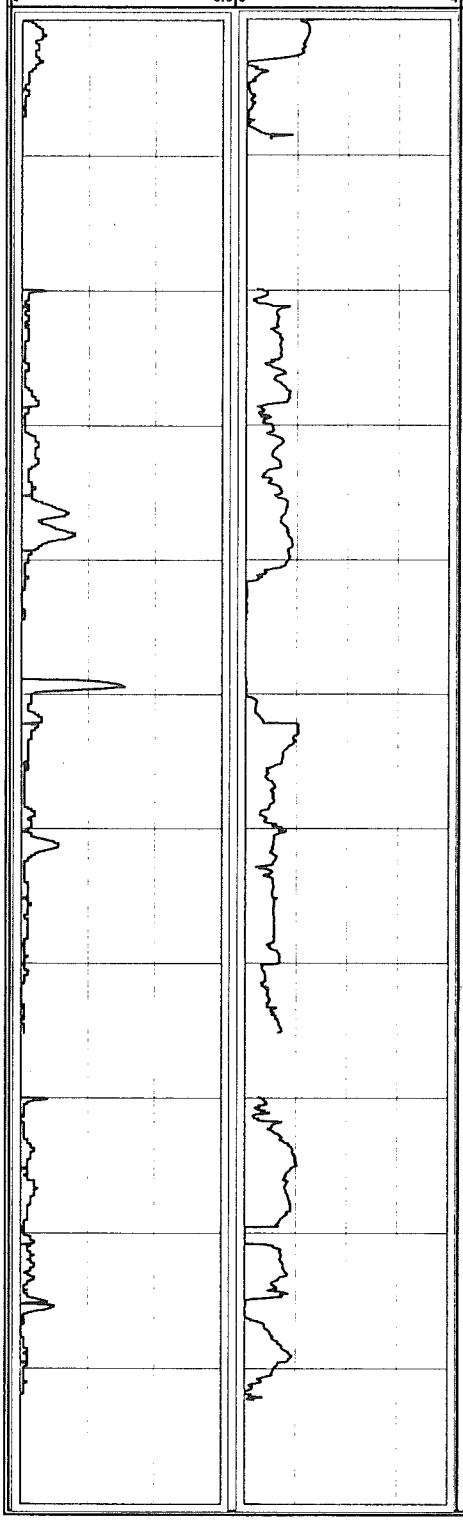
P-110

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	June 13, 2007
JOB NUMBER:	4563001	END DATE:	July 3, 2007
DRILLING FIRM:	SGS	LOCATION:	West of Levittown park and Acre Lane.
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Tom Lynch	LOGGED BY:	J. Hilton
HELPER:	Julio Cancel		

Total depth of Profile: 513.35 ft.

Total depth of boring: 510 ft.

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
400	SAND (medium) with trace Silt; light brown, angular.	SP		
410	CLAY dark gray, with interbedded carbonaceous lenses <0.5' thick.			Profiler refusal at 408.8' bgs, pulled rods and advanced casing from 390' bgs to 420'
420	SAND (fine-medium); light brown, angular.	SW		
430	SAND (medium) with interbedded Silt; white, angular.	SP		
440	SILT with little some Clay, grading to Sand (fine) at approximately 448' bgs; white.	ML		Profiler refusal at 444.5' bgs, pulled r and advanced casing from 420' bgs 450'
450	SAND (fine-medium) with trace-little Silt; light gray-white.	SW		
460				
470	SAND (fine-coarse) with trace-little Silt; white.	SW		Profiler advancement made difficult due to angular sand, advanced casing from 450' bgs to 480'
480	SAND (fine-coarse) with trace-little Silt; white .	SW		
490				
500	SAND (fine-medium) with little Silt; white	SW		Profiler refusal at 502.3' bgs, pulled rods and advanced casing from 480' bgs to 510'
				End of mud logging at 510 ft
				End of profile at 513.35 ft

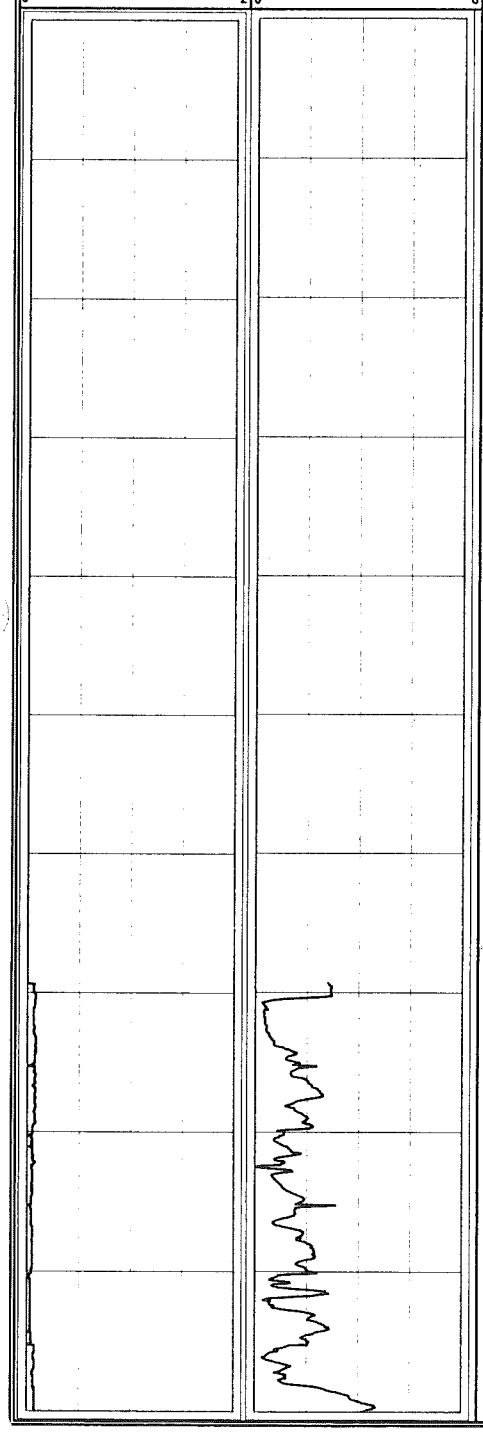
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-112

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 7, 2007
JOB NUMBER:	4563001	END DATE:	May 20, 2007
DRILLING FIRM:	SGS	LOCATION:	Stop and Shop parking lot North of Old Country Road
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Tom Lynch	LOGGED BY:	J. Hilton
HELPER:	Julio Cancel		

Total depth of Profile: 443 ft.
Total depth of boring: 425 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
0	SAND (fine-medium) with trace-little quartz Gravel (fine-coarse) to 2" diameter., moderate brown to white, sub-rounded.	SW		Asphalt 0.0-0.5, Hollow stem augers advanced from 0 to 20 ft bgs
10				
20	SAND (medium-coarse) with little-some Gravel (fine); light brown, sub-round.	SW		Begin mud rotary drilling at 20 ft
30				
40				
50	SAND (fine-medium) and GRAVEL (fine) with sub-roundnd Gravel to 1/4 -1/2" dia.; light brown.	SW		
60	SAND and GRAVEL; same as above with moderate brown silt interbeds 1-2' thick.	SW		
70	SAND (fine-medium) with interbedded silt < 1' thick; moderate Brown-gray to light gray, micaceous.	SW		Begin profiling at 69.25 ft
80				
90	SAND (fine-medium) and SILT, with interbedded oxidized silt <1' thick, trace Clay; gray-brown;	SM		

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

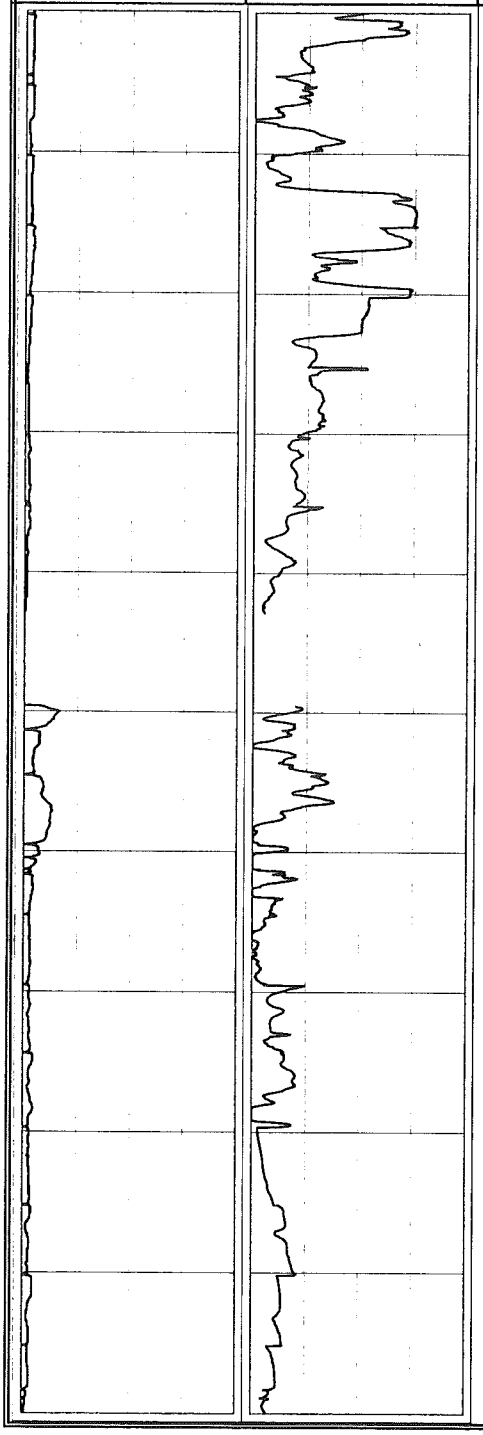
Boring ID:
P-112

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	SGS
DRILLING METHOD:	Mud Rotary
DRILLER:	Tom Lynch
HELPER:	Julio Cancel

START DATE: May 7, 2007
END DATE: May 20, 2007
LOCATION: Stop and Shop parking lot North of Old Country Road
DATUM: Land Surface
LOGGED BY: J. Hilton

Total depth of Profile: 443 ft.
Total depth of boring: 425 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
100				
110				
120	SAND (fine); light brown.	SP		
130	SAND (fine) and SILT, trace Clay with in Silt matrix; light gray-brown.	SM		Profiler refusal at 143' bgs, pulled rods and advanced casing from 70' bgs to 150'
140				
150				
160	SILT, with some Sand (fine); gray-brown.	ML		
170				
180				
190				

Boring ID:

MALCOLM PIRNIE, INC.

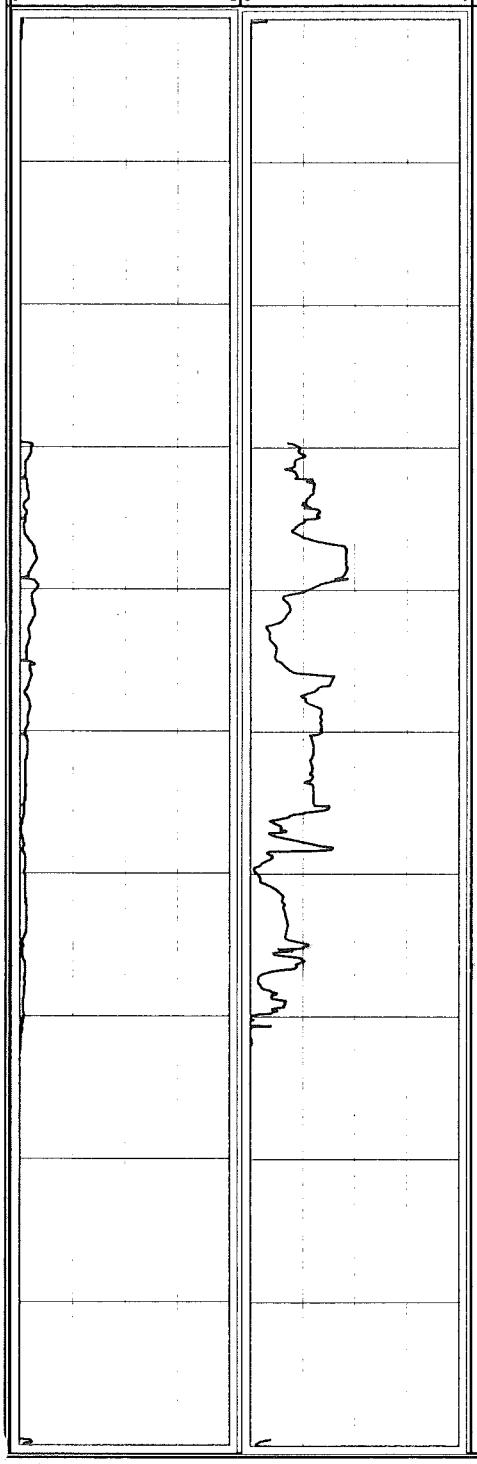
P-112

17-17 Route 208 North Fair Lawn, NJ 07401

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 7, 2007
JOB NUMBER:	4563001	END DATE:	May 20, 2007
DRILLING FIRM:	SGS	LOCATION:	Stop and Shop parking lot North of Old Country Road
DRILLING METHOD:	Mud Rotary		
DRILLER:	Tom Lynch	DATUM:	Land Surface
HELPER:	Julio Cancel	LOGGED BY:	J. Hilton

Total depth of Profile: 443 ft. Total depth of boring: 425 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
200	SILT and SAND (fine); brown.	ML-SM		Profiler refusal at 201' bgs, pulled rods and advanced casing from 150' bgs to 210'
210				
220	SILT and SAND (fine-medium) trace Clay; brown.	ML-SM		
230				
240	SAND (fine-medium) with some Gravel; tan-brown.	SW		
250	SAND (fine-medium) and SILT, with trace Gravel; tan-brown.	SM		
260	SAND (fine-medium) with some Silt; tan-brown.	SM		
270	CLAY, gray-white gradational to dark gray with interbedded lignite and carbonaceous Clay 290 - 300'.	CL		Profiler refusal at 272' bgs, pulled rods and advanced casing from 230' bgs to 300'
280				
290				

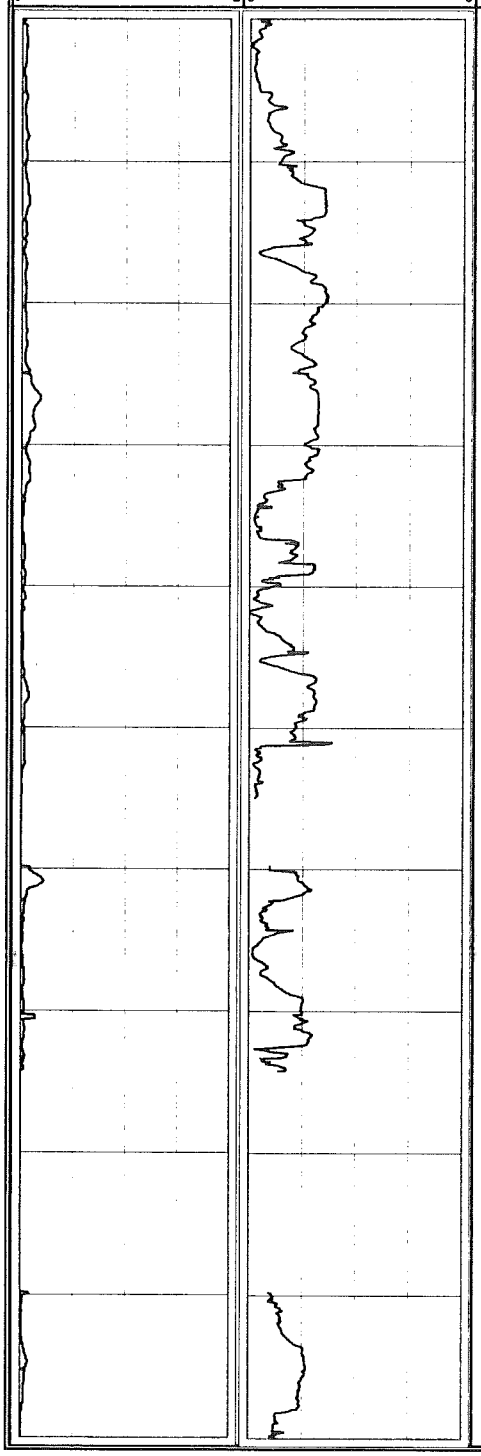
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-112

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 7, 2007
JOB NUMBER:	4563001	END DATE:	May 20, 2007
DRILLING FIRM:	SGS	LOCATION:	Stop and Shop parking lot North of Old Country Road
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Tom Lynch	LOGGED BY:	J. Hilton
HELPER:	Julio Cancel		

Total depth of Profile: 443 ft.
Total depth of boring: 425 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
300	SILT and SAND (fine) with trace carbonaceous Clay; moderate-dark gray.	ML-SM		
310	SAND (fine-medium) with trace-little gray-brown Silt; gray-white.	SW		
320	SAND (fine) with tan-brown interbedded Silt; gray-white.	SP		
330				
340				
350	SILT, with stratified fine Sand and Clay; lt. gray-white.	ML		Profiler refusal at 355' bgs, pulled rods and advanced casing from 300' bgs to 360'
360	SAND (fine) with interbedded Silt; lt. gray-white.	SP		
370				
380	SILT, with interbedded Clay lenses <1' thick; white-gray,stiff, dense.	ML-CL		Profiler reed valve malfunction at 374.2, pulled rods and advanced casing from 360' bgs to 390'
	SAND (fine) with Silt; tan-gray.	SM		
390	SAND (medium-coarse) w/ trace yellow-brwn Silt; white-gray, angular.	SW		

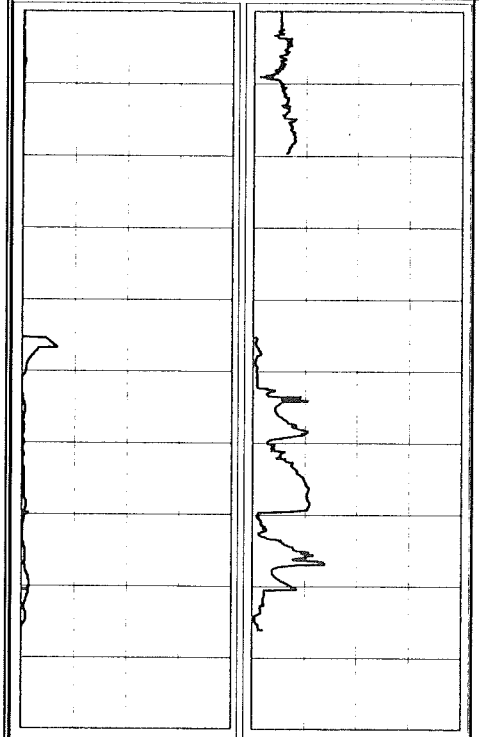
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-112

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 7, 2007
JOB NUMBER:	4563001	END DATE:	May 20, 2007
DRILLING FIRM:	SGS	LOCATION:	Stop and Shop parking lot North of Old Country Road
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Tom Lynch	LOGGED BY:	J. Hilton
HELPER:	Julio Cancel		

Total depth of Profile: 443 ft.
Total depth of boring: 425 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
400				
410	CLAY and SILT, with interbedded Silt and Sand (fine); dark gray-black, carbonaceous,soft.	CL-ML		Profiler advancement difficult at 410- 420' interval, pulled rods and advanced casing from 390' bgs to 425'
420				
430				End of mud logging at 425 ft
440				Profiler refusal at 443' bgs, pulled rods and terminated borehole advancement
450				End of profile at 443 ft
460				
470				
480				
490				

Stratl ogs 1-08.xls

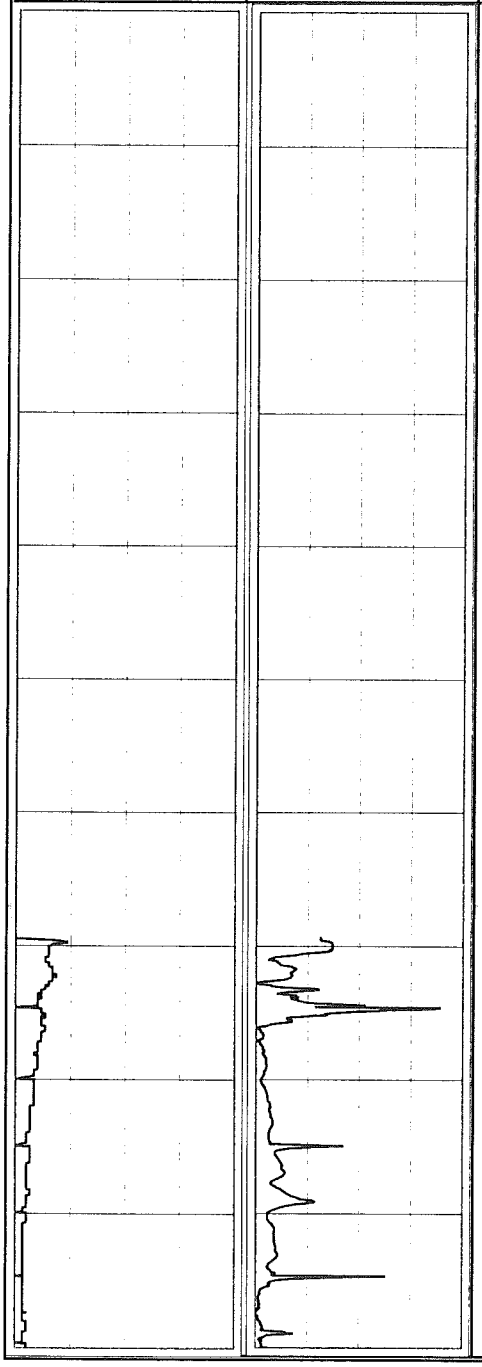
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-113

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 29, 2007
JOB NUMBER:	4563001	END DATE:	June 7, 2007
DRILLING FIRM:	SGS	LOCATION:	Southwest corner of intersection of Levittown Pkwy and Old Country Road.
DRILLING METHOD:	Mud Rotary		
DRILLER:	Tom Lynch	DATUM:	Land Surface
HELPER:	Julio Cancel	LOGGED BY:	J. Hilton

Total depth of Profile: 389.9 ft.
Total depth of boring:

GEOLOGIC INFORMATION



Depth (ft bgs)	Description		Stratigraphic Column	REMARKS
0	SAND (medium-coarse) and GRAVEL; brown, sub-rounded, white quartz Gravel to 1" diameter.	SW		Hollow stem augers advanced from 0 to 20 ft bgs
10				
20	GRAVEL (fine) with some Sand (fine-medium); brown, sub-round.	GP		Begin mud rotary drilling at 20 ft
30	SAND (medium-coarse) and GRAVEL (fine); light brown, sub-round Gravel 1/4-1/2"diameter.	SW-GP		
40				
50	SAND (medium-coarse) with little-some Gravel (Fine); gray-brown, sub-round.	SW		
60	SAND (fine-medium) with little Gravel (fine); gray-brown, sub-round.	SW		
	SAND (fine-medium) and SILT; light tan-brown.	SM		
70	SAND (fine) and SILT; light tan-gray.	SM		Begin profiling at 69.35 ft
80	SILT with little fine interbedded Sand < 1' thick; light brown.	ML		
90	SILT and SAND (fine) with trace white Clay; light gray-brown.	SM		

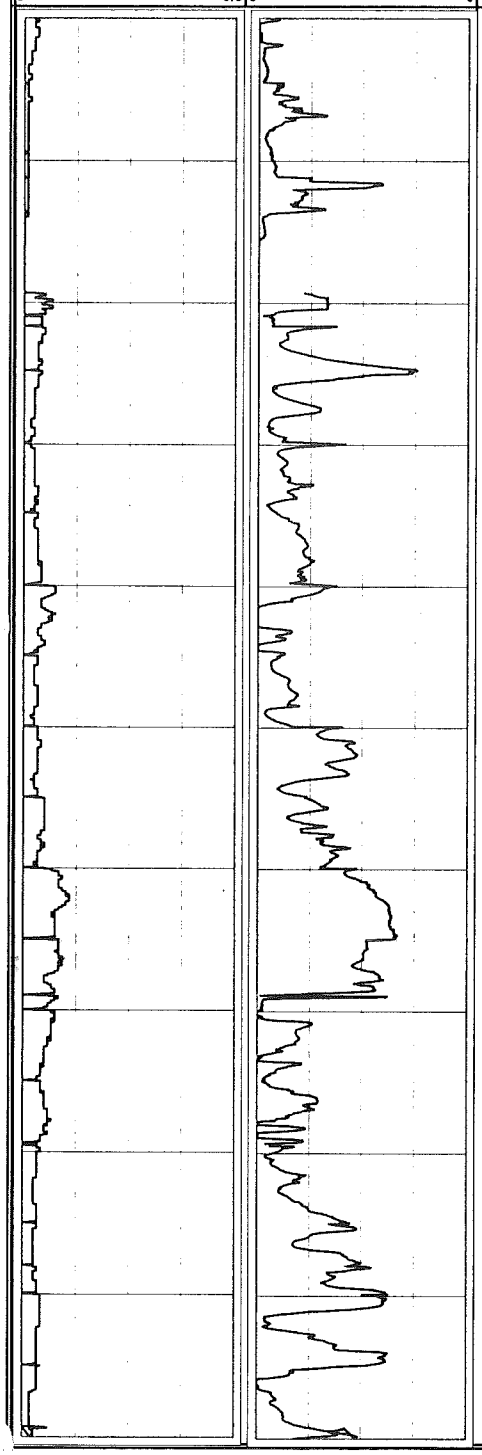
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-113

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	May 29, 2007
JOB NUMBER:	4563001	END DATE:	June 7, 2007
DRILLING FIRM:	SGS	LOCATION:	Southwest corner of intersection of Levittown Pkwy and Old Country Road.
DRILLING METHOD:	Mud Rotary		
DRILLER:	Tom Lynch	DATUM:	Land Surface
HELPER:	Julio Cancel	LOGGED BY:	J. Hilton

Total depth of Profile: 389.9 ft.
Total depth of boring:

GEOLOGIC INFORMATION



Depth (ft bgs)	Description		Stratigraphic Column	REMARKS
100				
110	SAND (fine) and SILT, with stiff Clay lens; gray-white to dark brown.	SM		
120	SAND (fine) with little interbedded Silt (1-3'), trace Gravel (fine); light tan-brown.	SP		Profiler refusal at 116' bgs, pulled rods and advanced casing from 70' bgs to 120'
130				
140				
150				
160	SAND (fine); light tan-brown, with black, carbonaceous Silty-Clay interbed <1' thick.	SP		
170	SAND (fine) with little - some Silt; light tan-brown.	SP		
180				
190	SILT, with little fine Sand, trace-little Clay with in Silt matrix; brown - yellow.	ML		

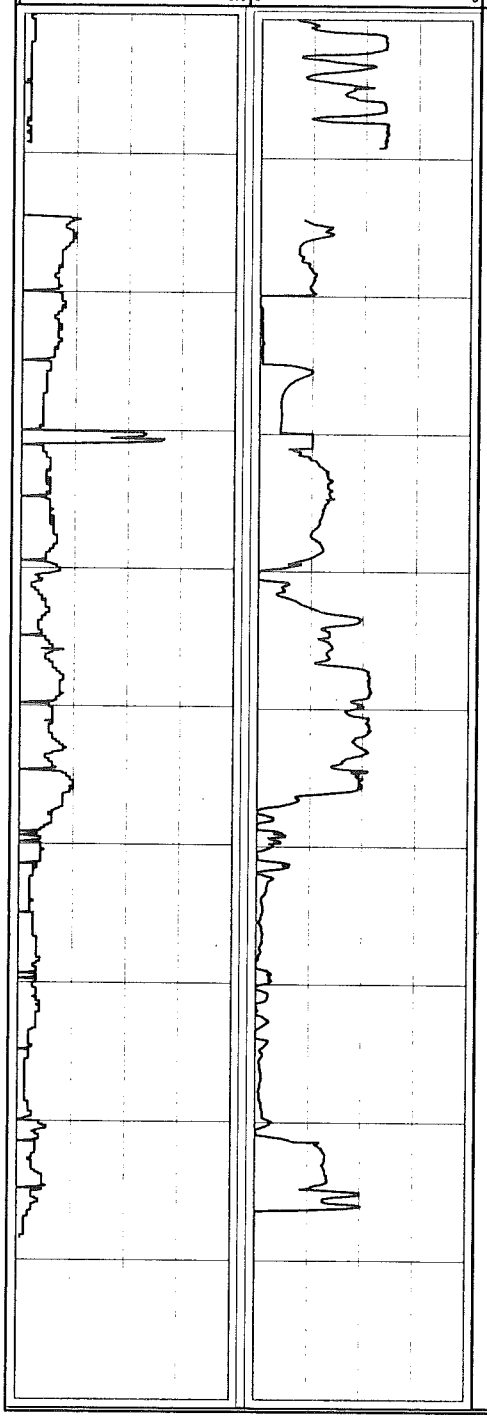
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-113

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	SGS
DRILLING METHOD:	Mud Rotary
DRILLER:	Tom Lynch
HELPER:	Julio Cancel
START DATE:	May 29, 2007
END DATE:	June 7, 2007
LOCATION:	Southwest corner of intersection of Levittown Pkwy and Old Country Road.
DATUM:	Land Surface
LOGGED BY:	J. Hilton

Total depth of Profile: 389.9 ft.
Total depth of boring:

GEOLOGIC INFORMATION



Depth (ft bgs)	Description		Stratigraphic Column	REMARKS
200	Sand (fine) with trace - little silt; light tan.	SP		
210				Pulled rods and advanced casing from 70' bgs to 215'
220	SAND (fine) and SILT, with interbedded Sand/Silt lenses; light gray.	SM		
230				
240				
250	SILT, with trace-little Sand (fine); light gray-brown.	ML		
260				
270	SILT, with trace Sand (fine); dark gray.	ML		
280				
290	CLAY; dark gray-black, carbonaceous with interbedded lignite <1' thick.	CL		Profiler refusal at 286.4' bgs, pulled rods and advanced casing from 215' bgs to 330'

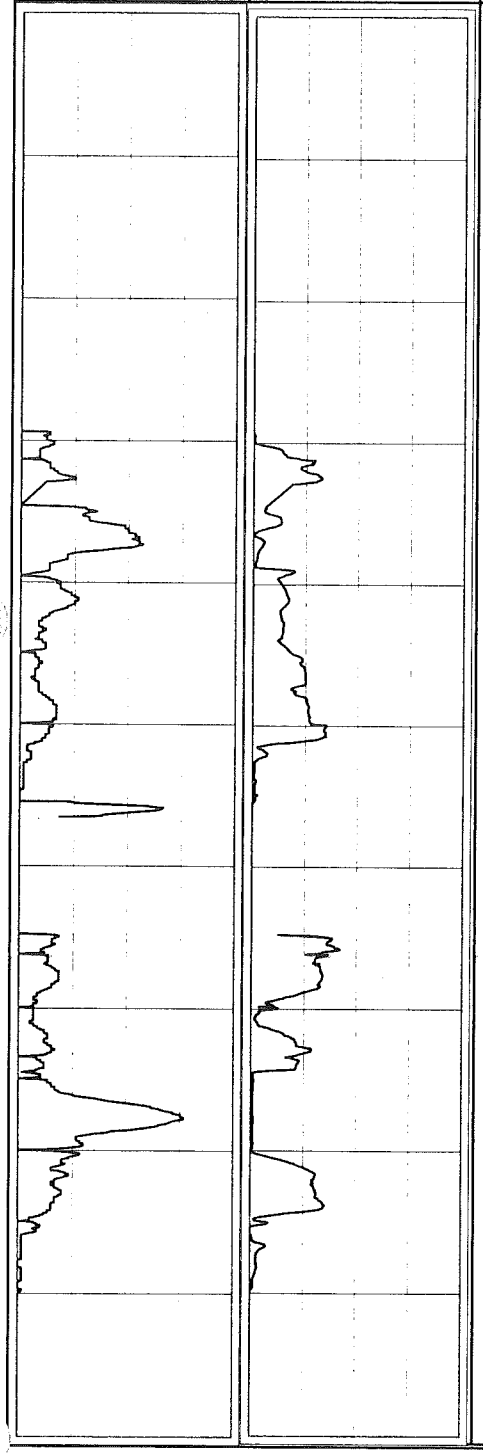
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-113

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	SGS
DRILLING METHOD:	Mud Rotary
DRILLER:	Tom Lynch
HELPER:	Julio Cancel
START DATE:	May 29, 2007
END DATE:	June 7, 2007
LOCATION:	Southwest corner of intersection of Levittown Pkwy and Old Country Road.
DATUM:	Land Surface
LOGGED BY:	J. Hilton

Total depth of Profile: 389.9 ft.
Total depth of boring:

GEOLOGIC INFORMATION



Depth (ft bgs)	Description		Stratigraphic Column	REMARKS
300	CLAY; light gray, soft.	CL		
310	CLAY, with stiff, dense interbedded clay fabric; moderate-dark gray.	CL		
320				
330	SAND (fine); moderate gray-brown, micaceous.	SP		Profiling pump malfunction, pulled rods and advanced casing from 330' bgs to 335'
340	SAND (medium-coarse); gray-white.	SW		
350	SILT; with black carbonaceous Clay, trace fine Sand (fine); gray-white.	ML		Profiler refusal at 356.55' bgs, pulled rods and advanced casing from 335' bgs to 365'
360				
370				
380				
390				Profiler refusal at 389.9' bgs, pulled rods and terminated borehole advancement End of mud logging at 365 ft End of profile at 389.9 ft

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-114

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	SGS
DRILLING METHOD:	Mud Rotary
DRILLER:	Tom Lynch
HELPER:	Julio Cancel

START DATE: July 11, 2007
END DATE: July 28, 2007
LOCATION: Levittown park between Levittown Pkwy and Acre Lane.
DATUM: Land Surface
LOGGED BY: J. Hilton

Total depth of Profile: 523.9 ft.
Total depth of boring: 455 ft.

GEOLOGIC INFORMATION

Penetration Rate (ft/min) 0 – 0.6	Index of Hyd. Conductivity 0 – 4	Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
		0	SAND (medium-coarse) with little white quartz Gravel (fine-coarse) to 2" diameter, moderate-dark brown, sub-round.	SW		Hollow stem augers advanced from 0 to 20 ft bgs
		10	SAND (medium-coarse) with some sub-round gravel (coarse) and cobbles to 3" diameter.	SW		
		20	SAND (medium-coarse); light brown.	SW		Begin mud rotary drilling at 20 ft
		30	SAND (coarse) and GRAVEL (coarse), with Gravel (fine) to 1/2' diameter; light brown, sub-round.	SP		
		40				
		50	SAND (medium-coarse) with trace-little fine white quartz Gravel; light tan-white.	SW		
		60				
		70	SAND (fine-medium) with trace interbedded white Silt; light tan-pink.	SW		Begin profiling at 69.2 ft
		80				
		90	SAND (medium) and SILT, with pink-white Silt , trace Gravel (fine); yellow-brown.	SM		

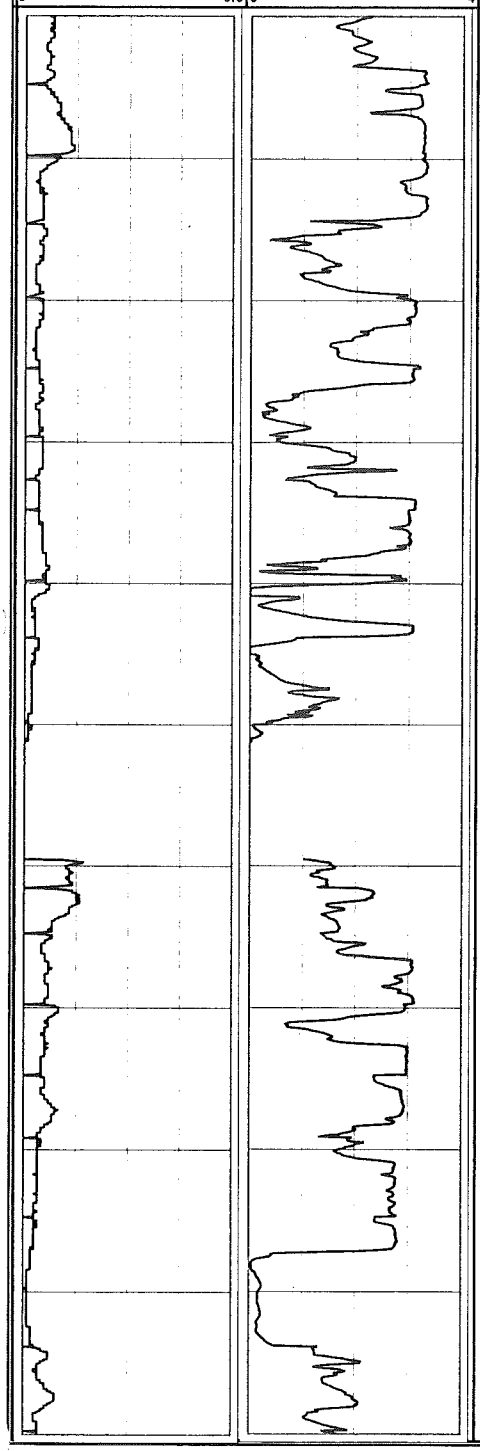
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-114

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	July 11, 2007
JOB NUMBER:	4563001	END DATE:	July 28, 2007
DRILLING FIRM:	SGS	LOCATION:	Levittown park between Levittown Pkwy and Acre Lane.
DRILLING METHOD:	Mud Rotary		
DRILLER:	Tom Lynch	DATUM:	Land Surface
HELPER:	Julio Cancel	LOGGED BY:	J. Hilton

Total depth of Profile: 523.9 ft.
Total depth of boring: 455 ft.

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
100				
110	SAND (fine) with trace interbedded Silt; light gray-brown.	SP		
120	SAND (fine) and SILT, with interbedded oxidized Silt; moderate brown.	SM		
130				
140	SAND (medium-coarse), trace Silt; yellow-brown to light gray.	SW		
150	SAND (fine); light tan.	SP		Profiler refusal at 151' bgs, pulled rods and advanced casing from 70' bgs to 160'
160	SAND (fine) with little interbedded Silt; light brown-yellow, oxidized.	SP		
170	SAND (fine-medium); light brown, micaceous.	SW		
180				
190				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

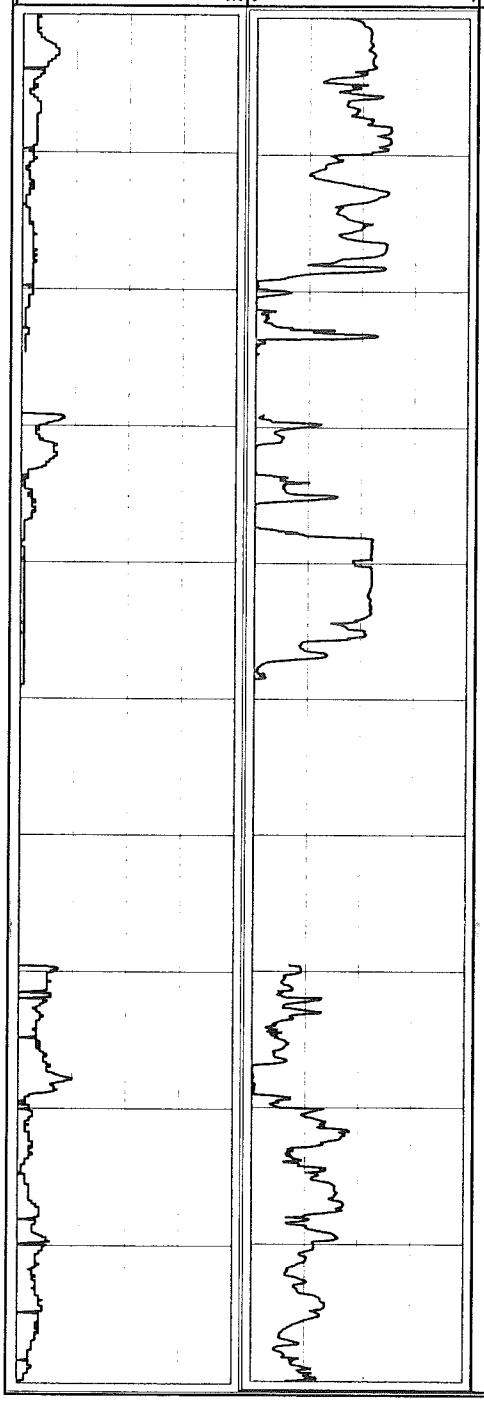
Boring ID:
P-114

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	SGS
DRILLING METHOD:	Mud Rotary
DRILLER:	Tom Lynch
HELPER:	Julio Cancel

START DATE: July 11, 2007
END DATE: July 28, 2007
LOCATION: Levittown park between Levittown Pkwy and Acre Lane.
DATUM: Land Surface
LOGGED BY: J. Hilton

Total depth of Profile: 523.9 ft.
Total depth of boring: 455 ft.

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
200				
210	SILT and SAND; light yellow-white, with light brown, interbedded fine Sand.	SM		
220				
230				Profiler refusal at 224.7' bgs, pulled rods and advanced casing from 160' bgs to 230'
	SILT, little interbedded fine Sand < 4' thick; Light - dark gray.	ML		
240				
250	SILT and CLAY, with interbedded Sand (fine-medium) at 267'; dark gray-black, carbonaceous grading to tan.	ML-CL		Profiler refusal at 249' bgs, pulled rods and advanced casing from 230' bgs to 270'
260				
270	SILT, with little Sand (fine); dark gray-black, carbonaceous.	ML		
280	SAND (fine), Light tan, micaceous.	SP		
290				

MALCOLM PIRNIE, INC.
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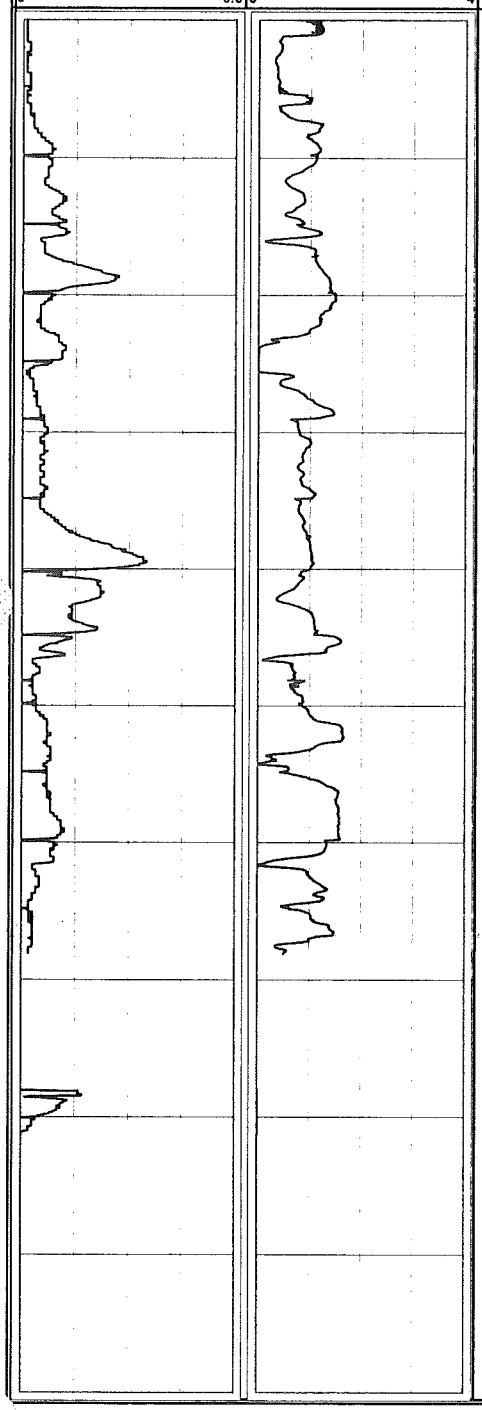
Boring ID:
P-114

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	July 11, 2007
JOB NUMBER:	4563001	END DATE:	July 28, 2007
DRILLING FIRM:	SGS	LOCATION:	Levittown park between Levittown Pkwy and Acre Lane.
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Tom Lynch	LOGGED BY:	J. Hilton
HELPER:	Julio Cancel		

Total depth of Profile: 523.9 ft.
Total depth of boring: 455 ft.

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
300	SAND (fine), trace-little Silt; light gray-brown.	SP		
310				
320				
330				
340				
350				
360	SAND (fine) and SILT, little Clay to approximatly 378'; moderate.-dark gray.	SM		
370				Pulled rods at 370' bgs and advanced casing from 270' bgs to 380'
380	CLAY, with interbedded carbonaceous Clay-Silt lenses; moderate.-dark gray,	CL		Profiler refusal at 381.3' bgs, pulled rods and advanced casing from 380' bgs to 455'
390				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

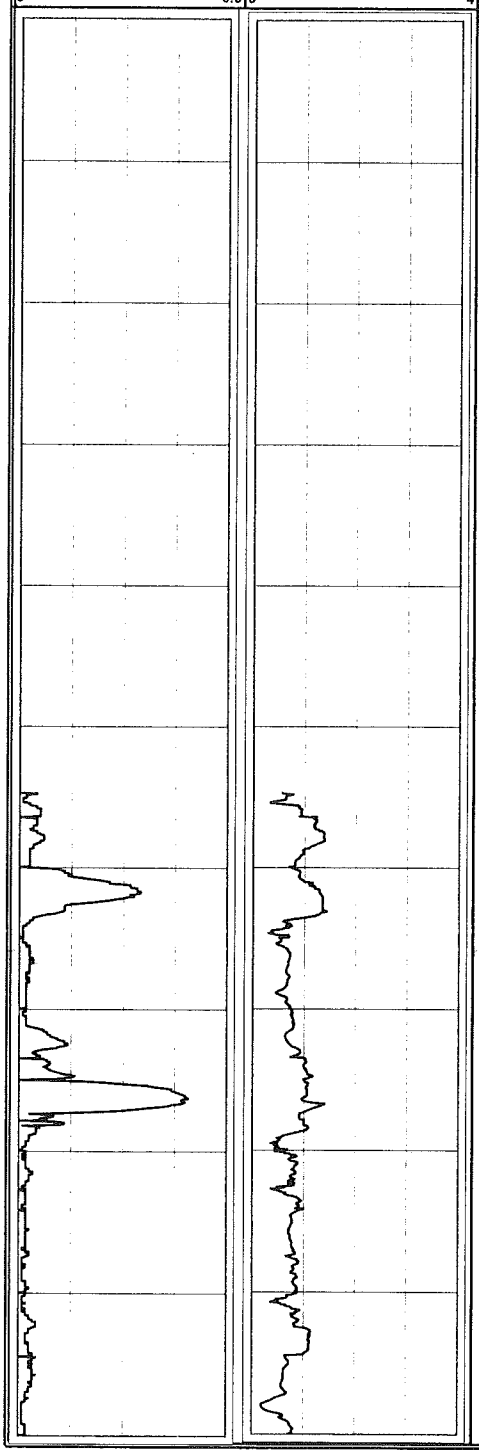
Boring ID:
P-114

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	SGS
DRILLING METHOD:	Mud Rotary
DRILLER:	Tom Lynch
HELPER:	Julio Cancel

START DATE: July 11, 2007
END DATE: July 28, 2007
LOCATION: Levittown park between Levittown Pkwy and Acre Lane.
DATUM: Land Surface
LOGGED BY: J. Hilton

Total depth of Profile: 523.9 ft.
Total depth of boring: 455 ft.

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
400	CLAY with trace - little Silt; buff white, soft, weak plasticity.	CL		
410	CLAY with interbedded carbonaceous lenses <0.5' thick; dark gray.	CL		
420	CLAY; buff white, moderately stiff, massive.	CL		
430				
440				
450	SAND (medium-coarse) and SILT, with little-trace silt, trace interbedded Clay <0.5'thick; white.	SM		End of mud logging at 455 ft
460				
470				
480				
490				

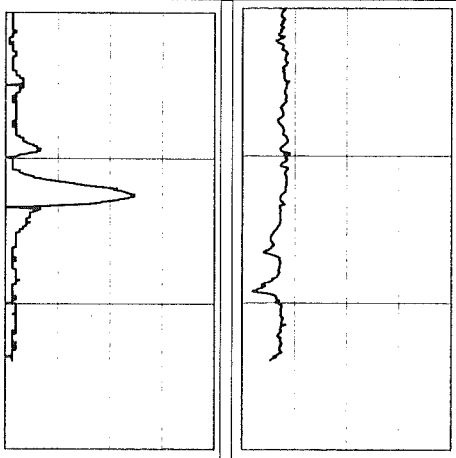
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-114

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	July 11, 2007
JOB NUMBER:	4563001	END DATE:	July 28, 2007
DRILLING FIRM:	SGS	LOCATION:	Levittown park between Levittown Pkwy and Acre Lane.
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Tom Lynch	LOGGED BY:	J. Hilton
HELPER:	Julio Cancel		

Total depth of Profile: 523.9 ft.
Total depth of boring: 455 ft.

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
500				
510				
520				End of profile at 523.9 ft
530				
540				
550				
560				
570				
580				
590				

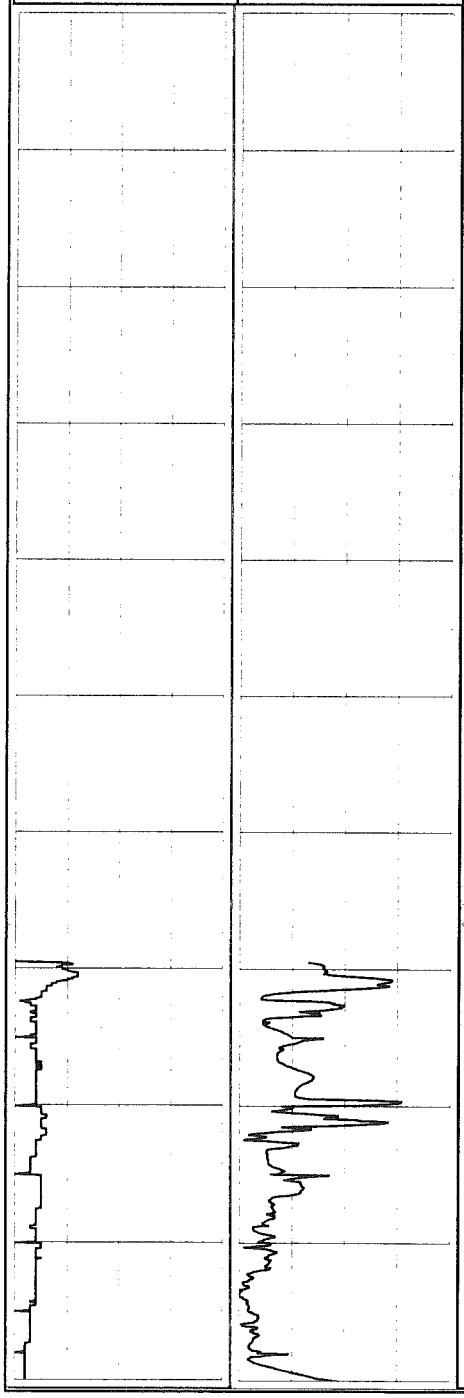
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-118

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	October 30, 2007
JOB NUMBER:	4563001	END DATE:	November 18, 2007
DRILLING FIRM:	SGS	LOCATION:	Wantagh State Parkway north of Stewart Ave.
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Tom Lynch	LOGGED BY:	J. Hilton
HELPER:	Julio Cancel		

Total depth of Profile: 580.7 ft.
Total depth of boring: 580 ft.

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
0	SAND (fine), trace Silt and Gravel (fine); dark brown, sub-round.	SP		Hollow stem augers advanced from 0 to 20 ft bgs
	SAND (fine) and GRAVEL (fine-coarse) to 1" diameter, yellow-brown, sub-round.	SW		
10				
20	SAND (fine-medium) and GRAVEL (fine) to 1/2" diameter, light brown, sub-round.	SW		Begin mud rotary drilling at 20 ft
30				
40				
50				
60	SAND (fine-medium); light brown.	SW		
70	SAND (medium-coarse) with oxidized orange-white Silt interbeds; light brown.	SM		Begin profiling at 69.45 ft. Advance casing from ground surface to initial depth at 70' bgs
80				
90	SAND (fine), trace white Silt interbeds; Light gray white.	SP		

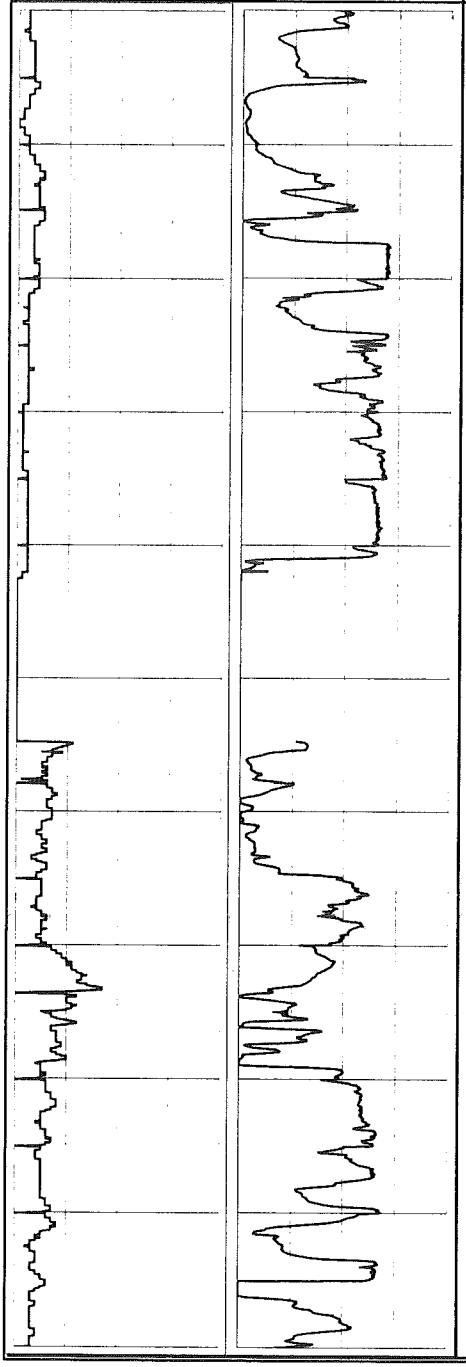
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-118

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	October 30, 2007
JOB NUMBER:	4563001	END DATE:	November 18, 2007
DRILLING FIRM:	SGS	LOCATION:	Wantagh State Parkway north of Stewart Ave.
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Tom Lynch	LOGGED BY:	J. Hilton
HELPER:	Julio Cancel		

Total depth of Profile: 580.7 ft.
Total depth of boring: 580 ft.

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
100		SP		
110				
120				
130				
140	SILT and CLAY, trace Sand (fine); gray-white with black carbonaceous Clay.	ML-CL		Profiler refusal at 143' bgs, pulled rods and advanced casing from 70' bgs to 155'
150	SAND (fine) with interbedded Silt; gray.	SP		
160				
170				
180	SAND (fine), trace white Clay and Silt interbeds; light gray brown, micaceous.	SP		
190	SAND (fine); tan-brown, micaceous.	SP		

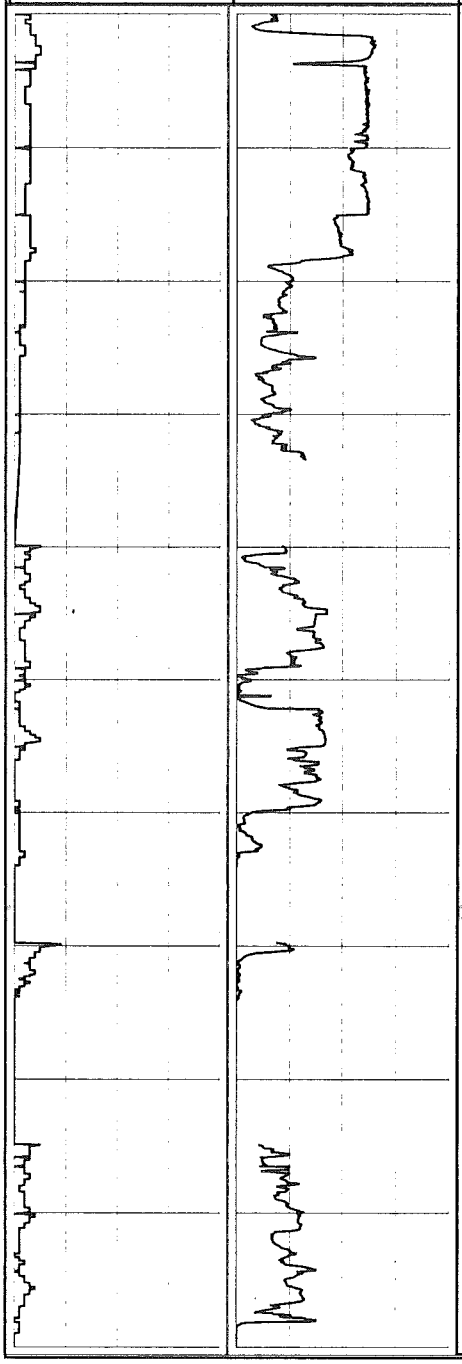
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-118

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	SGS
DRILLING METHOD:	Mud Rotary
DRILLER:	Tom Lynch
HELPER:	Julio Cancel
START DATE:	October 30, 2007
END DATE:	November 18, 2007
LOCATION:	Wantagh State Parkway north of Stewart Ave.
DATUM:	Land Surface
LOGGED BY:	J. Hilton

Total depth of Profile: 580.7 ft.
Total depth of boring: 580 ft.

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
200		SP		
210	SAND (fine-medium); light brown, micaceous.	SW		
220				
230	SAND (fine-coarse); light brown, micaceous.	SW		Profiler refusal at 233' bgs, pulled rods and advanced casing from 155' bgs to 240'
240	SAND (fine); light brown.	SP		
250	SAND (fine-medium); light brown.	SW		
260	SAND (fine), trace-little white Silty Clay interbeds < 1" thick; light brown.			
	SILT and CLAY, with stiff white Clay interbeds, trace Sand; white gray.	ML-CL		Profiler refusal at 264' bgs, pulled rods and advanced casing from 240' bgs to 270'
270				Profiler refusal at 274' bgs, pulled rods and advanced casing from 270' bgs to 285'
280	SAND (fine), little Silt; light gray white.	SP		
290				
	CLAY with trace carbonaceous material and Silt; light gray-white.	CL		

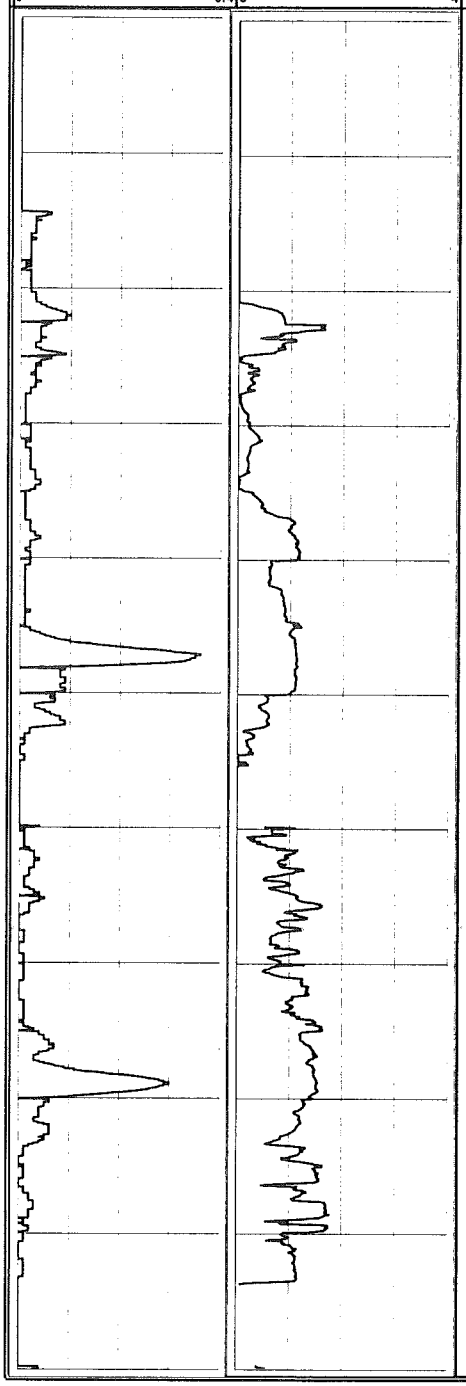
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-118

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	October 30, 2007
JOB NUMBER:	4563001	END DATE:	November 18, 2007
DRILLING FIRM:	SGS	LOCATION:	Wantagh State Parkway north of Stewart Ave.
DRILLING METHOD:	Mud Rotary		
DRILLER:	Tom Lynch	DATUM:	Land Surface
HELPER:	Julio Cancel	LOGGED BY:	J. Hilton

Total depth of Profile: 580.7 ft.
Total depth of boring: 580 ft.

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
300		CL		Profiler refusal at 299' bgs, pulled rods and advanced casing from 285' bgs to 320'
310	SILT and SAND (fine-medium); gray-white.	SM		
	SAND (medium); gray-white, angular.	SP		
320				
330				
340	SAND (fine-coarse), trace Silt; tan-white, angular, micaceous.	SW		
350				Profiler refusal at 355' bgs, pulled rods and advanced casing from 320' bgs to 360'
360	SAND (fine); light brown-gray, micaceous.	SP		
370	SAND (medium-coarse), trace Clay and Silt; Light gray-white, angular, micaceous.	SW		
380				
390				Profiler refusal at 394' bgs, pulled rods and advanced casing from 360' bgs to 400'

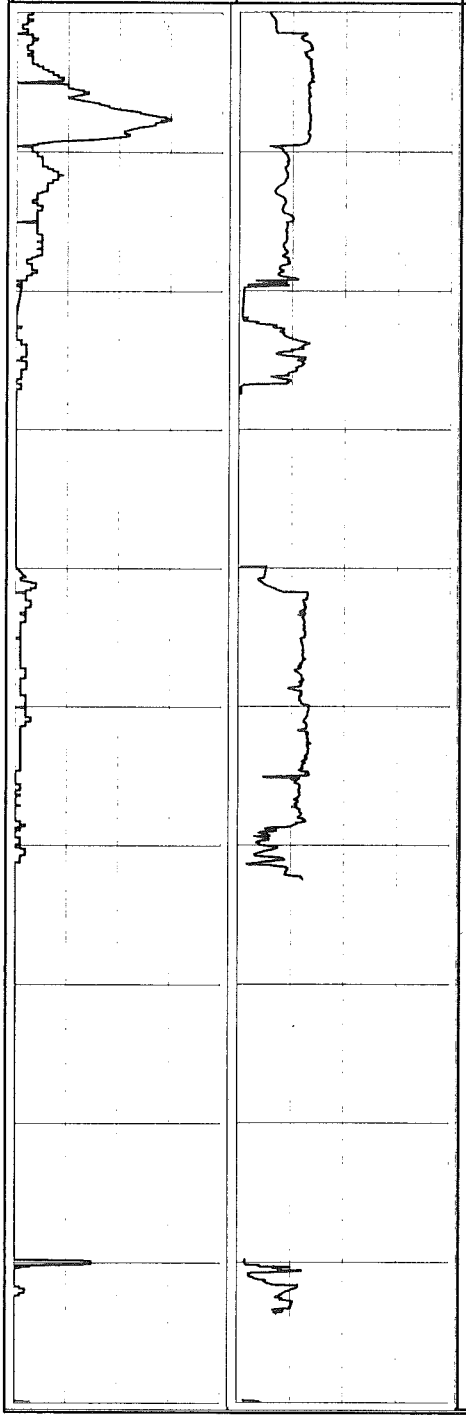
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-118

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	SGS
DRILLING METHOD:	Mud Rotary
DRILLER:	Tom Lynch
HELPER:	Julio Cancel
START DATE:	October 30, 2007
END DATE:	November 18, 2007
LOCATION:	Wantagh State Parkway north of Stewart Ave.
DATUM:	Land Surface
LOGGED BY:	J. Hilton

Total depth of Profile: 580.7 ft.
Total depth of boring: 580 ft.

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
400	SAND (fine-medium); light gray, micaceous.	SW		
410				
420				
	SILT and CLAY; gray-white.	ML-CL		Profiler refusal at 427 bgs, pulled rods and advance casing from 400' bgs to 440' bgs.
430				
	SAND (fine); light tan-brown.	SP		
440				
450	SAND (medium-coarse), trace fine Gravel; tan-white, angular.	SW		
460	SAND (fine-medium), trace-little white Silt; tan.	SW		Profiler refusal at 462' bgs, pulled rods and advanced casing from 440' bgs to 490'
	CLAY and Silt with interbedded white Silt, trace Sand (fine); dark gray.	CL-ML		
470				
480				
	SAND (fine-coarse) with Gravel (fine), trace Silt; light brown-white, sub-round.	SW		silt appears oxidized
490				Profiler refusal at 494' bgs, pulled rods and advanced casing from 490' bgs to 500'

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

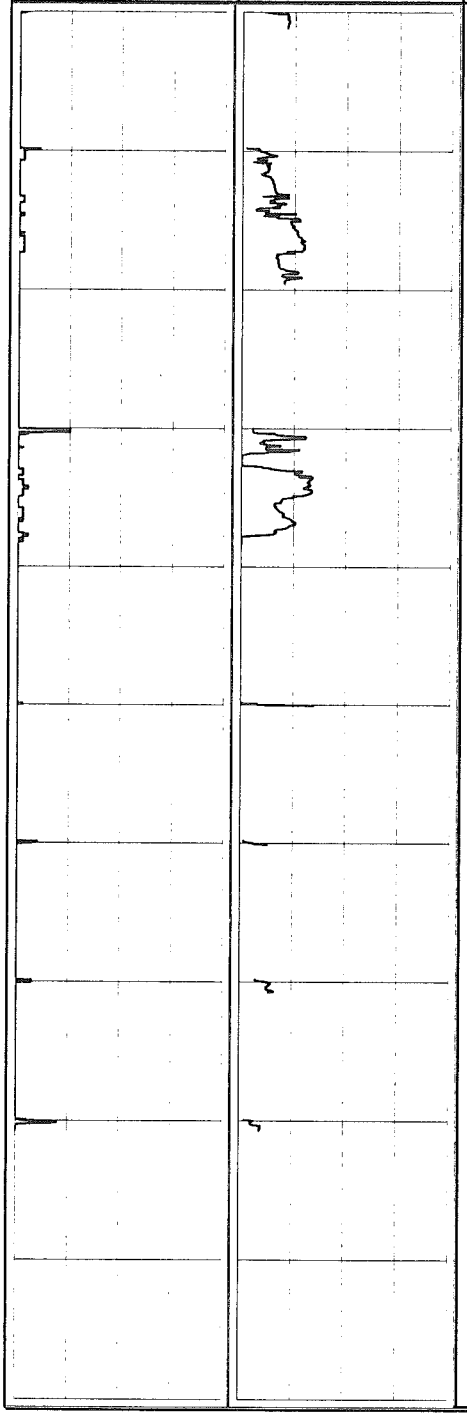
Boring ID: **P-118**

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	October 30, 2007
JOB NUMBER:	4563001	END DATE:	November 18, 2007
DRILLING FIRM:	SGS	LOCATION:	Wantagh State Parkway north of Stewart Ave.
DRILLING METHOD:	Mud Rotary		
DRILLER:	Tom Lynch	DATUM:	Land Surface
HELPER:	Julio Cancel	LOGGED BY:	J. Hilton

Total depth of Profile: 580.7 ft.

Total depth of boring: 580 ft.

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
500	SAND (medium-coarse), trace-little Garvel and white Silt interbeds; gray-white, sub-round.	SW		Profiler refusal at 501' bgs, pulled rods and advanced casing from 500' bgs to 510'
510				
520				Profiler refusal at 519' bgs, pulled rods and advanced casing from 510' bgs to 530'
530	SAND (medium-coarse), little-some Silt and gray Clay interbeds < 2' thick; white-gray.	SW		Artesian Conditions noted in sand unit profiled at 530-537' bgs; flow at 2-3 gpm.
540				Profiler refusal at 538' bgs, pulled rods and advanced casing from 530' bgs to 550'
	SAND (medium-coarse) with white Silt interbeds; gray-white.	SM		
550	SAND (coarse) and GRAVEL (fine); white-gray, aub-angular.	SW		Profiler refusal at 550' bgs, pulled rods and advanced casing from 550' bgs to 560'
560				Trip out profiling rods from 560' bgs. Not able to collect sample at 560' interval due to parameters indicating drilling mud or additives in purge water. pull rods and advanced casing from 560' bgs to 570'
570	SAND (medium-coarse), little interbedded white/pink Silt < 1' thick from approximately 575-578' bgs; white-gray.	SW		Profiler refusal at 571' bgs, pulled rods and advanced casing from 570' bgs to 580'
				End of boring at 580 ft End of profile at 580.7 ft
580				
590				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

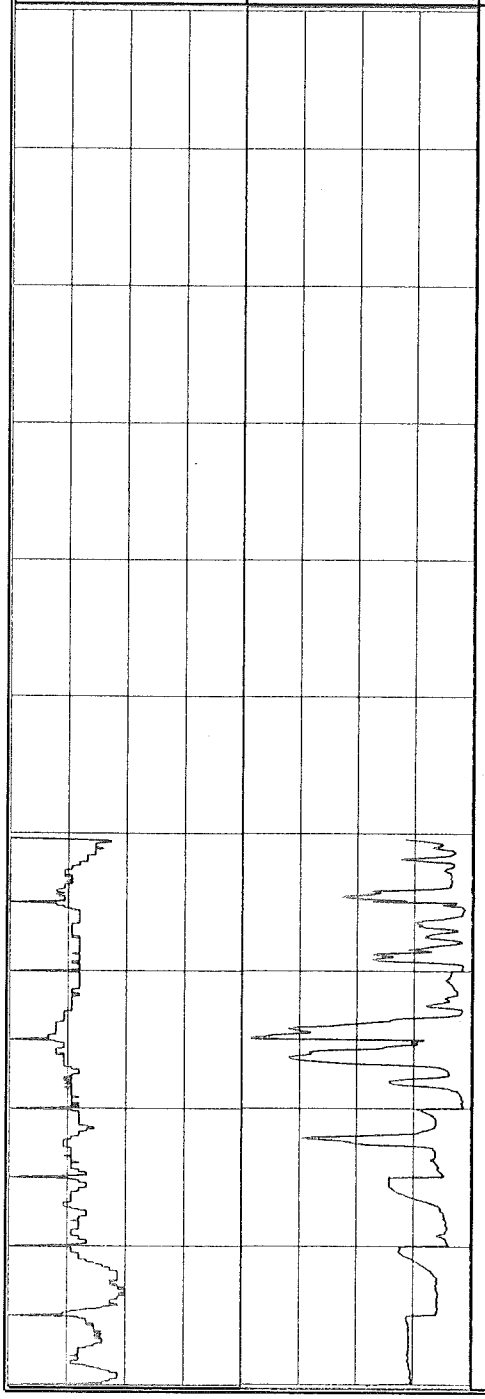
Boring ID:
P-119

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	SGS
DRILLING METHOD:	Mud Rotary
DRILLER:	Tom Lynch
HELPER:	Mike Mella

START DATE: March 30, 2009
END DATE: April 16, 2009
LOCATION: Intersection of Charlotte Ave. and Duffy Ave. on Winter Brothers property
DATUM: Land Surface
LOGGED BY: J. Hilton, C. Goldsmith

Total depth of Profile: 409.5
Total depth of boring: 405.5

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
0	SAND (fine-medium) and SILT, trace-little sub-rounded Gravel (fine),dark brown.	SM		Hollow stem augers advanced from 0 to 20 ft
10	SAND (medium to coarse), little Gravel (fine); moderate brown.	SW		
20	SAND (fine to coarse), little Gravel (fine); fine-moderate brown.	SW		Begin mud rotary drilling at 20 ft
30	SAND (fine-medium), light brown.	SP		
40	SAND (medium-coarse), light brown.	SP		
50	SAND (fine), trace Silt; moderate brown.	SP		
60	SAND (fine) with Silt; light brown.	SM		Begin profiling at 60 ft
70				
80				
90	SAND (fine) with Silt, some Sand (coarse) and Gravel (fine); light brown.	SM		

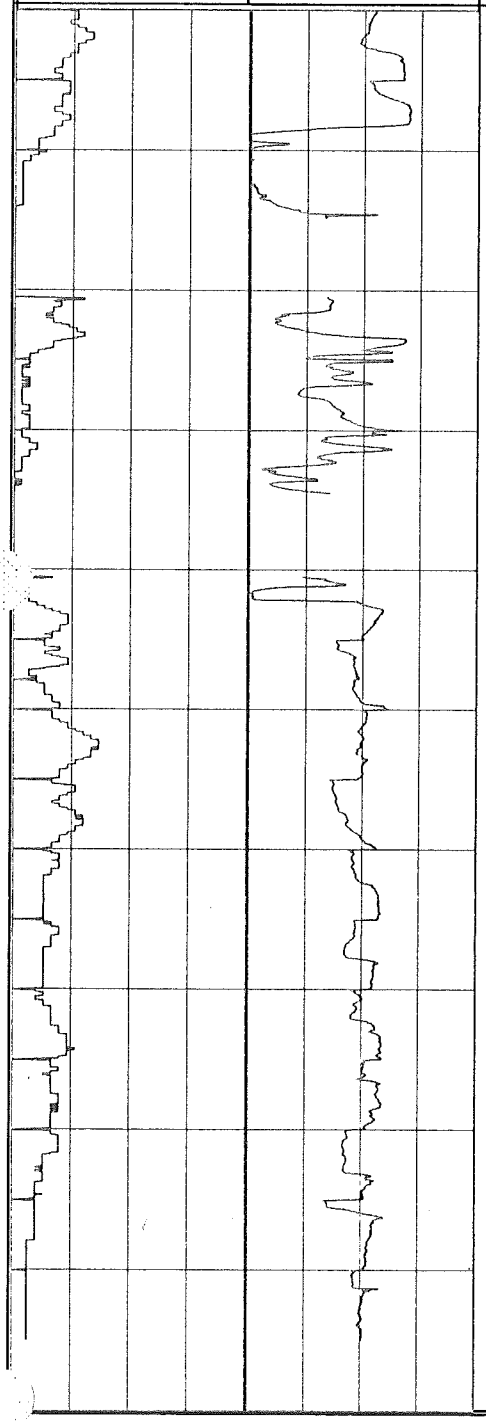
MALCOLM PIRNIE, INC.
7-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-119

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	March 30, 2009
JOB NUMBER:	4563001	END DATE:	April 16, 2009
DRILLING FIRM:	SGS	LOCATION:	Intersection of Charlotte Ave. and Duffy Ave. on Winter Brothers property
DRILLING METHOD:	Mud Rotary		
DRILLER:	Tom Lynch	DATUM:	Land Surface
HELPER:	Mike Mella	LOGGED BY:	J. Hilton, C. Goldsmith

Total depth of Profile: 409.5 — Total depth of boring: 405.5

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
100				
110	SAND (fine) with Silt, trace white Clay; light brown.	SM		Profiler refusal at 114.80' bgs, pulled rods and advanced casing from 60' bgs to 120'
120	SAND (fine-medium) with some Silt; light-moderate brown.	SM		
130				Profiler refusal at 134.46' bgs, pulled rods and advanced casing from 120' bgs to 140'
140	SAND (fine-medium) some Silt; moderate brown.	SM		
150				
160				
170	SAND (fine-coarse) trace Silt; moderate brown.	SP		
180	SAND (fine) with Silt, trace gray Clay; light brown.	SM		
	SAND (fine) light brown, with interbedded light brown and gray Silt.	SM		
190				Profiler tripped out at 194.95, pulled rods and advanced casing from 140' bgs to 200'

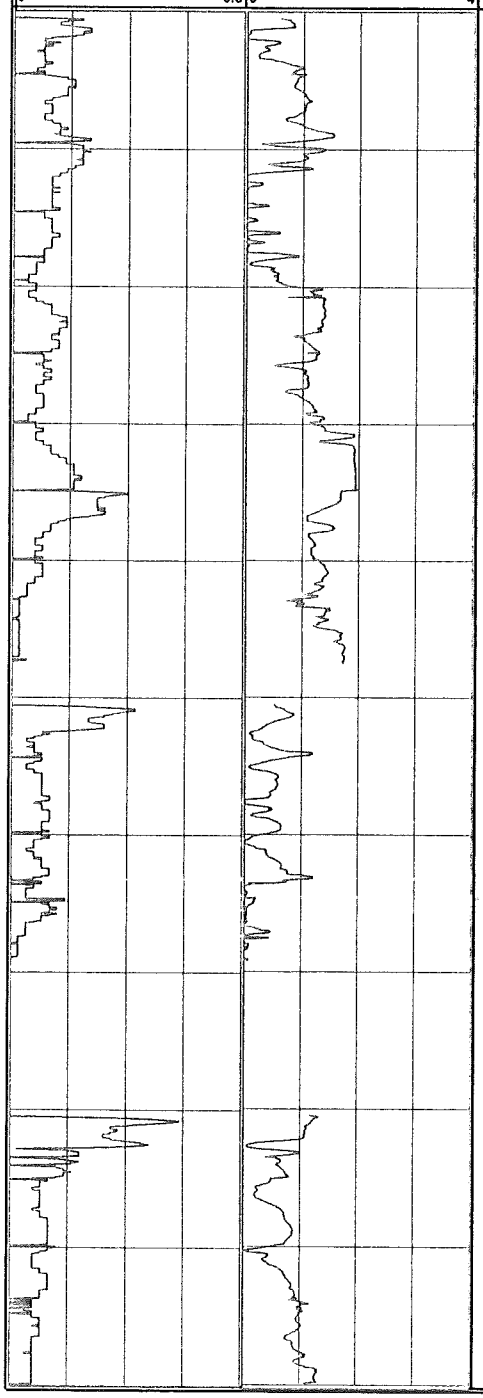
MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-119

PROJECT NAME:	GTEOSI-Hicksville
JOB NUMBER:	4563001
DRILLING FIRM:	SGS
DRILLING METHOD:	Mud Rotary
DRILLER:	Tom Lynch
HELPER:	Mike Mella
START DATE:	March 30, 2009
END DATE:	April 16, 2009
LOCATION:	Intersection of Charlotte Ave. and Duffy Ave. on Winter Brothers property
DATUM:	Land Surface
LOGGED BY:	J. Hilton, C. Goldsmith

Total depth of Profile: 409.5
Total depth of boring: 405.5

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
200	SAND (fine-medium) and SILT, trace Clay; moderate brown to gray-brown.	SM		
210	SILT, trace-little fine grain Sand; medium brown w/ black carbonaceous interbeds.	ML		
220	SAND (fine), trace Silt; light brown.	SP		
230				
240	SAND (medium-coarse), trace Silt; light brown-gray.	SP		Profiler tripped out at 247.5, pulled rods and advanced casing from 200' bgs to 250' bgs
250	SILT, trace Sand (fine), trace Clay; light brown-white.	ML		
260				
270				Profiler refusal at 269.2' bgs, pulled rods and advanced casing from 250' bgs to 280'
	SAND (fine), some Silt; light brown.	SM		
280	SILT, some Sand (fine); light brown-white.	ML		
290				

MALCOLM PIRNIE, INC.
17-17 Route 208 North Fair Lawn, NJ 07401

Boring ID: **P-119**

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	March 30, 2009
JOB NUMBER:	4563001	END DATE:	April 16, 2009
DRILLING FIRM:	SGS	LOCATION:	Intersection of Charlotte Ave. and Duffy Ave. on Winter Brothers property
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Tom Lynch	LOGGED BY:	J. Hilton, C. Goldsmith
HELPER:	Mike Mella		

Total depth of Profile: 409.5

GEOLOGIC INFORMATION

Total depth of boring: 405.5

Penetration Rate (ft/min) 0 – 0.3	Index of Hyd. Conductivity 0 – 4	Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
		300	SAND (fine-medium), some Silt; light brown, micaceous.	SM		
		310	SILT, some Sand (fine); white.	ML		Profiler refusal at 310.34' bgs, pulled rods and advanced casing from 280' bgs to 320'
			SAND (fine), some Silt; light brown-white.	SM		
		320	SAND (fine-coarse), some Silt; light brown-white, angular.	SM		
		330	SAND (fine to medium), trace Silt and Clay interbeds; light brown to white.	ML		Profiler refusal at 332.84' bgs, pulled rods and advanced casing from 320' bgs to 345' bgs
		340	SAND (fine), some Silt; light brown.	SM		
		350	SAND (fine-coarse) trace-little white Silt; light gray-white.	SM		
		360				
		370	SAND (fine to medium), trace white Silt; light gray-white, angular	SM		Profiler refusal at 371.2' bgs, pulled rods and advanced casing from 345' bgs to 370'
		380				Profiler refusal at 377.18' bgs, pulled rods and advanced casing from 370' bgs to 385'
		390				Profiler tripped out at 388.15, pulled rods and advanced casing from 385' bgs to 395.5' bgs
			SAND (fine to medium), trace-little Silt; light tan-brown, sub-angular.	SM		

Boring ID:

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

P-119

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	March 30, 2009
JOB NUMBER:	4563001	END DATE:	April 16, 2009
DRILLING FIRM:	SGS	LOCATION:	Intersection of Charlotte Ave. and Duffy Ave. on Winter Brothers property
DRILLING METHOD:	Mud Rotary		
DRILLER:	Tom Lynch	DATUM:	Land Surface
HELPER:	Mike Mella	LOGGED BY:	J. Hilton, C. Goldsmith

Total depth of Profile: 409.5

Total depth of boring: 405.5

GEOLOGIC INFORMATION

Penetration Rate (ft/min) 0 – 0.3	Index of Hyd. Conductivity 0 – 4	Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
		400				Profiler refusal at 397.4' bgs, pulled rods and advanced casing from 395.5' bgs to 405.5'
						End of mud logging at 405 ft
		410				End of profile at 409.5 ft
		420				
		430				
		440				
		450				
		460				
		470				
		480				
		490				

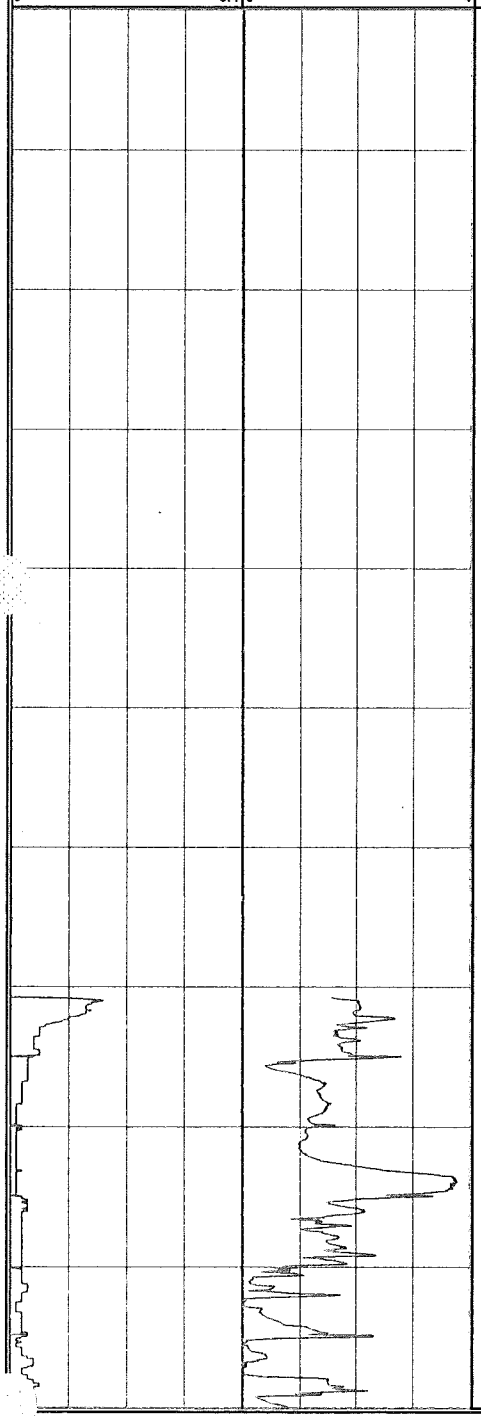
MALCOLM PIRNIE, INC.
7-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-120

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	April 18, 2009
JOB NUMBER:	4563001	END DATE:	May 13, 2009
DRILLING FIRM:	SGS	LOCATION:	Town of Oyster Bay, Alpine Lane
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Tom Lynch	LOGGED BY:	J. Hilton, C. Goldsmith
HELPER:	Mike Mella		

Total depth of Profile: 481.25 ft
Total depth of boring: 480 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
0	ASPHALT and GRAVEL; gray.	GW		
	SAND (medium-coarse), trace Gravel (fine-coarse); yellow-brown, sub-round.	SW		Hollow stem augers advanced from 0 to 20 ft
10	SAND (medium-coarse), some Gravel (fine-coarse); moderate brown, sub-round.	SW		
20	SAND (fine-medium); light brown.	SW		Begin mud rotary drilling at 20 ft
30				
40	SAND (fine-coarse); light brown.	SW		
50	SAND (coarse) and GRAVEL (fine); light brown, sub-round.	SW		
60				
				Begin profiling at 70 ft
70	SAND (fine), trace Silt; light brown.	SP		
80	SAND (fine), trace interbedded white Silt; light brown.	SP		
90	SAND (fine), with orange-brown interbedded Silt; lightbrown-yellow.	SM		

Boring ID:

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

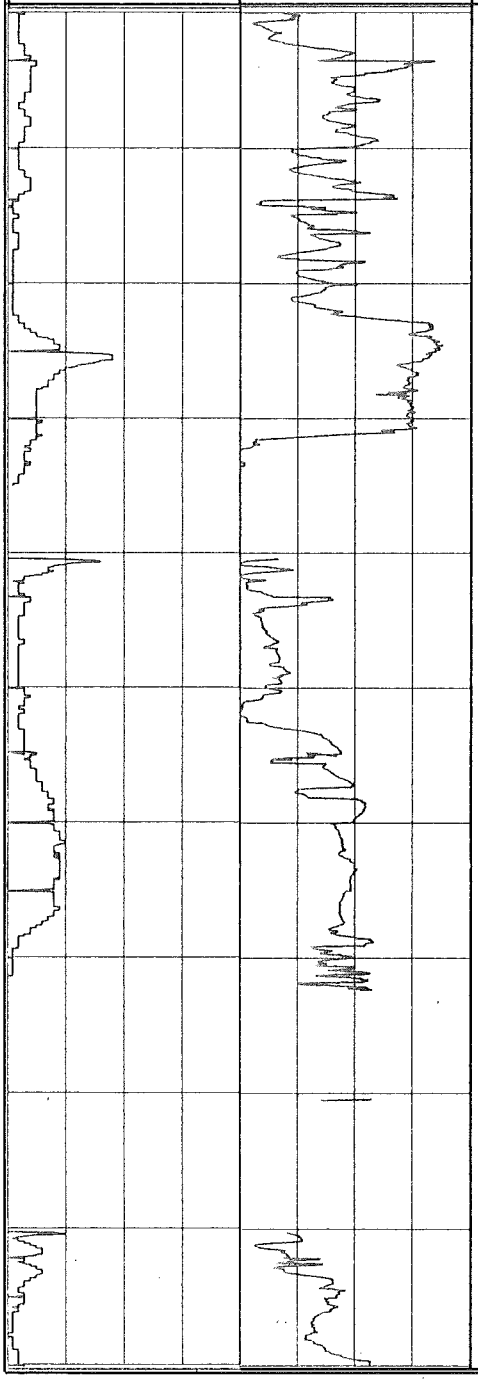
P-120

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	April 18, 2009
JOB NUMBER:	4563001	END DATE:	May 13, 2009
DRILLING FIRM:	SGS	LOCATION:	Town of Oyster Bay, Alpine Lane
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Tom Lynch	LOGGED BY:	J. Hilton, C. Goldsmith
HELPER:	Mike Mella		

Total depth of Profile: 481.25 ft

Total depth of boring: 480 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
100	SAND (fine), trace Silt; light brown-orange, micaceous.	SP		
110				
120				
130	SILT, trace-little black carbonaceous Clay; dark gray-black.	ML		Profiler refusal at 135' bgs, pulled rods and advanced casing from 70' bgs to 140'
140	SAND (fine), trace interbedded white Silt; light gray-white.	SM		
150	SAND (fine); light brown.	SP		
160	SAND (fine); light brown-orange.	SP		
170	SAND (fine-coarse), trace -little orange Silt; brown-orange.	SM		Profiler refusal at 172.35' bgs, pulled rods and advanced casing from 140' bgs to 180'
180	SAND (fine), trace orange Silt; light brown.	SM		Profiler tripped out at 184.9, pulled rods and advanced casing from 180' bgs to 190'
190	SAND (fine), some orange oxidized Silt; light brown.	SM		

Boring ID:

MALCOLM PIRNIE, INC.

P-120

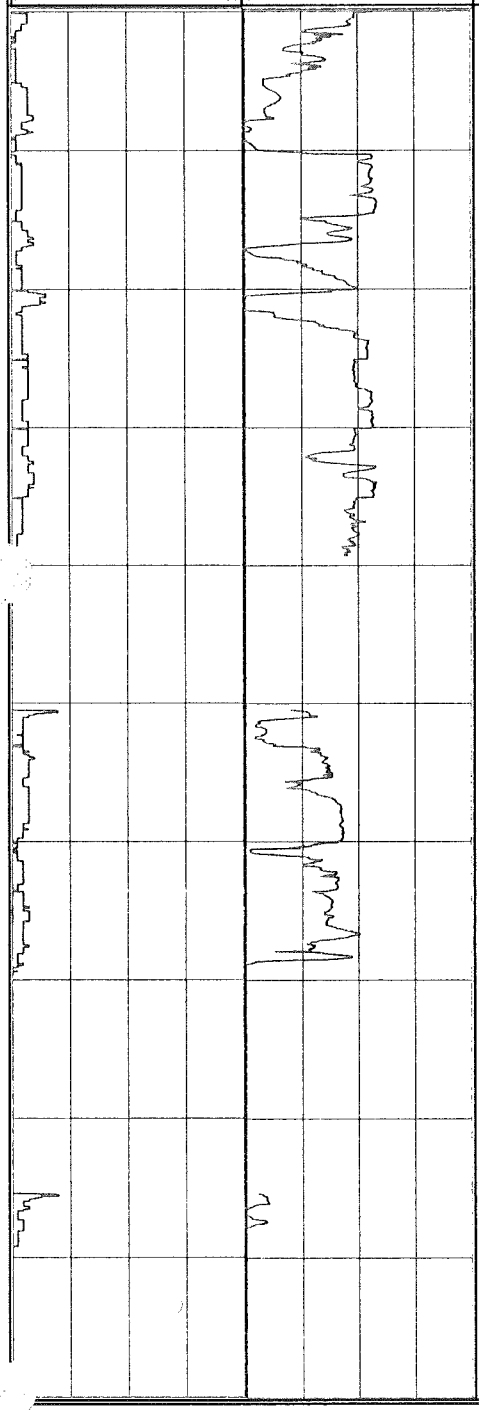
17 Route 208 North Fair Lawn, NJ 07401

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	April 18, 2009
JOB NUMBER:	4563001	END DATE:	May 13, 2009
DRILLING FIRM:	SGS	LOCATION:	Town of Oyster Bay, Alpine Lane
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Tom Lynch	LOGGED BY:	J. Hilton, C. Goldsmith
HELPER:	Mike Mella		

Total depth of Profile: 481.25 ft

Total depth of boring: 480 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
200	SAND (fine-medium), trace Silt; light brown.	SM		
210	SAND (fine-medium); light brown.	SW		
220				
230				
240				Profiler refusal at 239.3' bgs, pulled rods and advanced casing from 190' bgs to 250' bgs
	SAND (fine), trace white Silt; light brown.	SP		
250	SAND (fine-medium), trace white-light gray Silt; light brown.	SP		
260				
270	SAND (fine) with interbedded light gray Silt; light brown.	SM		Profiler refusal at 269.6' bgs, pulled rods and advanced casing from 250' bgs to 285'
280	SAND (fine) with interbedded white Silt; light brown.			Profiler refusal at 289.4' bgs, pulled rods and advanced casing from 289' bgs to 300'
290	SILT and CLAY, trace Sand (fine); dark gray.	ML		
	SILT with dark gray-black	ML		

Boring ID:

MALCOLM PIRNIE, INC.

17-17 Route 208 North Fair Lawn, NJ 07401

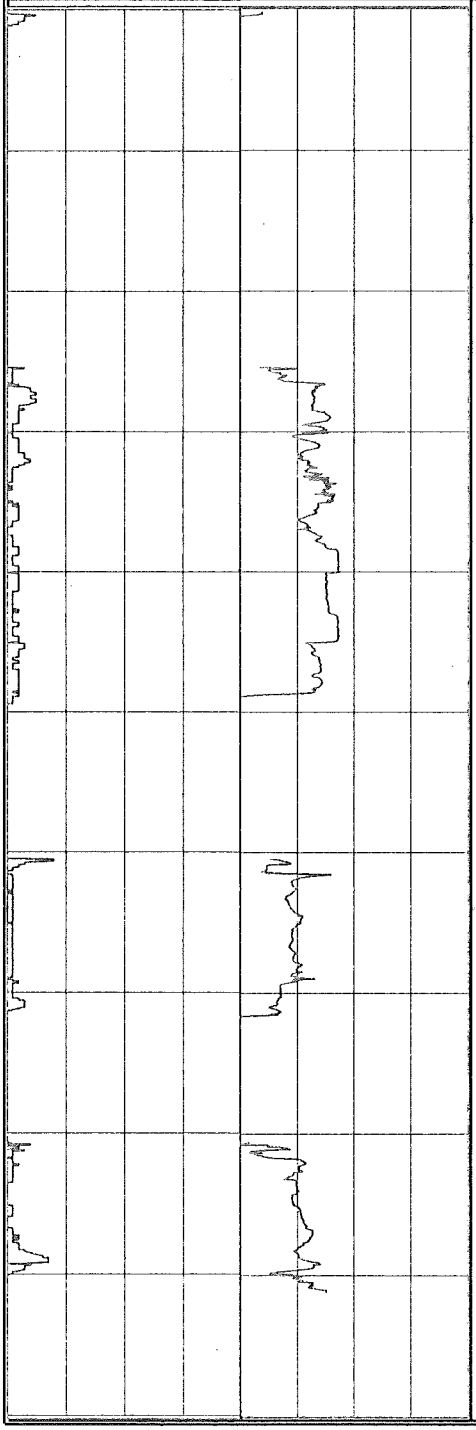
P-120

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	April 18, 2009
JOB NUMBER:	4563001	END DATE:	May 13, 2009
DRILLING FIRM:	SGS	LOCATION:	
DRILLING METHOD:	Mud Rotary		Town of Oyster Bay, Alpine Lane
DRILLER:	Tom Lynch	DATUM:	Land Surface
HELPER:	Mike Mella	LOGGED BY:	J. Hilton, C. Goldsmith

Total depth of Profile: 481.25 ft

Total depth of boring: 480 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
300	carbonaceous Clay, trace Sand (fine) lenses; gray-white.			Profiler refusal at 301' bgs, pulled rods and advanced casing from 300' bgs to 325'
310	SILT with trace-little Sand (fine) within matrix, becoming sandy with depth; gray-white.	ML		
320				
	SAND (fine-medium), trace-little Silt; light gray, micaceous.	SP		
330				
340				
350	SILT, trace-little Sand (fine); gray-white.	ML		Profiler refusal at 349.5' bgs, pulled rods and advanced casing from 325' to 360' bgs
	SAND (fine-medium); light gray-brown, micaceous.	SW		
360				
370	SILT, trace Sand (fine); gray-white.	ML		Profiler refusal at 371.9' bgs, pulled rods and advanced casing from 360' to 380' bgs
	SAND (fine-medium); light brown, angular.	SW		
380	SAND (fine-coarse); light brown, angular.	SW		
390				Profiler refusal at 391.2' bgs, pulled rods and advanced casing from 380' to 400' bgs

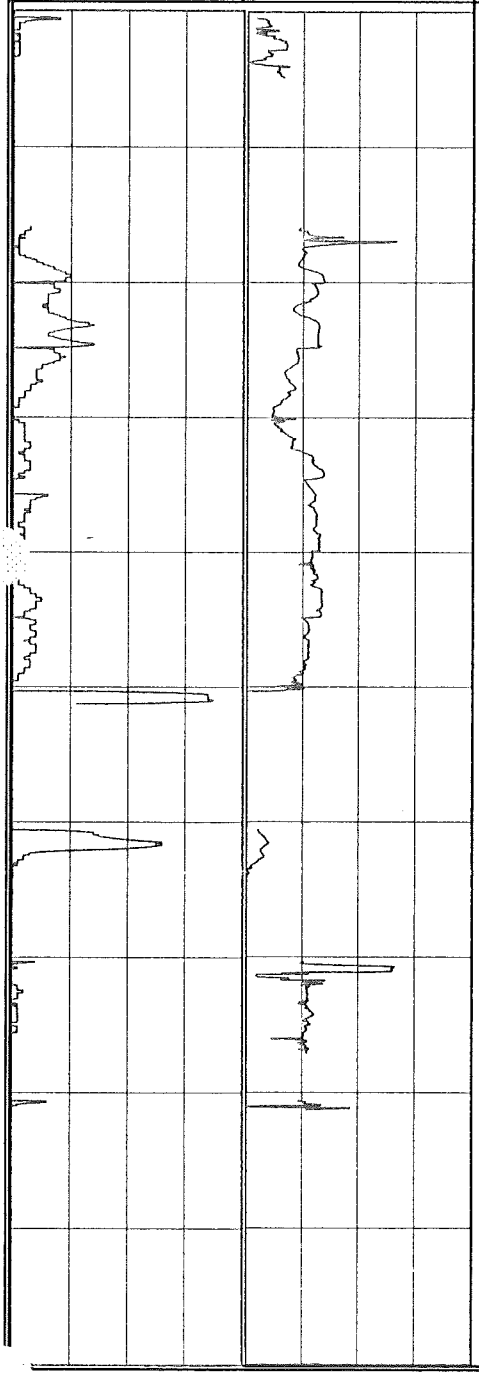
MALCOLM PIRNIE, INC.
7-17 Route 208 North Fair Lawn, NJ 07401

Boring ID:
P-120

PROJECT NAME:	GTEOSI-Hicksville	START DATE:	April 18, 2009
JOB NUMBER:	4563001	END DATE:	May 13, 2009
DRILLING FIRM:	SGS	LOCATION:	Town of Oyster Bay, Alpine Lane
DRILLING METHOD:	Mud Rotary	DATUM:	Land Surface
DRILLER:	Tom Lynch	LOGGED BY:	J. Hilton, C. Goldsmith
HELPER:	Mike Mella		

Total depth of Profile: 481.25 ft
Total depth of boring: 480 ft

GEOLOGIC INFORMATION



Depth (ft bgs)	Description	USCS Symbol	Stratigraphic Column	REMARKS
400	SAND (fine-coarse), some white Silt; light brown-white, angular.	SM		Profiler refusal at 404.85' bgs, pulled rods and advanced casing from 400' to 415' bgs
410	SAND (medium-coarse); light brown, angular.	SW		
	SAND (medium-coarse); gray-white, angular.	SW		
420				
430				
440	SAND (medium-coarse); brown, angular.	SW		
450	SAND (fine-coarse) and SILT with interbedded white brown Silt; brown-gray, angular, micaceous.	SM		Profiler refusal at 451.26' bgs, pulled rods and prep to advance casing from 415' to 460' bgs
460	SAND (fine-medium) and SILT, light brown.	SM		Profiler refusal at 463.84' bgs, pulled rods and prep to advance casing from 460' to 470' bgs
470	SAND (fine-medium), some Silt, light brown.	SM		Profiler refusal at 477.06' bgs, pulled rods and prep to advance casing from 470' to 480' bgs
480				End of mud logging at 480.0 ft End of profile at 481.25 ft
490				

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

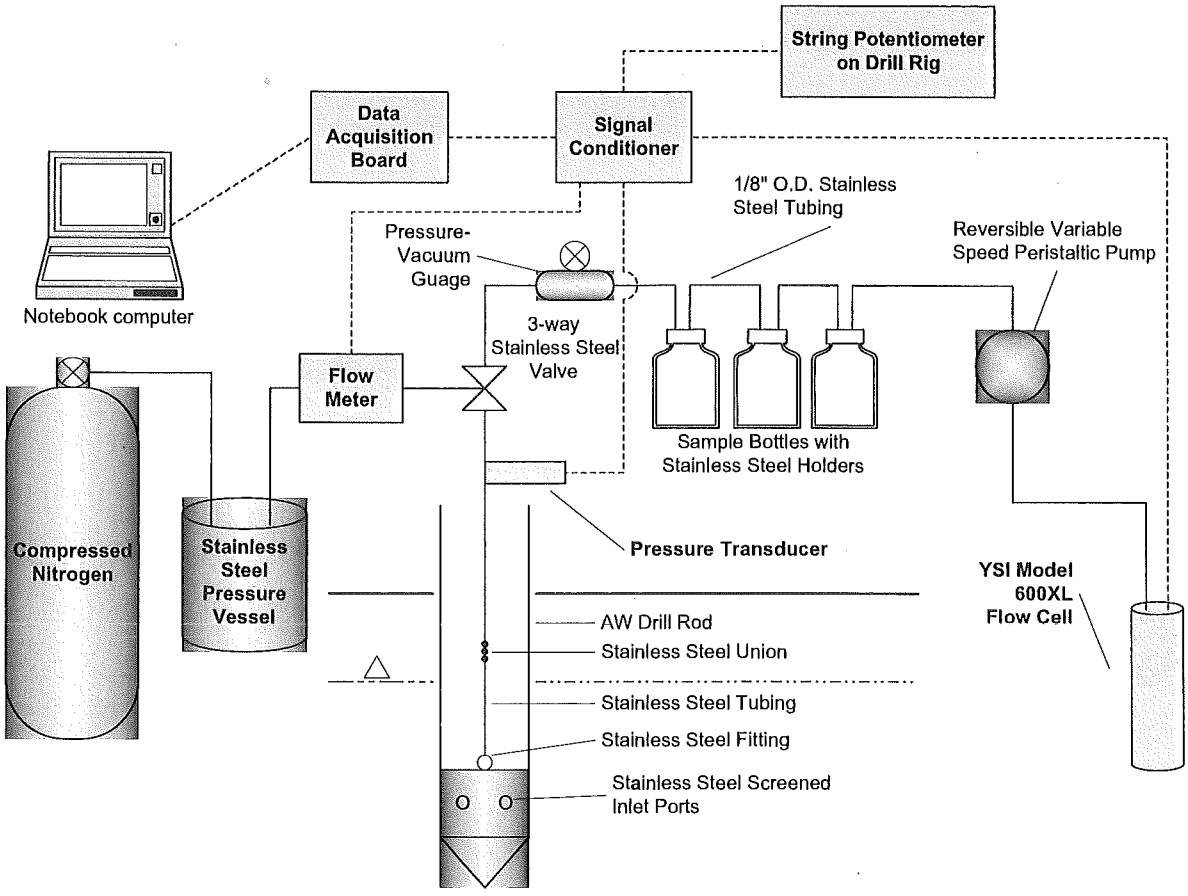
B

APPENDIX

GREEN SEAL

Appendix B

Waterloo Profiler



MALCOLM PIRNIE, INC FAIR LAWN, NJ	**Waterloo Profiler® Data Acquisition Configuration**	**GTEOSI Former Sylvania Electric Products Facility Hicksville, NY**	**Figure A-2**

WATERLOO PROFILER®

The Waterloo Profiler® (Figure A-1) is capable of collecting groundwater samples in lower hydraulic conductivity settings; measuring hydraulic head (if the potentiometric surface is within the suction limit); measuring an index of hydraulic conductivity; and measuring physico-chemical properties such as pH, specific conductance, dissolved oxygen, oxidation/ reduction potential and temperature.

The current profiler tip is equipped with sixteen ports. The ports are arranged in four rows, resulting in an open interval of approximately 6 cm (2.4 inches) in length. This configuration increases the speed of sampling and minimizes the potential for the ports to become clogged while passing through geologic units with a high content of fine-grained sand, silt, and clay. To further minimize the potential for clogging, the screens are flush with the outer surface of the Profiler tip. This prevents the fine-grained material from entering the recessed ports and blocking groundwater flow into the unit. In addition, each port is fitted with a double screen: a coarse outer screen and a finer inner screen.

The stainless steel profiler tip is fitted with 1/4 inch outside diameter stainless steel tubing as shown on Figure A-1. The tube fits into the bottom of a gas drive pump and is sealed with "O"-rings. Water flows into the pump through the Viton reed valve, which prevents flow back out of the pump. Once the pump has filled with formation water, compressed nitrogen is pumped down the nitrogen line, forcing the water up the sample line to the surface. When the profiler is driven, the pump is filled with analyte free water and pressurized with nitrogen while water is pushed down the K-Pro line and out the ports on the profiler tip. Three sets of tubing are added in five-foot lengths using SwageLok couplings as the profiler is driven. The drive rod coupled to the profiler tip is 1.75-inch outside diameter direct push. This diameter is uniform along the length of the rod and profiler to minimize the potential for fluid movement along the rod to the tip.

The standard data acquisition configuration is shown in Figure A-2. This configuration includes the use of a peristaltic pump with in-line sample containers. These containers are standard glass Volatile Organic Analysis (VOA) sample bottles held in stainless steel bottle holders. The sample is collected directly into the bottles as it is pushed out of the downhole gas drive pump. The data is collected by a sophisticated data

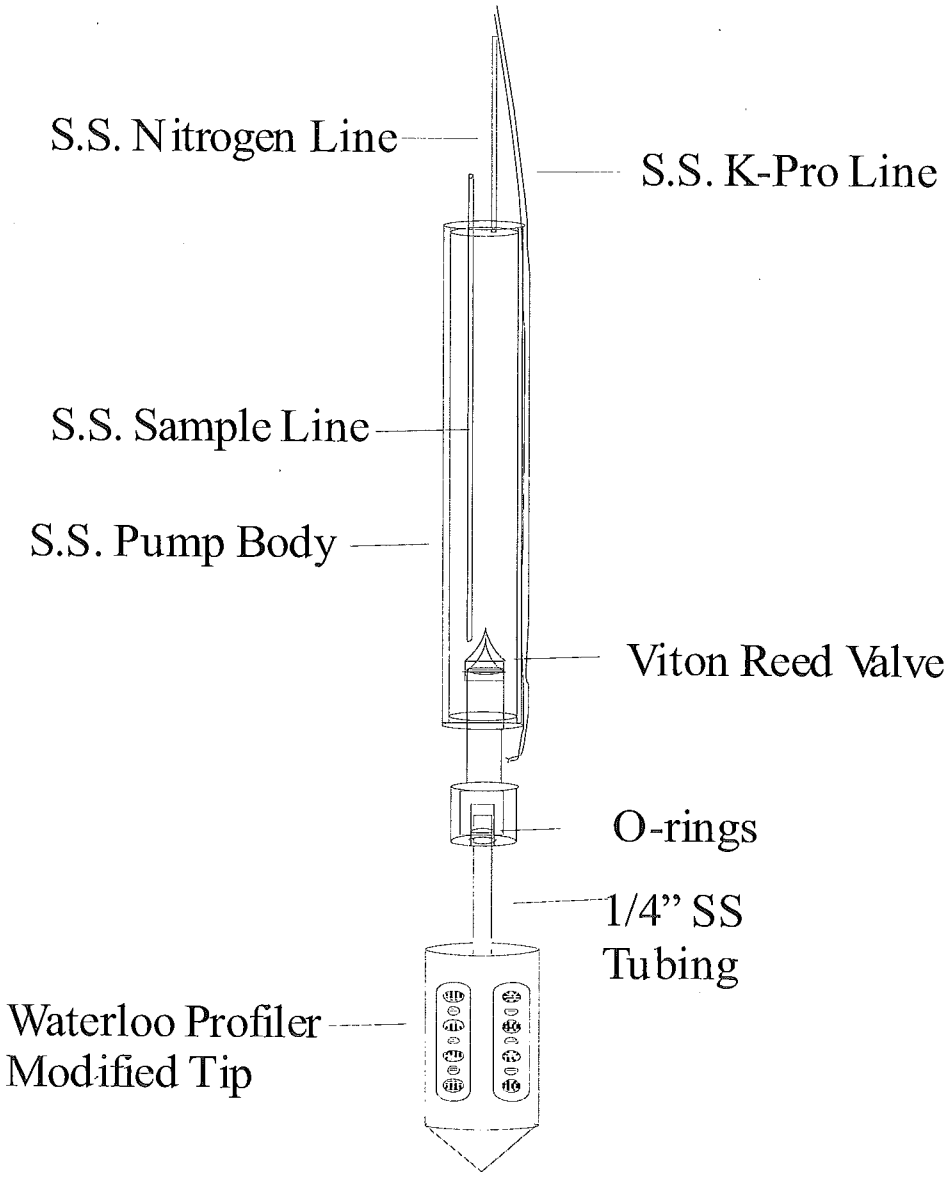
acquisition system. Various sensors are in the Profiler and are wired to a signal-conditioning device. The signal conditioning device outputs to a data acquisition board that in turn outputs to a Pentium notebook computer. Data are processed and viewed graphically in real time on the notebook computer screen and the data are written to files on disk.

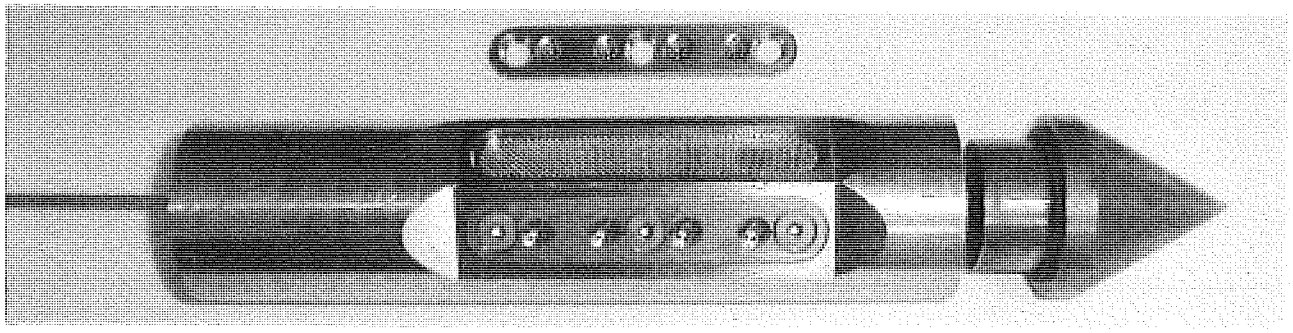
At approximately every ten feet and based on the real-time index of hydraulic conductivity record, driving ceases and a sample is collected after purging sufficient volume of water for the physico-chemical parameters to equilibrate. This volume is typically between 500 to 2000 milliliters.

The index of hydraulic conductivity is collected continuously in every hole during the sampling push. This data helps to better understand the hydrostratigraphy across the site. The index of hydraulic conductivity (I_k) is a tool for assessing hydrostratigraphy while advancing the profiler. The index of hydraulic conductivity is the flow rate of water pushed through the profiler into the formation using a compressed nitrogen pressure source, divided by the corrected head (measured pressure less head loss due to friction). This value is not a hydraulic conductivity value, but it provides an excellent indication of the areas of relatively high and low hydraulic conductivity. The flow and pressure are measured using an electronic pressure transducer and flow meter at the ground surface as water is pumped into the formation during driving. This data is logged on disk in the notebook computer and are plotted versus depth on the notebook screen.

The rate of penetration shows stratigraphic changes that may affect contaminant transport or remedial design. Rate of penetration will be measured using a string potentiometer mounted on the direct push rig. This device electronically tracks the position of the hammer and the depth of the profiler tip. The depth is divided by elapsed time to provide a rate of penetration log, displayed in real time on the laptop computer.
Using flow cell parameters rather than a predetermined purge volume assures that formation water is sampled. In addition, the distribution of the flow cell parameters provides insight into the geochemical environment. A series of water quality probes in a YSI Model 600XL, equipped with a custom-built 50 mL volume flow cell, is placed in-line on the discharge side of the pump. This custom flow cell minimizes the volume of water that must be pumped to achieve equilibration of parameters. The YSI and flow cell

are integrated directly into the data acquisition system. These data are displayed on the notebook computer screen in the back of box truck. The YSI probes monitor pH, specific conductance, temperature, dissolved oxygen and oxidation/reduction potential. This data is used in real-time to determine when sufficient purging has occurred prior to sampling.





MALCOLM PIRNIE MALCOLM PIRNIE, INC FAIR LAWN, NJ	**Waterloo Profiler®**	**GTEOSI** **Former Sylvania Electric Products Facility** **Hicksville, NY**	**Figure A-1**

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

C

APPENDIX

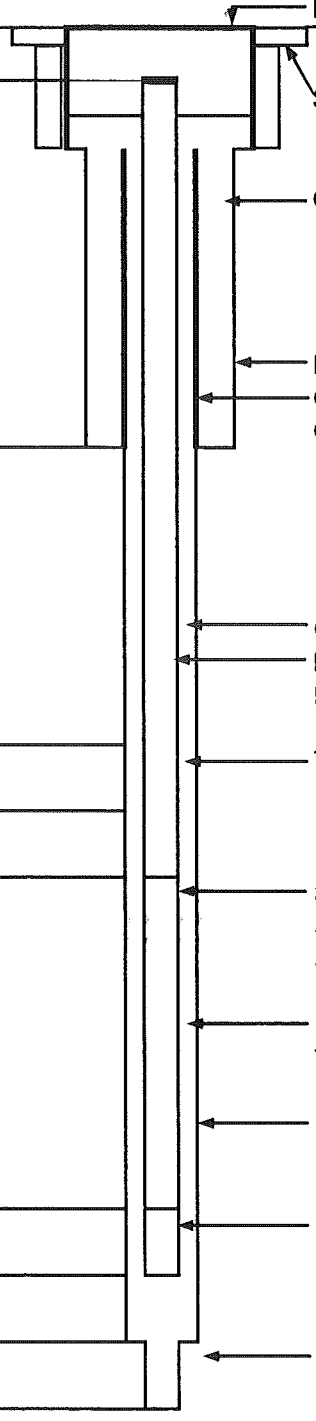
GREEN SEAL

Appendix C

Well Construction Logs

MALCOLM PIRNIE, Inc.			FLUSHMOUNT OVERBURDEN Multicased Monitoring Well MWP 110-355
Project: Profiling/Well Installation Hicksville, NY		**Number:** 4563-001	
Client: GTEOSI		**Date:** 8/13/2007	**Subcontractor:** SGS Drilling
Drilling Method: Mud rotary			**Measuring Point**
Development Method: Submersible Pump			**Type:** Top Of Riser
Development Dates: 9/18/2007			**Elevation (ft):** 0.0

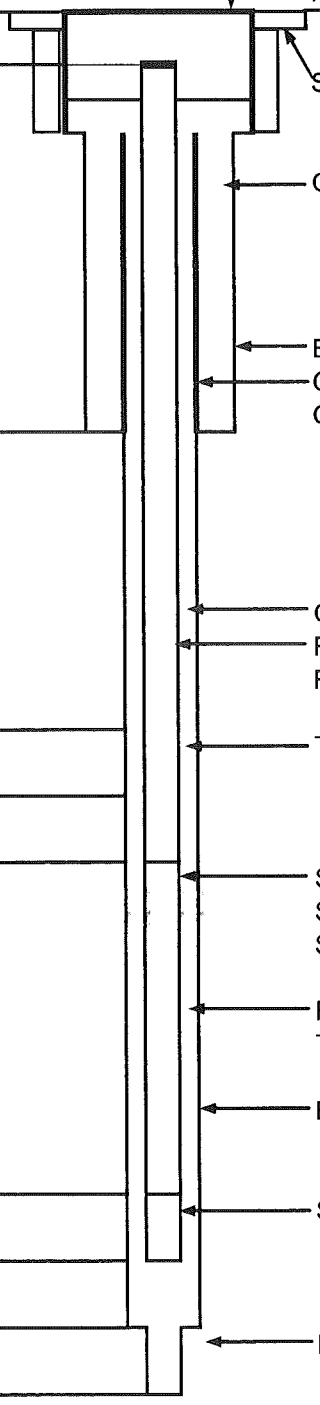
Item	Depth, below Measuring Point (ft)	Elevation (ft)	Description
Grade	0.0	0	Flushmount Diameter: 9 (in.)
Riser Pipe	0.5	-0.5	Surface Seal Type: Concrete
			Grout Type: Cement-bentonite
			Borehole Diameter: 12 (in.)
			Casing Type: Sch 40 PVC
Base of Casing	78.5	-78.5	Casing ID: 8 (in.)
			Grout Type: Cement-bentonite
			Riser Pipe Type: Sch 80 PVC
			Riser Pipe ID: 4 (in.)
Top of Seal.	330	-330	Type of Seal: Bentonite Slurry
Top of Filter Pack.	340.2	-340.2	
Top of Screen.	345	-345	Screen Type: Sch 80 PVC
			Screen ID: 4 (in.)
			Screen Slot Size: 0.02 (in.)
			Filter/Sand Pack Type: Graded #1 silica sand
			Borehole Diameter: 7 7/8 (in.)
Base of Screen.	355	-355	Sump: Sch 80 PVC
End Cap	357	-357	
Drilled Depth	362	-362	Fallback/Backfill: Not Applicable
Total Depth	362	-362	



Notes:

MALCOLM PIRNIE, Inc.			FLUSHMOUNT OVERBURDEN Multicased Monitoring Well MWP 110-440
Project: Profiling/Well Installation Hicksville, NY		**Number:** 4563-001	
Client: GTEOSI		**Date:** 8/24/2007	**Subcontractor:** SGS Drilling
Drilling Method:	Mud rotary		**Measuring Point**
Development Method:	Submersible Pump		**Type:** Top Of Riser
Development Dates: 9/19/2007-9/20/2007			**Elevation (ft):** 0.0

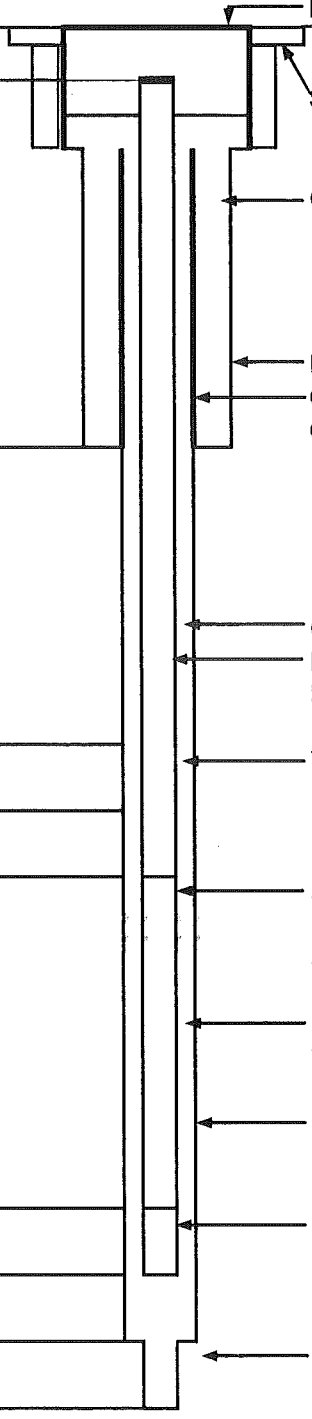
Item	Depth, below Measuring Point (ft)	Elevation (ft)	Description
Grade	0.0	0	Flushmount Diameter: 9 (in.)
Riser Pipe	0.5	-0.5	Surface Seal Type: Concrete
			Grout Type: Cement-bentonite
			Borehole Diameter: 12 (in.)
			Casing Type: Sch 40 PVC
Base of Casing	78.4	-78.4	Casing ID: 8 (in.)
			Grout Type: Cement-bentonite
			Riser Pipe Type: Sch 80 PVC
			Riser Pipe ID: 4 (in.)
Top of Seal.	415	-415	Type of Seal: Bentonite Slurry
Top of Filter Pack.	424	-424	
Top of Screen.	430	-430	Screen Type: Sch 80 PVC
			Screen ID: 4 (in.)
			Screen Slot Size: 0.02 (in.)
			Filter/Sand Pack Type: Graded #1 silica sand
			Borehole Diameter: 7 7/8 (in.)
Base of Screen.	440	-440	Sump: Sch 80 PVC
End Cap	444	-444	
Drilled Depth	445	-445	Fallback/Backfill: Native sand
Total Depth	445	-445	



Notes:

MALCOLM PIRNIE, Inc.			FLUSHMOUNT OVERBURDEN Multicased Monitoring Well MWP 114-290
Project: Profiling/Well Installation Hicksville, NY		**Number:** 4563-001	
Client: GTEOSI		**Date:** 9/10/2007	**Subcontractor:** SGS Drilling
Drilling Method:	Mud rotary		**Measuring Point**
Development Method:	Submersible Pump		**Type:** Top Of Riser
Development Dates: 9/25/2007			**Elevation (ft):** 0.0

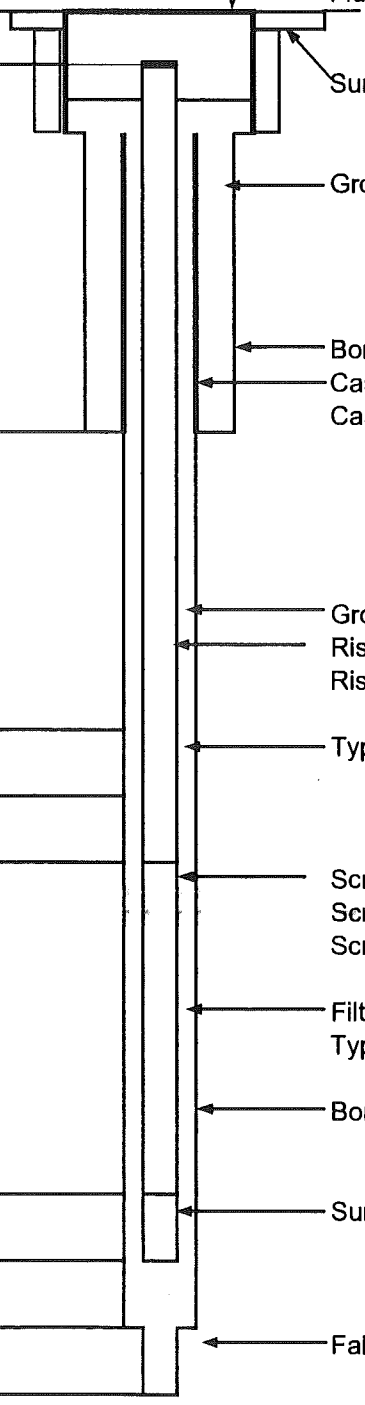
Item	Depth, below Measuring Point (ft)	Elevation (ft)	Description	
Grade	0.0	0	Flushmount Diameter:	9 (in.)
Riser Pipe	0.5	-0.5	Surface Seal Type:	Concrete
			Grout Type:	Cement-bentonite
			Borehole Diameter:	13 (in.)
			Casing Type:	Sch 40 PVC
Base of Casing	78.5	-78.5	Casing ID:	8 (in.)
			Grout Type:	Cement-bentonite
			Riser Pipe Type:	Sch 80 PVC
			Riser Pipe ID:	4 (in.)
Top of Seal.	265	-265	Type of Seal:	Bentonite Slurry
Top of Filter Pack.	277.6	-277.6		
Top of Screen.	280	-280	Screen Type:	Sch 80 PVC
			Screen ID:	4 (in.)
			Screen Slot Size:	0.02 (in.)
			Filter/Sand Pack Type:	Graded #1 silica sand
			Borehole Diameter:	7 7/8 (in.)
Base of Screen.	290	-290	Sump:	Sch 80 PVC
End Cap	292	-292		
Drilled Depth	294	-294	Fallback/Backfill:	Not Applicable
Total Depth	294	-294		



Notes:

MALCOLM PIRNIE, Inc.			FLUSHMOUNT OVERBURDEN Multicased Monitoring Well MWP 114-170
Project: Profiling/Well Installation Hicksville, NY	**Number:** 4563-001		
Client: GTEOSI	**Date:** 10/12/2007	**Subcontractor:**	SGS Drilling
Drilling Method: Mud rotary		**Measuring Point**	
Development Method: Submersible Pump		**Type:**	Top Of Riser
Development Dates: 10/29/2007		**Elevation (ft):**	0.0

Item	Depth, below Measuring Point (ft)	Elevation (ft)	Description	
Grade	0.0	0	Flushmount Diameter:	9 (in.)
Riser Pipe	0.5	-0.5	Surface Seal Type:	Concrete
			Grout Type:	Cement-bentonite
			Borehole Diameter:	12 (in.)
			Casing Type:	Sch 40 PVC
Base of Casing	76	-76	Casing ID:	8 (in.)
			Grout Type:	Cement-bentonite
			Riser Pipe Type:	Sch 80 PVC
			Riser Pipe ID:	4 (in.)
Top of Seal.	145	-145		
			Type of Seal:	Bentonite Slurry
Top of Filter Pack.	157	-157		
Top of Screen.	160	-160		
			Screen Type:	Sch 80 PVC
			Screen ID:	4 (in.)
			Screen Slot Size:	0.02 (in.)
			Filter/Sand Pack Type:	Graded #1 silica sand
			Borehole Diameter:	7 7/8 (in.)
Base of Screen.	170	-170		
			Sump:	Sch 80 PVC
End Cap	172	-172		
Drilled Depth	174	-174		
			Fallback/Backfill:	Not Applicable
Total Depth	174	-174		



Notes:

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

D

APPENDIX

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APPENDIX

Appendix D

USEPA Region II Low Flow Groundwater Sampling Protocol

STANDARD OPERATING PROCEDURE FOR LOW-STRESS (Low Flow) / MINIMAL DRAWDOWN GROUND-WATER SAMPLE COLLECTION

INTRODUCTION

The collection of "representative" water samples from wells is neither straightforward nor easily accomplished. Ground-water sample collection can be a source of variability through differences in sample personnel and their individual sampling procedures, the equipment used, and ambient temporal variability in subsurface and environmental conditions. Many site inspections and remedial investigations require the sampling at ground-water monitoring wells within a defined criterion of data confidence or data quality, which necessitates that the personnel collecting the samples are trained and aware of proper sample-collection procedures.

The purpose of this standard operating procedure (SOP) is to provide a method which minimize the amount of impact the purging process has on the ground water chemistry during sample collection and to minimize the volume of water that is being purged and disposed. This will take place by placing the pump intake within the screen interval and by keeping the drawdown at a minimal level (0.33 feet) (Puls and Barcelona, 1996) until the water quality parameters have stabilized and sample collection is complete. The flow rate at which the pump will be operating will be depended upon both hydraulic conductivity of the aquifer and the drawdown with the goal of minimizing the drawdown. The flow rate from the pump during purging and sampling will be at a rate that will not compromise the integrity of the analyte that is being sampled. This sampling procedure may or may not provide a discrete ground water sample at the location of the pump intake. The flow of ground-water to the pump intake will be dependent on the distribution of the hydraulic conductivity (K) of the aquifer within the screen interval. In order to minimize the drawdown in the monitoring well a low-flow rate must be utilized. Low-flow refers to the velocity with which water enters the pump intake from the surrounding formation in the

immediate vicinity of the well screen. It does not necessarily refer to the flow rate of water discharged at the surface, which can be affected by flow regulators or restrictions (Puls and Barcelona, 1996). This SOP was developed by the Superfund/RCRA Ground Water Forum and draws from an USEPA's Ground Water Issue Paper, Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedure, by Robert W. Puls and Michael J. Barcelona. Also, available USEPA Regional SOPs regarding Low-Stress(Low Flow)Purging and Sampling were used for this SOP.

SCOPE AND APPLICATION

This SOP should be used primarily at monitoring wells which have a screen or an open interval with a length of ten feet or less and can accept a sampling device which minimizes the disturbance to the aquifer or the water column in the well casing. The screen or open interval should have been optimally located to intercept an existing contaminant plume(s) or along flowpaths of potential contaminant releases. Knowledge of the contaminant distribution within the screen interval is highly recommended and is essential for the success of this sampling procedure. The ground-water samples which are collected using this procedure are acceptable for the analyses of ground-water contaminants which may be found at Superfund and RCRA contamination sites. The analytes may be volatile, semi-volatile organic compounds, pesticides, PCBs, metals and other inorganic compounds. The screened interval should be located within the contaminant plume(s) and the pump intake should be placed at or near the known source of the contamination within the screened interval. It is critical to place the pump intake in the exact location or depth for each sampling event. This argues for the use of dedicated, permanently installed sampling devices whenever possible. If this is not possible then the placement of the pump intake should be positioned with a calibrated sampling pump hose sounded with a weighted-tape or using a pre-measured hose. The pump intake should not be placed near the bottom of the screened interval to avoid disturbing any sediment that may have settled at the bottom of the well.

Water-quality indicator parameters and water levels must be measured during purging, prior to sample collection. Stabilization of the water quality parameters as well as

monitoring water levels are a prerequisite to sample collection. The water-quality indicator parameters which are recommended include the following: specific electrical conductance, dissolved oxygen, turbidity, oxidation-reduction potential, pH, and temperature. The latter two parameters are useful data, but are generally insensitive as purging parameters. Oxidation-reduction potential may not always be appropriate stabilization parameter, and will depend on site-specific conditions. However, readings should be recorded because of its value as a double check for oxidation conditions, and for fate and transport issues. Also, when samples are collected for metals, semi-volatile organic compounds, and pesticides every effort must be made to reduce turbidity to 10 NTUs or less (not just the stabilization of turbidity) prior to the collection of the water sample. In addition to the measurement of the above parameters, depth to water must be measured during purging (U.S. Environmental Protection Agency, 1995).

Proper well construction, development and maintenance are essential for any ground-water sampling procedure. Prior to conducting the field work, information on the construction of the well and well development should be obtained and that information factored into the site specific sampling procedure. The attached Sampling Checklist is an example of the type of information that is useful.

Stabilization of the water-quality indicator parameters is the criterion for sample collection. But if stabilization is not occurring and the procedure has been strictly followed, then sample collection can take place once three (minimum) to six (maximum) casing volumes have been removed (Schuller et al., 1981 and U.S. Environmental Protection Agency., 1986; Wilde et al., 1998; Gibs and Imbrigiotta., 1990). The specific information on what took place during purging must be recorded in the field notebook or in the ground-water sampling log.

This SOP is not to be used where non-aqueous phase liquids (immiscible fluids) are present in the monitoring well.

EQUIPMENT

- Depth-to-water measuring device - An electronic water-level indicator or steel tape and chalk, with marked intervals of

0.01 foot. Interface probe for determination of liquid products (NAPL) presence, if needed.

- Steel tape and weight - Used for measuring total depth of well. Lead weight should not be used.
- Sampling pump - Submersible or bladder pumps with adjustable rate controls are preferred. Pumps are to be constructed of inert materials, such as stainless steel and teflon®. Pump types that are acceptable include gear and helical driven, centrifugal (low-flow type) and air-activated piston. Adjustable rate, peristaltic pump can be used when the depth to water is 20 feet or less.
- Tubing - Teflon® or Teflon® lined polyethylene tubing is preferred when sampling for organic compounds. Polyethylene tubing can be used when sampling inorganics.
- Power Source - If a combustion type (gasoline or diesel-driven) generator is used, it must be placed downwind of the sampling area.
- Flow measurement supplies - flow meter, graduated cylinder and a stop watch.
- Multi-Parameter meter with flow-through-cell - This can be one instrument or more contained in a flow-through cell. The water-quality indicator parameters which must be monitored are pH, ORP/EH, dissolved oxygen (DO), turbidity, specific conductance, and temperature. Turbidity readings must be collected before the flow cell because of the potential for sediment buildup which can bias the turbidity measurements. Calibration fluids for all instruments should be NIST-traceable and there should be enough for daily calibration through-out the sampling event. The inlet of the flow cell must be located near the bottom of the flow cell and the outlet near the top. The size of the flow cell should be kept to a minimum and a closed cell is preferred. The flow cell must not contain any air or gas bubbles when monitoring for the water-quality indicator parameters.
- Decontamination Supplies - Including a reliable and documented source of distilled water and any solvents (if used). Pressure sprayers, buckets or decontamination tubes for pumps, brushes and non-phosphate soap will also be needed.
- Sample bottles, sample preservation supplies, sample tags or labels and chain of custody forms.
- Approved Field Sampling and Quality Assurance Project Plan.
- Well construction data, field and water quality data from the previous sampling event.
- Well keys and map of well locations.

- Field notebook, ground-water sampling logs and calculator. A suggested field data sheet (ground-water sampling record or ground-water sampling log) are provided in the attachment.
- Filtration equipment, if needed. An in-line disposable filter is recommended.
- Polyethylene sheeting which will be placed on ground around the well head.
- Personal protective equipment specified in the site Health and Safety Plan.
- Air monitoring equipment as specified in the Site Health and Safety Plan.
- Tool box - All needed tools for all site equipment used.
- A 55-gallon drum or container to contain the purged water.

Materials of construction of the sampling equipment (bladders, pumps, tubing, and other equipment that comes in contact with the sample) should be limited to stainless steel, Teflon®, glass and other inert material. This will reduce the chance of the sampling materials to alter the ground-water where concentrations of the site contaminants are expected to be near the detection limits. The sample tubing diameter thickness should be maximized and the tubing length should be minimized so that the loss of contaminants into and through the tubing walls may be reduced and the rate of stabilization of ground-water parameters is maximized. The tendency of organics to sorb into and out of material makes the appropriate selection of sample tubing material critical for trace analyses (Pohlmann and Alduino, 1992; Parker and Ranney, 1998).

PURGING AND SAMPLING PROCEDURES

The following describes the purging and sampling procedures for the Low-Stress (Low Flow)/ Minimal Drawdown method for the collection of ground-water samples. These procedures also describe steps for dedicated and non-dedicated systems.

Pre-Sampling Activities (Non-dedicated and dedicated system)

1. Sampling locations must begin at the monitoring well with the least contamination, generally up-gradient or furthest from the site or suspected source. Then proceed systematically to the monitoring wells with the most contaminated ground water.

2. Check and record the condition of the monitoring well for damage or evidence of tampering. Lay out polyethylene sheeting around the well to minimize the likelihood of contamination of sampling/purging equipment from the soil. Place monitoring, purging and sampling equipment on the sheeting.

3. Unlock well head. Record location, time, date and appropriate information in a field logbook or on the ground-water sampling log (See attached ground-water sampling record and ground-water sampling log as examples).

4. Remove inner casing cap.

5. Monitor the headspace of the monitoring well at the rim of the casing for volatile organic compounds (VOC) with a Photo-ionization detector (PID) or Flame ionization detector (FID), and record in the logbook. If the existing monitoring well has a history of positive readings of the headspace, then the sampling must be conducted in accordance with the Health and Safety Plan.

6. Measure the depth to water (water level must be measured to nearest 0.01 feet) relative to a reference measuring point on the well casing with an electronic water level indicator or steel tape and record in logbook or ground-water sampling log. If no reference point is found, measure relative to the top of the inner casing, then mark that reference point and note that location in the field logbook. Record information on depth to ground water in the field logbook or ground water sampling log. Measure the depth to water a second time to confirm initial measurement; measurement should agree within 0.01 feet or re-measure.

7. Check the available well information or field information for the total depth of the monitoring well. Use the information from the depth of water in step six and the total depth of the monitoring well to calculate the volume of the water in the monitoring well or the volume of one casing. Record information in field logbook or ground-water sampling log.

Purging and Sampling Activities

8A. Non-dedicated system - Place the pump and support equipment at the wellhead and slowly lower the pump and tubing down into the monitoring well until the location of the pump intake is set

at a pre-determined location within the screen interval. The placement of the pump intake should be positioned with a calibrated sampling pump hose, sounded with a weighted-tape, or using a pre-measured hose. Refer to the available monitoring well information to determine the depth and length of the screen interval. Measure the depth of the pump intake while lowering the pump into location. Record pump location in field logbook or groundwater sampling log.

8B. Dedicated system - Pump has already been installed, refer to the available monitoring well information and record the depth of the pump intake in the field logbook or ground-water sampling log.

9. Non-dedicated system and dedicated system - Measure the water level (water level must be measured to nearest 0.01 feet) and record information on the ground-water sampling log, leave water level indicator probe in the monitoring well.

10. Non-dedicated and dedicated system - Connect the discharge line from the pump to a flow-through cell. A "T" connection is needed prior to the flow cell to allow for the collection of water for the turbidity measurements. The discharge line from the flow-through cell must be directed to a container to contain the purge water during the purging and sampling of the monitoring well.

11. Non-dedicated and dedicated system - Start pumping the well at a low flow rate (0.2 to 0.5 liter per minute) and slowly increase the speed. Check water level. Maintain a steady flow rate while maintaining a drawdown of less than 0.33 feet (Puls and Barcelona, 1996). If drawdown is greater than 0.33 feet lower the flow rate. 0.33 feet is a goal to help guide with the flow rate adjustment. It should be noted that this goal may be difficult to achieve under some circumstances due to geologic heterogeneities within the screened interval, and may require adjustment based on site-specific conditions and personal experience (Puls and Barcelona, 1996).

12. Non-dedicated and dedicated system - Measure the discharge rate of the pump with a graduated cylinder and a stop watch. Also, measure the water level and record both flow rate and water level on the groundwater sampling log. Continue purging, monitor and record water level and pump rate every three to five minutes during purging. Pumping rates should be kept at minimal flow to

ensure minimal drawdown in the monitoring well.

13. Non-dedicated and dedicated system - During the purging, a minimum of one tubing volume (including the volume of water in the pump and flow cell) must be purged prior to recording the water-quality indicator parameters. Then monitor and record the water-quality indicator parameters every three to five minutes. The water-quality indicator field parameters are turbidity, dissolved oxygen, specific electrical conductance, pH, redox-potential and temperature. Oxidation-reduction potential may not always be an appropriate stabilization parameter, and will depend on site-specific conditions. However, readings should be recorded because of its value as a double check for oxidizing conditions. Also, for the final dissolved oxygen measurement, if the readings are less than 1 milligram per liter, it should be collected and analyze with the spectrophotometric method (Wilde et al., 1998 Wilkin et al., 2001), colorimetric or Winkler titration (Wilkin et al., 2001). The stabilization criterion is based on three successive readings of the water quality field parameters; the following are the criteria which must be used:

Parameter	**Stabilization Criteria**	**Reference**
pH	± 0.1 pH units	Puls and Barcelona, 1996; Wilde et al.,
Specific electrical conductance (SEC)	± 3% μS/cm	Puls and Barcelona, 1996
oxidation-reduction potential (ORP)	± 10 millivolts	Puls and Barcelona 1996
turbidity	± 10 % NTUs (when turbidity is greater than 10 NTUs)	Puls and Barcelona, 1996 Wilde et al., 1998
dissolved oxygen	± 0.3 milligrams per liter	Wilde et al., 1998

Once the criteria have been successfully met indicating that the water quality indicator parameters have stabilized, then sample collection can take place.

14. If a stabilized drawdown in the well can't be maintained at 0.33 feet and the water level is approaching the top of the screened interval, reduce the flow rate or turn the pump off (for 15 minutes) and allow for recovery. It should be noted whether or not the pump has a check valve. A check valve is required if the pump is shut off. Under no circumstances should the well be

pumped dry. Begin pumping at a lower flow rate, if the water draws-down to the top of the screened interval again turn pump off and allow for recovery. If two tubing volumes (including the volume of water in the pump and flow cell) have been removed during purging then sampling can proceed next time the pump is turned on. This information should be noted in the field notebook or ground-water sampling log with a recommendation for a different purging and sampling procedure.

15. Non-dedicated and dedicated system - Maintain the same pumping rate or reduce slightly for sampling (0.2 to 0.5 liter per minute) in order to minimize disturbance of the water column. Samples should be collected directly from the discharge port of the pump tubing prior to passing through the flow-through cell. Disconnect the pump's tubing from the flow-through-cell so that the samples are collected from the pump's discharge tubing. For samples collected for dissolved gases or Volatile Organic Compounds (VOCs) analyses, the pump's tubing needs to be completely full of ground water to prevent the ground water from being aerated as the ground water flows through the tubing. The sequence of the samples is immaterial unless filtered (dissolved) samples are collected and they must be collected last (Puls and Barcelona, 1996). All sample containers should be filled with minimal turbulence by allowing the ground water to flow from the tubing gently down the inside of the container. When filling the VOC samples a meniscus must be formed over the mouth of the vial to eliminate the formation of air bubbles and head space prior to capping. In the event that the ground water is turbid, (greater then 10 NTUs), a filtered metal (dissolved) sample also should be collected.

If filtered metal sample is to be collected, then an in-line filter is fitted at the end of the discharge tubing and the sample is collected after the filter. The in-line filter must be pre-rinsed following manufacturer's recommendations and if there are no recommendations for rinsing, a minimum of 0.5 to 1 liter of ground water from the monitoring well must pass through the filter prior to sampling.

16A. Non-dedicated system - Remove the pump from the monitoring well. Decontaminate the pump and dispose of the tubing if it is non-dedicated.

16B Dedicated system - Disconnect the tubing that extends from the plate at the wellhead (or cap) and discard after use.

17. Non-dedicated system - Before locking the monitoring well, measure and record the well depth (to 0.1 feet).
Measure the total depth a second time to confirm initial measurement; measurement should agree within 0.01 feet or re-measure.

18. Non-dedicated and dedicated system - Close and lock the well.

DECONTAMINATION PROCEDURES

Decontamination procedures for the water level meter and the water quality field parameter sensors.
The electronic water level indicator probe/steel tape and the water-quality field parameter sensors will be decontaminated by the following procedures:
1. The water level meter will be hand washed with phosphate free detergent and a scrubber, then thoroughly rinsed with distilled water.

2. Water quality field parameter sensors and flow-through cell will be rinsed with distilled water between sampling locations. No other decontamination procedures are necessary or recommended for these probes since they are sensitive. After the sampling event, the flow cell and sensors must be cleaned and maintained per the manufacturer's requirements.

Decontamination Procedure for the Sampling Pump

Upon completion of the ground water sample collection the sampling pump must be properly decontaminated between monitoring wells. The pump and discharge line including support cable and electrical wires which were in contact with the ground water in the well casing must be decontaminated by the following procedure:

1. The outside of the pump, tubing, support cable and electrical wires must be pressured sprayed with soapy water, tap water and distilled water. Spray outside of tubing and pump until water is flowing off of tubing after each rinse. Use bristle brush to help remove visible dirt and contaminants.
2.Place the sampling pump in a bucket or in a short PVC casing (4-in. diameter) with one end capped. The pump placed in this device must be completely submerged in the water. A small amount of phosphate free detergent must be added to the potable water

(tap water).
3. Remove the pump from the bucket or 4-in. casing and scrub the outside of the pump housing and cable.
4. Place pump and discharge line back in the 4-in. casing or bucket, start pump and re-circulate this soapy water for 2 minutes (wash).
5. Re-direct discharge line to a 55-gallon drum, continue to add 5 gallons of potable water (tap water)or until soapy water is no longer visible.
6. Turn pump off and place pump into a second bucket or 4-in. Casing which contains tap water, continue to add 5-gallons of tap water (rinse).
7. Turn pump off and place pump into a third bucket or 4-in. casing which contains distilled/deionized water, continue to add three to five gallons of distilled/deionized water (final rinse).
8. If a hydrophobic contaminant is present (such as separate phase, high levels of PCB's, etc.) An additional decon step, or steps, may be added. For example, an organic solvent, such as reagent-grade isopropanol alcool may be added as a first spraying/bucket prior to the soapy water rinse/bucket.

FIELD QUALITY CONTROL

Quality control (QC) samples must be collected to verify that sample collection and handling procedures were performed adequately and that they have not compromised the quality of the ground water samples. The appropriate EPA program guidance must be consulted in preparing the field QC sample requirements for the site-specific Quality Assurance Project Plan (QAPP).

There are five primary areas of concern for quality assurance (QA) in the collection of representative ground-water samples:

1. Obtaining a ground-water sample that is representative of the aquifer or zone of interest in the aquifer. Verification is based on the field log documenting that the field water-quality parameters stabilized during the purging of the well, prior to sample collection.
2. Ensuring that the purging and sampling devices are made of materials, and utilized in a manner, which will not interact with or alter the analyses.
3. Ensuring that results generated by these procedures are reproducible; therefore, the sampling scheme should incorporate co-located samples (duplicates).

4. Preventing cross-contamination. Sampling should proceed from least to most contaminated wells, if known. Field equipment blanks should be incorporated for all sampling and purging equipment, and decontamination of the equipment is therefore required.
5. Properly preserving, packaging, and shipping samples.

All field quality control samples must be prepared the same as regular investigation samples with regard to sample volume, containers, and preservation. The chain of custody procedures for the QC samples will be identical to the field ground water samples. The following are quality control samples which must be collected during the sampling event:

Sample Type	Frequency
• Field duplicates	1 per 20 samples
• Matrix spike	1 per 20 samples
• Matrix spike duplicate	1 per 20 samples
• Equipment blank	Per Regional requirements or policy
• Trip blank (VOCs)	1 per sample cooler
• Temperature blank	1 per sample cooler

HEALTH AND SAFETY CONSIDERATIONS

Depending on the site-specific contaminants, various protective programs must be implemented prior to sampling the first well. The site Health and Safety Plan should be reviewed with specific emphasis placed on the protection program planned for the sampling tasks. Standard safe operating practices should be followed, such as minimizing contact with potential contaminants in both the liquid and vapor phase through the use of appropriate personal protective equipment.

Depending on the type of contaminants expected or determined in previous sampling efforts, the following safe work practices will be employed:

Particulate or metals contaminants

1. Avoid skin contact with, and incidental ingestion of, purge water.
2. Use protective gloves and splash protection.

Volatile organic contaminants

1. Avoid breathing constituents venting from well.
2. Pre-survey the well head space with an appropriate device as specified in the Site Health and Safety Plan.
3. If monitoring results indicate elevated organic constituents, sampling activities may be conducted in level C protection. At a minimum, skin protection will be afforded by disposable protective clothing, such as Tyvek®.

General, common practices should include avoiding skin contact with water from preserved sample bottles, as this water will have pH less than 2 or greater than 10. Also, when filling pre-acidified VOA bottles, hydrochloric acid fumes may be released and should not be inhaled.

POST-SAMPLING ACTIVITIES

Several activities need to be completed and documented once ground-water sampling has been completed. These activities include, but are not limited to:

1. Ensure that all field equipment has been decontaminated and returned to proper storage location. Once the individual field equipment has been decontaminated, tag it with date of cleaning, site name, and name of individual responsible.
2. All sample paperwork should be processed, including copies provided to the Regional Laboratory, Sample Management Office, or other appropriate sample handling and tracking facility.
3. All field data should be complied for site records.
4. All analytical data when processed by the analytical laboratory, should be verified against field sheets to ensure all data has been returned to sampler.

REFERENCES

Gibs, J. and T.E. Imbrigiotta, 1990, Well-Purging Criteria for Sampling Purgeable Organic Compounds; Ground Water, Vol. 28, No. 1, pp 68-78.

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SAMPLING CHECKLIST

Well Identification:_____

Map of Site Included: Y or N
Wells Clearly Identified w/ Roads: Y or N
Well Construction Diagram Attached: Y or N

Well Construction:

Diameter of Borehole:_____ Diameter of Casing:_____
Casing Material:_____ Screen Material:_____

Screen Length:_____ Total Depth:_____

Approximate Depth to Water:_____
Maximum Well Development Pumping Rate:_____
Date of Last Well Development:_____

Previous Sampling Information:

Was the Well Sampled Previously: Y or N
(If Sampled, Fill Out Table Below)

Table of Previous Sampling Information

Parameter	Previously Sampled	Number of Times Sampled	Maximum Concentration	Notes (include previous purge rates)

Ground-Water Sampling Log

Site Name: **Well #:** **Date:**

Well Depth(Ft-BTOC[1]): **Screen Interval**(Ft):

Well Dia.: **Casing Material:** **Sampling Device:**

Pump placement(Ft from TOC[2]):

Measuring Point: **Water level (static)**(Ft):

Water level (pumping)(Ft): **Pump rate**(Liter/min):

Sampling Personnel:

Other info: (such as sample numbers, weather conditions and field notes)

Water Quality Indicator Parameters

Time	Pumping rates (L/min)	Water level (ft)	DO (mg/l)	ORP (mv)	Turb. (NTU)	SEC[3] (μS/cm)	pH	Temp. (C°)	Volume pumped (L)

Type of Sample collected:

1-casing volume was:

Total volume purged prior to sample collection:

Stabilization Criteria		
DO	±	0.3 mg/l
Turb.	±	10%
SEC	±	3%
ORP	±	10 mv
pH	±	0.1 unit

[1]**BTOC-Below Top of Casing**
[2]**TOC-Top of Casing**
[3]**Specific electrical conductance**

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

E

APPENDIX

E
APPENDIX

Appendix E

Groundwater Sampling Logs

2002 Monitoring Well Sampling

WELL PURGING LOG

URS CONSULTANTS, INC.

PROJECT TITLE: GTR

PROJECT NO.:

STAFF: Chris M & Scott M

DATE: 10/13/02

START PURGE: 1200

END PURGE: 1215

WELL NO.: MW-1

1. TOTAL CASING AND SCREEN LENGTH (FT.): 76.92

2. CASING INTERNAL DIAMETER (IN.): .66

3. WATER LEVEL BELOW TOP OF CASING (FT.): 75.54

4. VOLUME OF WATER IN CASING (GAL.): .91

#1-#3 x #2 (Gal./Ft.)

VOLUME OF 3 CASINGS: _____ GAL.

WELL ID.	VOL. (GAL./FT.)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)										
	0	.5	1.0	1.5	2.0	2.5	sample				
pH	6.39	6.29	6.26	6.26	6.26	6.26	6.26				
SPEC. COND. (µmhos) MS	.165	.163	.162	.160	.157	.156	.156				
TURBIDITY (NTU)	203.0	246	86.2	45.1	23.4	16.3	8.7				
TEMPERATURE (°C)	16.6	18.2	19.5	19.8	19.8	19.9	20.0				
DISSOLVED OXYGEN (mg/L)	5.40	5.43	5.49	5.53	5.63	5.64	5.65				
ORP (mV)	184	170	185	194	200	204	213				
COMMENTS: true	74.6	74.61	74.61	74.61	7.61	7.61	7.61				

WELL PURGING LOG

URS CONSULTANTS, INC.

PROJECT TITLE: GTE

PROJECT NO.:

STAFF: Chris M & Steve M

DATE: 10/17/02

START PURGE: 0857

END PURGE: 0930

Sample

WELL NO.: MW-2

		WELL ID.	VOL. (GAL/FT.)
1. TOTAL CASING AND SCREEN LENGTH (FT.):	77.30	1"	0.04
		2"	0.17
2. CASING INTERNAL DIAMETER (IN.):	.66	3"	0.38
		4"	0.66
3. WATER LEVEL BELOW TOP OF CASING (FT.):	74.26	5"	1.04
		6"	1.50
4. VOLUME OF WATER IN CASING (GAL.):	2.0	8"	2.60
#1-#3 x #2 (Gal/Ft.)			

VOLUME OF 3 CASINGS: _____ GAL

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)										
	0	.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.7
pH	5.76	5.78	5.77	5.72	5.67	5.67	5.68	5.71	5.76	5.83	3.91
SPEC. COND. (umhos/cm) ms	.364	.364	.360	.353	.349	.342	.341	.339	.335	.332	.330
TURBIDITY (NTU)	480	559	>1000	876	2920	234	184	135	99.5	79	55
TEMPERATURE (°C)	16.3	16.5	17.1	18.3	20.3	20.6	20.8	20.9	21.0	20.9	21.0
DISSOLVED OXYGEN (mg/L)	5.61	5.96	5.20	4.97	5.06	5.07	5.13	5.18	5.19	5.17	5.16
ORP mV	172	158	142	149	172	177	182	183	185	184	185
COMMENTS: Depth to water	74.3	74.3	74.3	74.3	74.3	74.2	74.3	74.3	74.3	74.3	74.3

WELL PURGING LOG

URS CONSULTANTS, INC.

PROJECT TITLE: GTE

PROJECT NO.:

STAFF: Chris M & Scott M

DATE: 10/11/02

START PURGE: 0857

END PURGE: 0932

WELL NO.: MW-2

1. TOTAL CASING AND SCREEN LENGTH (FT.): 77.30

2. CASING INTERNAL DIAMETER (IN.): .66

3. WATER LEVEL BELOW TOP OF CASING (FT.): 74.26

4. VOLUME OF WATER IN CASING (GAL.): 2.0

#1-#3 x #2 (Gal./Ft.)

VOLUME OF 3 CASINGS: _____ GAL.

WELL ID.	VOL. (GAL./FT.)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)										
	5.5	6.0	6.5	7.0	Sample						
pH	6.01	6.05	6.08	6.10	6.13						
SPEC. COND. ~~(µmhos)~~ mS.	.328	.328	.327	.327	.327						
TURBIDITY (NTU)	45.7	37.7	36.5	34.1	30.6						
TEMPERATURE (°C)	21.0	20.4	21.0	20.4	20.4						
DISSOLVED OXYGEN (mg/L)	5.21	5.22	5.22	5.22	5.23						
ORP mV	184	183	183	183	182						
COMMENTS: Depth to water	74.3	74.7	74.3	74.3	74.3						

WELL PURGING LOG

URS CONSULTANTS, INC.

PROJECT TITLE: GTE

PROJECT NO.:

STAFF: Bob Fabian / Rob Murphy

DATE: 10-13-02

Pump GT-2

START PURGE: 09:21

END PURGE:

WELL NO.: MW-3

		WELL ID.	VOL. (GAL./FT.)
1. TOTAL CASING AND SCREEN LENGTH (FT.):	17.45	1"	0.04
		3"	0.17
2. CASING INTERNAL DIAMETER (IN.):	.66	3"	0.38
		(4")	0.66
3. WATER LEVEL BELOW TOP OF CASING (FT.):	13.17	5"	1.04
		6"	1.50
4. VOLUME OF WATER IN CASING (GAL.):	2.82	8"	2.60
#1-#3 x #2 (Gal./Ft.)			

VOLUME OF 3 CASINGS: 8.47 GAL

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)											
	Initial	3	6	9	Sample							
pH	5.35	5.55	5.58	5.60	6.16							
SPEC. COND. (µmhos)	.116	.101	.097	.098	.100							
TURBIDITY (NTU)	754	453	107	82.6	20.0							
TEMPERATURE (°C)	16.43	17.45	17.02	17.00	18.38							
DISSOLVED OXYGEN (mg/L)	10.53	9.37	9.28	9.24	10.07							
ORP	209	189	226	240	250							
W.L.	13.17	13.27	13.3	13.37	13.21							
COMMENTS: TIME	09:21	09:26	09:31	09:34	09:45							

Running @ 208.8 Hz

Page ___ of ___

WELL PURGING LOG

URS CONSULTANTS, INC.

PROJECT TITLE: GTE

PROJECT NO.:

STAFF: Bob Fabian / Rob Murphy

DATE: 10-13-02

Pump GT-2

START PURGE: 11:00

END PURGE:

WELL NO.: MW-4

1. TOTAL CASING AND SCREEN LENGTH (FT.): 76.55

2. CASING INTERNAL DIAMETER (IN.): .66

3. WATER LEVEL BELOW TOP OF CASING (FT.): 72.71

4. VOLUME OF WATER IN CASING (GAL.): 2.53

#1-#3 x #2 (Gal./Ft.)

VOLUME OF 3 CASINGS: 7.60 GAL.

WELL ID.	VOL. (GAL./FT.)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)										
	Initial	.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	SAMPLE
pH	6.13	6.34	6.36	6.36	6.35	6.37	6.38	6.38	6.38	6.38	6.31
SPEC. COND. (µmhos) m S/Cm	.104	.103	.103	.103	.102	.102	.102	.101	.101	.101	.102
TURBIDITY (NTU)	567	310	415	487	333	163	53	32.9	29.1	26.5	12.3
TEMPERATURE (°C)	17.05	16.78	16.91	17.74	17.84	17.85	17.78	17.84	17.86	17.86	17.89
DISSOLVED OXYGEN (mg/L)	10.45	9.40	8.93	8.86	8.85	8.87	8.78	8.78	8.74	8.74	9.38
ORP	202	192	174	164	169	176	189	194	197	199	223
W.L.	72.71		72.75		72.76		72.77		72.77		72.77
COMMENTS: TIME	11:00	11:06	11:08	11:10	11:11	11:13	11:15	11:17	11:19	11:21	11:25

URSF-021/2 OF 3WPL/GM

Page ___ of ___

WELL PURGING LOG

URS CONSULTANTS, INC.

PROJECT TITLE: GTE

PROJECT NO.:

STAFF: Chris M & Scott M

DATE: 10/12/02

START PURGE: 1425

END PURGE: 1455

WELL NO.: MW-05

		WELL ID.	VOL. (GAL/FT.)
1. TOTAL CASING AND SCREEN LENGTH (FT.):	76.05	1"	0.04
		2"	0.17
2. CASING INTERNAL DIAMETER (IN.):	2"	3"	0.38
		4"	0.66
3. WATER LEVEL BELOW TOP OF CASING (FT.):	74.14	5"	1.04
		6"	1.50
4. VOLUME OF WATER IN CASING (GAL.):	1.26	8"	2.60

#1-#3 x #2 (Gal/Ft.)

VOLUME OF 3 CASINGS: _____ GAL

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)										
	0	.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	Surge
pH	5.64	5.43	5.36	5.39	5.34	5.39	5.34	5.34	5.35	5.35	5.33
SPEC. COND: ~~(umhos/cm)~~ mS	.154	.152	.151	.152	.152	.153	.154	.155	.156	.156	.157
TURBIDITY (NTU)	308	510	327	210	91	517	363	25.7	14.8	11.3	9.7
TEMPERATURE (°C)	15.9	17.0	18.1	18.3	18.4	18.7	18.8	18.9	19.0	19.2	19.3
DISSOLVED OXYGEN (mg/L)	5.70	5.58	5.57	5.58	5.62	5.63	5.64	5.62	5.61	5.63	5.63
ORP (mV)	257	240	247	254	261	268	272	276	278	279	281
COMMENTS: Depth to water	74.27	74.22	74.22	74.21	74.20	74.20	74.20	74.24	74.26	74.21	74.21

WELL PURGING LOG

URS CONSULTANTS, INC.

PROJECT TITLE: GTR

PROJECT NO.:

STAFF: Chris M & Scott M

DATE: 10/13/02

START PURGE: 1020

END PURGE: 1115

WELL NO.: MW-6

1. TOTAL CASING AND SCREEN LENGTH (FT.): 128.91
2. CASING INTERNAL DIAMETER (IN.): .66
3. WATER LEVEL BELOW TOP OF CASING (FT.): 74.32
4. VOLUME OF WATER IN CASING (GAL.): 36.

#1-#3 x #2 (Gal./Ft.)

VOLUME OF 3 CASINGS: _____ GAL.

WELL ID.	VOL. (GAL./FT.)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)										
	0	5	10	15	20	25	30	32	34	36	Sample
pH	7.79	7.48	6.85	6.57	6.40	6.32	6.29	6.27	6.28	6.29	6.31
SPEC. COND. (~~µmhos~~) mS	.486	.489	.530	.525	.531	.533	.539	.543	.538	.539	.541
TURBIDITY (NTU)	36.3	21.1	37.7	4.1	4.5	7.9	4.5	3.7	3.3	3.7	4.1
TEMPERATURE (°C)	14.6	15.1	15.3	15.4	15.4	15.4	15.4	15.9	16.1	16.2	16.1
DISSOLVED OXYGEN (mg/L)	5.40	5.20	6.60	6.52	5.31	5.29	5.37	5.29	5.38	5.27	5.36
ORP (mV)	160	162	208	216	219	224	227	230	228	227	231
COMMENTS: water level	74.32	74.42	74.42	74.42	74.42	74.42	74.42	74.42	74.42	74.42	74.42

Page ___ of ___

WELL PURGING LOG

URS CONSULTANTS, INC.

PROJECT TITLE: GTS

PROJECT NO.:

STAFF: Scott M / Chris M

DATE: 10/13/02

START PURGE: 1530

END PURGE: 1600

WELL NO.: MW-7

		WELL ID.	VOL. (GAL/FT.)
1. TOTAL CASING AND SCREEN LENGTH (FT.):	78.80	1"	0.04
		2"	0.17
2. CASING INTERNAL DIAMETER (IN.):	2"	3"	0.38
		4"	0.66
3. WATER LEVEL BELOW TOP OF CASING (FT.):	74.91	5"	1.04
		6"	1.50
4. VOLUME OF WATER IN CASING (GAL.):	2.6	8"	2.60

#1-#3 x #2 (Gal/Ft.)

VOLUME OF 3 CASINGS: _____ GAL

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)									
	0	.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	Sample
pH	6.13	6.11	6.13	6.19	6.14	6.15	6.17	6.17	6.18	6.18
SPEC. COND. (µmhos/cm)	.178	.177	.177	.177	.175	.176	.179	.180	.181	.183
TURBIDITY (NTU)	115	94.4	80.3	67.1	59.2	33.0	19.1	17.9	17.6	14.2
TEMPERATURE (°C)	16.4	16.5	16.5	16.8	17.5	17.7	17.7	17.7	17.8	17.8
DISSOLVED OXYGEN (mg/L)	9.39	5.34	4.83	4.66	4.41	4.43	4.46	4.47	4.46	4.46
ORP (MV)	203	204	200	197	197	200	205	206	207	208
COMMENTS: Depth to water	75.03	75.02	75.02	75.03	75.03	75.03	75.03	75.03	75.03	75.03

Page ___ of ___

WELL PURGING LOG

URS CONSULTANTS, INC.

PROJECT TITLE: GTE

PROJECT NO.:

STAFF: Rob Murphy / Bob Fabian

DATE: 10-13-02

Pump - Pine #3

START PURGE: 12:25

END PURGE:

WELL NO.: MW-8

1. TOTAL CASING AND SCREEN LENGTH (FT.): 130.25

2. CASING INTERNAL DIAMETER (IN.): .66

3. WATER LEVEL BELOW TOP OF CASING (FT.): 72.91

4. VOLUME OF WATER IN CASING (GAL.): 37.84

#1-#3 x #2 (Gal./Ft.)

VOLUME OF 3 CASINGS: 113.53 GAL.

WELL ID.	VOL. (GAL./FT.)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)										
	Initial	3	6	9	12	15	18	21	24	27	30
pH	6.92	6.48	6.43	6.42	6.40	6.42	6.41	6.42	6.42	6.42	6.42
SPEC. COND. (µmhos)	.161	.172	.171	.171	.171	.172	.172	.173	.173	.174	.173
TURBIDITY (NTU)	205	151	102	46.3	29	29.6	21	18.9	17.9	17.8	16.3
TEMPERATURE (°C)	16.09	15.24	15.34	15.36	15.36	15.35	15.35	15.35	15.35	15.34	15.35
DISSOLVED OXYGEN (mg/L)	9.68	7.70	7.87	7.87	7.84	7.85	7.82	7.81	7.81	7.80	7.79
ORP	85	85	119	149	159	168	175	179	182	186	190
W.L.	72.91	72.94	72.94	72.94	72.94	72.94	72.94	72.94	72.94	72.94	72.94
COMMENTS: TIME	12:25	12:30	12:33	12:36	12:39	12:42	12:45	12:48	12:51	12:54	12:57

Pumping @ 227.1 Hz (~ 1 gal/min)

WELL PURGING LOG

URS CONSULTANTS, INC.

PROJECT TITLE: GTE

PROJECT NO.:

STAFF: Rob Murphy / Bob Fabian

DATE: 10-13-02 START PURGE: ___

END PURGE: ___

WELL NO.: MW-8 cont...

1. TOTAL CASING AND SCREEN LENGTH (FT.): ___
2. CASING INTERNAL DIAMETER (IN.): ___
3. WATER LEVEL BELOW TOP OF CASING (FT.): ___
4. VOLUME OF WATER IN CASING (GAL.): ___

#1-#3 x #2 (Gal/Ft.)

VOLUME OF 3 CASINGS: ___ GAL.

WELL ID.	VOL. (GAL./FT.)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)										
	~~33~~	36	39	SAMPLE							
pH	6.43	6.43	6.43	6.51							
SPEC. COND. (µmhos)	.173	.174	.174	.175							
TURBIDITY (NTU)	15.8	15.8	15	17.5							
TEMPERATURE (°C)	15.34	15.34	15.41	15.80							
DISSOLVED OXYGEN (mg/L)	7.79	7.77	7.75	9.54							
ORP	193	195	196	197							
W.L.	72.94	72.95	72.93	72.93							
COMMENTS: Time	13:00	13:03	13:06	13:10							

- Took blind Dup here too

Page ___ of ___

WELL PURGING LOG

URS CONSULTANTS, INC.

PROJECT TITLE: GTE

PROJECT NO.:

STAFF: Bob Fabian / Rob Murphy

DATE: 10-13-02

Pump GT-2

START PURGE: 14:55

END PURGE:

WELL NO.: MW-9

1. TOTAL CASING AND SCREEN LENGTH (FT.): 85.2
2. CASING INTERNAL DIAMETER (IN.): .66
3. WATER LEVEL BELOW TOP OF CASING (FT.): 73.59
4. VOLUME OF WATER IN CASING (GAL.): 7.66
   #1-#3 x #2 (Gal./Ft.)

VOLUME OF 3 CASINGS: 22.98 GAL.

WELL ID.	VOL. (GAL./FT.)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)										
	Initial	2	3	4	5	6	7	8	9	10	Sample
pH	6.52	5.87	5.63	5.45	5.34	5.29	5.28	5.27	5.27	5.27	5.26
SPEC. COND. (µmhos)	.061	.043	.038	.036	.035	.034	.034	.033	.034	.034	.034
TURBIDITY (NTU)	201	43.4	30.9	25.5	20.7	19.1	18.7	18.8	19.3	18.7	11
TEMPERATURE (°C)	16.00	16.22	16.37	16.46	16.51	16.54	16.56	16.56	16.55	16.55	16.84
DISSOLVED OXYGEN (mg/L)	10.55	8.40	8.76	8.99	9.04	9.00	9.01	8.97	9.00	8.98	10.25
ORP	66	132	169	195	216	231	240	244	247	250	261
W.L.	73.59	73.64	73.64	73.64	73.64	73.64	73.64	73.64	73.64	73.64	73.62
COMMENTS: TIME	14:55	13:57	14:00	14:03	14:05	14:07	14:08	14:09	14:10	14:11	14:15

WELL PURGING LOG

URS CONSULTANTS, INC.

PROJECT TITLE: GTE

PROJECT NO.:

STAFF: Bob Fabian / Reb Murphy

DATE: 10-13-02 START PURGE: 14:55

Pump GT-2 END PURGE:

WELL NO.: MW-9

		WELL ID.	VOL. (GAL./FT.)
1. TOTAL CASING AND SCREEN LENGTH (FT.):	85.2	1"	0.04
		2"	0.17
2. CASING INTERNAL DIAMETER (IN.):	.66	3"	0.38
		(4")	0.66
3. WATER LEVEL BELOW TOP OF CASING (FT.):	73.59	5"	1.04
		6"	1.50
4. VOLUME OF WATER IN CASING (GAL.):	7.66	8"	2.60

#1-#3 x #2 (Gal./Ft.)

VOLUME OF 3 CASINGS: 22.98 GAL

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)										
	Initial	2	3	4	5	6	7	8	9	10	Sample
pH	6.52	5.87	5.63	5.45	5.34	5.29	5.28	5.27	5.27	5.27	5.26
SPEC. COND. (µmhos)	.061	.043	.038	.036	.035	.034	.034	.033	.034	.034	.034
TURBIDITY (NTU)	201	43.4	30.9	25.5	20.7	19.1	18.7	18.8	19.3	18.7	11
TEMPERATURE (°C)	16.00	16.22	16.37	16.46	16.51	16.54	16.56	16.56	16.55	16.55	16.84
DISSOLVED OXYGEN (mg/L)	10.55	8.40	8.76	8.99	9.04	9.00	9.01	8.97	9.00	8.98	10.25
ORP	66	132	169	195	216	231	240	244	247	250	261
W.L.	73.59	73.64	73.64	73.64	73.64	73.64	73.64	73.64	73.64	73.64	73.62
COMMENTS: TIME	14:55	13:57	14:00	14:03	14:05	14:07	14:08	14:09	14:10	14:11	14:15

Page ___ of ___

WELL PURGING LOG

URS CONSULTANTS, INC.

PROJECT TITLE: GTE

PROJECT NO.:

STAFF: Bob Fabian / Rob Murphy

DATE: 10-13-02

Pine #3

START PURGE: 14:54

END PURGE:

WELL NO.: MW-10

		WELL ID.	VOL. (GAL./FT.)
1. TOTAL CASING AND SCREEN LENGTH (FT.):	130.00	1"	0.04
2. CASING INTERNAL DIAMETER (IN.):	6	2"	0.17
3. WATER LEVEL BELOW TOP OF CASING (FT.):	73.40	3"	0.38
4. VOLUME OF WATER IN CASING (GAL.):	37.3	(4")	0.66
#1-#3 x #2 (Gal/Ft.)		5"	1.04
		6"	1.50
		8"	2.60

VOLUME OF 3 CASINGS: 112 GAL

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)										SAMPLE
	5 Duplicate	3	6	9	15	20	25	30	35	40	30
pH	5.47	5.38	5.29	5.23	5.20	5.17	5.17	5.17	5.17	5.17	5.22
SPEC. COND. (µmhos)	.057	.060	.058	.059	.059	.060	.060	.060	.060	.061	.063
TURBIDITY (NTU)	119	54.6	36.1	28.9	21.3	17.7	16.1	15.0	14.5	14.2	15.5
TEMPERATURE (°C)	15.10	14.78	14.91	14.97	14.98	14.98 8:30	14.98	14.98	14.98	14.99	15.56
DISSOLVED OXYGEN (mg/L)	9.73	8.38	8.37	8.32	8.28	RTF 8.30 14:	8.31	8.32	8.29	8.28	9.74
ORP	226	227	251	273	284	294	300	306	309	312	307
W.L.	73.40	73.51	73.50	73.50	73.50	73.50	73.50	73.50	73.51	73.51	73.46
COMMENTS: Time	14:54	14:57	15:00	15:02	15:06	15:11	15:16	15:21	15:26	15:31	15:40

WELL PURGING LOG

URS CONSULTANTS, INC.

PROJECT TITLE: GTR

PROJECT NO.:

STAFF: Chin, Sears

DATE: 10/12/02 START PURGE: 1250

END PURGE: 1320

WELL NO.: MW-11

		WELL ID.	VOL. (GAL/FT.)
1. TOTAL CASING AND SCREEN LENGTH (FT.):	79.93	1"	0.04
		2"	0.17
2. CASING INTERNAL DIAMETER (IN.):	.66	3"	0.38
		4"	0.66
3. WATER LEVEL BELOW TOP OF CASING (FT.):	73.65	5"	1.04
		6"	1.50
4. VOLUME OF WATER IN CASING (GAL.):	4.1	8"	2.60

#1-#3 x #2 (Gal/Ft.)

VOLUME OF 3 CASINGS: _____ GAL.

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)										
	0	.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	Sample
pH	6.36	6.33	6.28	6.23	5.91	5.82	5.80	5.75	5.71	5.70	5.70
SPEC. COND. (µmhos) mS	.079	.077	.079	.072	.064	.064	.064	.064	.064	.064	.064
TURBIDITY (NTU)	122	101	89.6	80.6	47.6	46.3	41.2	39.2	35.3	34.3	34.0
TEMPERATURE (°C)	16.9	17.1	17.3	17.4	17.4	17.9	17.9	18.0	18.1	18.1	18.1
DISSOLVED OXYGEN (mg/L)	5.28	5.18	5.20	5.24	5.47	5.50	5.50	5.51	5.51	5.53	5.59
ORP (MV)	253	254	256	254	271	272	270	270	267	264	264
COMMENTS: Depth to water	73.75	73.75	73.75	73.75	73.75	73.75	73.75	73.75	73.75	73.75	73.75

Page ___ of ___

WELL PURGING LOG

URS CONSULTANTS, INC.

PROJECT TITLE: GTE

PROJECT NO.:

STAFF: Bob Fabian / Rob Murphy

DATE: 10-13-02 START PURGE: 16:05

Pine #2 END PURGE:

WELL NO.: MW-12

1. TOTAL CASING AND SCREEN LENGTH (FT.): 129.5

2. CASING INTERNAL DIAMETER (IN.): .66

3. WATER LEVEL BELOW TOP OF CASING (FT.): 74.21

4. VOLUME OF WATER IN CASING (GAL.): 36.49

#1-#3 x #2 (Gal./Ft.)

VOLUME OF 3 CASINGS: 109.47 GAL

WELL ID.	VOL. (GAL./FT.)
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PARAMETERS	ACCUMULATED VOLUME PURGED (GALLONS)									
	Initial	5	10	15	20	25	30	35	40	SAMPLE
pH	7.53	7.03	7.01	7.02	7.05	7.06	7.05	7.07	7.06	7.25
SPEC. COND. (µmhos)	.207	.224	.233	.233	.242	.245	.240	.243	.248	.248
TURBIDITY (NTU)	122	42.9	34.1	28.3	25.9	23.4	25.1	21.2	21.0	15.8
TEMPERATURE (°C)	14.45	14.02	14.07	14.10	14.15	14.15	14.17	14.15	14.32	14.85
DISSOLVED OXYGEN (mg/L)	9.78	2.46	2.65	2.73	2.88	2.99	3.03	3.20	3.35	7.02
ORP	257	209	171	120	80	67	61	56	53	82
W.L.	74.21	74.36	74.35	74.33	74.35	74.39	74.33	74.33	74.25	74.25
COMMENTS: TIME	16:05	16:10	16:14	16:18	16:22	16:26	16:30	16:34	16:38	16:45

URSF-021/3 OF 5/WPL/DM

2003 Monitoring Well Sampling

MALCOLM PIRNIE

17-17 ROUTE 208 NORTH, FAIRLAWN, NEW JERSEY 07410

GROUNDWATER MONITORING WELL SAMPLE COLLECTION LOGS

PROJECT NUMBER: 4563 001
PROJECT NAME: GTEOSI
SITE LOCATION: Hicksville
SITE CONTACT: Jean Agostinelli
DATE: 3-15-03
SAMPLERS: A Wood, K Hayes
WEATHER: Fine, windy 36°F

WELL IDENTIFICATION NUMBER: MW-01
PERMIT: --

WELL HEADSPACE READING: --
PID MODEL/LAMP: --
DEPTH TO WATER (Before Purging): 73.77 FEET FROM TOP OF CASING
WELL DEPTH: 77.00 FEET FROM TOP OF CASING
HEIGHT OF WATER IN WELL: -- 3.23 FEET
WATER IN ONE WELL VOLUME: -- 2.10 GALLONS
PURGE TIME (start/finish): 1318 to 1356
PURGE RATE: 0.30 l/m
WELL EVACUATION DEVICE: Rediflow electrosubmersible
SAMPLING TIME (start/finish): 1400 to 1412
SAMPLE RATE: 100 ml/min for VOA
SAMPLE COLLECTION DEVICE: Rediflow electrosubmersible 150 ml/min for Radiometal
SAMPLE APPEARANCE: Clear clear

FIELD PARAMETERS	Initial	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
time (00:00)	1320	1325	1335	1340	1345	1350	1355			
pH (SU)	7.53	6.95	6.87	6.68	6.65	6.64	6.61			
specific conductivity (mS)	0.075	0.071	0.070	0.069	0.069	0.069	0.070			
turbidity (NTU's)	4	5	7	7	4	4	2			
dissolved oxygen (mg/l)	7.22	5.40	6.00	5.64	6.09	6.11	6.13			
temperature (degrees C)	12.9	13.6	14.0	14.8	20	14.9	14.9			
redox potential (mv)	223	201	174	173	174	176	176			
depth to water (feet)	73.81	73.77	73.78	73.78	73.78	73.78	73.78			
volume purged (~~gal or~~ L)	~~73.76~~	~~73.77~~	6.0	7.5	9.0	10.5	12.0			

1.5

SAMPLE ANALYSIS INFORMATION

3.0l

ANALYSIS REQUIRED: VOC's,, Isotopic Uranium, Isotopic Thorium, Technetium 99, Isotopic Radium, and select metals
LABORATORY: STL St.Louis
CONTACT: John Powel

Casing Diameter/Volume conversions	
(inches)	(gallons per foot)
2.0	0.1632
(4.0)	(0.6528)
6.0	1.4687
8.0	2.6115

NOTES: soft bottom, windy, open top flow through cell. Water surface subject to wind effects. Pump blockage / outages 1325 to 1335 hr, dealt to 300 ml/min at 1332 hr

MALCOLM PIRNIE

17-17 ROUTE 208 NORTH, FAIRLAWN, NEW JERSEY 07410

GROUNDWATER MONITORING WELL SAMPLE COLLECTION LOGS

PROJECT NUMBER: 4563 001
PROJECT NAME: GTEOSI
SITE LOCATION: Hicksville
SITE CONTACT: Jean Agostinelli
DATE: 3-15-03
SAMPLERS: D Wood, K Hayes
WEATHER: Fine, windy 36° F

WELL IDENTIFICATION NUMBER: MW-02
PERMIT: --

WELL HEADSPACE READING: -- 0
PID MODEL/LAMP: --
DEPTH TO WATER (Before Purging): 73.48 FEET FROM TOP OF CASING
WELL DEPTH: 79.00 FEET FROM TOP OF CASING
HEIGHT OF WATER IN WELL: -- 5.52 FEET
WATER IN ONE WELL VOLUME: -- 3.60 GALLONS
PURGE TIME (start/finish): 1125 to 1210
PURGE RATE: 0.3 l/min
WELL EVACUATION DEVICE: Rediflow electrosubmersible
SAMPLING TIME (start/finish): 1215 to 1228
SAMPLE RATE: 100ml/m for VOA. 150ml/min for others.
SAMPLE COLLECTION DEVICE: Rediflow electrosubmersible
SAMPLE APPEARANCE: Clear

FIELD PARAMETERS	initial	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
time (00:00)	1130	1135	1140	1145	1150	1155	1200	1205	1210	
pH (SU)	7.16	7.23	7.11	7.10	7.28	7.12	7.08	7.06	7.06	
specific conductivity (mS)	0.259	0.262	0.262	0.262	0.262	1261	0.261	0.259	0.259	
turbidity (NTU's)	25	31	37	35	29	21	20	18	16	
dissolved oxygen (mg/l)	10.75	10.24	9.64	10.02	9.4	2.81	3.23	3.32	3.15	
temperature (degrees C)	13.4	14.0	14.4	14.6	14.8	14.9	15.4	15.8	16.0	
redox potential (mv)	172	152	140	143	150	147	135	124	120	
depth to water (feet)	73.48	73.48	73.48	73.48	73.48	73.48	73.48	73.48	73.48	
volume purged ~~(gal or~~ L)	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5	

SAMPLE ANALYSIS INFORMATION

ANALYSIS REQUIRED: VOC's,, Isotopic Uranium, Isotopic Thorium, Technetium 99, Isotopic Radium, and select metals
LABORATORY: STL St.Louis
CONTACT: John Powel

Casing Diameter/Volume conversions	
(inches)	(gallons per foot)
2.0	0.1632
4.0	(0.6528)
6.0	1.4687
8.0	2.6115

NOTES: soft bottom, windy conditions. Open top flow through cells. Constant aeration of water surface. Sample rate: 100ml/min VOA. 150ml/min radiochem & metals.

MALCOLM PIRNIE 17-17 ROUTE 208 NORTH, FAIRLAWN, NEW JERSEY 07410

GROUNDWATER MONITORING WELL SAMPLE COLLECTION LOGS

PROJECT NUMBER: 4563 001
PROJECT NAME: GTEOSI
SITE LOCATION: Hicksville
SITE CONTACT: Jean Agostinelli

DATE: 3-16-03
SAMPLERS: A Wood, K Hays
WEATHER: Fine, light breeze 45°F

WELL IDENTIFICATION NUMBER: MW 3
PERMIT: --

WELL HEADSPACE READING: - 0
PID MODEL/LAMP: --
DEPTH TO WATER (Before Purging): 72.33 FEET FROM TOP OF CASING
WELL DEPTH: 77.75 FEET FROM TOP OF CASING
HEIGHT OF WATER IN WELL: - 5.42 FEET
WATER IN ONE WELL VOLUME: - 3.53 GALLONS
PURGE TIME (start/finish): 0935 ~ 1030
PURGE RATE: 0.32 l/min
WELL EVACUATION DEVICE: Electrosubmersible
SAMPLING TIME (start/finish): 1032 to 1050
SAMPLE RATE: 100 ml/min VOA, 150 ml/min Rad & metals
SAMPLE COLLECTION DEVICE: Electrosubmersible
SAMPLE APPEARANCE: clear, clean

FIELD PARAMETERS	initial	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
time (00:00)	0940	0945	0950	0955	1000	1005	1015	1020	1025	1030
pH (SU)	5.86	6.31	6.45	6.51	6.53		6.63	6.63	6.63	6.64
specific conductivity (mS)	0.117	0.110	0.105	0.104	0.105		0.105	0.105	0.105	0.1[illegible]
turbidity (NTU's)	7	7	9	10	10		12	10	10	10
dissolved oxygen (mg/l)	6.89	5.62	5.43	5.38	5.14	missed	5.76	5.49	5.52	5.50
temperature (degrees C)	14.5	15.1	16.3	17.4	17.1		19.2	19.2	19.1	19.2
redox potential (mv)	238	228	210	190	190		185	182	182	180
depth to water (feet)	72.33	72.33	72.33	72.33	72.33		72.33	72.33	72.33	72.33
volume purged (~~gal or~~ L)	1.6	3.2	4.8	6.4	8.0	9.6	11.2	12.8	14.4	16.0

SAMPLE ANALYSIS INFORMATION

ANALYSIS REQUIRED: VOC's,, Isotopic Uranium, Isotopic Thorium, Technetium 99, Isotopic Radium, and select metals
LABORATORY: STL St.Louis
CONTACT: John Powel

Casing Diameter/Volume conversions (inches)	(gallons per foot)
2.0	0.1632
(4.0)	(0.6528)
6.0	1.4687
8.0	2.6115

NOTES: soft bottom
samples (MWDUP & MW3)
sample times MW3 = 1032 hr (MW3)
MWDUP = ~~1034 hr~~ 0900 hr
pump stopped at 1004, 1004 to 1010 restart at 1010 hr at 9.6 l total.

MALCOLM PIRNIE

17-17 ROUTE 208 NORTH, FAIRLAWN, NEW JERSEY 07410

GROUNDWATER MONITORING WELL SAMPLE COLLECTION LOGS

PROJECT NUMBER: 4563 001
PROJECT NAME: GTEOSI
SITE LOCATION: Hicksville

SITE CONTACT: Jean Agostinelli

DATE: 3/16/03
SAMPLERS: John Ifkovits, Emily Moshier

WEATHER: Sunny, Slight Breeze 45°F

WELL IDENTIFICATION NUMBER: MW-4

PERMIT: --

WELL HEADSPACE READING: --
PID MODEL/LAMP: --
DEPTH TO WATER (Before Purging): 71.91 FEET FROM TOP OF CASING
WELL DEPTH: 80.00 FEET FROM TOP OF CASING
HEIGHT OF WATER IN WELL: -- FEET
WATER IN ONE WELL VOLUME: -- GALLONS
PURGE TIME (start/finish): 1108/1130
PURGE RATE: 400 ml/min
WELL EVACUATION DEVICE:
SAMPLING TIME (start/finish): 1131/1196
SAMPLE RATE: 100ml/min / 200ml/min
SAMPLE COLLECTION DEVICE: Clear
SAMPLE APPEARANCE:

FIELD PARAMETERS	initial	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
time (00:00)	1115	1120	1125	1130						
pH (SU)	6.30	6.31	6.33	6.33						
specific conductivity (mS)	0.125	0.125	0.126	0.126						
turbidity (NTU's)	4	10	10	10						
dissolved oxygen (mg/l)	6.76	6.16	6.95	6.89						
temperature (degrees C)	19.0	18.6	18.2	18.6						
redox potential (mv)	334	345	381	381						
depth to water (feet)	71.93	71.93	71.93	71.93						
volume purged (gal or L)	2	4	6	8						

SAMPLE ANALYSIS INFORMATION

ANALYSIS REQUIRED: VOC's,, Isotopic Uranium, Isotopic Thorium, Technetium 99, Isotopic Radium, and select metals
LABORATORY: STL St.Louis
CONTACT: John Powel

Casing Diameter/Volume conversions (inches)	(gallons per foot)
2.0	0.1632
4.0	0.6528
6.0	1.4687
8.0	2.6115

NOTES:

MALCOLM PIRNIE

17-17 ROUTE 208 NORTH, FAIRLAWN, NEW JERSEY 07410

GROUNDWATER MONITORING WELL SAMPLE COLLECTION LOGS

PROJECT NUMBER: 4563 001
PROJECT NAME: GTEOSI
SITE LOCATION: Hicksville
SITE CONTACT: Jean Agostinelli

DATE: March 15, 2003
SAMPLERS: Emily Hoshier, John Kroub
WEATHER: Clear Breezy 35°F

WELL IDENTIFICATION NUMBER: MW-5
PERMIT: --

WELL HEADSPACE READING: --
PID MODEL/LAMP: --
DEPTH TO WATER (Before Purging): 73.39 FEET FROM TOP OF CASING
WELL DEPTH: 78.00 FEET FROM TOP OF CASING
HEIGHT OF WATER IN WELL: -- FEET
WATER IN ONE WELL VOLUME: -- GALLONS
PURGE TIME (start/finish): 1150 / 12:50
PURGE RATE: 400 mL/min
WELL EVACUATION DEVICE:
SAMPLING TIME (start/finish): 12:52 / 13:07
SAMPLE RATE: 100 mL/min VOC
SAMPLE COLLECTION DEVICE: 200 mL/min Rad/metal
SAMPLE APPEARANCE: clear

FIELD PARAMETERS	initial	1st	2nd	3rd	4th	5th	6th	7th (22)	8th	9th
time (00:00)	12:00	1205	12:10	12:15	1220	12:25	12:30	1240	1245	1250
pH (SU)	5.71	5.74	5.77	5.79	5.80	5.82	5.80	5.87	5.87	5.8[illegible]
specific conductivity (mS)	.128	.124	.119	.117	.118	.118	.118	.119	.116	.116
turbidity (NTU's)	91	86	67	39	35	25	21	29	28	17
dissolved oxygen (mg/l)	6.15	6.72	6.79	6.56	6.39	6.21	8.45	5.90	5.70	6.08
temperature (degrees C)	14.1	14.5	16.3	18.1	18.6	19.1	18.8	16.4	16.3	16.8
redox potential (mv)	220	202	195	208	212	217	225	224	227	225
depth to water (feet)	73.35	73.37	73.37	73.37	73.37	73.37	73.37	73.37	73.37	73.37
volume purged (gal or L)	initial	4	6	8	10	12	14	16	20	22

SAMPLE ANALYSIS INFORMATION

ANALYSIS REQUIRED: VOC's,, Isotopic Uranium, Isotopic Thorium, Technetium 99, Isotopic Radium, and select metals
LABORATORY: STL St.Louis
CONTACT: John Powel

Casing Diameter/Volume conversions (inches)	(gallons per foot)
2.0	0.1632
4.0	0.6528
6.0	1.4687
8.0	2.6115

NOTES: Pump flow adjustment @ 1235

MALCOLM PIRNIE

17-17 ROUTE 208 NORTH, FAIRLAWN, NEW JERSEY 07410

GROUNDWATER MONITORING WELL SAMPLE COLLECTION LOGS

PROJECT NUMBER: 4563 001
PROJECT NAME: GTEOSI
SITE LOCATION: Hicksville
SITE CONTACT: Jean Agostinelli

DATE: March 16, 2003
SAMPLERS: Emily Moshier, John Hlavka
WEATHER: Sunny Slight Breeze, 4

WELL IDENTIFICATION NUMBER: MW-6
PERMIT: --

WELL HEADSPACE READING: --
PID MODEL/LAMP: --
DEPTH TO WATER (Before Purging): 73.55 FEET FROM TOP OF CASING
WELL DEPTH: 132.90 FEET FROM TOP OF CASING
HEIGHT OF WATER IN WELL: -- FEET
WATER IN ONE WELL VOLUME: -- GALLONS
PURGE TIME (start/finish): 0935 / 1025
PURGE RATE: 400 ml/min
WELL EVACUATION DEVICE: Grundfos Submersible w/ dedicated poly
SAMPLING TIME (start/finish): 1026 / 1040
SAMPLE RATE: 100 ml/min VOC, 200 ml/min
SAMPLE COLLECTION DEVICE:
SAMPLE APPEARANCE: clear

FIELD PARAMETERS	initial	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
time (00:00)	0940	0945	0950	0955	10:00	1005	1010	1015	1020	1025
pH (SU)	6.57	.395	6.81	6.91	6.74	6.85	6.84	6.82	6.80	6.78	6.78
specific conductivity (mS)	.395	.409	.415	.437	.436	.437	.438	.439	.439	.439
turbidity (NTU's)	0	12		5	1	5	7	9	10	10
dissolved oxygen (mg/l)	5.52	7.09		7.21	6.57	6.18	6.28	6.28	6.31	6.12
temperature (degrees C)	14.8	14.6		15.5	15.7	15.8	15.8	15.9	15.9	16.0
redox potential (mv)	153	150	124	139	152	167	176	185	191	195
depth to water (feet)	73.55	73.55	73.58	73.58	73.57	73.58	73.58	73.58	73.58	73.58
volume purged (gal or L)	2	4	6	8	10	12	14	16	18	20

SAMPLE ANALYSIS INFORMATION

ANALYSIS REQUIRED: VOC's,, Isotopic Uranium, Isotopic Thorium, Technetium 99, Isotopic Radium, and select metals
LABORATORY: STL St.Louis
CONTACT: John Powel

Casing Diameter/Volume conversions (inches)	(gallons per foot)
2.0	0.1632
4.0	0.6528
6.0	1.4687
8.0	2.6115

NOTES: 0950 - recalibrated U10

MALCOLM PIRNIE 17-17 ROUTE 208 NORTH, FAIRLAWN, NEW JERSEY 07410

GROUNDWATER MONITORING WELL SAMPLE COLLECTION LOGS

PROJECT NUMBER:	4563 001	DATE:	3-15-03
PROJECT NAME:	GTEOSI	SAMPLERS:	Ken Hayes
SITE LOCATION:	Hicksville		A. Wood
SITE CONTACT:	Jean Agostinelli	WEATHER:	Cloudy windy 35°F

WELL IDENTIFICATION NUMBER: MW-7 PERMIT: -

WELL HEADSPACE READING:	0	PID MODEL/LAMP:	-
DEPTH TO WATER (Before Purging):	74.11	FEET FROM TOP OF CASING	
WELL DEPTH:	82.70	FEET FROM TOP OF CASING	
HEIGHT OF WATER IN WELL:	8.59	FEET	
WATER IN ONE WELL VOLUME:	5.61	GALLONS	
PURGE TIME (start/finish):	0930 to 1011hr	PURGE RATE:	330 ml/min
WELL EVACUATION DEVICE:	Rediflow pump electrosubmersible		
SAMPLING TIME (start/finish):	1012 to 1028	SAMPLE RATE:	150ml/min, VOA=100ml/m
SAMPLE COLLECTION DEVICE:	Rediflow pump - electrosubmersible		
SAMPLE APPEARANCE:	clear clean		

FIELD PARAMETERS	initial	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
time (00:00)	0938	0943	0948	0953	0958	1003	1008			
pH (SU)	5.67	6.51	6.69	6.70	6.70	6.71	6.68			
specific conductivity (mS)	0.144	0.129	0.122	0.123	0.126	0.126	0.129			
turbidity (NTU's)	6	6	6	2	1	1	0			
dissolved oxygen (mg/l)	4.11	2.65	3.90	3.86	11.27	11.40	12.0			
temperature (degrees C)	12.3	12.5	13.1	14.3	14.5	14.7	14.8			
redox potential (mv)	124	138	142	145	152	154	157			
depth to water (feet)	~~74.12~~ 74.11	74.11	74.11	74.11	74.11	74.11	74.11			
volume purged (~~gal~~ L)	2.64	4.24	5.94	7.59	9.24	10.90	12.6			

74.11

SAMPLE ANALYSIS INFORMATION

ANALYSIS REQUIRED: VOC's,, Isotopic Uranium, Isotopic Thorium, Technetium 99, Isotopic Radium, and select metals

LABORATORY: STL St.Louis

CONTACT: John Powel

Casing Diameter/Volume conversions	
(inches)	(gallons per foot)
2.0	0.1632
(4.0)	(0.6528)
6.0	1.4687
8.0	2.6115

NOTES: Soft bottom Windy conditions. Open top to Flow Through cell.

MALCOLM PIRNIE

17-17 ROUTE 208 NORTH, FAIRLAWN, NEW JERSEY 07410

GROUNDWATER MONITORING WELL SAMPLE COLLECTION LOGS

PROJECT NUMBER: 4563 001
PROJECT NAME: GTEOSI
SITE LOCATION: Hicksville
SITE CONTACT: Jean Agostinelli
DATE: 3-16-03
SAMPLERS: A Wood, K Hayes
WEATHER: Fine light breeze 45°F

WELL IDENTIFICATION NUMBER: MW-8
PERMIT: --

WELL HEADSPACE READING: --
PID MODEL/LAMP: --
DEPTH TO WATER (Before Purging): 72.08 FEET FROM TOP OF CASING
WELL DEPTH: 130.30 FEET FROM TOP OF CASING
HEIGHT OF WATER IN WELL: - 57.5 FEET
WATER IN ONE WELL VOLUME: - 37.54 GALLONS
PURGE TIME (start/finish): 1120 to 1154
PURGE RATE: 0.3 l/min
WELL EVACUATION DEVICE: Electrosubmersible
SAMPLING TIME (start/finish): 1155 to 1207
SAMPLE RATE: 100ml/min VOA, 150ml/min Radiometals.
SAMPLE COLLECTION DEVICE: electrosubmersible
SAMPLE APPEARANCE: clear

FIELD PARAMETERS	Initial	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
time (00:00)	1128	1133	1138	1143	1148	1153				
pH (SU)	7.12	7.29	7.28	7.38	7.30	7.33				
specific conductivity (mS)	0.171	0.182	0.188	0.190	0.191	0.191				
turbidity (NTU's)	10	10	10	8	9	9				
dissolved oxygen (mg/l)	7.9	5.95	5.68	5.83	5.58	5.57				
temperature (degrees C)	16.9	15.8	15.9	16.3	16.2	16.2				
redox potential (mv)	181	164	150	151	149	148				
depth to water (feet)	72.08	72.08	72.08	72.08	72.08	72.08				
volume purged (~~gal~~ or L)	2.4	3.9	5.4	6.9	8.4	9.9				

SAMPLE ANALYSIS INFORMATION

ANALYSIS REQUIRED: VOC's,, Isotopic Uranium, Isotopic Thorium, Technetium 99, Isotopic Radium, and select metals
LABORATORY: STL St.Louis
CONTACT: John Powel

Casing Diameter/Volume conversions	
(inches)	(gallons per foot)
2.0	0.1632
(4.0)	(0.6528)
6.0	1.4687
8.0	2.6115

NOTES: Sample MW8 at 1155 hr
Sample rate = 100ml/min VOA, 150ml/min Rad + metals

MALCOLM PIRNIE 17-17 ROUTE 208 NORTH, FAIRLAWN, NEW JERSEY 07410

GROUNDWATER MONITORING WELL SAMPLE COLLECTION LOGS

PROJECT NUMBER: 4563 001
DATE: 3/15/03
PROJECT NAME: GTEOSI
SAMPLERS: John Iskovitz, Emily Moshier
SITE LOCATION: Hicksville
SITE CONTACT: Jean Agostinelli
WEATHER: P Cloudy Breezy

WELL IDENTIFICATION NUMBER: MW-9
PERMIT: --

WELL HEADSPACE READING: -- FW
PID MODEL/LAMP: --
DEPTH TO WATER (Before Purging): ~~82.5~~ 72.77 FEET FROM TOP OF CASING
WELL DEPTH: 86.5 FEET FROM TOP OF CASING
HEIGHT OF WATER IN WELL: -- FEET
WATER IN ONE WELL VOLUME: -- GALLONS
PURGE TIME (start/finish): 1600/1630
PURGE RATE: 400 mL/min
WELL EVACUATION DEVICE:
SAMPLING TIME (start/finish): 1632/1647
SAMPLE RATE: 100 ml/min VOA 800 ml/min
SAMPLE COLLECTION DEVICE:
SAMPLE APPEARANCE: Clear

FIELD PARAMETERS	initial	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
time (00:00)	1605	1610	1615	1620	1625	1630				
pH (SU)	5.55	5.52	5.49	5.46	5.44	5.43				
specific conductivity (mS)	.041	0.039	.037	.036	.036	.036				
turbidity (NTU's)	0	0	0	0	1	1				
dissolved oxygen (mg/l)	7.66	7.61	7.35	7.31	7.23	6.83				
temperature (degrees C)	14.1	15.0	15.8	16.3	16.6	16.7				
redox potential (mv)	284	286	288	294	298	302				
depth to water (feet)	72.78	72.78	72.76	72.77	72.77	72.77				
volume purged (gal or L)	2/initial	4	6	8	10	12				

SAMPLE ANALYSIS INFORMATION

ANALYSIS REQUIRED: VOC's,, Isotopic Uranium, Isotopic Thorium, Technetium 99, Isotopic Radium, and select metals
LABORATORY: STL St.Louis
CONTACT: John Powel

Casing Diameter/Volume conversions (inches)	(gallons per foot)
2.0	0.1632
4.0	0.6528
6.0	1.4687
8.0	2.6115

NOTES:

PIRNIE 17-17 ROUTE 208 NORTH, FAIRLAWN, NEW JERSEY 07410

GROUNDWATER MONITORING WELL SAMPLE COLLECTION LOGS

PROJECT NUMBER: 4563 001
PROJECT NAME: GTEOSI
SITE LOCATION: Hicksville
SITE CONTACT: Jean Agostinelli
DATE: 3/15/03
SAMPLERS: John Ifkovits, Emily Mosher
WEATHER: P Cloudy Breezy 35°

WELL IDENTIFICATION NUMBER: MW-10
PERMIT: --

WELL HEADSPACE READING: --
PID MODEL/LAMP: --
DEPTH TO WATER (Before Purging): 72.64 FEET FROM TOP OF CASING
WELL DEPTH: 130 FEET FROM TOP OF CASING
HEIGHT OF WATER IN WELL: -- FEET
WATER IN ONE WELL VOLUME: (CW 14:30) -- GALLONS
PURGE TIME (start/finish): ~~15:30~~ / 15:17
PURGE RATE: 400 ml/min
WELL EVACUATION DEVICE:
SAMPLING TIME (start/finish): 15:18 / 15:45
SAMPLE RATE: 200/200 ml/min
SAMPLE COLLECTION DEVICE:
SAMPLE APPEARANCE: Clear

FIELD PARAMETERS	Initial	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
time (00:00)	1435	1440	1445	1450	1455	1500	1505	1510	1515	
pH (SU)	5.46	5.25	5.24	5.24	5.26	5.27	5.29	5.29	5.30	
specific conductivity (mS)	.073	.109	.113	.112	.109	.107	.107	.106	.107	
turbidity (NTU's)	0	0	0	0	0	0	0	0	0	
dissolved oxygen (mg/l)	5.00	5.85	5.84	5.65	5.65	5.72	5.67	5.64	5.72	
temperature (degrees C)	14.2	15.2	15.6	15.8	15.8	15.9	15.8	15.9	15.8	
redox potential (mv)	267	233	244	263	213	278	283	283	264	
depth to water (feet)	72.64	72.64	72.64	72.64	72.64	72.64	72.64	72.64	72.64	
volume purged (gal or L)	2C	4	6	8	10	12	14	16	18	

SAMPLE ANALYSIS INFORMATION

ANALYSIS REQUIRED: VOC's,, Isotopic Uranium, Isotopic Thorium, Technetium 99, Isotopic Radium, and select metals
LABORATORY: STL St.Louis
CONTACT: John Powel

Casing Diameter/Volume conversions	
(inches)	(gallons per foot)
2.0	0.1632
4.0	0.6528
6.0	1.4687
8.0	2.6115

NOTES: MS/MSD Triple volume

MALCOLM PIRNIE

17-17 ROUTE 208 NORTH, FAIRLAWN, NEW JERSEY 07410

GROUNDWATER MONITORING WELL SAMPLE COLLECTION LOGS

PROJECT NUMBER: 4563 001
PROJECT NAME: GTEOSI
SITE LOCATION: Hicksville
SITE CONTACT: Jean Agostinelli
DATE: 3-15-03
SAMPLERS: A. Wood, M. Hayes
WEATHER: Fine Windy 36°F

WELL IDENTIFICATION NUMBER: MW-11
PERMIT: --

WELL HEADSPACE READING:	0	
DEPTH TO WATER (Before Purging):	72.90	PID MODEL/LAMP: -- FEET FROM TOP OF CASING
WELL DEPTH:	80.25	FEET FROM TOP OF CASING
HEIGHT OF WATER IN WELL:	7.30	FEET
WATER IN ONE WELL VOLUME:	4.57	GALLONS
PURGE TIME (start/finish):	1538 to 1619	PURGE RATE: 0.3 l/min
WELL EVACUATION DEVICE:	Redi-flow electrosubmersible	
SAMPLING TIME (start/finish):	1622 to 1638	SAMPLE RATE: 100 ml/min VOA, 150 ml/min Rad+metals
SAMPLE COLLECTION DEVICE:	Redi-flow electrosubmersible	
SAMPLE APPEARANCE:	clear, clear	

FIELD PARAMETERS	initial	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
time (00:00)	1544 1444	1549	1554	1559	1604	1609	1614	1619		
pH (SU)	7.10	6.80	6.78	6.69	6.68	6.50	6.50	6.50		
specific conductivity (mS)	0.044	0.04	0.04	0.040	0.04	0.04	0.04	0.04		
turbidity (NTU's)	1	0	0	0	0	0	0			
dissolved oxygen (mg/l)	8.2	7.30	7.10	7.60	7.80	7.30	7.3	7.28		
temperature (degrees C)	11.6	12.0	12.0	13.0	13.0	13.0	13	13		
redox potential (mv)	175	188	188	188	187	184	184	184		
depth to water (feet)	72.90	72.90	72.90	72.90	72.90	72.90	72.90	72.90		
volume purged (gal or L)	2.65	4.15	5.65	7.15	8.65	10.15	11.65	13.15		

SAMPLE ANALYSIS INFORMATION

ANALYSIS REQUIRED: VOC's,, Isotopic Uranium, Isotopic Thorium, Technetium 99, Isotopic Radium, and select metals
LABORATORY: STL St.Louis
CONTACT: John Powel

Casing Diameter/Volume conversions (inches)	(gallons per foot)
2.0	0.1632
(4.0)	(0.6528)
6.0	1.4687
8.0	2.6115

NOTES: Little sludge on bottom, lower rate after initial reading to 0.3 l/min; Open top flow through cell.
Flow rates = 100 ml/min for VOA
= 150 ml/min for Rad + metals

MALCOLM PIRNIE

17-17 ROUTE 208 NORTH, FAIRLAWN, NEW JERSEY 07410

GROUNDWATER MONITORING WELL SAMPLE COLLECTION LOGS

PROJECT NUMBER: 4563 001
PROJECT NAME: GTEOSI
SITE LOCATION: Hicksville
SITE CONTACT: Jean Agostinelli
DATE: 3-15-03
SAMPLERS: A Wood, IC Hayes
WEATHER: W.NW, 35°

WELL IDENTIFICATION NUMBER: MW-12 PERMIT: --

WELL HEADSPACE READING: - 0 PID MODEL/LAMP: --
DEPTH TO WATER (Before Purging): 73.42 FEET FROM TOP OF CASING
WELL DEPTH: 129.65 FEET FROM TOP OF CASING
HEIGHT OF WATER IN WELL: - 56.32 FEET
WATER IN ONE WELL VOLUME: - 36.71 GALLONS
PURGE TIME (start/finish): 1653 to 1728 PURGE RATE: 300 ml/min
WELL EVACUATION DEVICE: Rediflow electrosubmersible
SAMPLING TIME (start/finish): 1730 to 1747 SAMPLE RATE: 100 ml/min VOA, 150 ml/min rad-metals
SAMPLE COLLECTION DEVICE: Rediflow electrosubmersible
SAMPLE APPEARANCE: clear

FIELD PARAMETERS	initial	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
time (00:00)	1658	1703	1708	1713	1718	1723	1728			
pH (SU)	7.1	7.40	7.50	7.50	7.50	7.50	7.50			
specific conductivity (mS)	0.17	0.18	0.17	0.18	0.18	0.18	0.18			
turbidity (NTU's)	0	0	0	0	0	0	0			
dissolved oxygen (mg/l)	4.08	2.42	7.5	2.5	2.0	1.8	1.8			
temperature (degrees C)	12.1	12.0	12.0	12.0	12.0	12.0	12			
redox potential (mv)	157	154	149	149	143	141	141			
depth to water (feet)	73.42	73.42	73.42	73.42	73.42	73.42	73.42			
volume purged (~~gal~~ L)	1.5	3	4.5	6.0	7.5	9.0	10.5			

SAMPLE ANALYSIS INFORMATION

ANALYSIS REQUIRED: VOC's,, Isotopic Uranium, Isotopic Thorium, Technetium 99, Isotopic Radium, and select metals
LABORATORY: STL St.Louis
CONTACT: John Powel

Casing Diameter/Volume conversions	
(inches)	(gallons per foot)
2.0	0.1632
(4.0)	(0.6528)
6.0	1.4687
8.0	2.6115

NOTES: 1730hr Sample time
100 ml/min VOA
150 ml/min Rad & Metal

2007 Monitoring Well Sampling

MALCOLM PIRNIE

17-17 Rt 208 NORTH, FAIRLAWN, NEW JERSEY 07410

GROUNDWATER MONITORING WELL SAMPLE COLLECTION LOGS

PROJECT NUMBER:	4563001	DATE:	11/12/2007
PROJECT NAME:	GTEOSI	SAMPLERS:	Jeff DeKoskie
SITE LOCATION:	Hicksville, NY		Chris Goldsmith
SITE CONTACT:		WEATHER:	Cloudy, 45°F

WELL IDENTIFICATION NUMBER: MWP-114-170 **PERMIT:**

WELL HEADSPACE READING:	2.9	PID MODEL/LAMP:	mini rae 2000
DEPTH TO WATER (Before Purging):	47.59	FEET FROM TOP OF CASING	
WELL DEPTH:	171.85	FEET FROM TOP OF CASING	
HEIGHT OF WATER IN WELL:	124.26	FEET	
WATER IN ONE WELL VOLUME:	81.1169	GALLONS	
PURGE TIME (start/finish):	12:22 / 15:10	PURGE RATE:	300 ml/min
WELL EVACUATION DEVICE:	Marschalk bladder pump		
SAMPLING TIME (start/finish):	15:15 / 15:20	SAMPLE RATE:	250 ml/min
SAMPLE COLLECTION DEVICE:	Marschalk bladder pump		
SAMPLE APPEARANCE:	Brown to clear		

FIELD PARAMETERS	initial	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
time (00:00)	12:35	12:45	12:50	12:55	13:00	13:05	13:10	13:15	13:20	13:25
pH (SU)	5.00	5.39	5.99	6.02	6.01	6.07	6.08	6.11	6.23	6.4
specific conductivity (mS)	0.356	0.358	0.405	0.415	0.415	0.417	0.422	0.424	0.433	0.437
turbidity (NTU's)	2	41	86	293	330	>1000	>1000	>1000	>1000	>999
dissolved oxygen (mg/l)	2.16	1.71	1.84	2.00	2.05	0.99	0.92	0.96	1.00	1.00
temperature (degrees C)	12.5	13.1	13.5	13.2	13.3	13.8	14.1	14.2	14.0	14.5
redox potential (mv)	200.0	192.2	184.3	183.7	184.0	186.2	185.3	185.0	183.7	173.4
depth to water (feet)	47.68	47.67	47.62	47.62	47.62	47.62	47.63	47.63	47.63	47.66
volume purged (L)	0.5	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5

SAMPLE ANALYSIS INFORMATION

ANALYSIS REQUIRED:

LABORATORY:

CONTACT:

Casing Diameter/Volume conversions	
(inches)	(gallons per foot)
2.0	0.1632
4.0	**0.6528**
6.0	1.4687
8.0	2.6115

NOTES: 4-inch well

12:35 Stop pump to adjust flow thru cell and clean out

12:44 re-start pump

MALCOLM PIRNIE

17-17 Rt 208 NORTH, FAIRLAWN, NEW JERSEY 07410

GROUNDWATER MONITORING WELL SAMPLE COLLECTION LOGS

PROJECT NUMBER:	4563001	DATE:	11/12/2007
PROJECT NAME:	GTEOSI	SAMPLERS:	Jeff DeKoskie
SITE LOCATION:	Hicksville, NY		Chris Goldsmith
SITE CONTACT:		WEATHER:	Cloudy, 45°F

WELL IDENTIFICATION NUMBER: MWP-114-170 **PERMIT:**

WELL HEADSPACE READING:	2.9	PID MODEL/LAMP:	mini rae 2000
DEPTH TO WATER (Before Purging):	47.59	FEET FROM TOP OF CASING	
WELL DEPTH:	171.85	FEET FROM TOP OF CASING	
HEIGHT OF WATER IN WELL:	124.26	FEET	
WATER IN ONE WELL VOLUME:	81.1169	GALLONS	
PURGE TIME (start/finish):	12:22 / 15:10	PURGE RATE:	300 ml/min
WELL EVACUATION DEVICE:	Marschalk bladder pump		
SAMPLING TIME (start/finish):	15:15 / 15:20	SAMPLE RATE:	250 ml/min
SAMPLE COLLECTION DEVICE:	Marschalk bladder pump		
SAMPLE APPEARANCE:	Brownish color		

FIELD PARAMETERS	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th
time (00:00)	13:30	13:35	13:40	13:45	13:50	13:55	14:00	14:05	14:45	14:50
pH (SU)	6.50	6.77	6.96	7.07	7.15	7.30	7.46	7.69	6.21	6.19
specific conductivity (mS)	0.427	0.433	0.431	0.415	0.402	0.395	0.390	0.387	0.389	0.390
turbidity (NTU's)	>999	>999	>999	>999	>999	>999	>999	>999	155	75
dissolved oxygen (mg/l)	0.88	0.91	0.94	1.09	0.94	1.15	1.17	1.04	1.40	1.36
temperature (degrees C)	14.6	14.0	13.3	13.0	13.2	13.2	13.2	13.2	13.2	13.2
redox potential (mv)	170.7	170	169.6	169.4	168.9	168.8	165.1	147.5	211	209
depth to water (feet)	47.64	47.64	47.64	47.63	47.63	47.63	47.63	47.63	47.65	47.65
volume purged (L)	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5

SAMPLE ANALYSIS INFORMATION

ANALYSIS REQUIRED:	VOC
LABORATORY:	STL Edison
CONTACT:	

Casing Diameter/Volume conversions	
(inches)	(gallons per foot)
2.0	0.1632
4.0	**0.6528**
6.0	1.4687
8.0	2.6115

NOTES: 4-inch well

14:05 Stop pump, clean out FTC, raise pump 2 ft

14:40 Re-start pump

MALCOLM PIRNIE

17-17 Rt 208 NORTH, FAIRLAWN, NEW JERSEY 07410

GROUNDWATER MONITORING WELL SAMPLE COLLECTION LOGS

PROJECT NUMBER:	4563001	DATE:	11/12/2007
PROJECT NAME:	GTEOSI	SAMPLERS:	Jeff DeKoskie
SITE LOCATION:	Hicksville, NY		Chris Goldsmith
SITE CONTACT:		WEATHER:	Cloudy, 45°F

WELL IDENTIFICATION NUMBER: MWP-114-170 **PERMIT:**

WELL HEADSPACE READING:	2.9	PID MODEL/LAMP:	mini rae 2000
DEPTH TO WATER (Before Purging):	47.59	FEET FROM TOP OF CASING	
WELL DEPTH:	171.85	FEET FROM TOP OF CASING	
HEIGHT OF WATER IN WELL:	124.26	FEET	
WATER IN ONE WELL VOLUME:	81.1169	GALLONS	
PURGE TIME (start/finish):	12:22 / 15:10	PURGE RATE:	300 ml/min
WELL EVACUATION DEVICE:	Marschalk bladder pump		
SAMPLING TIME (start/finish):	15:15 / 15:20	SAMPLE RATE:	250 ml/min
SAMPLE COLLECTION DEVICE:	Marschalk bladder pump		
SAMPLE APPEARANCE:	Brown to clear		

FIELD PARAMETERS	20th	21th	22nd	23rd						
time (00:00)	14:55	15:00	15:05	15:10						
pH (SU)	6.19	6.16	6.03	6.02						
specific conductivity (mS)	0.402	0.403	0.401	0.401						
turbidity (NTU's)	60	58	55	57						
dissolved oxygen (mg/l)	1.39	1.32	0.96	0.97						
temperature (degrees C)	11.9	11.8	12.1	12.1						
redox potential (mv)	224	221	223	223						
depth to water (feet)	47.64	47.64	47.64	47.64						
volume purged (L)	30.0	31.5	33.0	34.5						

SAMPLE ANALYSIS INFORMATION

ANALYSIS REQUIRED: VOC

LABORATORY: STL Edison

CONTACT:

Casing Diameter/Volume conversions	
(inches)	(gallons per foot)
2.0	0.1632
4.0	**0.6528**
6.0	1.4687
8.0	2.6115

NOTES: 4-inch well

MALCOLM PIRNIE

17-17 Rt 208 NORTH, FAIRLAWN, NEW JERSEY 07410

GROUNDWATER MONITORING WELL SAMPLE COLLECTION LOGS

PROJECT NUMBER:	4563001	DATE:	11/13/2007
PROJECT NAME:	GTEOSI	SAMPLERS:	Jeff DeKoskie
SITE LOCATION:	Hicksville, NY		Chris Goldsmith
SITE CONTACT:		WEATHER:	Ptly cloudy, 55°F

WELL IDENTIFICATION NUMBER: MWP-110-440 PERMIT:

WELL HEADSPACE READING:	1.0	PID MODEL/LAMP:	mini rae 2000
DEPTH TO WATER (Before Purging):	47.34	FEET FROM TOP OF CASING	
WELL DEPTH:	444.31	FEET FROM TOP OF CASING	
HEIGHT OF WATER IN WELL:	396.97	FEET	
WATER IN ONE WELL VOLUME:	259.142	GALLONS	
PURGE TIME (start/finish):	12:00 / 13:10	PURGE RATE:	300 ml/min
WELL EVACUATION DEVICE:	Marschalk bladder pump		
SAMPLING TIME (start/finish):	13:20 / 13:25	SAMPLE RATE:	250 ml/min
SAMPLE COLLECTION DEVICE:	Marschalk bladder pump		
SAMPLE APPEARANCE:			

FIELD PARAMETERS	initial	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
time (00:00)	12:10	12:15	12:20	12:25	12:30	12:35	12:40	12:45	12:50	12:55
pH (SU)	5.56	5.35	5.27	5.26	5.25	5.22	5.16	5.12	5.09	5.05
specific conductivity (mS)	0.301	0.303	0.303	0.303	0.303	0.304	0.305	0.305	0.306	0.307
turbidity (NTU's)	2	1	1	2	5	6	6	7	7	9
dissolved oxygen (mg/l)	2.83	2.15	2.12	2.07	1.92	1.76	1.68	1.71	1.70	1.70
temperature (degrees C)	14.3	14.2	14.2	14.2	14.2	14.0	14.0	14.0	14.1	14.0
redox potential (mv)	210	237	247	249	249	245	247	243	237	232
depth to water (feet)	47.51	47.52	47.52	47.52	47.52	47.52	47.52	47.51	47.51	47.51
volume purged (L)	0.5	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5

SAMPLE ANALYSIS INFORMATION

ANALYSIS REQUIRED:	VOC
LABORATORY:	STL Edison
CONTACT:	

Casing Diameter/Volume conversions	
(inches)	(gallons per foot)
2.0	0.1632
4.0	**0.6528**
6.0	1.4687
8.0	2.6115

NOTES: 4-inch well

MALCOLM PIRNIE

17-17 Rt 208 NORTH, FAIRLAWN, NEW JERSEY 07410

GROUNDWATER MONITORING WELL SAMPLE COLLECTION LOGS

PROJECT NUMBER:	4563001	DATE:	11/13/2007
PROJECT NAME:	GTEOSI	SAMPLERS:	Jeff DeKoskie
SITE LOCATION:	Hicksville, NY		Chris Goldsmith
SITE CONTACT:		WEATHER:	Ptly cloudy, 55°F

WELL IDENTIFICATION NUMBER: MWP-110-440 **PERMIT:**

WELL HEADSPACE READING:	1.0	PID MODEL/LAMP:	mini rae 2000
DEPTH TO WATER (Before Purging):	47.34	FEET FROM TOP OF CASING	
WELL DEPTH:	444.31	FEET FROM TOP OF CASING	
HEIGHT OF WATER IN WELL:	396.97	FEET	
WATER IN ONE WELL VOLUME:	259.142	GALLONS	
PURGE TIME (start/finish):	12:00 / 13:10	PURGE RATE:	300 ml/min
WELL EVACUATION DEVICE:	Marschalk bladder pump		
SAMPLING TIME (start/finish):	13:20 / 13:25	SAMPLE RATE:	250 ml/min
SAMPLE COLLECTION DEVICE:	Marschalk bladder pump		
SAMPLE APPEARANCE:			

FIELD PARAMETERS	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th
time (00:00)	13:00	13:05	13:10							
pH (SU)	5.05	5.03	5.02							
specific conductivity (mS)	0.307	0.307	0.307							
turbidity (NTU's)	10	8	10							
dissolved oxygen (mg/l)	1.74	1.77	1.78							
temperature (degrees C)	14.1	14.1	14.0							
redox potential (mv)	232	232	232							
depth to water (feet)	47.51	47.51	47.51							
volume purged (L)	15.0	16.5	18.0							

SAMPLE ANALYSIS INFORMATION

ANALYSIS REQUIRED: VOC

LABORATORY: STL Edison

CONTACT:

Casing Diameter/Volume conversions	
(inches)	(gallons per foot)
2.0	0.1632
4.0	**0.6528**
6.0	1.4687
8.0	2.6115

NOTES: 4-inch well

MALCOLM PIRNIE

17-17 Rt 208 NORTH, FAIRLAWN, NEW JERSEY 07410

GROUNDWATER MONITORING WELL SAMPLE COLLECTION LOGS

PROJECT NUMBER:	4563001	DATE:	11/13/2007
PROJECT NAME:	GTEOSI	SAMPLERS:	Jeff DeKoskie
SITE LOCATION:	Hicksville, NY		Chris Goldsmith
SITE CONTACT:		WEATHER:	Sunny, mild, 60°F

WELL IDENTIFICATION NUMBER: MWP-110-355 **PERMIT:**

WELL HEADSPACE READING:	2.5	PID MODEL/LAMP:	mini rae 2000
DEPTH TO WATER (Before Purging):	47.15	FEET FROM TOP OF CASING	
WELL DEPTH:	354.54	FEET FROM TOP OF CASING	
HEIGHT OF WATER IN WELL:	307.39	FEET	
WATER IN ONE WELL VOLUME:	200.664	GALLONS	
PURGE TIME (start/finish):	15:00 / 16:25	PURGE RATE:	300 ml/min
WELL EVACUATION DEVICE:	Marschalk bladder pump		
SAMPLING TIME (start/finish):	16:30 / 16:35	SAMPLE RATE:	250 ml/min
SAMPLE COLLECTION DEVICE:	Marschalk bladder pump		
SAMPLE APPEARANCE:	Clear		

FIELD PARAMETERS	initial	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
time (00:00)	15:05	15:10	15:15	15:20	15:25	15:30	15:35	15:40	15:45	15:50
pH (SU)	5.32	5.54	5.65	5.66	5.63	5.54	5.36	5.34	5.35	5.36
specific conductivity (mS)	0.169	0.182	0.201	0.202	0.204	0.203	0.204	0.203	0.201	0.201
turbidity (NTU's)	85	88	70	69	71	75	55	41	37	41
dissolved oxygen (mg/l)	7.65	6.20	6.24	6.48	7.23	7.11	2.80	1.95	1.22	1.11
temperature (degrees C)	13.7	13.7	13.4	13.4	13.3	13.6	14.0	14.0	14.0	14.0
redox potential (mv)	292	310	314	315	306	306	278	256	205	180
depth to water (feet)	47.13	47.13	47.05	47.05	47.05	47.15	47.15	47.14	47.27	47.28
volume purged (L)	0.5	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5

SAMPLE ANALYSIS INFORMATION

ANALYSIS REQUIRED: VOC

LABORATORY: STL Edison

CONTACT:

Casing Diameter/Volume conversions	
(inches)	(gallons per foot)
2.0	0.1632
4.0	**0.6528**
6.0	1.4687
8.0	2.6115

NOTES: 4-inch well

MALCOLM PIRNIE

17-17 Rt 208 NORTH, FAIRLAWN, NEW JERSEY 07410

GROUNDWATER MONITORING WELL SAMPLE COLLECTION LOGS

PROJECT NUMBER:	4563001	DATE:	11/13/2007
PROJECT NAME:	GTEOSI	SAMPLERS:	Jeff DeKoskie
SITE LOCATION:	Hicksville, NY		Chris Goldsmith
SITE CONTACT:		WEATHER:	Sunny, mild, 60°F

WELL IDENTIFICATION NUMBER: MWP-110-355 **PERMIT:**

WELL HEADSPACE READING:	2.5	PID MODEL/LAMP:	mini rae 2000
DEPTH TO WATER (Before Purging):	47.15	FEET FROM TOP OF CASING	
WELL DEPTH:	354.54	FEET FROM TOP OF CASING	
HEIGHT OF WATER IN WELL:	307.39	FEET	
WATER IN ONE WELL VOLUME:	200.664	GALLONS	
PURGE TIME (start/finish):	15:00 / 16:25	PURGE RATE:	300 ml/min
WELL EVACUATION DEVICE:	Marschalk bladder pump		
SAMPLING TIME (start/finish):	16:30 / 16:35	SAMPLE RATE:	250 ml/min
SAMPLE COLLECTION DEVICE:	Marschalk bladder pump		
SAMPLE APPEARANCE:	Clear		

FIELD PARAMETERS	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th
time (00:00)	15:55	16:00	16:05	16:10	16:15	16:20	16:25			
pH (SU)	5.37	5.37	5.37	5.38	5.38	5.38	5.39			
specific conductivity (mS)	0.200	0.200	0.200	0.200	0.200	0.200	0.200			
turbidity (NTU's)	42	36	41	36	38	35	31			
dissolved oxygen (mg/l)	1.01	1.00	1.00	0.97	0.96	0.96	0.93			
temperature (degrees C)	13.9	13.9	13.9	13.9	13.9	13.9	13.9			
redox potential (mv)	173.5	172.8	171.9	171.9	169.3	168.7	167.5			
depth to water (feet)	47.38	47.42	47.44	47.41	47.41	47.42	47.42			
volume purged (L)	15.0	16.5	18.0	19.5	21.0	22.5	24.0			

SAMPLE ANALYSIS INFORMATION

ANALYSIS REQUIRED: VOC

LABORATORY: STL Edison

CONTACT:

Casing Diameter/Volume conversions	
(inches)	(gallons per foot)
2.0	0.1632
4.0	**0.6528**
6.0	1.4687
8.0	2.6115

NOTES: 4-inch well

MALCOLM PIRNIE

17-17 Rt 208 NORTH, FAIRLAWN, NEW JERSEY 07410

GROUNDWATER MONITORING WELL SAMPLE COLLECTION LOGS

PROJECT NUMBER:	4563001	DATE:	11/14/2007
PROJECT NAME:	GTEOSI	SAMPLERS:	Jeff DeKoskie
SITE LOCATION:	Hicksville, NY		Chris Goldsmith
SITE CONTACT:		WEATHER:	Sunny, mild, 60°F

WELL IDENTIFICATION NUMBER: MWP-114-290 PERMIT:

WELL HEADSPACE READING:	0.0	PID MODEL/LAMP:	mini rae 2000
DEPTH TO WATER (Before Purging):	47.68	FEET FROM TOP OF CASING	
WELL DEPTH:	289.61	FEET FROM TOP OF CASING	
HEIGHT OF WATER IN WELL:	241.93	FEET	
WATER IN ONE WELL VOLUME:	157.932	GALLONS	
PURGE TIME (start/finish):	08:25 / 10:30	PURGE RATE:	300 ml/min
WELL EVACUATION DEVICE:	Marschalk bladder pump		
SAMPLING TIME (start/finish):	10:35 / 10:40	SAMPLE RATE:	250 ml/min
SAMPLE COLLECTION DEVICE:	Marschalk bladder pump		
SAMPLE APPEARANCE:	Brown to clear		

FIELD PARAMETERS	initial	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
time (00:00)	8:30	8:35	8:40	8:45	8:50	8:55	9:00	9:15	9:35	9:40
pH (SU)	5.27	5.49	5.49	5.45	5.38	5.31	5.30	5.16	5.16	5.18
specific conductivity (mS)	0.365	0.355	0.353	0.351	0.338	0.330	0.336	0.303	0.291	0.291
turbidity (NTU's)	60	45	45	41	>999	>999	>999	>999	>999	>999
dissolved oxygen (mg/l)	2.44	1.60	1.51	1.21	1.24	0.97	0.85	1.26	1.04	0.98
temperature (degrees C)	13.5	14.1	14.2	14.2	14.2	14.4	14.4	14.5	14.6	14.6
redox potential (mv)	138.1	177.0	177.6	175.7	176.9	149.0	144.9	151.4	165.4	168.0
depth to water (feet)	47.91	47.90	47.90	47.89	47.88	47.88	47.90	47.90	48.03	48.06
volume purged (L)	0.5	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5

SAMPLE ANALYSIS INFORMATION

ANALYSIS REQUIRED: VOC

LABORATORY: STL Edison

CONTACT:

Casing Diameter/Volume conversions	
(inches)	(gallons per foot)
2.0	0.1632
4.0	**0.6528**
6.0	1.4687
8.0	2.6115

NOTES: 4-inch well

09:00 Clean out flow thru cell

09:15 Clean out flow thru cell

MALCOLM PIRNIE

17-17 Rt 208 NORTH, FAIRLAWN, NEW JERSEY 07410

GROUNDWATER MONITORING WELL SAMPLE COLLECTION LOGS

PROJECT NUMBER:	4563001	DATE:	11/14/2007
PROJECT NAME:	GTEOSI	SAMPLERS:	Jeff DeKoskie
SITE LOCATION:	Hicksville, NY		Chris Goldsmith
SITE CONTACT:		WEATHER:	Sunny, mild, 60°F

WELL IDENTIFICATION NUMBER: MWP-114-290 **PERMIT:**

WELL HEADSPACE READING:	0.0	PID MODEL/LAMP:	mini rae 2000
DEPTH TO WATER (Before Purging):	47.68	FEET FROM TOP OF CASING	
WELL DEPTH:	289.61	FEET FROM TOP OF CASING	
HEIGHT OF WATER IN WELL:	241.93	FEET	
WATER IN ONE WELL VOLUME:	157.932	GALLONS	
PURGE TIME (start/finish):	08:25 / 10:30	PURGE RATE:	300 ml/min
WELL EVACUATION DEVICE:	Marschalk bladder pump		
SAMPLING TIME (start/finish):	10:35 / 10:40	SAMPLE RATE:	250 ml/min
SAMPLE COLLECTION DEVICE:	Marschalk bladder pump		
SAMPLE APPEARANCE:	Brown to clear		

FIELD PARAMETERS	10th	11th	12th	13th	14th	15th	16th	17th	18th	19th
time (00:00)	9:45	9:50	9:55	10:00	10:05	10:10	10:15	10:20	10:25	10:30
pH (SU)	5.19	5.22	5.22	5.11	5.12	5.13	5.14	5.15	5.16	5.1[illegible]
specific conductivity (mS)	0.291	0.294	0.294	0.300	0.301	0.303	0.304	0.307	0.308	0.307
turbidity (NTU's)	>999	856	764	77	68	66	67	70	64	66
dissolved oxygen (mg/l)	1.20	1.28	1.16	1.75	1.29	1.24	0.98	0.88	0.85	0.83
temperature (degrees C)	14.5	14.7	14.7	14.8	14.8	14.8	14.9	14.8	14.8	14.9
redox potential (mv)	173.2	249.0	233.0	188.5	190.3	197.4	196.8	198.6	198.7	196.7
depth to water (feet)	48.08	48.14	48.17	48.15	48.15	48.15	48.14	48.14	48.14	48.14
volume purged (L)	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5

SAMPLE ANALYSIS INFORMATION

ANALYSIS REQUIRED: VOC

LABORATORY: STL Edison

CONTACT:

Casing Diameter/Volume conversions	
(inches)	(gallons per foot)
2.0	0.1632
4.0	**0.6528**
6.0	1.4687
8.0	2.6115

NOTES: 4-inch well

Duplicate sample collected

2010 Monitoring Well Sampling

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/6/2010 **WELL OWNER:** GTEOSI **WELL ID:** MW-03

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 68 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~70°F **SCREENED/OPEN BOREHOLE INTERVAL:** 58-78 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-3 **SAMPLE TIME (start/finish):** 1530 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: QED Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1450	0.3	60.27	300	0.0	5.54	0.184	10.17	18.76	343	9.2
1455	1.8	60.27	300	0.0	5.57	0.179	9.57	18.65	354	9.6
1500	3.3	60.27	300	0.0	5.60	0.176	9.87	18.57	358	10.6
1505	4.8	60.27	300	0.0	5.62	0.172	9.48	18.77	364	12.6
1510	6.3	60.27	300	0.0	5.62	0.169	9.51	18.64	367	12.5
1515	8.8	60.27	300	0.0	5.64	0.169	9.64	18.59	371	14.4
1520	10.3	60.27	300	0.0	5.64	0.169	9.62	18.48	372	14.6
1525	12.8	60.27	300	0.0	5.64	0.168	9.68	18.47	374	13.9

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/6/2010 **WELL OWNER:** GTEOSI **WELL ID:** MW-04

SAMPLERS: Brad Walker **DEPTH OF PUMP INTAKE:** 63 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~70°F **SCREENED/OPEN BOREHOLE INTERVAL:** 58-78 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-04 **SAMPLE TIME (start/finish):** 0905/1015 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: QED Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0825		59.81	250	0	5.68	0.136	8.53	15.77	297	9.2
0830		59.81	250	0	5.73	0.131	8.18	15.73	294	8.1
0835		59.81	250	0	5.77	0.134	8.25	15.79	291	7.2
0840	1.5	59.81	250	0	5.74	0.134	8.51	15.88	290	7.2
0845		59.81	250	0	5.75	0.134	8.16	15.96	289	6.9
0850		59.81	250	0	5.79	00.135	8.40	15.91	285	6.4
0855		59.81	250	0	5.78	0.139	8.25	16.10	284	5.5
0900	3.0	59.81	250	0	5.78	0.136	8.19	16.27	284	5.9

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs
Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 12 sec discharge - 8 sec, 100 psi
Collect sample for VOC, TAL Metals (Tot & Dis), 1, 4 dioxane, Rad (Tot & Dis), and Chloride

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/6/2010 **WELL OWNER:** GTEOSI **WELL ID:** MW-08

SAMPLERS: Cory Snyder **DEPTH OF PUMP INTAKE:** 125 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~80°F **SCREENED/OPEN BOREHOLE INTERVAL:** 120-130 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-8 **SAMPLE TIME (start/finish):** 1605/1700 **SAMPLE FLOW RATE:** 225 ml/min

PUMP TYPE: QED Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1533		60.15	350	0.0	5.61	0.258	7.18	13.74	258	3.20
1538		60.15	350	0.0	5.52	0.258	7.08	14.18	265	3.15
1543		60.15	350	0.0	5.55	0.258	7.15	14.19	266	2.81
1548		60.15	350	0.0	5.57	0.255	6.97	16.18	266	2.30
1553		60.15	350	0.0	5.57	0.257	7.03	14.11	267	No Reading
1558		60.15	350	0.0	5.57	0.257	7.13	14.36	269	1.3
1603		60.15	350	0.0	5.68	0.257	6.83	14.59	263	1.2

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 12.5 sec, Discharge 7.5 sec
at 1553 switch to U-52 turbidity readings

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/8/2010 **WELL OWNER:** GTEOSI **WELL ID:** MW-09

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 77 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~80°F **SCREENED/OPEN BOREHOLE INTERVAL:** 72-82 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-9 **SAMPLE TIME (start/finish):** 0930 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: QED Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 8592 **Other (specify):** LaMotte 2020 **Horiba serial #** UM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0845	0.3	60.55	300	0.0	5.81	0.067	10.50	15.82	251	1.9
0850	1.5	60.55	300	0.0	5.81	0.067	9.88	15.76	259	1.7
0855	2.8	60.55	300	0.0	5.72	0.063	7.20	15.74	299	0.05
0900	4.3	60.55	300	0.0	5.73	0.061	7.08	15.69	308	0.00
0905	5.8	60.55	300	0.0	5.73	0.061	7.08	15.69	308	0.00
0910	7.3	60.55	300	0.0	5.72	0.060	6.57	15.79	321	0.00
0915	8.8	60.55	300	0.0	5.72	0.079	6.51	15.78	324	0.20
0920	10.3	60.55	300	0.0	5.72	0.059	6.51	15.78	324	0.25
0925	11.8	60.55	300	0.0	5.68	0.057	6.57	15.79	330	0.25

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/8/2010 **WELL OWNER:** GTEOSI **WELL ID:** MW-10

SAMPLERS: Brad Walker & Cory Snyder **DEPTH OF PUMP INTAKE:** 125 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~65°F **SCREENED/OPEN BOREHOLE INTERVAL:** 120-130 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-10 **SAMPLE TIME (start/finish):** 0930 **SAMPLE FLOW RATE:** 210 ml/min

PUMP TYPE: QED Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 9447 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0845		60.42	210	0.0	4.99	0.347	9.91	15.73	318	2.85
0850		60.42	210	0.0	4.96	0.348	8.07	15.12	329	2.75
0855	1.0	60.42	210	0.0	4.96	0.347	7.46	15.09	336	2.83
0900		60.42	210	0.0	4.92	0.344	7.28	14.98	344	2.48
0905		60.42	210	0.0	4.98	0.341	7.07	14.99	345	2.45
0910		60.42	210	0.0	5.00	0.340	7.20	14.98	347	2.24
0920		60.42	210	0.0	4.94	0.340	6.90	15.00	352	2.05
0925	2.0	60.42	210	0.0	4.97	0.342	6.50	15.08	352	1.62

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: CPM: 2, Fill: 18 Sec, Discharge: 12 sec

0835 - Start purging, initial DTW 60.42

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/7/2010 **WELL OWNER:** GTEOSI **WELL ID:** MW-11

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 76 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~80°F **SCREENED/OPEN BOREHOLE INTERVAL:** 71-81 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-11 **SAMPLE TIME (start/finish):** 1345/1445 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: QED Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 11854 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1410	0.3	60.65	300	0.0	6.36	0.119	8.20	16.31	251	0.0
1415	1.8	60.65	300	0.0	6.39	0.113	7.88	15.99	263	0.0
1420	3.3	60.65	300	0.0	6.32	0.113	8.13	15.74	267	0.35
1425	4.8	60.65	300	0.0	6.33	0.113	7.99	15.71	269	0.40
1430	6.3	60.65	300	0.0	6.29	0.114	7.59	15.76	273	0.45
1435	7.8	60.65	300	0.0	6.28	0.114	7.63	15.78	277	0.40
1440	9.3	60.65	300	0.0	6.21	0.115	7.60	15.82	280	0.40
1445	10.8	60.65	300	0.0	6.20	0.115	7.72	15.80	280	0.40

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: DUPL-3 collected at 0900

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/7/2010 **WELL OWNER:** GTEOSI **WELL ID:** MW-12

SAMPLERS: Brad Walker **DEPTH OF PUMP INTAKE:** 125 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~80°F **SCREENED/OPEN BOREHOLE INTERVAL:** 120-130 ft TIC or **ft BGS** (circle one)

SAMPLE ID: Mw-12 **SAMPLE TIME (start/finish):** 1610/1715 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: QED Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 11286 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1530		61.20	250	0.0	7.18	0.496	15.66	19.66	151	1.5
1535	2.0	61.20	250	0.0	7.11	0.502	7.19	17.32	172	1.8
1540		61.20	250	0.0	7.12	0.505	7.12	16.88	176	1.3
1545		61.20	250	0.0	7.03	0.505	7.08	16.62	185	1.87
1550		61.20	250	0.0	7.04	0.505	6.73	16.74	186	1.10
1555		61.20	250	0.0	7.04	0.506	6.91	16.53	188	0.91
1600		61.20	250	0.0	7.02	0.506	6.73	16.62	190	0.80
1605	4.0	61.20	250	0.0	7.02	0.508	-	16.62	190	0.87

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: difficulty achieving 200 ml/min flow rate. Pulled pump tp check hose connection. Old tubing in well had to be removed and disgarded as pump got hung up when trying to remove.
1500 - Start purging, initial DTW - 61.20

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/8/2010 **WELL OWNER:** GTEOSI **WELL ID:** MW-P114-170R

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 165 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~80°F **SCREENED/OPEN BOREHOLE INTERVAL:** 160-170 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-P114-170R **SAMPLE TIME (start/finish):** 1425/1515 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: QED Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 10346 **Other (specify):** LaMotte 2020 **Horiba serial #** UM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1320	0.3	44.98	300	0.0	5.94	0.559	10.86	16.09	217	85
1325	1.8	44.98	300	0.0	5.87	0.554	3.95	15.69	226	130
1330	3.3	44.98	300	0.0	5.88	0.555	3.46	15.56	225	120
1335	4.8	44.98	300	0.0	5.86	0.552	3.12	15.53	225	183
1340	6.3	44.98	300	0.0	5.83	0.552	2.76	15.60	224	110
1345	7.8	44.98	300	0.0	5.85	0.546	2.55	15.61	223	70
1350	9.3	44.98	300	0.0	5.85	0.546	2.37	15.37	220	55
1355	10.8	44.98	300	0.0	5.88	0.542	2.22	15.46	218	50
1400	12.3	44.98	300	0.0	5.84	0.540	1.32	15.62	225	31
1405	13.8	44.98	300	0.0	5.84	0.540	1.32	15.50	224	27

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/8/2010 **WELL OWNER:** GTEOSI **WELL ID:** MW-P114-170R

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 165 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~80°F **SCREENED/OPEN BOREHOLE INTERVAL:** 160-170 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-P114-170R **SAMPLE TIME (start/finish):** 1425/1515 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: QED Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 10346 **Other (specify):** LaMotte 2020 **Horiba serial #** UM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1410	15.3	44.98	300	0.0	5.84	0.538	1.03	15.51	220	20
1415	16.8	44.98	300	0.0	5.85	0.535	0.97	15.53	219	21
1420	18.3	44.98	300	0.0	5.82	0.534	1.05	15.49	219	18

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/9/2010 **WELL OWNER:** GTEOSI **WELL ID:** MW-P114-290

SAMPLERS: Brad Walker & Cory Snyder **DEPTH OF PUMP INTAKE:** 285 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~80°F **SCREENED/OPEN BOREHOLE INTERVAL:** 280-290 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-P114-290 **SAMPLE TIME (start/finish):** 1425/1515 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: Marshchalk Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** 15504

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0855		45.50								52.9
1015	2	45.50	525	0.0	6.90	0.618	0.10	14.01	56	65.0
1020	4	45.50	525	0.0	6.59	0.603	0.00	13.91	76	62.9
1025		45.50	525	0.0	6.57	0.600	0.00	13.90	79	50.6
1030		45.50	525	0.0	6.67	0.588	0.00	13.88	75	50.6
1035		45.50	525	0.0	6.61	0.571	0.00	13.75	83	47.8
1040	6	45.50	525	0.0	6.57	0.557	0.00	13.94	85	48.7
1045		45.50	525	0.0	6.56	0.548	0.00	13.86	86	48.1
1050		45.50	525	0.0	6.46	0.528	0.00	13.84	95	49.5
1055		45.50	525	0.0	6.38	0.522	0.00	13.80	101	41.3

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 20 sec, Discharge - 10 sec, psi=100
Difficulty with pump. Air bubbling in well. Pulled pump and replace with different pump.
Pump set at 80 ft BGS and intake set at 285 ft BGS

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/9/2010 **WELL OWNER:** GTEOSI **WELL ID:** MW-P114-290

SAMPLERS: Brad Walker & Cory Snyder **DEPTH OF PUMP INTAKE:** 285 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~80°F **SCREENED/OPEN BOREHOLE INTERVAL:** 280-290 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-P114-290 **SAMPLE TIME (start/finish):** 1425/1515 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: Marshchalk Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** 15504

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1100	9	45.50	525	0.05	6.35	0.513	0.00	13.81	106	40.9
1105		45.60	525	0.10	6.28	0.507	0.00	13.82	110	39.2
1010	10.5	45.60	525	0.10	6.34	0.494	0.00	13.84	110	36.8

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/12/2010 **WELL OWNER:** GTEOSI **WELL ID:** MW-P110-355

SAMPLERS: Brad Walker **DEPTH OF PUMP INTAKE:** 350 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~65°F **SCREENED/OPEN BOREHOLE INTERVAL:** 345-355 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-P110-355 **SAMPLE TIME (start/finish):** 1710 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Marshchalk Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 14932 **Other (specify):** LaMotte 2020 **Horiba serial #** 15504 pine #

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1525		46.28	370	-1.37	6.20	0.304	0.22	14.19	170	30.9
1530	1.5	46.91	450	-2	6.29	0.304	0.06	14.23	168	30.8
1540		48.00	500	-3.09	6.19	0.303	0.16	14.21	177	31.3
1545		47.30	-	-	6.27	0.302	0.99	15.39	175	30.8
1550		47.08	300	-2.17	6.13	0.302	1.31	14.06	187	31.4
1600		47.10	300	-2.19	6.14	0.305	0.56	14.08	186	32.3
1605		47.15	300	-2.24	6.31	0.302	0.56	14.00	176	30.5
1610		47.14	300	-2.23	6.19	0.301	0.49	14.02	184	29.3
1615		47.11	300	-2.20	6.23	0.300	0.48	14.05	182	29.5
1620		47.10	300	-2.19	6.20	0.297	0.48	14.03	185	28.7

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill 13 sec, Discharge 17 sec, psi=70, CPM - 2
Pump set at 200 ft BGS and intake set at 355 ft BGS

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/12/2010 **WELL OWNER:** GTEOSI **WELL ID:** MW-P110-355

SAMPLERS: Brad Walker **DEPTH OF PUMP INTAKE:** 350 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~65°F **SCREENED/OPEN BOREHOLE INTERVAL:** 345-355 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-P110-355 **SAMPLE TIME (start/finish):** 1710 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Marshchalk Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 14932 **Other (specify):** LaMotte 2020 **Horiba serial #** 15504 pine #

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1625	6	47.09	300	-2.18	6.25	0.296	0.48	14.03	184	27.7
1630		47.05	300	-2.14	6.24	0.295	0.47	14.06	185	26.2
1640		47.04	300	-2.13	6.24	0.294	0.48	13.97	187	27.0
1645		47.00	300	-2.09	6.24	0.295	0.42	14.00	188	27.2
1650		47.02	300	-2.11	6.14	0.295	0.44	14.00	192	26.8
1655	8	47.05	300	-2.14	6.18	0.293	0.49	14.04	192	26.8

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Air compressor ran out of fuel at 1630. Refueled at 1645. Air tank maintained minimum pressure to continue cycles during refueling. Filter plugged up quickly during sampling. Had to replace midway on filtered RAD sample.

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/13/2010 **WELL OWNER:** GTEOSI **WELL ID:** MW-P110-440

SAMPLERS: Brad Walker & John Hilton **DEPTH OF PUMP INTAKE:** 435 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy, ~52°F **SCREENED/OPEN BOREHOLE INTERVAL:** 430-440 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-P110-440 **SAMPLE TIME (start/finish):** 1215/1355 **SAMPLE FLOW RATE:** 160 ml/min

PUMP TYPE: Marshchalk Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 9985 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1035		44.35								
1120		45.45	160	+0.12	5.93	0.449	7.62	13.18	262	35.9
1130		45.45	160	+0.12	5.92	0.446	2.99	12.95	224	11.8
1140		45.45	160	+0.12	5.78	0.445	2.43	12.98	231	8.44
1145		45.47	160	+0.14	5.74	0.445	2.27	13.00	235	5.91
1150		45.45	160	+0.12	5.76	0.444	2.19	12.95	237	4.63
1155		45.45	160	+0.12	5.76	0.444	2.11	12.94	238	3.91
1200		45.40	160	+0.07	5.76	0.444	2.03	12.93	240	2.92
1205		45.40	160	+0.07	5.76	0.443	1.99	12.93	241	2.28
1210	3.0	45.33	160	0	5.76	0.444	1.93	12.99	243	1.92

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill 8 sec, Discharge 4 sec, psi=100, CPM - 5
200' dropline with stainless steel intake

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/24/010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-13D

SAMPLERS: Ben Cole (E&E) Cory Snyder (MPI) **DEPTH OF PUMP INTAKE:** 295 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny Windy ~50°F **SCREENED/OPEN BOREHOLE INTERVAL:** 290-300 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-13D **SAMPLE TIME (start/finish):** 1110 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0945	0	65.48	350	0	6.94	0.093	0.63	13.91	-86.5	0.44
0950	1.5	65.48	350	0	7.00	0.094	0.41	13.75	-104.4	0.45
0955	3.0	65.48	300	0	6.99	0.094	0.46	13.57	-108.9	0.45
1000	4.5	65.48	300	0	6.99	0.094	0.52	12.96	-108.8	0.45
1005	6.0	65.48	300	0	6.77	0.093	0.47	13.52	-89.2	0.68
1010	7.5	65.48	300	0	6.58	0.094	0.46	13.70	-71.7	1.59
1015	9.0	65.48	300	0	6.04	0.094	0.74	13.67	-20.5	5.41
1020	10.5	65.48	300	0	5.71	0.095	1.53	13.79	14.2	11.9
1025	12.0	65.48	300	0	5.64	0.094	2.51	13.79	26.3	19.1
1030	13.5	65.48	300	0	5.60	0.093	3.10	13.78	37.5	11.7

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 20 sec, Discharge - 15 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/24/010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-13D

SAMPLERS: Ben Cole (E&E) Cory Snyder (MPI) **DEPTH OF PUMP INTAKE:** 295 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny Windy ~50°F **SCREENED/OPEN BOREHOLE INTERVAL:** 290-300 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-13D **SAMPLE TIME (start/finish):** 1110 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1040	15.0	65.48	300	0	5.56	0.093	3.87	13.59	47.2	7.16
1045	16.5	65.48	300	0	5.55	0.094	4.20	13.76	50.2	3.91
1050	18.0	65.48	300	0	5.59	0.096	4.56	13.71	53.3	6.25
1055	19.5	65.48	300	0	5.53	0.097	4.85	13.73	54.3	1.94
1100	21.0	65.48	300	0	5.51	0.098	5.02	13.73	58.0	2.55

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 20 sec, Discharge - 15 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/2/2010 Re-Sampled **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-13D Re-Sampled

SAMPLERS: Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 295 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny Windy ~44°F **SCREENED/OPEN BOREHOLE INTERVAL:** 290-300 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-13D **SAMPLE TIME (start/finish):** 1150 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #** _____

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1045		64.65	500	0.0	6.27	0.130	5.07	14.91	141.5	0.96
1050		64.65	500	0.0	6.04	0.130	2.13	15.17	144.7	0.75
1055		64.65	500	0.0	5.99	0.129	2.87	14.85	137.1	0.58
1100		64.65	500	0.0	5.95	0.127	3.72	14.63	132.2	0.63
1105		64.65	500	0.0	5.92	0.129	1.21	14.50	124.2	1.57
1110		64.65	500	0.0	5.85	0.129	1.50	14.38	123.0	5.91
1115		64.65	500	0.0	5.73	0.122	3.26	14.31	125.9	8.00
1120		64.65	500	0.0	5.72	0.117	4.01	14.25	121.1	4.61
1125		64.65	500	0.0	5.70	0.117	5.07	14.20	115.5	3.41
1130		64.65	500	0.0	5.67	0.121	6.14	14.19	118.7	2.28

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Well resampled by MPI due to breakage of split sample collected.

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/2/2010 Re-Sampled **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-13D Re-Sampled

SAMPLERS: Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 295 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny Windy ~44°F **SCREENED/OPEN BOREHOLE INTERVAL:** 290-300 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-13D **SAMPLE TIME (start/finish):** 1150 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1135	4.0	64.65	500	0.0	5.63	0.126	7.32	14.20	127.0	0.83
1140		64.65	500	0.0	5.62	0.128	7.67	14.17	130.7	0.82
1145		64.65	500	0.0	5.60	0.129	8.07	14.24	135.2	0.65

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Well resampled by MPI due to breakage of split sample collected.

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/24/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-13S

SAMPLERS: Tom Horn (CDM) Ben Cole (E&E) Chris Goldsmith **DEPTH OF PUMP INTAKE:** 75 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny Windy, ~40°F **SCREENED/OPEN BOREHOLE INTERVAL:** 70-80 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-13S **SAMPLE TIME (start/finish):** 950 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0905		65.46	350							
0910		65.46	350	0.0	4.85	1.269	9.93	13.92	37.4	1.23
0915		65.46	350	0.0	4.89	1.267	9..95	13.99	39.9	0.59
0920		65.46	350	0.0	4.88	1.263	9.75	14.12	41.4	2.25
0925		65.46	350	0.0	4.87	1.258	9.72	14.06	42.7	1.72
0930		65.46	350	0.0	4.86	1.253	9.69	14.07	43.2	1.38
0935		65.46	350	0.0	4.89	1.262	9.63	14.10	42.9	0.44
0940		65.46	350	0.0	4.89	1.272	9.76	14.06	42.5	0.30
0945		65.46	350	0.0	4.90	1.278	9.82	14.16	42.2	0.61

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/23/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-14D

SAMPLERS: Tom Horn & Ed (CDM) Ben Cole (E&E) **DEPTH OF PUMP INTAKE:** 299 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 294-304 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-14D **SAMPLE TIME (start/finish):** 1225 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0849		64.40	300							
0851		64.54	300	0.14	6.10	0.343	4.56	13.09	43.0	10.7
0856		64.61	300	0.21	6.05	0.326	3.54	13.15	40.9	135.0
0901		64.79	300	0.39	6.05	0.320	2.97	13.01	38.5	1386.0
0906		64.72	300	0.32	6.11	0.351	2.72	12.86	38.1	Turbidity out of range
0911		64.59	300	0.19	6.41	0.439	2.20	12.87	33.4	Turbidity out of range
0916		64.86	300	0.46	6.57	0.432	1.86	13.13	27.0	Turbidity out of range
1108	9	64.51	190	0.11	5.92	0.263	4.57	12.89	22.5	153
1113		64.51	190	0.11	5.92	0.254	4.45	12.85	29.4	133
1120		64.51	190	0.11	5.68	0.252	4.41	12.86	31.7	128

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: 0921 - Temporarily delay in purge due to loss of air pressure.
0935 - Stop purge, problem with airline on pump.
1105 - re-start purging

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/23/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-14D

SAMPLERS: Tom Horn & Ed (CDM) Ben Cole (E&E) **DEPTH OF PUMP INTAKE:** 299 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 294-304 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-14D **SAMPLE TIME (start/finish):** 1225 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	**gallons** / liters (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1125		64.51	190	0.11	5.66	0.251	4.41	12.89	32.9	99.3
1130		64.51	190	0.11	5.64	0.251	4.40	12.91	33.6	88.1
1135		64.51	190	0.11	5.63	0.251	4.37	12.89	34.2	72.8
1140		64.51	190	0.11	5.61	0.249	4.37	12.90	35.0	67.2
1145		64.51	190	0.11	5.61	0.249	4.35	12.88	34.7	60.6
1150		64.51	190	0.11	5.61	0.250	4.41	12.94	35.1	64.7
1155		64.51	190	0.11	5.63	0.251	4.33	12.88	32.9	55.8
1200		64.51	190	0.11	5.15	0.253	4.35	12.94	33.3	53.2
1205		64.51	190	0.11	5.68	0.254	4.28	12.93	32.6	53.9
1210		64.51	190	0.11	5.69	0.256	4.25	12.97	31.2	51.8

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface **Notes:**

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/23/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-14D

SAMPLERS: Tom Horn & Ed (CDM) Ben Cole (E&E) **DEPTH OF PUMP INTAKE:** 299 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 294-304 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-14D **SAMPLE TIME (start/finish):** 1225 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1215		64.51	190	0.11	5.70	0.257	4.18	13.0	30.0	50.1
1220		64.51	190	0.11	5.72	0.258	4.14	13.03	28.8	48.0

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/22/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-14DD

SAMPLERS: Tom Horn (CDM) **DEPTH OF PUMP INTAKE:** 370 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~45°F **SCREENED/OPEN BOREHOLE INTERVAL:** 365-375 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-14DD **SAMPLE TIME (start/finish):** 1630 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1533		64.38								
1536		64.38	250	0.0	6.33	0.243	5.72	13.57	18.3	1.71
1541		64.38	250	0.0	6.32	0.243	5.53	13.57	17.7	1.23
1546		64.38	250	0.0	6.30	0.242	5.31	13.50	17.0	2.29
1551		64.38	250	0.0	6.29	0.242	5.16	13.48	16.6	3.17
1556		64.38	250	0.0	6.27	0.244	4.73	13.44	14.9	49.6
1601		64.38	250	0.0	6.22	0.246	3.86	13.46	11.9	57.2
1606		64.38	250	0.0	6.22	0.245	3.16	13.43	9.0	28.1
1611		64.38	250	0.0	6.22	0.243	2.77	13.41	7.1	18.0
1616		64.38	250	0.0	6.21	0.243	2.53	13.42	5.8	13.9

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/22/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-14DD

SAMPLERS: Tom Horn (CDM) **DEPTH OF PUMP INTAKE:** 370 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~45°F **SCREENED/OPEN BOREHOLE INTERVAL:** 365-375 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-14DD **SAMPLE TIME (start/finish):** 1630 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1621		64.38	250	0.0	6.15	0.241	2.22	13.41	4.6	10.92
1626		64.38	250	0.0	6.10	0.239	2.13	13.40	3.6	8.84

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

DATE: 3/22/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-14S

SAMPLERS: Tome Horn (CDM) **DEPTH OF PUMP INTAKE:** 75 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Overcast, cool **SCREENED/OPEN BOREHOLE INTERVAL:** 70-80 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-14S **SAMPLE TIME (start/finish):** 1420 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1342		64.58								
1347		64.58	300		5.18	0.457	9.60	13.90	28.7	2.17
1352		64.58	300		5.12	0.449	9.46	13.88	34.2	1.83
1357		64.58	300		5.10	0.442	9.35	13.80	38.5	1.76
1402		64.58	300		5.09	0.446	9.27	13.84	41.1	0.79
1407		64.58	300		5.09	0.445	9.28	13.80	42.5	1.29
1412		64.58	300		5.09	0.442	9.24	13.79	13.4	0.79
1415		64.58	300		5.09	0.438	9.21	13.81	44.4	2.35

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/23/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-15D

SAMPLERS: Tom Horn (CDM) **DEPTH OF PUMP INTAKE:** 305 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Overcast ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 300-310 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-15D **SAMPLE TIME (start/finish):** 1345 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1245		64.13	325							
1250		64.12	325	-0.01	5.41	0.201	2.85	13.88	25.9	2.10
1255		64.12	325	-0.01	5.35	0.201	2.61	13.74	26.9	0.42
1300		64.12	325	-0.01	5.33	0.201	2.51	13.65	29.1	0.52
1305		64.12	325	-0.01	5.31	0.200	2.98	13.61	32.2	-
1310		64.12	325	-0.01	5.30	0.200	3.18	13.58	34.4	4.86
1315		64.12	325	-0.01	5.24	0.197	4.44	13.53	38.7	2.18
1320		64.12	325	-0.01	5.22	0.197	5.18	13.55	43.2	3.32
1325		64.12	325	-0.01	5.20	0.98	5.80	13.64	47.8	1.39
1330		64.12	325	-0.01	5.18	0.198	6.26	13.66	50.2	0.98
1335		64.12	325	-0.01	5.17	0.198	6.52	13.65	57.3	1.19

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/23/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-15DD

SAMPLERS: Tom Horn (CDM) Ben Cole (E&E) Chris Goldsmith **DEPTH OF PUMP INTAKE:** 365 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Light Rain ~50°F **SCREENED/OPEN BOREHOLE INTERVAL:** 360-370 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-15DD **SAMPLE TIME (start/finish):** 1550 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1440		64.52	350							
1445		64.52	350	0.0	10.01	0.153	9.3	13.71	8.8	229
1450		64.52	350	0.0	9.70	0.144	9.95	13.39	12.5	-
1455		64.51	350	-0.01	9.57	0.142	9.87	13.46	13.3	220
1500		64.51	350	-0.01	8.89	0.135	8.32	13.48	17.6	1.66
1505		64.51	350	-0.01	8.01	0.129	8.51	13.43	26.6	16.8
1510		64.51	350	-0.01	7.36	0.123	8.50	13.57	33.0	16.0
1515		64.51	350	-0.01	7.01	0.119	7.05	13.47	36.2	9.96
1520		64.51	350	-0.01	6.60	0.117	6.56	13.49	38.1	6.24
1525		64.51	350	-0.01	6.31	0.115	6.46	13.44	39.6	4.3

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface **Notes:**

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/23/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-15DD

SAMPLERS: Tom Horn (CDM) Ben Cole (E&E) Chris Goldsmith **DEPTH OF PUMP INTAKE:** 365 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Light Rain ~50°F **SCREENED/OPEN BOREHOLE INTERVAL:** 360-370 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-15DD **SAMPLE TIME (start/finish):** 1550 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1530		64.51	350	-0.01	6.15	0.114	6.45	13.47	39.9	2.59
1535		64.51	350	-0.01	6.06	0.114	6.43	13.51	39.9	2.38
1540		64.51	350	-0.01	6.02	0.113	6.42	13.48	39.9	1.42

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/22/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-15S

SAMPLERS: Tom Horn (CDM) & Ben Cole (E&E) **DEPTH OF PUMP INTAKE:** 75 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Overcast ~50°F **SCREENED/OPEN BOREHOLE INTERVAL:** 70-80 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-15S **SAMPLE TIME (start/finish):** 1050 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 MDS **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0953		64.28	300							
1005		64.29	300	+.01	6.21	2.653	9.52	13.50	25.8	6.58
1010		64.28	300	-.01	6.91	2.633	9.53	13.18	27.5	1.93
1015		64.28	300	0.0	6.18	2.613	9.56	13.19	27.8	0.85
1020		64.28	300	0.0	6.18	2.608	9.58	13.15	28.1	1.46
1025		64.28	300	0.0	6.18	2.594	9.56	13.12	28.6	1.22
1030		64.28	300	0.0	6.18	2.592	9.56	13.08	28.8	1.93
1035		64.28	300	0.0	6.18	2.591	9.58	13.02	29.9	0.16
1040		64.28	300	0.0	6.18	2.588	9.55	12.96	29.7	0.88

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/7/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-16D

SAMPLERS: Pat Conelly (CDM) Chris Goldsmith (MPI) **DEPTH OF PUMP INTAKE:** 285 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~80°F **SCREENED/OPEN BOREHOLE INTERVAL:** 280-290 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-16D **SAMPLE TIME (start/finish):** 925 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 600 XL **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0757	0.4	63.11	400	0.0	8.16	0.402	0.24	13.66	-31.4	176
0802	2.4	63.11	400	0.0	9.31	0.367	0.10	14.37	-34.7	39.5
0807	4.4	63.11	400	0.0	9.23	0.393	0.09	14.47	-30.5	36.5
0812	6.4	63.11	400	0.0	8.74	0.407	0.16	14.51	-24.0	42.4
0817	8.4	63.11	400	0.0	7.80	0.428	0.64	14.50	-17.5	52.4
0822	10.4	63.11	400	0.0	7.31	0.452	1.10	14.58	-17.0	1028
0827	12.4	63.11	400	0.0	7.60	0.399	1.11	14.61	-23.5	5828
0832	14.4	63.11	400	0.0	7.73	0.354	1.30	14.65	-27.1	2670
0837	16.4	63.11	400	0.0	7.61	0.320	1.51	14.75	-34.8	1459
0842	18.4	63.11	400	0.0	7.31	0.294	1.68	14.83	-39.7	1624

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/7/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-16D

SAMPLERS: Pat Conelly (CDM) Chris Goldsmith (MPI) **DEPTH OF PUMP INTAKE:** 285 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~80°F **SCREENED/OPEN BOREHOLE INTERVAL:** 280-290 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-16D **SAMPLE TIME (start/finish):** 925 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 600 XL **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0847	20.4	63.11	400	0.0	7.50	0.274	7.32	14.95	-44.1	1056
0852	22.4	63.11	400	0.0	7.18	0.273	6.71	14.88	-35.6	723
0857	24.4	63.11	400	0.0	6.89	0.269	6.85	14.90	-25.8	518
0902	26.4	63.11	400	0.0	6.81	0.268	7.12	14.99	-23.1	447
0907	28.4	63.11	400	0.0	6.77	0.267	7.04	14.90	-23.4	400
0912	30.4	63.11	400	0.0	6.74	0.266	7.08	15.06	-22.3	369
0917	32.4	63.11	400	0.0	6.74	0.266	7.06	15.07	-23.7	304

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/7/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-16S

SAMPLERS: Tom Horn (CDM) Chris Goldsmith (MPI) **DEPTH OF PUMP INTAKE:** 75 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~80°F **SCREENED/OPEN BOREHOLE INTERVAL:** 70-80 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-16S **SAMPLE TIME (start/finish):** 1125/1215 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1030		63.98	400	0.0	6.38	0.168	0.75	16.22	97.1	6.88
1035		63.98	400	0.0	6.32	0.165	0.60	16.05	87.6	6.34
1040		63.98	400	0.0	6.33	0.161	0.58	16.10	84.5	4.68
1045		63.98	400	0.0	6.23	0.160	0.58	15.93	72.3	-
1050		63.98	400	0.0	6.23	0.159	0.59	15.87	58.4	4.57
1055		63.98	400	0.0	6.20	0.167	0.62	15.85	49.4	5.48
1100		63.98	400	0.0	5.99	0.179	0.61	15.80	31.4	8.68
1105		63.98	400	0.0	5.95	0.180	0.79	15.80	22.1	2.44
1110		63.98	400	0.0	5.92	0.181	0.77	15.84	23.4	1.89
1115		63.98	400	0.0	5.89	0.182	0.82	15.86	24.4	1.63

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface **Notes:**

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/23/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-17S

SAMPLERS: Pat Conelly (CDM) Cory Snyder & Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 70 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Well inside - Outside Rain ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 65-75 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-17S **SAMPLE TIME (start/finish):** 1535-1538 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1508	0.25	64.59	400	0.0	6.36	0.164	4.53	15.52	15.3	34.6
1513	0.5	64.59	400	0.0	6.27	0.139	1.09	15.35	-35.9	15.0
1518	1.0	64.59	400	0.0	6.25	0.135	1.19	15.33	-47.3	8.37
1523	1.5	64.59	400	0.0	6.24	0.133	1.30	15.32	-53.0	5.06
1526	1.75	64.59	400	0.0	6.24	0.133	1.37	15.32	-54.2	5.12
1529	2.0	64.59	400	0.0	6.23	0.133	1.44	15.32	-55.8	5.53
1532	2.25	64.59	400	0.0	6.24	0.133	1.47	15.32	-56.1	5.72

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Initial DTW 64.59

Fill 20 sec, Discharge - 18 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/31/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-18I

SAMPLERS: Pat Conelly (CDM) Chris Goldsmith (MPI) **DEPTH OF PUMP INTAKE:** 123 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 118-128 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-18I **SAMPLE TIME (start/finish):** 1520 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 600 XL **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1447	1.5	63.72	300	0.0	6.40	0.866	4.46	13.84	86.3	13.7
1452	3.0	63.72	300	0.0	5.57	1.309	8.27	13.96	137.2	14.0
1457	4.5	63.72	300	0.0	5.44	1.336	8.76	13.95	148.7	8.60
1502	6.0	63.72	300	0.0	5.41	1.341	8.90	13.48	155.3	5.04
1507	7.5	63.72	300	0.0	5.40	1.339	8.93	14.00	154.7	4.23
1512	9.0	63.72	300	0.0	5.39	1.341	8.94	14.00	161.0	3.89
1517	10.5	63.72	300	0.0	5.39	1.341	8.93	14.01	162.5	2.88

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/1/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-18S

SAMPLERS: Pat Conelly (CDM) Chris Goldsmith (MPI) **DEPTH OF PUMP INTAKE:** 67 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 62-72 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-18S **SAMPLE TIME (start/finish):** 0755/0845 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #** _____

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0723	0.8	63.42	400	0.0	6.79	1.160	7.09	13.55	118.3	42.2
0728	2.8	63.42	400	0.0	6.60	1.157	7.03	13.71	110.1	10.58
0733	4.8	63.42	400	0.0	6.57	1.163	6.95	13.73	104.9	3.11
0738	6.8	63.42	400	0.0	6.57	1.165	6.96	13.68	104.7	3.09
0742	8.8	63.42	400	0.0	6.58	1.166	6.97	13.70	102.8	3.06
0747	10.8	63.42	400	0.0	6.58	1.170	6.98	13.80	103.0	1.54
0752	12.8	63.42	400	0.0	6.58	1.172	6.99	13.80	105.9	1.07

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Split full analysis suite with CDM: TAL Metals, VOC, 1,4 Dioxane, Chloride, RAD

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/31/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-19D

SAMPLERS: Pat Conelly (CDM) Chris Goldsmith (MPI) **DEPTH OF PUMP INTAKE:** 301 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 296-306 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-19D **SAMPLE TIME (start/finish):** 1320 **SAMPLE FLOW RATE:** _____ ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #** _____

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1203	0.3	62.75	300	0.0	6.17	1.337	5.32	12.20	88.4	10.41
1208	1.8	62.75	300	0.0	5.99	1.351	2.40	13.27	102.1	2.88
1213	3.2	62.75	300	0.0	5.91	1.351	2.15	13.32	108.0	2.84
1218	4.7	62.75	300	0.0	5.89	1.349	2.43	13.32	109.9	1.21
1223	6.2	62.75	300	0.0	5.87	1.347	2.73	13.30	110.00	0.31
1228	7.7	62.75	300	0.0	5.86	1.345	203	13.27	110.8	4.77
1233	9.2	62.75	300	0.0	5.88	1.303	3.72	13.30	78.2	226
1243	12.2	62.75	300	0.0	5.97	0.644	3.76	13.27	36.4	234
1248	13.7	62.75	300	0.0	5.82	0.542	5.24	13.26	59.2	184
1253	15.2	62.75	300	0.0	-	-	-	-	-	-

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: _____

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/31/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-19D

SAMPLERS: Pat Conelly (CDM) Chris Goldsmith (MPI) **DEPTH OF PUMP INTAKE:** 301 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 296-306 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-19D **SAMPLE TIME (start/finish):** 1320 **SAMPLE FLOW RATE:** _____ ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #** _____

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1258	16.7	62.75	300	0.0	5.71	0.478	5.36	13.20	76.7	58.1
1303	18.2	62.75	300	0.0	5.68	0.423	5.61	13.18	83.9	44.0
1306	19.1	62.75	300	0.0	5.63	0.467	5.72	13.15	88.2	31.6
1309	20.0	62.75	300	0.0	5.62	0.396	5.82	13.14	91.1	28.2
1312	20.9	62.75	300	0.0	5.60	0.386	5.95	13.05	95.5	22.4
1315	21.8	62.75	300	0.0	5.58	0.384	6.00	13.16	97.1	18.2
1318	22.7	62.75	300	0.0	5.57	0.380	6.08	13.16	99.4	17.3

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill 1 18 sec, Discharge - 20 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/24/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-19S

SAMPLERS: Pat Conelly (CDM) Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 75 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~50°F **SCREENED/OPEN BOREHOLE INTERVAL:** 70-80 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-19S & DUP-01 **SAMPLE TIME (start/finish):** 1615/1640 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1534	<0.25	63.41	250	0.0	5.90	0.093	7.63	14.39	155.6	10.90
1539	0.25	63.41	250	0.0	5.76	0.090	5.40	14.35	166.9	5.32
1544	0.5	63.41	250	0.0	5.71	0.087	5.16	14.37	173.3	1.54
1549	0.75	63.41	250	0.0	5.70	0.087	4.94	14.32	176.5	0.48
1554	1.0	63.41	250	0.0	5.73	0.088	4.54	14.28	177.8	2.17
1559	1.25	63.41	250	0.0	5.75	0.089	4.26	14.29	176.0	1.36
1604	1.5	63.41	250	0.0	5.75	0.089	4.11	14.32	174.9	1.79
1607	1.65	63.41	250	0.0	5.76	0.090	3.88	14.29	167.2	0.66
1610	1.80	63.41	250	0.0	5.77	0.091	3.73	14.26	162.0	0.03

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 15 sec, Discharge - 10 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/5/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-20D

SAMPLERS: Tom Horn (CDM) **DEPTH OF PUMP INTAKE:** 305 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny, ~50°F **SCREENED/OPEN BOREHOLE INTERVAL:** 300-310 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-20D **SAMPLE TIME (start/finish):** 1440 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1345		62.91	500		6.35	1.601	6.71	14.86	176.6	7.87
1350		62.91	500		6.33	1.401	4.50	14.88	191.2	9.65
1355		62.91	500		6.34	1.275	3.50	14.87	197.3	11.4
1400		62.91	500		6.16	1.531	2.99	14.96	211.4	43.0
1405		62.91	500		5.83	2.415	5.96	15.03	232.6	54.1
1410		62.91	500		5.77	2.603	7.24	15.11	242.3	33.6
1415		62.91	500		5.75	2.673	8.37	14.92	253.2	14.9
1420		62.91	500		5.76	2.676	8.60	14.88	255.7	8.85
1425		62.91	500		5.76	2.685	8.59	15.02	257.9	9.98
1430		62.91	500		5.75	2.696	8.89	14.90	259.2	8.85

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: attempted to sample on 4/1/10, but could not get pump to work

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/1/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-20I

SAMPLERS: Tom Horn (CDM) **DEPTH OF PUMP INTAKE:** 145 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 140-150 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-20I **SAMPLE TIME (start/finish):** 1225/1315 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1150		63.48	500	0.0	6.28	1.383	6.19	14.58	99.8	51.6
1155		63.48	500	0.0	6.06	1.390	6.24	14.57	111.5	34.9
1200		63.48	500	0.0	5.92	1.389	6.30	14.55	122.6	22.3
1205		63.48	500	0.0	5.88	1.386	6.27	14.54	128.3	14.8
1210		63.48	500	0.0	5.85	1.384	6.14	14.54	131.7	12.1
1215		63.48	500	0.0	5.83	1.384	6.16	14.52	136.9	9.92

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/1/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-20S

SAMPLERS: Ben Cole (E&E) **DEPTH OF PUMP INTAKE:** 75 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 70-80 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-20S **SAMPLE TIME (start/finish):** 1220/1316 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1140		63.33	300		6.23	1.301	6.80	14.52	-2.1	7.2
1145		63.40	300		6.24	1.328	5.68	14.52	-3.8	12
1150		63.40	300		6.22	1.299	6.51	14.51	-3.9	9.0
1155		63.40	300		6.21	1.291	6.20	14.48	-3.9	6.5
1200		63.40	300		6.20	1.290	6.20	14.54	-4.2	4.0
1205		63.40	300		6.20	1.288	6.58	14.51	-5.1	2.6
1210		63.40	300		6.20	1.285	6.54	14.54	-5.3	2.5
1215		63.40	300		6.19	1.288	6.53	14.54	-5.1	2.0

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Airline leak from separation of bonded tubing. Repaired with electrical tape
Collect sample for VOC, TAL Metals (Tot & Dis), 1, 4 dioxane, Rad (Tot & Dis), and Chloride

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/24/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-21D

SAMPLERS: Cory Snyder (MPI) **DEPTH OF PUMP INTAKE:** 305 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny Windy ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 300-310 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-21D **SAMPLE TIME (start/finish):** 1500 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #** _____

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1340	0	63.45	300	0	6.22	0.478	1.63	14.78	81.1	1.23
1345	1.5	63.45	300	0	6.22	0.478	1.35	14.72	83.4	0.75
1350	3.0	63.45	300	0	6.22	0.476	0.68	14.83	90.3	0.30
1355	4.5	63.45	300	0	6.20	0.477	0.64	14.91	95.8	0.24
1400	6.0	63.45	300	0	6.17	0.477	0.51	14.95	100.9	0.24
1405	7.5	63.45	300	0	6.10	0.475	0.39	15.00	112.2	2.30
1410	9.0	63.45	300	0	6.08	0.473	0.40	14.92	113.9	5.51
1415	10.5	63.45	300	0	5.70	0.412	0.68	14.94	127.1	14.7
1420	12.0	63.45	300	0	5.56	0.370	0.98	14.93	133.5	11.3
1425	13.5	63.45	300	0	5.47	0.329	1.38	14.92	138.3	14.6

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 18 sec, Discharge - 16 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/24/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-21D

SAMPLERS: Cory Snyder (MPI) **DEPTH OF PUMP INTAKE:** 305 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny Windy ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 300-310 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-21D **SAMPLE TIME (start/finish):** 1500 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1430	15.0	63.45	300	0	5.44	0.308	1.51	14.84	142.2	18.2
1435	16.5	63.45	300	0	5.41	0.292	3.44	15.01	148.7	8.24
1440	18.0	63.45	300	0	5.40	0.287	3.50	14.93	152.7	7.46
1445	19.5	63.45	300	0	5.39	0.279	3.08	14.77	155.2	5.09
1450	21.0	63.45	300	0	5.39	0.277	4.10	14.87	157.4	5.54
1455	22.5	63.45	300	0	5.38	0.274	4.55	14.86	158.6	3.40
1500	24.0	63.45	300	0	5.36	0.270	4.23	14.70	162.1	3.67

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 18 sec, Discharge - 16 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/24/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-21I

SAMPLERS: Pat Conelly (CDM) Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 175 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny Windy ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 170-180 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-21I **SAMPLE TIME (start/finish):** 1420/1500 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1340		63.45	400	0.0	5.12	0.859	9.39	14.83	253.4	5.27
1345	0.5	63.45	300	0.0	4.65	0.964	8.01	14.76	295.1	153
1350	1.0	63.45	350	0.0	4.38	1.090	8.01	14.82	322.8	225
1355	1.5	63.45	350	0.0	4.33	1.094	8.00	14.77	334.2	89.2
1400	2.0	63.45	350	0.0	4.32	1.092	8.07	14377	340.5	66.0
1405	2.5	63.45	350	0.0	4.32	1.091	8.08	14.75	342.8	53.4
1408	2.75	63.45	350	0.0	4.32	1.087	8.10	14.75	342.6	50.0
1411	3.0	63.45	350	0.0	4.32	1.084	8.09	14.65	341.5	47.1
1414	3.25	63.45	350	0.0	4.32	1.094	8.09	14.77	341.5	56.8

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 16 sec, Discharge - 15 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/24/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-21S

SAMPLERS: Tom Horn (CDM) Chris Goldsmith (MPI) **DEPTH OF PUMP INTAKE:** 75 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 70-80 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-21S **SAMPLE TIME (start/finish):** 1500 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1415		63.47	250							
1420		63.47	250	0.0	6.47	0.314	1.79	15.01	-62.9	8.88
1425		63.58	200	+0.11	6.45	0.308	1.39	15.08	-59.04	8.78
1430		63.56	350	+0.09	6.46	0.298	1.36	15.19	-56.1	8.56
1435		63.55	350	+0.08	6.44	0.289	1.35	14.87	-57.9	7.13
1440		63.55	350	+0.08	6.42	0.268	1.15	14.92	-54.0	4.96
1445		63.55	350	+0.08	6.38	0.258	1.30	14.94	-51.6	4.48
1450		63.55	350	+0.08	6.37	0.257	1.39	14.86	-53.5	4.78
1455		63.55	350	+0.08	6.35	0.246	1.35	15.02	-49.6	4.32

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/1/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-22D

SAMPLERS: Tom Horn (CDM) Cory Snyder (MPI) **DEPTH OF PUMP INTAKE:** 310 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 305-315 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-22D **SAMPLE TIME (start/finish):** 0945/0950 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0745		63.95	-							
0805		64.31	400	+0.36	8.64	1.826	0.81	13.62	-191.2	42.7
0810		64.31	400	+0.36	8.22	1.830	0.40	13.61	-144.7	89.0
0815		64.31	400	+0.36	7.48	1.945	0.35	13.55	-87.5	760.0
0820		64.31	400	+0.36	6.89	2.076	0.32	13.62	-56.1	2189.0
0825		64.31	400	+0.36	6.61	2.114	0.30	13.53	-45.2	1648.0
0830		64.30	400	+0.35	6.49	2.127	0.29	13.61	-40.8	985.0
0835		64.30	400	+0.35	6.45	1.132	0.29	13.59	-33.6	727.0
0840		64.30	400	+0.35	6.43	2.139	0.28	13.56	-29.4	441.0
0845		64.30	400	+0.35	6.29	2.142	0.27	13.55	-23.7	234.0

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 17 sec, Discharge - 18

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/1/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-22D

SAMPLERS: Tom Horn (CDM) Cory Snyder (MPI) **DEPTH OF PUMP INTAKE:** 310 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 305-315 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-22D **SAMPLE TIME (start/finish):** 0945/0950 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0850		64.30	400	+0.35	6.27	2.144	0.26	13.52	-22.7	175.0
0855		64.30	400	+0.35	6.27	2.145	0.25	13.46	-23.1	185.0
0900		64.30	400	+0.35	6.25	2.143	0.26	13.54	-22.0	128.0
0905		64.30	400	+0.35	6.24	2.143	0.26	13.51	-32.0	57.4
0910		64.30	400	+0.35	6.23	2.142	0.26	13.66	-33.2	71.6
0915		64.30	400	+0.35	6.22	2.142	0.27	13.71	-30.7	58.5
0920		64.30	400	+0.35	6.21	2.143	0.26	13.67	-31.8	51.4
0925		64.30	400	+0.35	6.20	2.143	0.26	13.69	-27.0	42.8
0930		64.30	400	+0.35	6.20	2.142	0.27	13.77	-26.6	45.2
0935		64.30	400	+0.35	6.20	2.141	0.26	13.72	-28.1	43.3

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 9.5 sec, Discharge - 10.5

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/1/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-22I

SAMPLERS: Ben Cole (E&E) Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 145 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 140-150 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-22I **SAMPLE TIME (start/finish):** 925 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0815		63.65	300	0.0	7.07	1.105	2.04	13.45	34.4	0.75
0820		63.70	300	0.05	6.83	1.246	5.11	13.58	25.0	1.8
0825		63.70	300	0.05	5.68	1.281	7.94	13.61	25.4	1.4
0830		63.70	300	0.05	5.66	1.280	8.08	13.66	23.1	1.1
0835		63.70	300	0.05	5.66	1.278	8.19	16.63	19.8	1.1
0840		63.70	300	0.05	5.66	1.278	8.48	13.66	17.1	0.90
0845		63.70	300	0.05	5.66	1.278	8.50	13.70	14.8	1.00
0850	3.5	63.70	300	0.05	5.66	1.278	8.50	13.68	14.3	1.2
0855		63.70	300	0.05	5.66	1.279	8.29	13.69	12.3	0.95
0900		63.70	300	0.05	5.65	1.280	8.63	13.70	11.7	-

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 9.5 sec, Discharge - 10.5

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/1/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-22I

SAMPLERS: Ben Cole (E&E) Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 145 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 140-150 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-22I **SAMPLE TIME (start/finish):** 925 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0905	4.5	63.70	300	0.05	5.66	1.281	8.61	13.75	10.8	1.1
0910		63.70	300	0.05	5.67	1.281	8.55	13.78	9.5	1.1
0915		63.70	300	0.05	5.66	1.282	8.53	13.74	9.4	1.3
0920		63.70	300	0.05	5.66	1.284	8.31	13.73	8.9	1.2

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 9.5 sec, Discharge - 10.5

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/31/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-22S

SAMPLERS: Ben Cole (E&E) Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 75 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~48°F **SCREENED/OPEN BOREHOLE INTERVAL:** 70-80 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-22S **SAMPLE TIME (start/finish):** 1605 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1535		63.92	300		6.35	0.421	5.80	13.83	-25.6	5.3
1540		63.92	300		6.23	0.420	4.42	13.87	-20.5	3.0
1545		63.95	300		6.19	3.87	3.87	13.86	-18.3	2.3
1550		63.95	300		6.17	3.81	3.81	13.88	-18.3	1.5
1555		63.95	300		6.17	3.71	3.71	13.87	-18.2	-

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Split full analysis suite with CDM: TAL Metals, VOC, 1,4 Dioxane, Chloride, RAD

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/31/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-23D

SAMPLERS: Pat Conelly (CDM) Chris Golsmith (MPI) **DEPTH OF PUMP INTAKE:** 335 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: light Rain ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 330-340 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-23D **SAMPLE TIME (start/finish):** 0900/0945 **SAMPLE FLOW RATE:** 275 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0813	<0.25	61.70	275	-0.11	8.97	0.959	2.44	13.38	-69.1	39.1
0818	0.25	61.59	275	0.0	7.68	0.824	0.64	13.66	-101.4	21.8
0823	0.5	61.59	275	0.0	7.07	0.743	0.56	13.69	-88.3	14.6
0828	0.75	61.59	275	0.0	6.88	0.698	0.55	13.72	-87.9	12.2
0833	1.0	61.59	275	0.0	6.80	0.652	0.53	13.69	-84.6	10.60
0838	1.25	61.59	275	0.0	6.84	0.581	0.50	13.65	-88.6	36.1
0843	1.50	61.59	275	0.0	7.03	0.505	0.44	13.67	-102.1	30.1
0848	2.0	61.59	275	0.0	7.01	0.606	0.42	13.69	-98.1	18.0
0851	2.75	61.59	275	0.0	6.87	0.682	0.42	13.70	-87.0	13.2
0854	3.0	61.59	275	0.0	6.77	0.632	0.43	13.76	-78.2	11.4
0857	3.2	61.59	275	0.0	6.73	0.638	0.43	13.76	-75.9	10.2

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 18 sec, Discharge - 20 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/29/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-23I

SAMPLERS: Tom Horn (CDM) Cory Snyder (MPI) **DEPTH OF PUMP INTAKE:** 175 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Rain, ~50°F **SCREENED/OPEN BOREHOLE INTERVAL:** 170-180 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-23I **SAMPLE TIME (start/finish):** 1000 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0800		61.81	300							
0820		61.83	300	+0.02	10.09	0.377	4.12	13.42	12.0	47.5
0825		61.83	300	+0.02	11.10	0.419	3.74	13.22	12.0	46.0
0830		61.83	300	+0.02	11.16	0.426	3.37	13.53	12.0	27.2
0835		61.83	300	+0.02	11.11	0.406	3.31	13.54	12.0	39.3
0840		61.83	500	+0.02	11.07	0.403	3.26	13.63	12.0	28.8
0845		61.83	350	+0.02	10.96	0.384	3.11	13.52	12.0	unit replaced
0850		61.83	350	+0.02	10.73	0.366	3.00	13.55	12.0	22.85
0855		61.83	350	+0.02	10.19	0.355	2.91	13.55	12.0	67.3
0900		61.83	350	+0.02	9.54	0.401	2.80	13.54	12.1	65.9

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: 0850 - Switch out turbidity meter due to malfuction

Fill - 13 sec, Discharge 12 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/29/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-23I

SAMPLERS: Tom Horn (CDM) Cory Snyder (MPI) **DEPTH OF PUMP INTAKE:** 175 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Rain, ~50°F **SCREENED/OPEN BOREHOLE INTERVAL:** 170-180 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-23I **SAMPLE TIME (start/finish):** 1000 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0905		61.83	350	+0.02	9.29	0.411	2.73	13.54	12.1	57.6
0910		61.83	350	+0.02	8.53	0.437	2.68	13.50	12.0	53.8
0915		61.83	350	+0.02	7.90	0.472	2.45	13.57	12.1	52.7
0920		61.83	350	+0.02	7.51	0.495	2.33	13.54	12.1	38.9
0925		61.83	350	+0.02	7.27	0.509	2.29	13.49	12.0	30.4
0930		61.83	350	+0.02	7.06	0.527	2.25	13.50	12.1	25.2
0935		61.83	350	+0.02	6.94	0.537	2.25	13.50	12.0	23.4
0940		61.83	350	+0.02	6.81	0.550	2.23	13.49	12.0	22.5
0945		61.83	350	+0.02	6.69	0.566	2.11	13.50	12.0	19.9
0950		61.83	350	+0.02	6.61	0.579	2.02	13.46	12.0	16..4

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/29/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-23I

SAMPLERS: Tom Horn (CDM) Cory Snyder (MPI) **DEPTH OF PUMP INTAKE:** 175 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Rain, ~50°F **SCREENED/OPEN BOREHOLE INTERVAL:** 170-180 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-23I **SAMPLE TIME (start/finish):** 1000 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0955		61.83	350	+0.02	6.54	0.592	1.92	13.50	12.0	16.4

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/29/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-23S

SAMPLERS: Stphanie Britch (CDM) Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 95 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Rain, ~50°F **SCREENED/OPEN BOREHOLE INTERVAL:** 90-100 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-23S **SAMPLE TIME (start/finish):** 0850/1045 **SAMPLE FLOW RATE:** 240 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0818		62.01	240	0.0	6.66	0.138	8.31	13.70	177	8.87
0823		62.01	240	0.0	6.31	0.125	0.09	13.73	176.7	7.12
0828		62.01	240	0.0	6.22	0.125	7.94	13.73	177	2.46
0833		62.01	240	0.0	6.18	0.126	7.86	13.75	176.6	2.24
0838		62.01	240	0.0	6.19	0.127	7.83	13.72	176.9	2.17
0843		62.01	240	0.0	6.19	0.127	7.83	13.75	175.8	-
0848		62.01	240	0.0	6.19	0.128	7.86	13.76	175.5	2.02

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Duplicat and MS/MSD collected by CDM

Fill - 16 sec, Discharge - 14 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/31/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-24D

SAMPLERS: Stephanie Brith (CDM) Cory Snyder (MPI) **DEPTH OF PUMP INTAKE:** 365 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Overcast ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 360-370 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-24D **SAMPLE TIME (start/finish):** 1420-1425 **SAMPLE FLOW RATE:** 300 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1320		65.50	300	-	5.88	0.202	5.24	14.08	229.1	-
1335		65.40	300	-0.1	5.74	0.198	4.81	14.31	238.8	1.99
1340		65.50	300	0.0	5.64	0.195	3.11	14.27	250.7	2.69
1345		65.50	300	0.0	5.53	0.193	3.10	14.21	259.4	8.91
1350		65.50	300	0.0	5.42	0.193	3.31	14.19	267.3	12.4
1355		65.50	300	0.0	5.33	0.196	3.90	14.11	273.7	18.4
1400		65.50	300	0.0	5.27	0.199	5.04	14.11	278.2	9.43
1405		65.50	300	0.0	5.24	0.199	5.39	14.11	280.2	3.87
1410		65.50	300	0.0	5.23	0.199	5.62	14.11	282.2	2.50
1415		65.50	300	0.0	5.22	0.199	5.82	14.08	283.6	2.52

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 31 sec. Discharge - 21 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/31/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-24S

SAMPLERS: Stephanie Brith (CDM) Cory Snyder (MPI) **DEPTH OF PUMP INTAKE:** 75 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Overcast ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 70-80 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-24S **SAMPLE TIME (start/finish):** 1230/1235 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1155		62.20	300	-	6.14	0.147	9.01	14.41	175.9	4.34
1200		62.20	300	0.00	6.04	0.147	8.28	14.60	196.5	5.11
1205		62.20	300	0.00	6.02	0.146	8.26	14.59	202.9	3.75
1210		62.20	300	0.00	6.00	0.146	8.13	14.58	209.0	3.72
1215		62.20	300	0.00	6.00	0.145	8.18	14.57	212.2	2.08
1220		62.25	300	+0.05	6.00	0.146	8.02	14.61	215.6	0.98
1225		62.20	300	0.00	5.99	0.146	7.74	14.56	218.4	0.55

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 25, Discharge - 19 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/31/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-25D

SAMPLERS: Tom Horn (CDM) Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 345 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: light Rain ~45°F **SCREENED/OPEN BOREHOLE INTERVAL:** 340-350 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-25D **SAMPLE TIME (start/finish):** 0910/1000 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0745		62.10								
0805		62.10	400	0.0	7.98	1.308	0.67	13.85	-176.4	13.7
0810		62.10	400	0.0	8.26	1.313	0.38	13.73	-159.4	11.8
0815		62.10	400	0.0	7.77	1.313	0.28	13.82	-113.8	43.4
0820		62.10	400	0.0	6.49	1.236	0.34	13.77	-30.1	26.7
0825		62.10	400	0.0	5.91	1.183	0.58	13.76	15.6	10.42
0830		62.10	400	0.0	5.69	1.168	1.78	13.73	43.9	8.05
0835		62.10	400	0.0	5.55	1.158	2.26	13.78	73.5	3.35
0840		62.10	400	0.0	5.51	1.160	2.46	13.75	87.4	5.14
0845		62.10	400	0.0	5.49	1.162	2.65	13.76	96.7	4.28

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 19 sec, Discharge - 24 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/31/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-25D

SAMPLERS: Tom Horn (CDM) Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 345 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: light Rain ~45°F **SCREENED/OPEN BOREHOLE INTERVAL:** 340-350 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-25D **SAMPLE TIME (start/finish):** 0910/1000 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	**gallons** / liters (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0850		62.10	400	0.0	5.47	1.165	2.87	13.74	10.8	3.78
0855		62.10	400	0.0	5.45	1.167	3.02	13.08	113.4	2.98
0900	7.5	62.10	400	0.0	5.44	1.165	3.70	13.79	116.8	3.69

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 19 sec, Discharge - 24 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/31/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-25I

SAMPLERS: Ben Cole (E&E) Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 235 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: light Rain ~45°F **SCREENED/OPEN BOREHOLE INTERVAL:** 230-240 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-25I **SAMPLE TIME (start/finish):** 1001/1040 **SAMPLE FLOW RATE:** _____ ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #** _____

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0910		67.7	300	0.0	10.72	0.418	2.46	13.95	-41.9	4.4
0915	1.5	67.7	300	0.0	9.30	0.486	2.67	13.97	-34.2	6.9
0920	3.0	67.7	300	0.0	7.44	0.648	4.82	14.00	-9.6	3.6
0925	4.5	67.7	300	0.0	6.17	0.677	5.90	13.99	5.6	5.3
0930	6.0	67.7	300	0.0	5.76	0.673	6.69	14.01	4.6	2.9
0935	7.5	67.7	300	0.0	5.70	0.679	6.90	14.00	3.0	2.1
0940	9.0	67.7	300	0.0	5.67	0.679	6.82	13.97	2.4	2.1
0945	10.5	67.7	300	0.0	5.65	0.679	6.83	13.91	3.3	1.6
0950	12.0	67.7	300	0.0	5.61	0.680	6.97	13.85	4.6	1.6

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 24 sec, Discharge - 6 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/31/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-25S

SAMPLERS: Tom Horn (CDM) Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 110 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: light Rain ~45°F **SCREENED/OPEN BOREHOLE INTERVAL:** 105-115 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-25S **SAMPLE TIME (start/finish):** 1045/1120 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1010		61.91								
1020		61.92	500	+0.01	5.26	0.397	6.72	13.98	158.7	2.44
1025		61.92	500	+0.01	5.23	0.399	6.77	13.97	159.3	2.42
1030		61.92	500	+0.01	5.20	0.404	6.81	13.95	163.0	2.41
1035		61.92	500	+0.01	5.18	0.403	6.76	13.93	169.0	1.38
1040		61.92	500	+0.01	5.16	0.400	6.80	14.00	172.7	1.35

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 14 sec, Discharge - 18 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/29/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-26D

SAMPLERS: Joe (CDM) Chris Goldsmith (MPI) **DEPTH OF PUMP INTAKE:** 271 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Heavy Rain ~50°F **SCREENED/OPEN BOREHOLE INTERVAL:** 266-276 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-26D **SAMPLE TIME (start/finish):** 1520 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1420		62.16	250		5.89	0.313	1.29	14.64	106.1	0.77
1425		62.17	250		5.72	0.311	0.65	14.52	114.7	4.26
1430		-	250		5.62	0.310	0.83	14.44	128.7	2.18
1435		62.21	250		5.60	0.312	1.90	14.42	136.7	3.66
1440		62.21	250		5.49	0.313	3.77	14.39	107.0	5.44
1445		62.18	250		5.40	0.317	5.20	14.32	37.8	5.51
1450		62.18	250		5.37	0.320	5.73	14.33	105.2	3.30
1455		62.18	250		5.36	0.321	6.02	14.32	119.0	2.05
1500		62.14	250		5.35	0.321	6.22	14.29	133.5	1.95
1505		62.19	250		5.37	0.321	6.33	14.25	149.2	138

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/29/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-26D

SAMPLERS: Joe (CDM) Chris Goldsmith (MPI) **DEPTH OF PUMP INTAKE:** 271 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Heavy Rain ~50°F **SCREENED/OPEN BOREHOLE INTERVAL:** 266-276 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-26D **SAMPLE TIME (start/finish):** 1520 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1510		62.18	250		5.39	0.321	6.39	14.23	155.0	1.23
1515		62.20	250		5.40	0.323	6.34	14.21	162.7	0.95
1518	5	62.18	250		5.35	0.323	6.34	14.21	165.8	1.85

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/31/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-26I

SAMPLERS: Stephanie Brith (CDM) Cory Snyder (MPI) **DEPTH OF PUMP INTAKE:** 115 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: light Rain ~50°F **SCREENED/OPEN BOREHOLE INTERVAL:** 110-120 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-26I **SAMPLE TIME (start/finish):** 0830-0835 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0740		62.15	300	-	6.15	0.175	7.40	14.44	12.0	1.03
0745		62.15	300	0	5.60	0.917	3.87	14.48	12.0	8.91
0750		62.19	300	+0.04	6.20	0.514	3.10	14.30	121.7	2.95
0755		62.16	300	-0.03	5.79	0.510	2.59	14.35	124.7	1.11
0800		62.15	300	-0.01	5.69	0.510	2.45	14.30	131.5	1.11
0805		62.15	300	0	5.66	0.507	2.35	14.27	136.8	0.81
0810		62.15	300	0	5.64	0.505	2.32	14.29	149.3	0.67
0815		62.15	300	0	5.63	0.506	2.28	14.25	153.3	0.40
0820		62.18	300	+0.03	5.63	0.504	2.23	14.27	158.0	0.93
0825		62.16	300	-0.02	5.63	0.504	2.22	14.29	159.0	1.13

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 15 sec, Discharge - 15 sec

0745 - YSI meter switched out due to ORP malfunction

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/2/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-27D

SAMPLERS: Tom Horn (CDM) Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 370 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~44°F **SCREENED/OPEN BOREHOLE INTERVAL:** 365-375 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-27D **SAMPLE TIME (start/finish):** 940 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0825		61.27	500	0.0	5.98	0.258	4.53	14.21	155.8	24.4
0830		61.27	500	0.0	5.92	0.252	5.02	14.26	173.2	26.0
0835		61.27	500	0.0	5.91	0.252	5.27	14.27	177.3	28.8
0840		61.27	500	0.0	5.82	0.236	5.84	14.25	189.7	381.0
0845		61.27	500	0.0	5.57	0.206	6.23	14.20	200.7	300.0
0850		61.27	500	0.0	5.33	0.179	6.62	14.18	219.7	248.0
0855		61.27	500	0.0	5.21	0.177	6.68	14.17	226.6	365.0
0900		61.27	500	0.0	5.21	0.176	6.75	14.08	234.1	233.0
0905		61.27	500	0.0						
0910		61.27	500	0.0	5.19	0.176	6.86	13.78	241.6	181.6

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/2/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-27D

SAMPLERS: Tom Horn (CDM) Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 370 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~44°F **SCREENED/OPEN BOREHOLE INTERVAL:** 365-375 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-27D **SAMPLE TIME (start/finish):** 940 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0915		61.27	500	0.0	5.18	0.176	6.75	13.97	244.4	118.0
0920	6	61.27	500	0.0	5.18	0.176	6.84	13.96	248.0	59.0
0925		61.27	500	0.0	5.18	0.176	6.89	13.94	249.5	47.11
0930		61.27	500	0.0	5.18	0.176	6.87	13.95	249.9	45.6

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/2/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-27I

SAMPLERS: Ben Cole (E&E) Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 285 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~44°F **SCREENED/OPEN BOREHOLE INTERVAL:** 280-290 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-27I **SAMPLE TIME (start/finish):** 950 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0815	0	61.12	300	0	10.73	1.011	14.23	14.33	-41.5	4.4
0820	1.5	61.12	300	0	10.83	1.154	13.67	14.29	-30.3	7.1
0825	3.0	61.18	300	-0.06	10.92	1.166	14.90	14.15	-25.0	1.9
0830	4.5	61.10	300	-0.08	10.94	1.193	14.66	14.13	-25.3	2.1
0835	6.0	61.15	300	-0.05	8.15	3.115	14.12	14.12	-2.2	2.2
0840	7.5	61.05	300	-0.1	6.64	3.424	10.05	14.17	-0.7	95
0845	9	61.10	300	+0.5	5.68	3.424	9.18	14.14	-2.1	75
0850	10.5	61.10	300	0	5.47	3.455	8.64	14.14	-1.4	36
0855	12.0	61.10	300	0	5.38	3.470	8.23	14.14	-0.5	28
0900	13.5	61.10	300	0	5.34	3.467	8.03	14.14	0.5	37

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/2/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-27I

SAMPLERS: Ben Cole (E&E) Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 285 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~44°F **SCREENED/OPEN BOREHOLE INTERVAL:** 280-290 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-27I **SAMPLE TIME (start/finish):** 950 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0905	15.0	61.10	300	0	5.30	3.467	7.90	14.13	1.9	55
0910	16.5	61.10	300	0	5.27	3.466	7.78	14.16	2.9	70
0915	18.0	61.10	300	0	5.23	3.470	7.67	14.15	4.2	100
0920	19.5	61.10	300	0	5.20	3.474	7.55	14.14	5.5	140
0925	21.0	61.10	300	0	5.17	3.477	7.38	14.14	6.7	140
0930	22.5	61.10	300	0	5.16	3.478	7.18	14.16	7.8	170
0935	24.0	61.10	300	0	5.13	3.477	7.10	14.15	8.8	170
0940	25.5	61.10	300	0	5.07	3.482	7.00	14.15	9.1	170
0945	27.0	61.10	300	0	5.09	3.484	6.99	14.15	9.2	174

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/7/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-27S

SAMPLERS: Cory Snyder (MPI) Tom Horn & Pat Conelly (CDM) **DEPTH OF PUMP INTAKE:** 85 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~85°F **SCREENED/OPEN BOREHOLE INTERVAL:** 80-90 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-27S **SAMPLE TIME (start/finish):** 1550-1555 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 600 XL **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1515		60.60	400		5.54	0.149	3.60	15.75	132.6	22.9
1520		60.60	400		5.50	0.148	6.37	15.74	141.5	12.3
1525		60.60	400		5.47	0.147	3.25	15.66	148.3	5.87
1530		60.60	400		5.48	0.148	2.92	15.81	152.9	4.22
1535		60.60	400		5.45	0.148	2.56	15.71	157.4	1.86
1540		60.60	400		5.46	0.147	2.41	15.80	160.1	2.61
1545		60.60	400		5.46	0.147	2.41	15.89	163.7	0.74

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface **Notes:**

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/31/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-28D

SAMPLERS: Ben Cole (E&E) Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 282 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~48°F **SCREENED/OPEN BOREHOLE INTERVAL:** 277-287 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-28D **SAMPLE TIME (start/finish):** 1240 **SAMPLE FLOW RATE:** 240 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1145		66.86	375	-	9.50	2.119	0.17	13.58	-39.1	45
1150		66.90	375	0.04	9.52	2.108	0.40	13.62	-49.1	45
1155		66.90	375	0.04	7.52	1.963	0.37	13.55	-40.3	290
1200		66.90	375	0.04	6.84	1.901	0.40	13.56	-32.1	120
1205		66.90	375	0.04	6.67	1.903	0.41	13.56	-31.6	110
1210	4	66.90	300	0.04	6.57	1.906	0.41	13.49	-30.9	110
1215		66.90	300	0.04	5.52	1.910	0.42	13.53	-31.0	110
1220		66.90	300	0.04	5.50	1.917	0.44	13.57	-31.7	120
1225		66.90	300	0.04	6.49	1.920	0.41	13.54	-32.1	120
1230		66.90	300	0.04	6.46	1.921	0.40	13.50	-32.6	-

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill 14 sec, Discharge 6 sec, 3 CPM

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/31/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-28I

SAMPLERS: Tom Horn (CDM) Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 154 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~48°F **SCREENED/OPEN BOREHOLE INTERVAL:** 149-159 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-28I & DUPL #2 **SAMPLE TIME (start/finish):** 1350/1420 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1230		66.84								
1240		66.84	500	0.0	9.11	0.741	5.57	13.91	53.61	72.3
1245		66.84	500	0.0	9.06	0.796	5.32	13.86	59.8	68.0
1250		66.84	500	0.0	8.47	0.802	4.65	13.81	92.4	56.2
1255		66.84	500	0.0	8.15	0.800	4.49	13.94	110.7	60.8
1300		66.84	500	0.0	8.02	0.799	4.54	13.67	117.3	66.9
1305		66.84	500	0.0	8.00	0.798	4.62	13.71	118.7	72
1301		66.84	500	0.0	7.98	0.799	4.60	13.69	119.6	0
1315		66.84	500	0.0	7.98	0.798	4.59	13.66	120.6	67.4
1320		66.84	500	0.0	7.95	0.799	4.76	13.69	118.3	63.2

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/31/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-28I

SAMPLERS: Tom Horn (CDM) Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 154 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~48°F **SCREENED/OPEN BOREHOLE INTERVAL:** 149-159 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-28I & DUPL #2 **SAMPLE TIME (start/finish):** 1350/1420 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1325		66.84	500	0.0	7.95	0.798	4.75	13.71	118.8	54.9
1330		66.84	500	0.0	7.93	0.801	4.72	13.77	119.1	51.7
1335		66.84	500	0.0	7.91	0.801	4.66	13.75	119.5	45.5
1340		66.84	500	0.0	7.89	0.801	4.70	13.76	119.9	46.4

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Collecred DUPL #2

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/31/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-28S

SAMPLERS: Tom Horn (CDM) Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 95 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~48°F **SCREENED/OPEN BOREHOLE INTERVAL:** 90-100 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-28S **SAMPLE TIME (start/finish):** 1500/1615 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1420		64.18								
1435		64.18	400	0.0	6.20	0.450	6.29	13.69	109.4	4.36
1440		64.18	400	0.0	6.12	0.452	6.10	13.77	113.9	4.87
1445		64.18	400	0.0	6.08	0.452	6.10	13.88	116.9	5.42
1450		64.18	400	0.0	6.06	0.452	6.03	13.93	116.1	7.48
1455		64.18	400	0.0	6.04	0.452	6.00	13.91	116.9	6.27

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Split full analysis suite with CDM: TAL Metals, VOC, 1,4 Dioxane, Chloride, RAD
Fill - 16 sec, Discharge 16 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/23/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-29S

SAMPLERS: Pat Conelly (CDM) Snyder & Walker (MPI **DEPTH OF PUMP INTAKE:** 71 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Indoors **SCREENED/OPEN BOREHOLE INTERVAL:** 66-76 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-29S, 29SDup, MW-29s MS/MSD **SAMPLE TIME (start/finish):** 0845-0850 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0813		62.71	400		6.08	0.469	8.01	15.66	154.6	30.9
0817		62.71	400		5.96	0.497	7.34	15.57	133.6	21.6
0822		62.74	400		5.97	0.496	6.79	15.55	117.9	13.5
0827		62.72	400		6.00	0.495	6.62	15.54	111.9	8.26
0832		62.73	400		6.02	0.495	6.53	15.55	100.6	6.76
0836	3.0	62.74	400		6.03	0.494	6.50	15.54	95.4	5.06
0841		62.73	400		6.03	0.494	6.46	15.54	91.0	3.94

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 12 sec, Discharge - 15 sec
CDM collects duplicate and MS/MSD

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/1/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-30D

SAMPLERS: Tom Horn (CDM) Brad walker (MPI) **DEPTH OF PUMP INTAKE:** 335 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 330-340 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-30D **SAMPLE TIME (start/finish):** 1600 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1450		61.03	500	0.0	7.08	0.558	4.32	16.77	-40.7	54.6
1455		61.03	500	0.0	7.30	0.507	3.51	16.22	-66.5	38.9
1500		61.03	500	0.0	7.39	0.453	2.18	15.85	-105.9	20.8
1505		61.03	500	0.0	7.77	0.369	0.90	15.52	-139.8	7.78
1510		61.03	500	0.0	7.96	0.368	0.58	15.56	-162.3	4.76
1515		61.03	500	0.0	7.75	0.475	0.38	15.54	159.1	87.8
1520		61.03	500	0.0	6.74	0.779	0.66	15.39	-83.2	50.0
1525		61.03	500	0.0	5.99	0.915	1.64	15.36	-31.7	386
1530		61.03	500	0.0	5.84	0.918	2.27	15.38	-8.8	9.55
1535		61.03	500	0.0	5.82	0.917	2.39	15.43	2.4	7.60

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/1/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-30D

SAMPLERS: Tom Horn (CDM) Brad walker (MPI) **DEPTH OF PUMP INTAKE:** 335 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 330-340 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-30D **SAMPLE TIME (start/finish):** 1600 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1540		61.03	500	0.0	5.80	0.917	2.49	15.44	10.5	4.73
1545		61.03	500	0.0	5.80	0.916	2.56	15.40	17.1	4.56
1550	6.5	61.03	500	0.0	5.80	0.918	2.63	15.44	24.8	4.53
1555		61.03	500	0.0	5.80	0.920	2.63	15.41	25.5	4.50

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/2/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-30I

SAMPLERS: S. Britch (CDM) C. Snyder (MPI) **DEPTH OF PUMP INTAKE:** 235 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 230-240 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-30I **SAMPLE TIME (start/finish):** 0903-0908 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 600 XL **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0810		57.59	400	0.0	12.18	0.959	11.25	14.81	-3.3	1.52
0815		60.50	400	+1.09	11.56	0.556	10.04	14.98	-69.1	9.73
0820		60.60	400	+0.10	8.16	0.648	8.83	14.99	33.7	4.55
0825		60.60	400	0.0	7.47	0.648	8.57	14.90	68.6	2.61
0830		60.60	400	0.0	6.96	0.648	7.99	15.08	92.2	1.75
0835		60.60	400	0.0	6.70	0.648	7.77	15.02	104.6	0.80
0840		60.60	400	0.0	6.48	0.650	7.61	15.08	120.0	0.77
0845		60.60	400	0.0	6.38	0.651	7.56	15.06	133.4	0.58
0850		60.60	400	0.0	6.26	0.652	7.48	15.03	143.4	0.52
0855		60.60	400	0.0	6.23	0.653	7.44	15.13	140.5	0.53
0900		60.60	400	0.0	6.18	0.655	7.36	15.06	142.0	0.39

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill- 15 sec, Discharge - 13 sec

MALCOLM PIRNIE

DATE: 4/1/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-30S

SAMPLERS: Ben Cole (E&E) Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 95 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 90-100 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-30S **SAMPLE TIME (start/finish):** 1540 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	**gallons** / liters (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1455	0	60.55	300	0.0	4.86	0.136	8.35	15.40	34.6	11
1500		60.55	300	0.0	4.83	0.136	8.79	15.30	32.8	9
1505		60.55	300	0.0	4.85	0.136	9.14	15.19	27.0	4.0
1510		60.55	300	0.0	4.96	0.137	9.20	15.30	24.8	2.6
1515		60.55	300	0.0	5.04	0.137	9.20	15.24	22.2	2.0
1520		60.55	300	0.0	5.05	0.137	9.13	15.28	22.4	3.1
1525		60.55	300	0.0	5.11	0.137	9.04	15.16	20.7	1.7
1530		60.55	300	0.0	5.11	0.137	9.18	15.15	20.5	1.5
1535	4.5	60.55	300	0.0	5.14	0.137	9.17	15.12	20.3	1.5

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 14.5, Discharge - 5.5, CPM - 3

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/1/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-31D

SAMPLERS: Pat Connelly (CDM) **DEPTH OF PUMP INTAKE:** 325 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 320-330 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-31D **SAMPLE TIME (start/finish):** 1420 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1332	0.70	61.0	350	0.0	7.57	2.230	3.09	16.15	33.2	29.7
1337	2.45	61.0	350	0.0	8.50	2.222	1.00	15.83	6.6	3.04
1342	4.20	61.0	350	0.0	9.15	2.210	0.72	15.79	-6.3	1.47
1347	5.95	61.0	350	0.0	9.12	2.203	0.58	15.66	-71.2	6.97
1352	7.70	61.0	350	0.0	8.15	2.283	1.03	15.60	-55.8	8.05
1357	9.45	61.0	350	0.0	6.66	2.625	4.95	15.55	43.6	12.38
1402	10.20	61.0	350	0.0	5.84	2.622	4.87	15.52	90.3	96.8
1407	11.95	61.0	350	0.0	5.55	2.613	4.34	15.46	92.7	50.1
1412	13.70	61.0	350	0.0	5.38	2.616	4.43	15.47	99.0	50.1
1415	14.75	61.0	350	0.0	5.33	2.622	4.43	15.46	99.7	30.2
1418	15.80	61.0	350	0.0	5.30	2.622	4.41	15.45	101.2	29.9

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: MS/MSD collected by CDM

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/1/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-31I

SAMPLERS: Joe Button (CDM) Cory Snyder (MPI) **DEPTH OF PUMP INTAKE:** 185 ft TIC or ft BGS (circle one)

WEATHER CONDITIONS: Sunny ~70°F **SCREENED/OPEN BOREHOLE INTERVAL:** 180-190 ft TIC or ft BGS (circle one)

SAMPLE ID: MW-31I **SAMPLE TIME (start/finish):** 1605/1610 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 600 XL **Horiba Model #** _____

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1510		60.51	300		10.87	0.522	10.82	17.43	126.4	0.19
1515		60.51	300		10.41	0.543	7.27	16.35	135.1	0.94
1520		60.51	300		9.69	0.481	6.13	16.11	193.2	1.43
1525		60.51	300		6.85	0.657	3.25	16.00	165.2	1.47
1530		60.51	300		6.05	0.664	2.67	15.87	166.9	1.31
1535		60.51	300		5.79	0.670	2.68	15.90	167.5	1.31
1540		60.51	300		5.65	0.670	2.62	15.99	167.1	1.15
1545		60.51	300		5.58	0.671	2.60	16.07	067.0	1.41
1555		60.51	300		5.48	0.671	2.53	16.09	165.2	0.50
1600		60.51	300		5.45	0.671	2.51	16.06	166.2	0.91

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 15 sec, Discharge - 14 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/23/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-32D

SAMPLERS: Pat Conelly (CDM) Cory Snyder & Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 300 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Overcast ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 295-305 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-32D **SAMPLE TIME (start/finish):** 1300-1305 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1219	1.0	62.30	200	-0.14	6.29	1.757	1.35	13.07	-82.9	115
1223	1.5	62.30	200	-0.14	5.80	1.978	1.28	13.09	-26.3	279
1228	2.0	62.30	200	-0.14	5.45	2.056	1.46	13.19	19.8	988
1233	2.25	62.30	200	-0.14	5.24	2.070	1.51	13.18	46.5	540
1235	2.50	62.30	200	-0.14	5.17	2.065	1.53	13.13	55.9	317
1240	2.75	62.30	200	-0.14	5.12	2.058	1.56	13.13	61.1	238
1245	3.0	62.30	200	-0.14	5.09	2.051	1.57	13.07	64.0	195
1250	3.25	62.30	200	-0.14	5.06	2.048	1.71	13.06	68.9	183
1255	3.50	62.30	200	-0.14	5..04	2.046	1.69	12.98	72.7	218

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Initial DTW - 62.16. Air bubbles coming out at end of discharge cycle. Decreaced discharge time to eliminate bubles. They were a function of the pump and a pressure release valve.
Recharge - 15 sec, Discharge - 20 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/2/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-33D

SAMPLERS: Pat Connelly (CDM) Chris Goldsmith (MPI) **DEPTH OF PUMP INTAKE:** 295 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 290-300 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-33D **SAMPLE TIME (start/finish):** 845 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 600 XL **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0751	1.2	55.65	400	0.0	6.91	0.734	2.65	12.90	-162.1	3.08
0756	3.2	55.65	400	0.0	7.83	0.718	0.53	13.20	-266.0	3.76
0801	5.2	55.65	400	0.0	7.04	0.714	0.38	13.21	-217.4	1.98
0806	7.2	55.65	400	0.0	6.56	0.706	0.39	13.04	-189.7	179
0811	9.2	55.65	400	0.0	6.25	0.872	0.31	13.00	-155.7	251
0816	11.2	55.65	400	0.0	6.09	0.847	0.60	12.98	-119.8	126
0821	13.2	55.65	400	0.0	6.05	0.842	0.63	12.92	-87.9	82.8
0826	15.2	55.65	400	0.0	5.92	0.840	0.59	12.98	-82.9	61.7
0829	16.4	55.65	400	0.0	5.89	0.832	0.54	12.99	-76.7	57.7
0831	17.6	55.65	400	0.0	5.87	1.070	0.51	13.02	-71.6	46.3

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/2/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-33D

SAMPLERS: Pat Connelly (CDM) Chris Goldsmith (MPI) **DEPTH OF PUMP INTAKE:** 295 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 290-300 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-33D **SAMPLE TIME (start/finish):** 845 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 600 XL **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0836	19.6	55.65	400	0.0	5.85	1.055	0.58	12.95	-61.5	44.0
0839	20.8	55.65	400	0.0	5.85	1.050	0.57	13.01	-60.9	34.8
0842	22.0	55.65	400	0.0	5.85	1.047	0.55	13.02	-59.9	36.1

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface **Notes:**

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/2/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-33S

SAMPLERS: Pat Connelly (CDM) Chris Goldsmith (MPI) **DEPTH OF PUMP INTAKE:** 70 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 65-75 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-33S **SAMPLE TIME (start/finish):** 1015 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 600 XL **Horiba Model #** _____

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0937	1.5	54.96	400	0.0	5.40	0.079	12.00	13.26	139.2	10.37
0942	3.5	54.96	400	0.0	5.24	0.078	12.13	13.26	157.6	17.0
0947	5.5	54.96	400	0.0	5.19	0.078	NA	13.24	169.3	141
0952	7.5	54.96	400	0.0	5.10	0.075	12.07	13.27	180.4	10.95
0957	9.5	54.96	400	0.0	5.09	0.077	11.89	13.28	186.7	8.25
1002	11.5	54.96	400	0.0	5.07	0.077	12.05	13.27	192.2	5.35
1007	12.5	54.96	400	0.0	5.06	0.077	12.06	13.31	197.1	4.49
1010	13.7	54.96	400	0.0	5.06	0.076	12.02	13.33	199.5	4.01

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Collect sample for full split of VOC, TAL Metals (Tot & Dis), 1, 4 dioxane, Rad (Tot & Dis), and Chloride

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/5/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-34D

SAMPLERS: Pat Conelly (CDM) Chris Goldsmith (MPI) **DEPTH OF PUMP INTAKE:** 275 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~70°F **SCREENED/OPEN BOREHOLE INTERVAL:** 270-280 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-34D **SAMPLE TIME (start/finish):** 1000 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 600 XL **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0855	2.0	56.0	400	0.0	6.99	0.396	1.10	13.58	200.3	36.6
0900	4.0	56.0	400	0.0	7.00	0.414	0.72	13.69	198.6	44.3
0905	6.0	56.0	400	0.0	6.97	0.396	0.65	13.75	198.0	192
0910	8.0	56.0	400	0.0	9.65	0.408	0.92	13.81	158.1	739
0915	10.0	56.0	400	0.0	10.59	0.456	1.54	13.86	130.4	1352
0920	12.0	56.0	400	0.0	10.61	0.448	1.93	13.90	128.4	1671
0925	14.0	56.0	400	0.0	10.54	0.440	2.35	13.93	130.0	156.9
0930	16.0	56.0	400	0.0	10.44	0.427	2.69	14.04	133.6	132.3
0935	18.0	56.0	400	0.0	10.37	0.416	2.81	14.06	137.9	132.8
0940	20.0	56.0	400	0.0	10.20	0.402	2.81	14.25	143.2	1351

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface **Notes:**

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/5/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-34D

SAMPLERS: Pat Conelly (CDM) Chris Goldsmith (MPI) **DEPTH OF PUMP INTAKE:** 275 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~70°F **SCREENED/OPEN BOREHOLE INTERVAL:** 270-280 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-34D **SAMPLE TIME (start/finish):** 1000 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 600 XL **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0945	22.0	56.0	400	0.0	10.14	0.395	2.63	14.04	149.8	1411
0950	24.0	56.0	400	0.0	10.10	0.390	2.98	14.01	153.6	1442
0955	26.0	56.0	400	0.0	10.08	0.389	3.00	14.03	154.7	1394

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/5/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-34S

SAMPLERS: Pat Connelly (CDM) **DEPTH OF PUMP INTAKE:** 70 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~70°F **SCREENED/OPEN BOREHOLE INTERVAL:** 65-75 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-34S **SAMPLE TIME (start/finish):** 1225 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 600 XL **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1136	0.5	55.45	400	0.0	7.25	0.082	11.88	14.32	139.7	45.1
1141	2.5	55.45	400	0.0	6.79	0.081	11.13	14.27	142.7	19.1
1146	4.5	55.45	400	0.0	6.39	0.082	11.57	14.29	148.5	10.02
1151	6.5	55.45	400	0.0	6.10	0.085	9.68	14.13	153.1	7.20
1154	8.5	55.45	400	0.0	6.05	0.085	9.69	14.07	154.4	5.11
1159	10.5	55.45	400	0.0	5.92	0.086	9.34	14.00	156.9	4.03
1204	12.5	55.45	400	0.0	5.86	0.087	8.32	14.02	158.8	3.20
1209	14.5	55.45	400	0.0	5.79	0.086	7.57	13.98	160.9	3.36
1214	16.5	55.45	400	0.0	5.73	0.087	6.82	13.91	161.9	2.27
1219	18.5	55.45	400	0.0	5.70	0.087	6.81	13.97	163.7	2.22

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/24/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-39S

SAMPLERS: Tome Horn (CDM) Chris Goldsmith (MPI) **DEPTH OF PUMP INTAKE:** 81 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny Windy ~40°F **SCREENED/OPEN BOREHOLE INTERVAL:** 76-86 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-39S **SAMPLE TIME (start/finish):** 1210 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1130		61.55	300							
1135		61.55	300	0.0	5.46	0.172	9.37	15.10	24.6	3.55
1140		61.55	300	0.0	5.49	0.180	9.45	15.26	26.0	4.55
1145		61.55	300	0.0	5.49	0.191	9.35	15.19	26.9	7.66
1150		61.55	300	0.0	5.49	0.194	9.33	15.21	29.4	2.38
1155		61.55	300	0.0	5.49	0.198	9.23	15.05	28.6	9.92
1200		61.55	300	0.0	5.45	0.199	9.32	15.07	29.7	5.39

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/31/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-41S

SAMPLERS: Stephanie Brith (CDM) Cory Snyder (MPI) **DEPTH OF PUMP INTAKE:** 70 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Overcast ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 65-75 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-41S **SAMPLE TIME (start/finish):** 1605-1610 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1535		63.25	200	0.0	6.28	0.790	7.24	13.27	198.9	-
1540		63.25	200	0.0	6.20	0.653	4.27	13.77	204.8	1.19
1545		6.20	200	-0.05	6.16	0.645	2.80	14.06	203.0	0.60
1550		63.25	200	0.0	6.16	0.645	2.53	14.13	204.7	0.95
1550		63.25	200	0.0	6.16	0.646	2.55	14.14	205.5	1.06
1600		63.25	200	0.0	6.16	0.647	2.48	14.17	206.1	1.15

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 30 sec, Discharge -15 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/1/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-42I

SAMPLERS: Pat Connelly (CDM) Chris Goldsmith (MPI) **DEPTH OF PUMP INTAKE:** 145 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 140-150 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-42I **SAMPLE TIME (start/finish):** 0950/1035 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0911	0.8	63.13	400	0.0	8.23	0.182	2.53	13.67	37.6	13.1
0916	2.8	63.13	400	0.0	7.25	0.620	5.27	13.68	54.8	107.1
0921	4.8	63.13	400	0.0	6.63	0.723	6.81	13.68	79.2	57.3
0926	6.8	63.13	400	0.0	6.35	0.725	7.11	13.71	86.9	28.7
0931	8.8	63.13	400	0.0	6.24	0.724	7.14	13.73	89.9	18.9
0936	10.8	63.13	400	0.0	6.16	0.725	7.10	13.76	93.2	13.8
0941	12.8	63.13	400	0.0	6.11	0.724	7.06	13.77	96.0	11.6
0946	14.8	63.13	400	0.0	6.06	0724	7.07	13.74	98.7	10.27

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/1/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-43S

SAMPLERS: Pat Connelly (CDM) Chris Goldsmith (MPI) **DEPTH OF PUMP INTAKE:** 70 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 65-75 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-43S **SAMPLE TIME (start/finish):** 1220 **SAMPLE FLOW RATE:** _____ ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 600 XL **Horiba Model #** _____

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1142	1.5	63.52	400	0.0	6.10	0.790	9.34	14.53	114.6	1.36
1147	3.5	63.52	400	0.0	5.91	0.791	7.65	14.43	127.2	0.39
1152	5.5	63.52	400	0.0	5.91	0.790	7.26	14.50	130.8	0.39
1157	7.5	63.52	400	0.0	5.90	0.793	6.90	14.39	132.3	0.21
1202	9.5	63.52	400	0.0	5.89	0.792	7.08	14.30	133.3	0.32
1207	11.5	63.52	400	0.0	5.89	0.791	6.79	14.34	121.3	0.43
1212	13.5	63.52	400	0.0	5.89	0.791	6.82	14.37	113.7	0.49
1217	15.5	63.52	400	0.0	5.89	0.790	6.67	14.38	104.0	0.19

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: _____

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/1/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-44S

SAMPLERS: T. Bennett (CDM) C. Snyder (MPI) **DEPTH OF PUMP INTAKE:** 70 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~65°F **SCREENED/OPEN BOREHOLE INTERVAL:** 65-75 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-44S **SAMPLE TIME (start/finish):** 1100/1105 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 600 XL **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1015		62.49	250	0.0	7.29	0.546	10.36	13.49	191.4	0.79
1020		62.49	250	0.0	6.51	0.595	4.10	14.74	186.7	0.88
1025		62.49	250	0.0	6.42	0.596	3.36	14.64	175.5	0.50
1030		62.49	250	0.0	6.44	0.595	2.99	14.70	162.6	0.31
1035		62.49	250	0.0	6.43	0.595	2.97	14.70	161.4	0.30
1040		62.49	250	0.0	6.43	0.595	2.90	14.73	155.7	0.14
1045		62.49	250	0.0	6.43	0.595	2.82	14.73	149.5	0.15
1050		62.49	250	0.0	6.42	0.595	2.72	14.76	144.0	0.15
1055		62.49	250	0.0	6.42	0.596	2.69	14.71	141.8	0.16

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 30 sec, Discharge - 17 sec

CDM collects Dup and MS/MSD

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/31/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-49S

SAMPLERS: Stephanie Brith (CDM) Cory Snyder (MPI) **DEPTH OF PUMP INTAKE:** 105 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Overcast ~50°F **SCREENED/OPEN BOREHOLE INTERVAL:** 100-110 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-49S **SAMPLE TIME (start/finish):** 1015-1020 **SAMPLE FLOW RATE:** 240 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0940		63.70	240	-	5.80	0.094	10.03	14.27	161.6	15.7
0945		63.76	240	+0.06	5.75	0.096	8.42	14.20	166.4	6.36
0950		63.76	240	+0.06	5.74	0.095	8.01	14.16	168.3	3.23
0955		63.76	240	+0.06	5.73	0.094	7.59	14.26	169.0	2.02
1000		63.70	240	0	5.73	0.093	7.35	14.24	170.2	1.75
1005		63.70	240	0	5.72	0.091	7.11	14.23	170.7	1.75
1010		63.70	240	0	5.71	0.090	6.96	14.22	171.1	1.28

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 15 sec, Discharge - 12sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 3/31/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-50S

SAMPLERS: Pat Conelly (CDM) Chris Goldsmith (MPI) **DEPTH OF PUMP INTAKE:** 125 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: light Rain ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 120-130 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-51S **SAMPLE TIME (start/finish):** 1100/1135 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1020	.45	61.45	450	0.0	8.50	0.389	10.46	13.78	-50.7	14.1
1025	2.25	61.45	450	0.0	6.39	0.595	8.25	13.90	59.9	24.7
1030	4.50	61.45	450	0.0	5.98	0.590	6.78	13.92	73.4	22.6
1035	6.75	61.45	450	0.0	5.78	0.575	5.60	13.96	81.6	13.2
1040	9.0	61.45	450	0.0	5.68	0.564	4.84	14.03	85.4	7.64
1045	11.25	61.45	450	0.0	5.68	0.554	4.49	14.00	90.2	6.30
1050	13.5	61.45	450	0.0	5.60	0.546	4.67	14.05	93.7	5.57
1053	14.85	61.45	450	0.0	5.59	0.543	4.61	13.99	93.5	5.18
1056	16.2	61.45	450	0.0	5.59	0.546	4.50	14.02	94.6	5.45
1059	17.55	61.45	450	0.0	5.58	0.538	4.79	14.07	94.7	4.42

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/1/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-51I

SAMPLERS: Joe Button (CDM) Cory Snyder (MPI) **DEPTH OF PUMP INTAKE:** 135 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~70°F **SCREENED/OPEN BOREHOLE INTERVAL:** 130-140 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-51I **SAMPLE TIME (start/finish):** 1355-1400 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 600 XL **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1320		60.01	300		6.69	0.460	8.67	14.81	210.2	1.24
1325		60.01	300		5.64	0.600	8.54	15.32	245.3	2.10
1330		60.01	300		5.51	0.608	7.87	15.20	254.7	0.52
1335		60.01	300		5.47	0.606	7.44	15.16	260.0	1.10
1340		60.01	300		5.46	0.608	7.36	15.22	263.9	0.75
1345		60.01	300		5.44	0.609	7.43	15.25	267.7	1.85
1350		60.01	300		5.42	0.610	7.50	15.21	272.1	0.65

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 15 sec, Discharge - 15 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/5/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-52D

SAMPLERS: Pat Connelly (CDM) Cory Snyder (MPI) **DEPTH OF PUMP INTAKE:** 280 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny, Breezy, ~70°F **SCREENED/OPEN BOREHOLE INTERVAL:** 275-285 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-52D **SAMPLE TIME (start/finish):** 1450--1455 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 600 XL **Horiba Model #** _____

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1343	0.5	57.75	400	-0.93	10.93	0.423	7.60	14.09	35.0	3.71
1348	2.5	57.75	400	0.0	10.94	0.417	7.30	14.20	41.4	1.85
1353	4.5	57.75	400	0.0	10.62	0.339	7.30	14.08	60.7	3.33
1358	6.5	57.75	400	0.0	9.04	0.304	6.66	14.25	-80.5	16.8
1403	8.5	57.75	400	0.0	7.97	0.302	4.22	14.35	66.1	18.7
1408	10.5	57.75	400	0.0	7.44	0.300	3.85	14.37	76.7	27.4
1413	12.5	57.75	400	0.0	7.06	0.296	3.76	14.33	92.6	42.4
1418	14.5	57.75	400	0.0	6.99	0.292	3.13	14.37	97.1	43.2
1423	16.5	57.75	400	0.0	6.87	0.279	3.11	14.36	105.4	34.0
1428	18.5	57.75	400	0.0	6.65	0.266	2.15	14.37	111.1	45.1

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 14 sec, Discharge - 15 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/5/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-52D

SAMPLERS: Pat Connelly (CDM) Cory Snyder (MPI) **DEPTH OF PUMP INTAKE:** 280 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny, Breezy, ~70°F **SCREENED/OPEN BOREHOLE INTERVAL:** 275-285 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-52D **SAMPLE TIME (start/finish):** 1450--1455 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 600 XL **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1433	20.5	57.75	400	0.0	6.55	0.259	1.83	14.33	114.2	31.1
1438	22.5	57.75	400	0.0	6.45	0.254	1.69	14.21	116.0	29.7
1443	24.5	57.75	400	0.0	6.35	0.252	1.46	14.12	116.9	28.0
1448	26.5	57.75	400	0.0	6.35	0.250	1.63	14.14	117.3	27.1

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 14 sec, Discharge - 15 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/5/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-53S

SAMPLERS: Tom Horn (CDM) Brad Walker (MPI) **DEPTH OF PUMP INTAKE:** 75 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 70-80 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-53S **SAMPLE TIME (start/finish):** 1210/1245 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 650 **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1050		56.08	400	0.0	5.77	0.125	11.45	13.49	136.3	7.06
1135		56.08	400	0.0	5.76	0.130	10.50	13.79	159.6	5.86
1140		56.08	400	0.0	5.72	0.128	10.58	13.88	164.4	4.99
1145		56.08	400	0.0	5.71	0.129	10.69	13.84	166.7	3.06
1150		56.08	400	0.0	5.70	0.129	10.62	13.87	167.6	4.65
1155		56.08	400	0.0	5.67	0.129	10.78	13.86	170.0	3.48
1200		56.08	400	0.0	5.70	0.129	10.56	13.86	171.5	2.69

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: 1058 - Stop purging to replace YSI Meter
1123 - Restart Purge
Fill - 20 sec, Discharge - 20 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/7/2010 **WELL OWNER:** USACE FUSRAP Wells / GTEOSI Verison **WELL ID:** MW-55S

SAMPLERS: Pat Connelly (CDM) Cory Snyder (MPI) **DEPTH OF PUMP INTAKE:** 150-160 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~80°F **SCREENED/OPEN BOREHOLE INTERVAL:** 155 ft TIC or **ft BGS** (circle one)

SAMPLE ID: MW-55S **SAMPLE TIME (start/finish):** 1210/1215 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Dedicated Geotech Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** 600 XL **Horiba Model #**

Other (specify): LaMotte 2020

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1123	0.3	55.31	400	0.0	7.08	0.669	9.76	16.64	-43.0	39.0
1128	2.3	55.31	400	0.0	5.98	0.813	9.11	15.59	-20.1	37.3
1133	4.3	55.31	400	0.0	5.89	0.814	9.13	15.55	-16.5	30.1
1138	6.3	55.31	400	0.0	5.84	0.815	8.93	15.48	-13.9	26.8
1143	8.3	55.31	400	0.0	5.82	0.815	8.64	15.48	-12.7	19.6
1148	10.3	55.31	400	0.0	5.81	0.807	8.50	15.29	-11.3	15.2
1153	12.3	55.31	400	0.0	5.82	0.801	8.15	15.46	-10.0	13.2
1158	14.3	55.31	400	0.0	5.84	0.803	7.85	15.49	-8.8	12.8
1203	16.3	55.31	400	0.0	5.83	0.805	7.67	15.47	-5.2	10.47
1208	18.3	55.31	400	0.0	5.82	0.810	7.64	15.49	-5.0	10.74

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 15 sec, Discharge - 15 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/19/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-01-120

SAMPLERS: C. Goldsmith, C. Snyder **DEPTH OF PUMP INTAKE:** 115 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 110-120 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-01-120 **SAMPLE TIME (start/finish):** 1305/13/45 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1150		58.08	250							
1225		58.08	250	0	6.46	0.333	3.75	14.92	-37	146
1230		58.09	250	+0.01	6.47	0.332	2.43	15.10	-52	167
1235		58.08	250	-0.01	6.46	0.333	2.05	14.96	-57	195
1240		58.08	250	0	6.44	0.333	1.74	14.89	-60	193
1245		58.08	250	0	6.47	0.334	1.68	14.83	-62	176
1250		58.08	250	0	6.45	0.334	1.53	14.83	-62	156
1255		58.08	250	0	6.47	0.334	1.46	14.83	-65	143
1300		58.08	250	0	6.48	0.335	1.41	14.84	-68	129

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 13 sec, Discharge 7sec
Well Condition - Well lacks all 3 bolts, J-Plug fits tight with good seal

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/19/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-01-75

SAMPLERS: C. Goldsmith, C. McCarthy **DEPTH OF PUMP INTAKE:** 70 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 65-75 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-01-75 **SAMPLE TIME (start/finish):** 1515/1555 **SAMPLE FLOW RATE:** <250 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1430		56.30	290							
1435		56.40	290	+0.10	6.12	0.132	2.55	15.82	4	9.3
1440		56.40	290	+0.10	6.12	0.130	1.95	15.68	-2	6.7
1445		56.40	290	+0.10	6.11	0.129	1.81	15.87	-7	5.5
1450		56.40	290	+0.10	6.11	0.129	1.78	15.90	-9	4.4
1455	2	56.40	290	+0.10	6.12	0.129	1.78	15.94	-12	4.7
1500		56.40	290	+0.10	6.12	0.128	1.82	15.83	-15	4.6
1505		56.40	290	+0.10	6.11	0.127	1.84	15.80	-16	4.4
1510		56.40	290	+0.10	6.13	0.127	1.84	15.74	-18	3.6

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 12 sec, Discharge 8 ssec
Well under manhole, J-Plug is perforated, no good seal

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/20/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-02-70

SAMPLERS: C. Goldsmith, J. Conklin, C. Snyder **DEPTH OF PUMP INTAKE:** 65 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~50°F **SCREENED/OPEN BOREHOLE INTERVAL:** 60-70 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-02-70 **SAMPLE TIME (start/finish):** 1010/1130 **SAMPLE FLOW RATE:** 175 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 10346 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0835		58.02	350							
0845	0.5		350		5.91	0.461	8.23	15.34	242	313
0850		58.12	350	+0.10	6.11	0.452	7.58	16.61	215	215
0855		58.12	350	0	6.16	0.460	7.45	15.64	197	154
0900		58.12	350	0	6.19	0.474	7.19	15.69	177	83.3
0905	2	58.10	350	-0.02	6.21	0.476	7.20	15.70	175	57.5
0910	2.3	58.07	350	-0.03	6.24	0.469	7.17	15.73	173	38.8
0915	2.8	58.04	350	-0.03	6.25	0.468	7.29	15.74	172	31.5
0920	3.1	58.04	350	0	6.26	0.468	7.03	15.77	171	25.3
0925	3.5	58.04	350	0	6.26	0.461	6.98	15.80	172	44.8

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 10 sec, Discharge - 5 sec
Well Condition - good, 1 bolt missing from flush mount

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/20/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-02-70

SAMPLERS: C. Goldsmith, J. Conklin, C. Snyder **DEPTH OF PUMP INTAKE:** 65 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~50°F **SCREENED/OPEN BOREHOLE INTERVAL:** 60-70 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-02-70 **SAMPLE TIME (start/finish):** 1010/1130 **SAMPLE FLOW RATE:** 175 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 10346 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0930	4.0	58.10	350	+0.06	6.25	0.461	7.21	15.81	169	49.8
0935	4.5	58.10	350	0	6.27	0.461	6.78	15.88	167	23.0
0940	5.0	58.10	350	0	6.29	0.455	6.73	15.94	168	14.5
0945	5.5	58.10	350	0	6.30	0.451	6.71	15.93	168	9.4
0950	6.0	58.10	350	0	6.30	0.447	6.83	15.93	168	4.8
0955	6.3	58.09	350	-0.01	6.30	0.441	6.76	15.97	169	1.3
1000	6.7	58.05	350	-0.04	6.31	0.430	6.93	15.99	169	0.0
1005	7.5	58.05	350	0	6.32	0.429	6.74	16.01	169	2.9

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 10 sec, Discharge - 5 sec

Well Condition - good, 1 bolt missing from flush mount

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/19/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-03-112

SAMPLERS: B. Walker, C. Snyder **DEPTH OF PUMP INTAKE:** 107 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 102-112 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-03-112 **SAMPLE TIME (start/finish):** 1050/1155 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 11854 **Other (specify):** LaMotte 2020 **Horiba serial #** 4NK

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	**gallons** / liters (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0955			280							
1005		58.85	280		6.31	0.351	2.25	15.13	22	35
1010			280		6.50	0.335	0.69	14.98	-13	31
1015		59.92	280		6.60	0.334	0.22	14.89	-34	30
1020		59.92	280		6.60	0.333	0.03	14.89	-45	27
1025	2	59.92	280		6.60	0.333	0.00	14.88	-49	23
1030		59.92	280		6.60	0.333	0.00	14.87	-54	-
1035		59.92	280		6.61	0.333	0.00	14.92	-58	17
1040		59.92	280		6.66	0.332	0.00	14.92	-64	15
1045		59.93	280		6.62	0.332	0.00	14.94	-63	15

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Headspace - 0.0 ppm, Same as background. Initial DTW - 59.61
Fill - 12 sec, Discharge 8 sec, 3 CPM, 130 psi

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/19/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-03-72

SAMPLERS: C. Goldsmith, J. Conklin, C. McCarthy **DEPTH OF PUMP INTAKE:** 107 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 102-112 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-03-72 **SAMPLE TIME (start/finish):** 1000 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 9447 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0915	0.5	59.61	300	0	9.98	0.175	6.04	15.23	96	8.3
0920	0.75	60.90	300	1.29	10.11	0.153	5.79	15.14	88	10.7
0925	1.5	60.91	300	0.01	10.10	0.152	5.64	15.24	88	11.1
0930	2.5	60.72	300	0.19	10.06	0.153	5.88	15.22	90	12.8
0935	3.0	60.82	300	0.10	10.01	0.154	5.79	15.26	93	11.5
0940	3.5	60.92	300	0.10	9.98	0.154	6.03	15.28	95	11.1
0945	4.0	61.00	300	0.08	9.92	0.154	5.59	15.28	100	10.4
0950	4.5	61.07	300	0.07	9.85	0.155	5.60	15.32	104	10.7
0955	5.0	61.11	300	0.04	9.80	0.155	5.78	15.32	107	10.7

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Headspace - 0.0 ppm, Same as background. Initial DTW - 59.46
Well Condition - J-Plug does not fit right, on bolt in well cover

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/20/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-05-78

SAMPLERS: B. Walker, C. McCarthy **DEPTH OF PUMP INTAKE:** 73 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 68-78 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-05-78 **SAMPLE TIME (start/finish):** 1415/1500 **SAMPLE FLOW RATE:** 180 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 11286 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1310		60.16	295							
1320		60.48	295	.32	6.25	0.264	11.16	17.06	220	20
1325		60.45	295	.03	6.22	0.248	9.11	16.95	203	3.4
130		60.49	295	.04	6.19	0.224	6.95	16.44	162	2.0
1335	2	60.49	295	0	6.19	0.223	6.71	16.36	142	1.7
1340		60.49	295	0	6.21	0.225	6.21	16.33	130	1.8
1345		60.45	295	.04	6.15	0.223	6.15	16.37	127	1.5
1350		60.45	295	0	6.14	0.221	6.14	16.36	123	1.5
1355		60.45	295	0	6.17	0.219	6.17	16.32	114	1.6
1400	3	60.45	295	0	6.12	0.216	6.12	16.41	111	1.5

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Headspace = 0.0 ppm
Well Condition - 4" pvc, cap is not secure
Fill - 14 sec, Discharge - 6 sec, 3 CPM, 100 psi

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/20/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-05-78

SAMPLERS: B. Walker, C. McCarthy **DEPTH OF PUMP INTAKE:** 73 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 68-78 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-05-78 **SAMPLE TIME (start/finish):** 1415/1500 **SAMPLE FLOW RATE:** 180 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 11286 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1405	3.5	60.47	295		6.11	0.215	6.27	16.33	111	1.1
1410	4	60.47	295		6.12	0.214	6.05	16.25	111	1.6

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Sampled for VOCs, 1,4 Dioxane, TAL Metals (total & disolved) Rad (Total and Disolved), Chloride

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/20/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-6-79

SAMPLERS: C. Goldsmith **DEPTH OF PUMP INTAKE:** 74 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~65°F **SCREENED/OPEN BOREHOLE INTERVAL:** 69-79 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-6-79 **SAMPLE TIME (start/finish):** 1515/1610 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** UMB

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1420		59.92	250	0.0						
1430	1	59.92	250	0.0	5.98	0.123	10.46	17.56	262	6.5
1435	1.25	59.92	250	0.0	5.85	0.117	6.28	17.49	283	3.54
1440	1.5	59.92	250	0.0	5.84	0.119	6.04	17.05	289	4.55
1445	1.75	59.92	250	0.0	5.85	0.119	5.99	16.83	291	3.28
1450	2	59.92	250	0.0	5.83	0.121	5.89	17.21	295	2.5
1455	2.25	59.92	250	0.0	5.80	0.122	5.64	17.45	299	1.82
1500	2.5	59.92	250	0.0	5.81	0.122	5.64	17.41	299	1.65
1505	2.75	59.92	250	0.0	5.81	0.121	5.65	13.32	300	1.66
1510	3	59.92	250	0.0	5.81	0.121	5.58	17.45	300	1.64

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Initial water level - 59.63
Fill - 10 sec, Discharge - 10 sec
well condition - Good

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/19/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-08-71

SAMPLERS: B. Walker **DEPTH OF PUMP INTAKE:** 66 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 61-71 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-08-71 **SAMPLE TIME (start/finish):** 1420/1505 **SAMPLE FLOW RATE:** ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** 4NK

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1315		59.86	290							
1325	0.5	59.88	290		6.41	0.222	8.89	14.48	177	24
1330		59.88	290		6.35	0.217	8.29	14.46	199	30
1335		59.90	290		6.24	0.218	8.38	14.39	211	23
1340		59.89	290		6.25	0.218	8.25	14.20	218	18
1345		59.89	280		6.34	0.222	8.32	14.22	218	16
1350	2.5	59.89	280		6.22	0.221	8.11	14.32	226	11
1355		59.89	280		6.23	0.221	8.36	14.38	229	9.5
1400		89.89	280		6.26	0.220	8.27	14.31	229	8.6
1405		59.89	280		6.22	0.219	8.16	14.44	232	7.5
1415	3.5	59.89	280		6.20	0.219	8.25	14.40	234	6.0

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Headspace - 0.0 ppm, Same as background. Initial DTW - 59.86
Fill - 12 sec, Discharge 8 sec, 3 CPM, 90 psi
Well - 2" Stainless Steel, no bolts for flush mount cover

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/19/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-10-120

SAMPLERS: C. Goldsmith, C. Snyder **DEPTH OF PUMP INTAKE:** 115 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~65°F **SCREENED/OPEN BOREHOLE INTERVAL:** 110-120 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-10-120 **SAMPLE TIME (start/finish):** 1255/1410 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 8592 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1200		59.60	250							
1210		58.39	250		6.23	0.453	8.69	17.39	195	69.1
1215		58.39	250		6.03	0.465	8.09	17.12	201	64.1
1220		58.44	250		5.88	0.479	7.85	16.90	212	58.1
1225		58.43	250		5.83	0.487	7.72	16.97	220	53.6
1230		58.40	250		5.57	0.511	7.64	16.98	246	58.4
1235		58.40	250		5.48	0.518	7.64	17.10	255	51.4
1240		58.40	250		5.48	0.518	7.56	17.14	257	42.8
1245		58.40	250		5.53	0.514	7.45	17.25	254	37.7
1250		58.40	250		5.55	0.514	7.45	17.25	252	34.1

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 10 sec, Discharge - 10 sec

Well Condition - missing bolts, J-plug secure

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/20/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-10-71

SAMPLERS: C. Goldsmith **DEPTH OF PUMP INTAKE:** 69 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~65°F **SCREENED/OPEN BOREHOLE INTERVAL:** 61-71 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-10-71 **SAMPLE TIME (start/finish):** 1300/1355 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 9447 **Other (specify):** LaMotte 2020 **Horiba serial #** UM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1200		57.84	300							
1210	1	57.86	300		6.19	1.51	9.12	16.09	201	48.5
1215	1.25	57.88	300		6.21	1.50	7.96	16.12	201	43.1
1220	1.5	57.85	300		6.22	1.50	7.15	16.08	206	29.0
1225	1.75	57.86	300		6.23	1.49	6.90	16.10	210	19.1
1230	2	57.86	300		6.23	1.48	7.05	16.12	212	15.5
1235	2.25	57.86	300		6.22	1.48	36.61	16.21	217	8.5
1240	2.5	57.86	300		6.23	1.47	6.73	16.16	219	2.5
1245	2.75	57.86	300		6.22	1.46	6.71	16.20	223	0.10
1250	3	57.86	300		6.22	1.45	6.76	16.16	224	0.00
1255	3.25	57.86	300		6.23	1.45	6.75	16.21	225	0.00

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 9 sec, Discharge - 6 sec
Well condition - good

MALCOLM PIRNIE

DATE: 4/21/2010 WELL OWNER: General Instrument Wells WELL ID: W-11-70

SAMPLERS: C. McCarthy, B. Walker, C. Snyder DEPTH OF PUMP INTAKE: 65 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~50°F SCREENED/OPEN BOREHOLE INTERVAL: 60-70 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-11-70 SAMPLE TIME (start/finish): 0945/1015 SAMPLE FLOW RATE: _____ ml/min

PUMP TYPE: QED Bladder Pumps WQ Instrument (complete and or circle at right): YSI Model # _____ Horiba Model # U-52

Pump #: 10346 Other (specify): LaMotte 2020 Horiba serial # 15504

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0855		58.14	290							
0900		58.14	290	0	5.40	0.291	10.89	17.76	278	16.3
0905		58.14	290	0	5.71	0.269	8.33	15.34	267	12
0910		58.14	290	0	5.77	0.265	8.09	15.20	267	7.2
0915	1.5	58.14	290	0	5.76	0.263	7.91	15.10	275	5.15
0920		58.14	290	0	5.82	0.263	7.70	15.08	275	4.39
0925	2	58.12	290	-0.02	5.80	0.262	7.88	15.04	280	2.94
0930		58.14	290	+0.02	5.75	0.261	7.76	15.07	285	2.13
0935	2.5	58.14	290	0	5.78	0.259	7.84	15.07	285	1.76
0940	3	58.11	290	-0.03	5.80	0.259	7.64	15.11	285	1.39

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: PID = 0.0 ppm, DTB - 70.7 ft BGS
Well Condition - good
Fill - 13 sec, Discharge - 7 sec, 3 CPM

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/21/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-12-120

SAMPLERS: C. Whipple, J. Conklin **DEPTH OF PUMP INTAKE:** 115 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy, ~65°F **SCREENED/OPEN BOREHOLE INTERVAL:** 110-120 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-12-120 **SAMPLE TIME (start/finish):** 1155/1315 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** UM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1041		57.74	300	0						
1105	7.5	57.75	300	0.01	5.27	0.097	7.89	15.01	323	36.2
1110	9.0	57.75	300	0	5.21	0.096	7.42	15.04	333	36.0
1115	10.5	57.75	300	0	5.09	0.095	6.80	14.98	349	23.0
1120	12	57.75	300	0	5.02	0.095	6.73	14.91	356	18.5
1125	13.5	57.75	300	0	4.96	0.094	6.64	14.90	362	15.9
1130	15	57.75	300	0	4.91	0.094	6.78	14.88	368	14.1
1140	18	57.75	300	0	4.86	0.093	6.68	14.89	372	6.2
1145	19.5	57.75	300	0	4.82	0.093	6.88	14.91	374	2.1
1150	21	57.75	300	0	4.81	0.092	6.74	14.92	379	3.1

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: DTB = 117 (TIC)
PID = 0.0

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/21/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-12-70

SAMPLERS: C. Goldsmith, J. Conklin **DEPTH OF PUMP INTAKE:** 65 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 60-70 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-12-70 **SAMPLE TIME (start/finish):** 1150/1350 **SAMPLE FLOW RATE:** 225 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1050										
1105	5.5		400		4.89	0.080	10.84	14.35	314	63.4
1110	6.0		400		4.76	0.078	9.45	14.32	325	47.3
1115	6.5		400		4.77	0.077	8.84	14.32	329	34.9
1120	7.0		400		5.01	0.076	8.55	14.28	323	22.9
1125	7.5		400		5.05	0.075	8.51	14.30	322	21.1
1130	8.0		400		5.12	0.074	8.70	14.33	320	18.9
1135	8.5		400		5.16	0.074	8.81	14.33	320	17.5
1140	9.0		400		5.22	0.073	8.39	14.34	318	15.9
1145	9.5		400		5.24	0.072	8.09	14.38	318	14.4

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 10 sec, Discharge - 5 sec
Well Condition - Flush mount cover has no bolts
DTB - 71.60 ft bgs, PID = 0.0 ppm
0900 DUPL-4 collected

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/19/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-14-150

SAMPLERS: C. Goldsmith **DEPTH OF PUMP INTAKE:** 145 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 140-150 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-14-150 **SAMPLE TIME (start/finish):** 1410/1530 **SAMPLE FLOW RATE:** 220 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 10346 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1240	1	58.40	220							
1245		58.41	220		6.71	0.349	8.65	15.24	206	253
1250		58.41	220		6.53	0.369	6.59	15.22	198	357
1255		58.41	220		5.23	0.419	3.65	15.17	149	349
1300		58.41	220		6.18	0.433	3.21	15.17	138	299
1305		58.41	220		6.15	0.445	2.98	15.17	134	244
1310		58.41	220		6.14	0.450	2.80	15.20	132	215
1315		58.41	220		6.11	0.456	2.52	15.26	129	172
1320		58.40	220		6.08	0.457	2.40	15.23	129	149
1325		58.40	220		6.06	0.460	2.36	15.23	128	114

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Well Condition - No Bolts, J-Plug good.
Headspace - 0.0 ppm, Same as background. Initial DTW - 58.46

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/19/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-14-150

SAMPLERS: C. Goldsmith **DEPTH OF PUMP INTAKE:** 145 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 140-150 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-14-150 **SAMPLE TIME (start/finish):** 1410/1530 **SAMPLE FLOW RATE:** 220 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 10346 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1330		58.40	220		6.04	0.461	2.34	15.27	129	103
1335		58.40	220		6.03	0.461	2.37	15.24	128	87.5
1340		58.40	220		6.05	0.461	2.38	15.16	127	74.7
1345		58.40	220		6.04	0.461	2.45	15.11	127	68.1
1350		58.40	220		6.01	0.463	2.50	15.22	127	48.4
1355		58.40	220		5.98	0.462	2.53	15.37	129	45.4
1400		58.40	220		5.99	0.462	2.71	15.37	129	40.8
1405		58.40	220		6.00	0.462	2.70	15.49	129	37.3

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Well Condition - No Bolts, J-Plug good.
Headspace - 0.0 ppm, Same as background. Initial DTW - 58.46

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/22/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-16-148

SAMPLERS: C. Goldsmith, J. Conklin, C. McCarthy **DEPTH OF PUMP INTAKE:** 133 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 138-148 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-16-148 **SAMPLE TIME (start/finish):** 1130/1240 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: Marxhalk Bladder Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 9990 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1040		58.78	440							
1050	2	58.78	440	0	5.22	0.229	11.31	15.42	290	37
1055	2	58.80	440	0.02	5.19	0.228	11.04	15.14	288	29
1100	2.5	58.80	440	0	5.45	0.232	9.98	15.24	287	25
1105	3	58.78	440	0.02	5.43	0.236	9.74	15.14	287	23
1110	4	58.78	440	0	4.45	0.239	9.58	15.18	286	18
1115	4.5	58.79	440	0.01	5.39	0.245	9.42	15.00	289	11
1120	5	58.79	440	0	5.42	0.246	9.29	15.05	288	7.9
1125	6	58.79	440	0	5.45	0.247	9.26	15.05	285	

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 10 sec, Discharge - 20 sec, 2 CPM, 70 psi
PID - 0.0 ppm

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/22/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-19-110

SAMPLERS: J. Conklin, C. Whipple, C. Snyder **DEPTH OF PUMP INTAKE:** 107 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Partly Cloudy ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 102-112 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-19-110 **SAMPLE TIME (start/finish):** 1225/1325 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 10346 **Other (specify):** LaMotte 2020 **Horiba serial #** UM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1025		54.03	300							
1045	6	54.04	300	+0.01	5.99	0.184	6.84	14.33	218	688
1050	8	54.05	300	-0.01	6.02	0.183	5.80	14.26	224	672
1055	10	54.05	300	0	5.99	0.183	5.51	14.13	235	545
1105	12	54.05	300	0	6.03	0.183	5.22	14.10	242	572
1110	14	54.05	300	0	6.03	0.183	5.06	14.18	242	532
1115	16	54.05	300	0	6.05	0.182	5.00	14.15	243	449
1120	18	54.04	300	0	6.07	0.182	4.94	14.17	245	359
1125	20	54.04	300	0	6.07	0.182	4.88	14.17	247	275
1130	22	54.04	300	0	6.05	0.182	4.98	14.13	250	207

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: DTB - 112.05 ft bgs
Well Construction - good & locked with J-Plug fitting secure
PVC construction
1105 - Switch to Horiba readings for turbidity

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/22/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-19-110

SAMPLERS: J. Conklin, C. Whipple, C. Snyder **DEPTH OF PUMP INTAKE:** 107 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Partly Cloudy ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 102-112 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-19-110 **SAMPLE TIME (start/finish):** 1225/1325 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 10346 **Other (specify):** LaMotte 2020 **Horiba serial #** UM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1135	24	54.04	300	0	6.07	0.182	4.83	14.11	251	169
1140	26	54.04	300	0	6.06	0.182	4.90	14.04	253	133
1145	28	54.04	300	0	6.07	0.182	4.88	14.07	254	113
1150	30	54.04	300	0	6.06	0.181	4.83	14.14	254	84.3
1155	32	54.04	300	0	6.07	0.181	4.75	14.20	254	76.2
1200	34	54.04	300	0	6.07	0.181	4.68	14.23	255	60.2
1205	36	54.04	300	0	6.05	0.181	4.69	14.20	257	54.9
1210	38	54.04	300	0	6.05	0.181	4.87	14.19	258	46.9
1215	40	54.04	300	0	6.07	0.181	4.79	14.17	258	45.9
1220	42	54.04	300	0	6.07	0.181	4.70	14.12	259	44.3

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/22/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-19-150

SAMPLERS: C. Goldsmith, J. Conklin, C. McCarthy **DEPTH OF PUMP INTAKE:** 148 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Partly Cloudy ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 143-153 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-19-150 **SAMPLE TIME (start/finish):** 1320/1422 **SAMPLE FLOW RATE:** 225 ml/min

PUMP TYPE: Marchalk Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** UM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1230		54.26	450							
1235		54.15	450	+0.11	5.70	0.312	3.81	15.74	282	440
1240		54.15	450	0	5.64	0.320	3.10	15.74	283	236
1245		54.15	450	0	5.62	0.338	2.97	15.60	282	71.8
1250		54.15	450	0	5.46	0.368	3.04	14.26	287	39.2
1255		54.15	450	0	5.43	0.372	2.95	14.28	285	35.0
1300		54.15	450	0	5.44	0.382	3.08	14.20	280	27.9
1305		54.15	450	0	5.46	0.384	3.17	14.16	279	28.5
1310		54.15	450	0	5.45	0.385	3.20	14.18	279	28.4
1315		54.15	450	0	5.44	0.387	3.11	14.37	279	24.3

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Well Condition - good, locked with J-Plug secure
DTB - 153.05 ft BGS
PVC construction
Marchalk pump used due to insufficient operation of QED Bladder pump.

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/23/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-20 120

SAMPLERS: B. Walker, C. McCarthy **DEPTH OF PUMP INTAKE:** 107 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny, ~45oF **SCREENED/OPEN BOREHOLE INTERVAL:** 102-112 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-20 120 **SAMPLE TIME (start/finish):** 1105 **SAMPLE FLOW RATE:** ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 14254 **Other (specify):** LaMotte 2020 **Horiba serial #** Pine # 15504

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0925			310							
0930	.5	54.70	310		5.36	0.342	3.52	12.28	309	600
0935	.75	54.78	310		5.42	0.338	2.47	12.10	309	260
0940	1	54.62	310		5.51	0.329	0.87	12.25	306	130
0945	1.5	54.66	310		5.54	0.330	0.71	12.26	305	112
0950	1.75	54.72	310		5.54	0.331	0.41	12.28	307	94.3
1000	1.75	54.45	150		5.62	0.332	0.00	12.31	303	83.6
1005	2	54.50	150		5.62	0.332	0.00	12.09	303	80
1010		54.50	150		5.64	0.333	0.04	11.03	301	70
1015	3	54.50	150		5.66	0.333	0.05	11.26	300	65.6

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 8 sec, Discharge - 12 sec, 3 CPM, PID = 0.0 ppm
Well condition - No J-plug upon arrival
0955 - Pause due to air bubble

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/23/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-20 120

SAMPLERS: B. Walker, C. McCarthy **DEPTH OF PUMP INTAKE:** 107 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny, ~45oF **SCREENED/OPEN BOREHOLE INTERVAL:** 102-112 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-20 120 **SAMPLE TIME (start/finish):** 1105 **SAMPLE FLOW RATE:** ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 14254 **Other (specify):** LaMotte 2020 **Horiba serial #** Pine # 15504

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1020	3.25	54.50	150		5.61	0.333	0.16	11.30	302	67.6
1030	3.75	54.74	300		5.55	0.331	0.40	12.01	303	76.8
1035	4	54.72	300		5.62	0.334	0.12	12.28	301	112
1040	4.3	54.70	300		5.63	0.336	0.00	12.43	303	65.2
1045	4.6	54.72	300		5.62	0.336	0.00	12.43	304	60.2
1050	5	54.70	300		5.67	0.337	0.00	12.45	301	60.5
1055	5.5	54.72	300		5.67	0.338	0.00	12.52	301	58.1
1100	6	54.72	300		5.70	0.339	0.00	12.57	298	60.0

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: 1025 -No readings collected. Adjust flow rate.

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/23/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-20-160

SAMPLERS: C. Goldsmith, J. Conklin, C. McCarthy **DEPTH OF PUMP INTAKE:** 155 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny, ~60oF **SCREENED/OPEN BOREHOLE INTERVAL:** 150-160 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-20-160 **SAMPLE TIME (start/finish):** 1205/1255 **SAMPLE FLOW RATE:** 240 ml/min

PUMP TYPE: Marchalk Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 4932 **Other (specify):** LaMotte 2020 **Horiba serial #** Pine # 15504

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1115	1	NA	330	-	5.77	0.240	4.25	12.81	288	48.7
1120	1.5	54.79	330	+0.15	5.74	0.240	3.85	12.82	289	32.7
1125	1.75	54.79	330	+0.15	5.76	0.242	3.02	12.84	287	28.2
1130	2.15	54.78	330	+0.14	5.79	0.242	2.61	12.89	285	24.7
1135	2.65	54.78	330	+0.14	5.78	0.243	2.41	12.90	285	18
1140	3.05	54.79	330	+0.15	5.80	0.244	2.07	12.91	283	19
1145	3.5	54.79	330	+0.15	5.77	0.245	1.92	12.91	284	15
1150	3.9	54.79	330	+0.15	5.78	0.246	1.72	12.91	283	13
1155	4.3	54.79	330	+0.15	5.79	0.246	1.64	12.90	282	12
1200	4.7	54.79	330	+0.15	5.81	0.247	4.58	12.93	280	12

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Initial DTW - 54.64, PID - 0.1 ppm
Fill - 10 sec, Discharge 10 sec, 3 CPM

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/21/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-22-95

SAMPLERS: C. Goldsmith, J. Conklin, C. Whipple **DEPTH OF PUMP INTAKE:** 90 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy, ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 85-95 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-22-95 **SAMPLE TIME (start/finish):** 0940/1030 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** UM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0758		58.55	300							
0810		58.55	300		6.16	0.466	11.79	15.29	224	237
0815		58.55	300		6.20	0.453	6.56	15.33	215	220
0820		58.55	300		6.30	0.434	3.75	15.41	200	207
0825		58.55	300		6.30	0.423	3.36	15.42	180	208
0830		58.55	300		6.30	0.407	3.22	15.47	151	210
0835		58.55	300		6.21	0.395	3.29	15.46	147	188
0840		58.55	300		6.26	0.388	3.28	15.47	141	173
0845		58.54	300		6.30	0.373	3.29	15.49	132	140
0850		58.54	300		6.30	0.370	3.20	15.51	131	129

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: DTB - 96.550, PID = 0.0 ppm
Fill - 12 sec, Discharge - 8 sec
Well Condition - Flush mount has no bolts

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/21/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-22-95

SAMPLERS: C. Goldsmith, J. Conklin, C. Whipple **DEPTH OF PUMP INTAKE:** 90 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy, ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 85-95 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-22-95 **SAMPLE TIME (start/finish):** 0940/1030 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** UM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0855		58.54	300	0	6.29	0.364	3.18	15.55	130	117
0900		58.54	300	0	6.30	0.357	3.21	15.59	129	104
0905		58.53	300	0.01	6.31	0.350	3.23	15.63	127	85.4
0910		58.53	300	0	6.31	0.341	3.31	15.67	126	67.0
0915		58.53	300	0	6.32	0.334	3.23	15.71	125	58.1
0920		58.53	300	0	6.32	0.325	3.21	15.79	124	44.2
0925		58.53	300	0	6.29	0.322	3.39	15.80	125	38.2
0930		58.53	300	0	6.31	0.320	3.20	15.85	123	36.4
0935	5	58.53	300	0	6.31	0.315	3.31	15.91	121	32.7

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/22/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-23-110

SAMPLERS: C. Snyder, C. Whipple **DEPTH OF PUMP INTAKE:** 105 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Overcast, Rain, ~58°F **SCREENED/OPEN BOREHOLE INTERVAL:** 100-110 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-23-110 **SAMPLE TIME (start/finish):** 1640/1525 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 14286 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1530		53.93	300							
1540		53.98	300	+0.05	6.63	0.584	3.66	15.65	-72	0.0
1600		53.96	300	-0.02	6.62	0.686	0.88	15.06	-106	197
1605		53.96	300	0	6.61	0.696	0.84	15.08	-107	163
1610		53.96	300	0	6.60	0.699	0.79	15.11	-108	122
1615		53.96	300	0	6.57	0.703	0.71	15.05	-109	77.8
1620		53.96	300	0	6.54	0.703	0.69	14.97	-108	59.2
1625		53.96	300	0	6.50	0.701	0.63	15.00	-107	49.9
1630		53.96	300	0	6.48	0.699	0.60	14.96	-106	47.7
1635		53.96	300	0	6.43	0.698	0.57	14.99	-104	34.9

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Well Condition - no bolts in cover, PVC construction
Fill - 11 sec, Dischaarge - 9 sec, 140 psi
1540 - Rainstorm. Temporarly abandon station

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/27/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-24-260

SAMPLERS: C. Goldsmith, C. Hofer **DEPTH OF PUMP INTAKE:** 255 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy, ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 260-250 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-24-260 **SAMPLE TIME (start/finish):** 1620/1740 **SAMPLE FLOW RATE:** 100-150 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** 4NK

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1530	1	53.41	200	0.03	5.59	0.301	3.00	16.03	251	35.8
1535	2	53.41	200	0.0	5.52	0.329	2.27	15.94	247	235
1540	3	53.41	200	0.0	5.51	0.332	1.94	16.03	244	178
1545	4	53.41	200	0.0	5.55	0.330	1.83	16.08	240	85.4
1550	5	53.41	200	0.0	5.62	0.324	1.56	16.23	240	64.4
1555	6	53.41	200	0.0	5.63	0.321	1.35	16.27	234	61.1
1600	7	53.41	200	0.0	5.52	0.319	1.21	16.37	240	44.6
1605	8	53.41	200	0.0	5.54	0.317	1.03	16.24	235	30.4
1610	9	53.41	200	0.0	5.52	0.316	0.97	16.21	234	30.1
1615	10	53.41	200	0.0	5.54	0.316	0.94	16.12	235	29.0

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Start purge at 1520, Initial DTW - 53.38
DTB - 262.69, PID - 0.0 ppm
Fill - 8 sec, Discharge - 20 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/27/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-25-150

SAMPLERS: C. Goldsmith, J. Conklin, C. Hofer **DEPTH OF PUMP INTAKE:** 144 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy, ~58°F **SCREENED/OPEN BOREHOLE INTERVAL:** 140-150 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-25-150 **SAMPLE TIME (start/finish):** 1010 **SAMPLE FLOW RATE:** 200 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 9447 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0916	2	52.98	200		9.10	0.459	4.22	9.47	237	9.5
0920	3	53.17	200		10.41	0.462	3.25	13.85	160	8.6
0925	4	53.19	200		10.90	0.508	2.78	13.66	118	8.5
0930	5	53.19	200		11.04	0.542	2.53	13.64	104	8.8
0935	6	53.19	200		11.45	0.644	1.63	13.47	54	8.5
0940	7	53.19	200		11.48	0.660	1.42	13.46	47	8.1
0945	8	53.19	200		11.56	0.698	0.93	13.45	23	7.3
0950	9	53.19	200		11.59	0.702	0.82	13.45	17	7.4
0955	10	53.19	200		11.60	0.713	0.67	13.44	10	7.2
1000	11	53.19	200		11.62	0.729	0.47	13.44	-2	6.7

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Intial DTW - 51.44, PID - 0.0 ppm
DTB - 145.40
Fill - 13 sec, Discharge - 7 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/27/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-25-188

SAMPLERS: C. Goldsmith, J. Conklin, C. Hofer **DEPTH OF PUMP INTAKE:** 183 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy, ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 178-188 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-25-188 **SAMPLE TIME (start/finish):** 1255/1345 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 11286 **Other (specify):** LaMotte 2020 **Horiba serial #** 4NK

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1135	3	51.72	280		13.19	0.559	1.30	13.19	90	337
1140	4.4	51.72	280		5.76	0.331	1.75	13.07	229	180
1150	7.2	51.72	280		5.43	0.310	0.31	13.79	226	0.0
1155	8.6	51.72	280		5.51	0.316	0.12	14.08	209	754
1200	10.0	51.72	280		5.52	0.316	0.06	14.10	209	697
1205	11.4	51.72	280		5.50	0.317	0.00	14.18	214	500
1210	12.8	51.72	280		5.48	0.319	0.00	14.21	217	295
1215	14.2	51.72	280		5.44	0.320	0.00	14.24	219	176
1220	15.6	51.72	280		5.43	0.320	0.00	14.37	220	131
1225	17.0	51.72	280		5.49	0.320	0.00	14.34	218	115

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Start purge at 1125, Initial DTW - 51.81
DTB 178.02' TIC
Well Condition - No bolts in well cover

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/27/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-25-188

SAMPLERS: C. Goldsmith, J. Conklin, C. Hofer **DEPTH OF PUMP INTAKE:** 183 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy, ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 178-188 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-25-188 **SAMPLE TIME (start/finish):** 1255/1345 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 11286 **Other (specify):** LaMotte 2020 **Horiba serial #** 4NK

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1230	18.4	51.72	280		5.50	0.320	0.00	14.20	219	66.4
1235	19.8	51.72	280		5.50	0.320	0.00	14.17	220	59.4
1240	21.2	51.72	280		5.46	0.322	0.00	14.29	220	56.9
1245	22.6	51.72	280		5.46	0.323	0.00	14.40	219	54.9
1250	24.0	51.72	280		5.48	0.323	0.00	14.51	217	44.5

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/27/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-26--270

SAMPLERS: C. McCarthy, B. Walker, C. Snyder **DEPTH OF PUMP INTAKE:** 265 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny, ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 260-270 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-26--270 **SAMPLE TIME (start/finish):** 1630/1745 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Marchalk Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 9990 **Other (specify):** LaMotte 2020 **Horiba serial #** UM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1540		40.86	320							
1545	0.5	40.90	320		5.70	0.377	16.93	15.47	250	65
1550	1.25	40.90	320		5.79	0.359	8.77	15.17	249	73.2
1555	2	40.86	320		5.80	0.357	7.42	15.00	252	78.7
1600	2.5	40.87	320		5.80	0.358	6.76	15.04	254	74.1
1605	2.75	40.87	320		5.83	0.358	6.56	15.05	254	65.2
1610	2.75	40.90	320		5.84	0.358	6.74	14.98	254	55.4
1615	3	40.86	320		5.85	0.358	6.52	14.86	256	45.6
1620	4	40.88	320		5.84	0.358	5.99	14.93	257	36.9
1625	4.5	40.86	320		5.80	0.359	6.32	14.93	260	35.1

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: 1500 - start Purge initially. Having trouble getting water. Pull pump to check.
1540 - Re-start purging, Initial DTW 40.86
Fill - 12 sec, Discharge - 8 sec, 3 CPM, 80 psi, PID = 0.0 ppm
Well Condition - Bolts are broken off and J-plug is secure

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/28/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-27-240

SAMPLERS: C. Goldsmith, J. Conklin **DEPTH OF PUMP INTAKE:** 235 **ft** TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Overcast, Windy, ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 230-240 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-27-240 **SAMPLE TIME (start/finish):** 1355/1540 **SAMPLE FLOW RATE:** _____ ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** _____ **Horiba Model #** U-52

Pump #: 8592 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1245	1	45.42	200		6.27	0.249	5.84	14.37	-22	14.3
1250	2	45.42	200		6.38	0.253	5.17	14.36	-35	39.2
1255	3	45.42	200		6.46	0.266	4.59	14.35	-39	64.0
1300	4	45.42	200		6.32	0.286	3.16	14.30	-15	44.5
1305	5	45.42	200		6.35	0.289	2.86	14.52	-13	41.1
1310	6	45.44	200		6.37	0.290	2.62	14.78	-11	24.1
1315	7	45.44	200		6.34	0.289	2.52	14.84	-9	14.9
1320	8	45.43	200		6.34	0.290	2.43	14.97	-7	12.2
1325	9	45.43	200		6.33	0.290	2.37	15.13	-8	10.6
1330	10	45.41	200		6.33	0.289	2.62	14.97	-10	22.3

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: 1230 - start purge, initial DTW - 45.48, DTB - 242.72
Well Condition - Stainless steel, no bolts, J-plug secure
100 psi, high pres. Control box
PID - 0.0 ppm

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/28/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-27-240

SAMPLERS: C. Goldsmith, J. Conklin **DEPTH OF PUMP INTAKE:** 235 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Overcast, Windy, ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 230-240 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-27-240 **SAMPLE TIME (start/finish):** 1355/1540 **SAMPLE FLOW RATE:** _____ ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** _____ **Horiba Model #** U-52

Pump #: 8592 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1335	11	45.42	200		6.34	0.290	2.54	14.90	-11	10
1340	12	45.42	200		6.33	0.290	2.40	14.83	-13	7.7
1345	13	45.40	200		6.35	0.291	3.02	14.87	-14	8.1
1350	14	45.40	200		6.35	0.292	3.66	15.28	-16	11

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: _____

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/28/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-27-285

SAMPLERS: C. Goldsmith, J. Conklin **DEPTH OF PUMP INTAKE:** Pump set at 125, intake at 280 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Overcast, Windy, ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 275-285 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-27-285 **SAMPLE TIME (start/finish):** 1605 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Marchalk Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 14932 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1500	2	44.98	150		5.93	0.110	8.83	15.54	175	17.3
1505	2.75	44.92	150		6.12	0.157	8.18	15.41	162	158
1510	3.5	44.94	150		6.36	0.219	6.16	15.25	144	160
1515	4.25	44.92	150		6.48	0.259	5.11	15.19	146	134
1520	5	44.92	150		6.48	0.268	4.90	15.17	149	121
1525	5.75	44.92	150		6.48	0.269	4.67	15.08	152	93.6
1530	6.5	44.90	150		6.46	0.271	4.47	14.99	155	69.1
1535	8.28	44.92	350		6.32	0.281	3.85	15.14	163	41.1
1540	10	44.92	350		6.24	0.288	3.47	15.22	171	27.1
1545	11.75	44.92	350		6.15	0.296	3.14	15.24	180	26.5

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill 16 sec, Discharge 14 sec, 150 psi,
1434 - Start purge, initial DTW - 45.04, Total depth 283.68 ft TIC
Well Condition - Dteel, no bolts, J-plug secure
PID = 0.0 ppm

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/28/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-27-285

SAMPLERS: C. Goldsmith, J. Conklin **DEPTH OF PUMP INTAKE:** Pump set at 125, intake at 280 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Overcast, Windy, ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 275-285 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-27-285 **SAMPLE TIME (start/finish):** 1605 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Marchalk Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 14932 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1550	13.5	44.92	350		5.80	0.323	3.00	15.15	206	22.8
1555	15.25	44.92	350		5.80	0.325	2.42	15.11	207	23.5
1600	17	44.92	350		5.77	0.332	2.19	15.06	211	20.6

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface **Notes:**

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/28/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-30-285

SAMPLERS: C. Hofer, J. Conklin, C. McCarthy **DEPTH OF PUMP INTAKE:** 280 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~45°F **SCREENED/OPEN BOREHOLE INTERVAL:** 275-285 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-30-285 **SAMPLE TIME (start/finish):** 1105 **SAMPLE FLOW RATE:** ml/min

PUMP TYPE: Marchalk Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** Pine # 15504

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0920			250							
0925	1.25	44.31	250		5.84	0.161	5.80	13.85	249	13.9
0930	2.5	44.30	250		5.74	0.163	4.92	13.84	259	60.4
0935	3.75	44.40	250		5.67	0.165	2.69	13.94	270	NA
0940	5	44.40	250		5.69	0.164	2.44	13.96	270	24.6
0945	6.25	44.40	250		5.61	0.164	2.30	14.02	268	24.3
0950	7.50	44.40	250		5.78	0.164	2.39	13.88	269	26.3
0955	8.75	44.40	250							
1030	17.50	44.40	250		5.60	0.170	5.59	14.62	254	10.12
1035	18.75	44.40	250		5.80	0.158	3.59	14.31	272	5.51

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: 0958 - Horiba ran out or power /malfunction

Fill - 20 sec, Discharge - 10 sec

PID - 0.0 ppm, DTB - 285.10, 110 psi

Well Condition - one bolt in cover, J-plug secure, had to bail area around casing upon arrival.

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/28/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-30-285

SAMPLERS: C. Hofer, J. Conklin, C. McCarthy **DEPTH OF PUMP INTAKE:** 280 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~45°F **SCREENED/OPEN BOREHOLE INTERVAL:** 275-285 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-30-285 **SAMPLE TIME (start/finish):** 1105 **SAMPLE FLOW RATE:** ml/min

PUMP TYPE: Marchalk Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** Pine # 15504

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1050	20	44.40	250		5.91	0.157	3.05	14.31	280	5.58
1055	21.25	44.40	250		5.90	0.156	3.01	14.18	288	4.16
1100	22.5	44.40	250		5.85	0.156	2.88	14.12	288	4.33

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface **Notes:**

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/21/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-31-95

SAMPLERS: C. McCarthy, B. walker, C. Snyder **DEPTH OF PUMP INTAKE:** 90 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 85-95 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-31-95 **SAMPLE TIME (start/finish):** 1230/1310 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 11286 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1110		58.20	250	0.02	5.42	0.125	8.96	14.67	275	>1100
1115	0.5	58.20	250	0	5.36	0.123	8.65	14.57	289	912
1120	1	58.20	250	0	5.36	0.120	8.55	14.41	304	676
1135	1.5	58.20	250	0	5.32	0.114	8.12	14.40	310	466
1140	2	58.20	250	0	5.36	0.120	8.25	14.39	309	246
1145	2.5	58.20	250	0	5.33	0.120	8.18	14.42	312	159
1150	3	58.20	250	0	5.32	0.120	7.89	14.41	314	96.6
1155	3	58.20	250	0	5.32	0.120	8.03	14.44	315	83.9
1200	3	58.20	250	0	5.31	0.121	8.01	14.45	317	51.9
1205	3.5	58.20	250	0	5.34	0.121	7.50	14.40	316	42.7

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt-content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: PID = 0.0 ppm, DTB 97.62 (TTC)
Fill - 11 sec, Discharge 9 sec, 3 CPM
Well Condition - good, J-plug was not locked upon arrival
Initial DTW - 58.18

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/21/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-31-95

SAMPLERS: C. McCarthy, B. walker, C. Snyder **DEPTH OF PUMP INTAKE:** 90 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 85-95 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-31-95 **SAMPLE TIME (start/finish):** 1230/1310 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 11286 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1210	3.5	58.20	250	0	5.30	0.121	7.30	14.45	318	32.0
1215	4	58.20	250	0	5.30	0.121	7.25	14.41	319	23.7
1220	4.5	58.20	250	0	5.34	0.121	7.29	14.35	317	17.6
1225	4.5	58.20	250	0	5.30	0.122	7.32	14.39	320	14.2
1230	5	58.20	250	0	5.35	0.122	7.26	14.36	317	12.0

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: PID = 0.0 ppm, DTB 97.62 (TTC)
Fill - 11 sec, Discharge 9 sec, 3 CPM
Well Condition - good

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/20/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-32-110

SAMPLERS: B. Walker, C. McCarthy **DEPTH OF PUMP INTAKE:** 105 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 100-110 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-32-110 **SAMPLE TIME (start/finish):** 1005/1100 **SAMPLE FLOW RATE:** 190 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 14254 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0830		58.32	325							
0845	1.5	58.32	325	0	5.18	0.560	7.94	15.84	314	485
0850	2	58.32	325	0	5.17	0.557	7.75	15.72	314	260
0855	2	58.35	325	0.03	5.25	0.558	7.42	15.68	309	139
0900	2.5	58.35	325	0	5.23	0.558	7.57	15.71	310	101.7
0905	2.5	58.35	325	0	5.23	0.558	7.57	15.71	310	70
0910	3	58.35	325	0	5.24	0.560	7.18	15.68	311	50
0915	3.5	58.35	325	0	5.23	0.562	7.01	15.71	313	36
0920	4	58.35	325	0	5.25	0.562	6.86	15.76	313	30
0925	4.25	58.35	325	0	5.25	0.561	6.69	15.72	314	27

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: PID Headspace - 0.0 ppm
Fill - 11 sec, Discharge - 9 sec, 3 CPM, 135 psi
Well Condition - No bolts and J-plug was not secure upon arrival

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/20/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-32-110

SAMPLERS: B. Walker, C. McCarthy **DEPTH OF PUMP INTAKE:** 105 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~55°F **SCREENED/OPEN BOREHOLE INTERVAL:** 100-110 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-32-110 **SAMPLE TIME (start/finish):** 1005/1100 **SAMPLE FLOW RATE:** 190 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 14254 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0930	4.5	58.35	325	0	5.25	0.560	6.60	15.78	313	20
0935	4.75	58.35	325	0	5.25	0.558	6.74	15.85	313	17
0940	5.25	58.35	325	0	5.27	0.555	6.81	15.87	313	14.2
0945	5.75	58.35	325	0	5.24	0.552	6.25	15.82	315	12
0950	6.25	58.35	325	0	5.22	0.552	6.31	15.80	316	10
0955	6.75	58.35	325	0	5.28	0.549	6.52	15.89	314	8.3

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: PID Headspace - 0.0 ppm
Fill - 11 sec, Discharge - 9 sec, 3 CPM, 135 psi
Well Condition - No bolts and J-plug was not secure upon arrival

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/27/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-34-285

SAMPLERS: B. walker, C. Snyder, C. McCarthy **DEPTH OF PUMP INTAKE:** _____ ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Overcast, ~50°F **SCREENED/OPEN BOREHOLE INTERVAL:** 275-285 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-34-285 **SAMPLE TIME (start/finish):** _____ **SAMPLE FLOW RATE:** _____ ml/min

PUMP TYPE: Marchalk Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** _____ **Horiba Model #** U-52

Pump #: 14932 **Other (specify):** LaMotte 2020 **Horiba serial #** _____

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Unable to lower pump past 56.80. Well slightly obstructed pr bent. Well will not be sampled.
PID - 0.1 ppm, Total Depth - 288.34 (TIC)

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/30/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-34-285

SAMPLERS: B. walker, C. Snyder, J. Conklin **DEPTH OF PUMP INTAKE:** 280 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Overcast, ~50°F **SCREENED/OPEN BOREHOLE INTERVAL:** 275-285 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-34-285 **SAMPLE TIME (start/finish):** **SAMPLE FLOW RATE:** 225 ml/min

PUMP TYPE: QED Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** 4NK

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1050		54.94	220	0	6.47	0.436	2.73	13.86	59	21.2
1055		54.94	220	0	6.54	0.451	1.75	13.76	41	18.3
1100		54.94	220	0	6.61	0.464	0.74	14.55	22	11.10
1105		54.94	220	0	6.61	0.466	0.73	14.52	21	10.10
1110*	~1	54.94	220	0	6.63	0.462	0.60	14.79	21	
Well will not be sampled										

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 12 sec, Discharge 18 sec, 125 psi

Well Condition - PVC and metal construction, stick-up is lecked and J-plug is secure.

Attempted to sample on 4/27/2010 with Marchalk pump.

*1110 - Flow stops. Appears to need more pressure. Switch to High Pressure control box.

Still can not get flow.

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/29/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-36-390

SAMPLERS: C. McCarthy, C. Snyder **DEPTH OF PUMP INTAKE:** Pump set at 182, intake at 188 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Clear, Breezy, ~60°F **SCREENED/OPEN BOREHOLE INTERVAL:** 350-390 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-36-390 **SAMPLE TIME (start/finish):** 1510/1555 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Marchalk Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 9990 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1420		42.42	300	-						
1425	0.75	42.42	300	0.0	9.71	0.862	5.93	15.57	55	29.9
1430	1	42.42	300	0.0	8.79	0.852	4.63	15.13	89	27.8
1435	1.25	42.42	300	0.0	8.01	0.860	3.40	15.39	120	20.7
1440	2	42.42	300	0.0	7.81	0.863	3.03	15.05	125	20.1
1445	2	42.42	300	0.0	7.70	0.860	2.74	15.09	126	19.2
1450	2.25	42.30	300	0.12	7.66	0.860	2.83	15.10	124	13.3
1455	2.5	42.30	300	0.12	7.63	0.863	2.31	14.99	120	9.98
1500	2.75	42.30	300	0.12	7.57	0.864	2.31	15.36	117	9.21
1505	3	42.30	300	0.12	7.57	0.862	2.23	15.08	114	9.47

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 15 sec, Discharge - 15 sec, 95 psi, 2 CPM
PID - 4.8 ppm, TD = 384.86 ft TIC

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/29/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-36-448

SAMPLERS: C. Goldsmith, J. Conklin, C. Hofer **DEPTH OF PUMP INTAKE:** Pump set at 128, intake at 433 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Clear, Breezy, ~65°F **SCREENED/OPEN BOREHOLE INTERVAL:** 418-448 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-36-448 **SAMPLE TIME (start/finish):** 1500 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Marchalk Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 14932 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1330	1	42.36	250	-	11.02	0.679	8.81	15.42	46	141
1335	2.25	42.48	250	0.12	8.95	0.639	6.96	14.97	127	72.3
1340	3.30	42.50	250	0.02	7.13	0.605	3.77	14.66	169	47.4
1345	4.75	42.50	250	0.0	6.91	0.600	5.00	14.49	131	29.9
1350	6	42.50	250	0.0	6.79	0.600	3.13	14.47	124	43.4
1355	7.25	42.50	250	0.0	6.69	0.587	9.80	14.60	127	26.7
1400	8.50	42.50	250	0.0	6.66	0.571	9.02	14.85	130	21.4
1405	9.75	42.50	250	0.0	6.59	0.558	7.64	14.91	136	9.4
1410	11	42.50	250	0.0	6.55	0.544	8.42	14.73	143	6.5
1415	12.25	42.50	250	0.0	6.46	0.532	6.46	14.74	150	7.6

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 15 sec, Discharge - 10 sec, 190 psi
PID - 1.6 ppm
Well Condition - good, lid secure, J-plug secure

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/29/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-36-448

SAMPLERS: C. Goldsmith, J. Conklin, C. Hofer **DEPTH OF PUMP INTAKE:** Pump set at 128, intake at 433 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Clear, Breezy, ~65°F **SCREENED/OPEN BOREHOLE INTERVAL:** 418-448 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-36-448 **SAMPLE TIME (start/finish):** 1500 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Marchalk Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 14932 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1420	13.5	42.50	250	0.0	6.35	0.524	2.94	14.65	156	4.2
1425	14.75	42.50	250	0.0	6.24	0.519	4.71	14.45	160	11.0
1430	16	42.50	250	0.0	6.29	0.511	4.24	14.60	164	5.1
1435	17.25	42.50	250	0.0	6.25	0.505	4.16	14.54	166	3.1
1440	18.5	42.50	250	0.0	6.17	0.498	3.83	14.53	171	2.6
1445	19.75	42.50	250	0.0	6.17	0.494	3.54	14.55	173	2.6
1450	21	42.50	250	0.0	6.17	0.494	3.48	14.53	174	2.6
1455	22.25	42.50	250	0.0	6.16	0.495	3.42	14.57	176	2.0

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface **Notes:**

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/29/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-37-325

SAMPLERS: C. McCarthy, C. Snyder **DEPTH OF PUMP INTAKE:** 305 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~50°F **SCREENED/OPEN BOREHOLE INTERVAL:** 285-325 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-37-325 **SAMPLE TIME (start/finish):** 1000/1100 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Marchalk Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: 9990 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0910		46.73	350							
0915	0.75	46.88	350		5.22	0.356	4.93	14.90	252	
0925	1	46.86	350		5.24	0.350	2.93	14.70	219	55.8
0930	2	46.88	350		5.19	0.349	1.86	14.88	227	20.8
0935	2.5	46.88	350		5.21	0.346	1.69	14.98	225	7.18
0940	2.5	46.88	350		5.26	0.346	1.72	15.09	224	6.15
0945	3	46.88	350		5.26	0.351	1.50	15.20	228	5.67
0950	3.5	46.88	350		5.24	0.354	1.48	15.25	231	4.93
0955	4	46.88	350		5.26	0.355	1.50	15.21	230	3.73

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 18 sec, Discharge - 18 sec, 2 CPM
PID - 30.6 ppm, TD - 325,20 ft TIC
MS/M5D collected

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/29/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-37-385

SAMPLERS: J. Conklin, C. Hofer **DEPTH OF PUMP INTAKE:** Pump set at 168, intake at 368 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Clear, Breezy, ~50°F **SCREENED/OPEN BOREHOLE INTERVAL:** 355-385 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-37-385 **SAMPLE TIME (start/finish):** 1125 **SAMPLE FLOW RATE:** 225-250 ml/min

PUMP TYPE: Marchalk Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: A145 **Other (specify):** LaMotte 2020 **Horiba serial #** UM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1000	1	46.75	225	0.0	5.83	0.324	10.75	14.72	272	4.5
1005	2	46.75	225-250	0.0	5.81	0.307	10.08	14.86	264	3.3
1010	3.25	46.75	225-250	0.0	5.59	0.293	9.75	14.90	276	10.8
1015	4.5	46.75	225-250	0.0	5.58	0.291	10.08	14.92	270	98.8
1020	5.75	46.75	225-250	0.0	5.71	0.288	10.41	14.94	256	189
1025	7	46.75	225-250	0.0	5.76	0.288	6.90	15.09	251	180
1030	8.25	46.75	225-250	0.0	5.72	0.283	9.35	15.13	245	197
1035	9.5	46.75	225-250	0.0	5.69	0.283	9.78	15.22	244	184
1040	10.75	46.75	225-250	0.0	5.70	0.282	9.70	15.26	243	175
1045	12	46.75	225-250	0.0	5.61	0.282	2.43	15.31	246	154

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: 0900 - Start purging
0930 - Not getting water, having problems with compressor, switch compressor out
0955 - Start getting water after re-starting purge after compressor switched out.
PID - 0.0 ppm, initial DTW - 46.79 ft, TD - 385.2 ft

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/29/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** W-37-385

SAMPLERS: J. Conklin, C. Hofer **DEPTH OF PUMP INTAKE:** Pump set at 168, intake at 368 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Clear, Breezy, ~50°F **SCREENED/OPEN BOREHOLE INTERVAL:** 355-385 ft TIC or **ft BGS** (circle one)

SAMPLE ID: W-37-385 **SAMPLE TIME (start/finish):** 1125 **SAMPLE FLOW RATE:** 225-250 ml/min

PUMP TYPE: Marchalk Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: A145 **Other (specify):** LaMotte 2020 **Horiba serial #** UM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1050	13.25	4.75	225-250	0.0	5.63	0.280	2.19	15.46	244	101
1055	14.50	4.75	225-250	0.0	5.62	0.279	2.30	15.50	241	116
1100	15.75	4.75	225-250	0.0	5.66	0.277	2.04	15.69	243	71.1
1105	17	4.75	225-250	0.0	5.69	0.276	2.02	15.77	241	64.9
1110	18.25	4.75	225-250	0.0	5.67	0.276	2.07	15.86	242	58.3
1115	19.50	4.75	225-250	0.0	5.70	0.276	2.06	15.88	241	58.7
1120	20.75	4.75	225-250	0.0	5.71	0.275	1.98	15.84	241	58.5

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface **Notes:**

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/4/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** S-1-325

SAMPLERS: C. Goldsmith, C. Hofer **DEPTH OF PUMP INTAKE:** 305 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny, ~80°F **SCREENED/OPEN BOREHOLE INTERVAL:** 285-325 ft TIC or **ft BGS** (circle one)

SAMPLE ID: S-1-325 **SAMPLE TIME (start/finish):** 1415/1450 **SAMPLE FLOW RATE:** 225 ml/min

PUMP TYPE: Marchalk Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** XUM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1235	1	45.06	300	-	6.38	0.364	6.56	16.04	12	>800
1240	2	45.08	225	0.02	5.66	0.355	5.06	16.21	107	302
1245	3	45.08	225	0.0	5.57	0.353	4.95	16.59	120	217
1250	4	45.08	225	0.0	5.56	0.351	4.75	16.66	126	179
1255	5	45.08	225	0.0	5.58	0.348	4.58	16.80	131	215
1300	6	45.08	225	0.0	5.52	0.347	4.72	15.94	143	210
1305	7	45.08	225	0.0	5.48	0.348	4.61	16.15	151	183
1310	8	45.08	225	0.0	5.39	0.347	4.63	16.02	157	143
1315	9	45.08	225	0.0	5.44	0.347	4.67	15.89	158	107
1320	10	45.08	225	0.0	5.37	0.346	4.80	15.72	166	92.4

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 10 sec, Discharge 15 sec, 80 psi

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/4/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** S-1-325

SAMPLERS: C. Goldsmith, C. Hofer **DEPTH OF PUMP INTAKE:** 305 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny, ~80°F **SCREENED/OPEN BOREHOLE INTERVAL:** 285-325 ft TIC or **ft BGS** (circle one)

SAMPLE ID: S-1-325 **SAMPLE TIME (start/finish):** 1415/1450 **SAMPLE FLOW RATE:** 225 ml/min

PUMP TYPE: Marchalk Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** XUM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1325	11	45.08	225	0.0	5.41	0.347	5.73	15.58	173	90.4
1330	12	45.08	225	0.0	5.34	0.348	7.82	15.50	177	102
1335	13	45.08	225	0.0	5.36	0.348	8.01	15.35	168	94.4
1340	14	45.08	225	0.0	5.41	0.348	7.88	15.04	162	88.2
1345	15	45.08	225	0.0	5.41	0.348	8.80	15.02	158	72.8
1350	16	45.08	225	0.0	5.43	0.350	8.72	15.27	158	61.4
1355	17	45.08	225	0.0	5.49	0.349	9.20	15.34	152	47.2
1400	18	45.08	225	0.0	5.50	0.349	8.32	15.39	149	23.8
1405	19	45.08	225	0.0	5.51	0.350	8.32	15.51	152	24.4
1410	20	45.08	225	0.0	5.51	0.351	8.34	15.36	149	22.2

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface **Notes:**

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/4/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** S-1-450

SAMPLERS: C. Goldsmith, C. Hofer **DEPTH OF PUMP INTAKE:** 430 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Partly Cloudy, ~75°F **SCREENED/OPEN BOREHOLE INTERVAL:** 410-450 ft TIC or **ft BGS** (circle one)

SAMPLE ID: S-1-450 **SAMPLE TIME (start/finish):** 1115/1155 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Marchalk Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** XUM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0900	1	45.78	225	0.0	8.74	0.138	5.48	14.79	129	22.4
0905	2	45.78	225	0.0	8.83	0.125	3.89	14.83	50	37.9
0910	3	45.78	225	0.0	8.72	0.127	3.30	15.52	26	566
0915*	4	45.78	225	0.0	7.59	0.145	2.91	15.58	49	>800
0940	8	45.78	225	0.0	5.70	0.153	7.44	15.03	131	344
0945	9	45.78	225	0.0	5.47	0.151	6.75	14.43	140	152
0950	10	45.78	225	0.0	5.31	0.156	5.90	14.72	161	112
0955	11	45.78	225	0.0	5.29	0.155	5.50	15.78	163	132
1000	12	45.78	225	0.0	5.34	0.151	5.15	16.98	165	133
1005	13	45.78	225	0.0	5.33	0.149	4.64	18.06	167	135

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: 0855 - Start purging
Flow-thru cell again til almost clear.
0915 - Purge water became excessively dirty. Empty flow-thru cell and wait to run through
0942 - Re-fill flow-thru cell

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/4/2010 **WELL OWNER:** General Instrument Wells **WELL ID:** S-1-450

SAMPLERS: C. Goldsmith, C. Hofer **DEPTH OF PUMP INTAKE:** 430 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Partly Cloudy, ~75°F **SCREENED/OPEN BOREHOLE INTERVAL:** 410-450 ft TIC or **ft BGS** (circle one)

SAMPLE ID: S-1-450 **SAMPLE TIME (start/finish):** 1115/1155 **SAMPLE FLOW RATE:** 250 ml/min

PUMP TYPE: Marchalk Bladder Pumps **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** XUM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1030	15	45.78	250	0.0	5.58	0.157	6.77	15.45	147	125
1035	16	45.78	250	0.0	5.72	0.156	5.88	15.02	130	612
1040	17	45.78	250	0.0	5.50	0.160	6.42	14.90	156	644
1045	18	45.78	250	0.0	5.52	0.157	6.52	14.91	158	383
1050	19	45.78	250	0.0	5.55	0.155	6.07	14.98	151	216
1055	20	45.78	250	0.0	5.58	0.155	6.32	14.93	151	25.1
1100	21	45.78	250	0.0	5.57	0.156	6.30	15.14	154	23.5
1105	22	45.78	250	0.0	5.56	0.156	6.28	15.00	157	25.6

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: 1005 - 1025 lost water. Airlinf blew out, had to fix it.
1025 - Start purging again

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/15/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-02-1

SAMPLERS: Brad Walker **DEPTH OF PUMP INTAKE:** 70.5 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~65°F **SCREENED?OPEN BOREHOLE INTERVAL:** 71-73 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-02-1 **SAMPLE TIME (start/finish):** 1520/1625 **SAMPLE FLOW RATE:** 50 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-140 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER:	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1305			70		5.52	0.189	16.73	21.90	260	18.5
1310			70		5.50	0.195	10.33	21.79	268	12.3
1320			70		5.48	0.200	9.81	22.05	274	9.2
1330	1		70		4.47	0.205	9.52	22.36	279	6.3
1340			70		5.48	0.208	9.21	22.68	281	4.4
1350			70		5.48	0.210	8.62	22.84	285	3.0
1400			70		5.48	0.211	8.67	22.74	287	2.6
1410			120		5.50	0.214	8.97	22.82	282	3.4
1420			120		5.82	0.213	9.26	22.18	262	27.3
1430			50		5.70	0.213	8.84	22.83	271	22.7

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: 2 CPM, Fill 15 sec, Discharge - 15 sec, 100 psi
Drawdown can not be measured due to diameter constraints of CMT channels
1410 - 2 CPM, Fill - 10 sec, Discharge 20 sec, 100 psi, purged dry
had to reset to 2 CPM, Fill - 20 sec, Discharge 10 sec

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/15/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-02-1

SAMPLERS: Brad Walker **DEPTH OF PUMP INTAKE:** 70.5 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~65°F **SCREENED?OPEN BOREHOLE INTERVAL:** 71-73 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-02-1 **SAMPLE TIME (start/finish):** 1520/1625 **SAMPLE FLOW RATE:** 50 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-140 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER:	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1445	2		50		5.51	0.214	8.98	23.43	283	6.9
1455			50		5.51	0.216	8.35	23.74	287	4.7
1505			50		5.50	0.218	8.37	23.84	290	3.8
1515			50		5.51	0.219	8.38	24.22	290	2.4

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: 1430-1445 allow flow cell to refill

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/14/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-02-2

SAMPLERS: Cory Snyder **DEPTH OF PUMP INTAKE:** 87 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~65°F **SCREENED?OPEN BOREHOLE INTERVAL:** 86-88 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-02-2 **SAMPLE TIME (start/finish):** 0940/1040 **SAMPLE FLOW RATE:** 80 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-140 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0905			80		4.95	0.268	9.82	18.76	280	29.8
0910			80		5.19	0.230	9.13	18.93	278	19.8
0915			80		5.45	0.217	8.58	19.10	270	9.9
0920			80		5.53	0.210	8.59	19.26	270	7.7
0925			80		5.61	0.203	8.28	19.48	267	7.0
0930			80		5.67	0.202	8.60	19.77	269	5.2
0935			80		5.64	0.200	8.51	19.95	270	5.6

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 10 sec, Discharge - 20 sec

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/16/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-02-3

SAMPLERS: Cory Snyder **DEPTH OF PUMP INTAKE:** 102 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Overcast, Breezy, ~52°F **SCREENED?OPEN BOREHOLE INTERVAL:** 101-103 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-02-3 **SAMPLE TIME (start/finish):** 1010 **SAMPLE FLOW RATE:** 90 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0935			90		5.43	0.498	7.51	13.88	281	7.9
0940			90		5.52	0.507	7.15	14.12	274	7.7
0945			90		5.54	0.509	6.71	14.19	270	7.4
0950			90		5.45	0.530	6.80	13.61	269	7.3
0955			90		5.43	0.532	6.47	13.36	269	5.8
1000			90		5.45	0.533	6.56	13.52	271	5.4
1005			90		5.33	0.536	6.31	13.36	274	5.4

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 10 sec, Discharge - 20 sec

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/3/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-02-4

SAMPLERS: Brad Walker & Julie Conklin **DEPTH OF PUMP INTAKE:** 116 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Rain ~60°F **SCREENED?OPEN BOREHOLE INTERVAL:** 116-118 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-02-4 **SAMPLE TIME (start/finish):** 1245/1320 **SAMPLE FLOW RATE:** 85 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-140 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1020	1	53.48	100		5.90	0.357	6.68	19.41	243	35.1
1030	2		100		5.93	0.440	6.66	19.14	243	28.6
1040	3		100		5.91	0.553	6.67	18.79	247	16.5
1050	4		100		5.82	0.623	6.73	18.51	263	12.7
1100	5		100		5.78	0.647	6.80	18.57	268	10.8
1110	6		100		5.74	0.653	6.98	18.64	272	11.4
1120	7		100		5.76	0.669	7.02	18.98	259	10.1
1130	7.5		50		5.75	0.671	7.08	19.15	245	7.7
*1140	8		50		5.75	0.66	7.18	19.88	222	5.0
1150	8.5		65							

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: * Adjusted settings to increase flow rate
1150 - Air line became disconnected. Adjusted flow rate and secured air line.
Drawdown can not be measured due to diameter constraints of CMT channels
Total depth = 117.31 TIC

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/3/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-02-4

SAMPLERS: Brad Walker & Julie Conklin **DEPTH OF PUMP INTAKE:** 116 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Rain ~60°F **SCREENED?OPEN BOREHOLE INTERVAL:** 116-118 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-02-4 **SAMPLE TIME (start/finish):** 1245/1320 **SAMPLE FLOW RATE:** 85 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-140 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
120	9		65		5.75	0.664	7.32	19.79	213	4.9
1220	10		65		5.75	0.666	8.19	19.14	199	7.1
1230	11		85		5.75	0.675	7.75	19.02	201	10.7
1240	12		85		5.69	0.670	7.75	18.86	202	5.6

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: 1203 - Compressor died. Switched compressors and flushed out flow thru cell.

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/3/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-02-5

SAMPLERS: B. Walker, C. Snyder, C. Hofer, J. Conklin **DEPTH OF PUMP INTAKE:** 131 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Partly Sunny ~65°F **SCREENED?OPEN BOREHOLE INTERVAL:** 131-133 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-02-5 **SAMPLE TIME (start/finish):** 1740/1805 **SAMPLE FLOW RATE:** 75 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-140 **Other (specify):** LaMotte 2020 **Horiba serial #** UM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1450		53.36	90							
1505	0.4		90		5.99	0.272	19.25	20.51	230	>800
1515	1.3		90		5.90	0.263	8.56	21.44	233	630
1525	2.1		90		5.88	0.262	8.41	21.43	239	477
1535	3.0		90		5.86	0.261	8.23	21.53	246	322
1545	3.9		90		5.85	0.259	8.45	21.79	249	224
1555	4.65		75		5.85	0.257	8.23	21.99	253	162
1605	5.4		75		5.81	0.259	11.54	21.17	262	151
1615	6.15		75		5.73	0.256	8.27	20.96	285	66.7
1625	6.90		75		5.57	0.254	8.40	20.20	299	44.5
1635	7.65		75		5.43	0.256	8.44	19.62	312	32.2

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Total depth = 132.42 ft TIC

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/3/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-02-5

SAMPLERS: B. Walker, C. Snyder, C. Hofer, J. Conklin **DEPTH OF PUMP INTAKE:** 131 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Partly Sunny ~65°F **SCREENED?OPEN BOREHOLE INTERVAL:** 131-133 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-02-5 **SAMPLE TIME (start/finish):** 1740/1805 **SAMPLE FLOW RATE:** 75 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-140 **Other (specify):** LaMotte 2020 **Horiba serial #** UM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1645	8.40		75		5.28	0.255	9.04	19.62	327	26.8
1650	9.15		75		5.22	0.256	9.12	19.34	332	23.0
1655	9.90		75		5.19	0.258	9.21	19.62	333	23.4
1700			75		5.38	0.255	8.75	19.32	321	26.0
1705			75		5.39	0.256	8.38	19.62	321	23.3
1710			75		5.41	0.253	8.20	19.84	321	20.9
1715			75		5.45	0.251	8.32	19.90	320	17.9
1720*			75		5.54	0.254	9.29*	19.71	316	17.2
1725			75		5.58	0.258	9.43	19.13	312	19.0
1730			75		5.58	0.256	8.89	19.61	312	16.1
1735			75		5.63	0.256	8.54	19.81	311	16.5

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: * Flow thru cell agitated, releasing air bubbles changing DO reading

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/4/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-02-6

SAMPLERS: B. Walker, C. Snyder, J. Conklin **DEPTH OF PUMP INTAKE:** 146 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~65°F **SCREENED?OPEN BOREHOLE INTERVAL:** 146-148 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-02-6 **SAMPLE TIME (start/finish):** 1400 **SAMPLE FLOW RATE:** 80 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-240 **Other (specify):** LaMotte 2020 **Horiba serial #** 4NK

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1050		53.50	80							
1125	1		80		5.39	0.329	12.61	23.08	267	145
1135	1.8		80		5.80	0.306	11.66	22.96	216	203
1145	2.6		80		5.85	0.285	13.25	23.21	210	248
1155	3.2		80		5.71	0.281	12.90	23.27	219	238
1205	4.0		80		5.44	0.281	13.28	23.45	237	205
1215	4.8		80		5.58	0.279	13.68	23.83	231	142
1225	5.6		80		5.29	0.281	13.81	24.31	247	122
1235	66.2		80		5.35	0.279	13.26	24.67	244	84.5
1245	7.0		80		5.34	0.278	15.72	24.80	247	64.9

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 15 sec, Discharge - 45 sec, 80 psi

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/4/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-02-6

SAMPLERS: B. Walker, C. Snyder, J. Conklin **DEPTH OF PUMP INTAKE:** 146 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~65°F **SCREENED?OPEN BOREHOLE INTERVAL:** 146-148 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-02-6 **SAMPLE TIME (start/finish):** 1400 **SAMPLE FLOW RATE:** 80 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-240 **Other (specify):** LaMotte 2020 **Horiba serial #** 4NK

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1255	7.8		80		5.34	0.277	14.40	25.15	248	49.7
1305	8.6		80		5.50	0.278	14.36	25.46	240	34.7
1315	9.2		80		5.42	0.277	16.24	25.96	241	35.7
1325	10.0		80		5.32	0.278	16.23	26.64	252	20.7
1335	10.8		80		5.48	0.277	15.96	27.00	250	10.6
1345	11.6		80		5.50	0.277	15.52	27.04	251	8.4
1355	12.2		80		5.47	0.277	14.94	27.13	257	7.0

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/5/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-02-7

SAMPLERS: Chris Goldsmith & Clayton Hofer **DEPTH OF PUMP INTAKE:** 159 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~80°F **SCREENED?OPEN BOREHOLE INTERVAL:** 162-160 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-02-7 **SAMPLE TIME (start/finish):** 1010/1350 **SAMPLE FLOW RATE:** 75 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-240 **Other (specify):** LaMotte 2020 **Horiba serial #** UM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0818			75							
0835	0.5		75		6.05	0.396	12.92	22.18	139	203
0845	1.25		75		6.16	0.336	7.12	22.33	166	164
0855	2.0		75		6.07	0.296	6.59	22.62	186	104
0905	2.75		75		5.88	0.280	6.53	22.96	207	68.4
0915	3.5		75		5.70	0.274	6.52	23.17	211	37.3
0925	4.25		75		5.77	0.273	6.78	13.37	213	23.6
0935	5.0		75		5.72	0.271	6.70	13.60	224	15.8
0945	5.75		75		5.77	0.270	6.93	23.84	219	11.8
0955	6.5		75		5.76	0.268	6.94	24.02	222	8.5
1005	7.25		75		5.77	0.268	6.93	24.04	220	7.0

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 15 sec, Discharge 45 sec. psi - 70
PID = 0.0 ppm
Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/10/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-03-1

SAMPLERS: Cory Snyder **DEPTH OF PUMP INTAKE:** 69 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Overcast ~50°F **SCREENED?OPEN BOREHOLE INTERVAL:** 70-72 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-3-7 **SAMPLE TIME (start/finish):** 1210-1300 **SAMPLE FLOW RATE:** 70 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1140			70		5.86	0.189	9.11	13.75	273	1.2
1145			70		5.82	0.188	8.25	13.78	276	1.6
1150			70		5.87	0.189	8.32	13.43	282	1.4
1155			70		5.94	0.187	7.80	13.40	283	1.1
1200			70		5.84	0.185	7.67	13.35	287	1.0
1205			70		5.87	0.185	7.65	13.38	291	1.1

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 19 sec, Discharge - 11 sec

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/13/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-03-2

SAMPLERS: Chris Goldsmith & Cory Snyder **DEPTH OF PUMP INTAKE:** 86 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~55°F **SCREENED?OPEN BOREHOLE INTERVAL:** 85-87 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-3-2 **SAMPLE TIME (start/finish):** 1445/1550 **SAMPLE FLOW RATE:** 80 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** UM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**^{c}/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1340		53.85	80							
1400			80		5.81	0.428	8.52	11.39	138	0.9
1405			80		5.82	0.431	5.31	11.41	137	1.2
1410			80		5.81	0.432	4.86	11.51	134	0.8
1415			80		5.81	0.433	4.74	11.65	132	0.7
1420			80		5.83	0.433	4.64	11.68	130	0.8
1425			80		5.83	0.433	4.56	11.67	129	0.75
1430			80		5.82	0.434	4.54	11.71	127	1.0
1435			80		5.84	0.433	4.45	11.82	125	0.9
1440			80		5.84	0.433	4.41	11.88	124	1.3

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 4 sec, Discharge - 16 sec
1425 - LaMotte verifies turbidity at 0.75 with the U-52 Horiba
Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/14/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-03-3

SAMPLERS: Chris Goldsmith & Cory Snyder **DEPTH OF PUMP INTAKE:** 101 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED?OPEN BOREHOLE INTERVAL:** 100-102 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-3-3 **SAMPLE TIME (start/finish):** 1040/1125 **SAMPLE FLOW RATE:** 75 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0900		53.85	80							
0930			80		5.37	0.425	6.85	12.98	286	4.4
0935			80		5.36	0.431	7.00	13.25	290	1.7
0945			80		5.32	0.435	6.73	14.09	303	0.0
0950			80		5.37	0.434	6.55	14.54	306	0.0
0955			80		5.34	0.432	6.25	14.91	309	0.0
1000			75		5.30	0.430	6.30	15.14	312	0.0
1005			75		5.32	0.429	6.18	15.28	313	0.0
1010			75		5.34	0.427	6.12	15.50	315	0.0
1015			75		5.34	0.423	6.25	15.78	317	0.0

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 6 sec, Discharge 14 sec

0940 - Car battery for pump dies, need to jump battery

0955 - Cross check turbidity on Horiba with LaMotte (horiba 0.0 - LaMotte 1.2 NTU)

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/14/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-03-3

SAMPLERS: Chris Goldsmith & Cory Snyder **DEPTH OF PUMP INTAKE:** 101 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED?OPEN BOREHOLE INTERVAL:** 100-102 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-3-3 **SAMPLE TIME (start/finish):** 1040/1125 **SAMPLE FLOW RATE:** 75 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1020			75		5.34	0.422	6.13	15.85	318	0.0
1025			75		5.34	0.423	6.20	15.85	319	0.0
1030			75		5.35	0.422	6.13	16.16	317	0.0
1035			75		5.35	0.421	6.25	16.34	317	0.0

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 6 sec, Discharge 14 sec
1030 - Cross check turbidity on Horiba with LaMotte (horiba 0.0 - LaMotte 1.5 NTU)
Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/14/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-03-4

SAMPLERS: Chris Goldsmith & Cory Snyder **DEPTH OF PUMP INTAKE:** 116 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~55°F **SCREENED?OPEN BOREHOLE INTERVAL:** 115-117 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-3-4 **SAMPLE TIME (start/finish):** 1010/1105 **SAMPLE FLOW RATE:** 80 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-140 **Other (specify):** LaMotte 2020 **Horiba serial #** UM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0900		53.85	80							
0920			80		6.02	0.270	10.69	14.04	151	255
0925			80		5.82	0.274	5.74	13.38	149	205
0930			80		5.81	0.278	5.10	13.03	154	159
0935			80		5.84	0.279	5.15	12.92	153	139
0940			80		5.77	0.281	5.15	12.89	157	135
0945			80		5.82	0.280	5.07	12.98	155	126
0950			80		5.87	0.280	4.93	13.19	153	70
0955			80		5.70	0.280	4.72	13.27	159	75
1000			80		5.72	0.280	4.62	13.31	155	70
1005			80		5.70	0.280	4.61	13.33	153	75

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 6 sec, Discharge - 14 sec
Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/12/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-03-5

SAMPLERS: Chris Goldsmith & Cory Snyder **DEPTH OF PUMP INTAKE:** 131 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~65°F **SCREENED?OPEN BOREHOLE INTERVAL:** 130-132 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-3-5 **SAMPLE TIME (start/finish):** 1530/1635 **SAMPLE FLOW RATE:** 80 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1420			80							
1440			80		5.70	0.212	4.93	18.68	219	4.7
1445			80		5.63	0.207	5.29	18.76	233	5.6
1450			80		5.65	0.206	5.38	18.82	232	4.8
1455			80		5.63	0.203	5.53	18.90	236	3.5
1505			80		5.61	0.202	5.79	18.83	243	3.1
1510			80		5.50	0.202	5.87	19.09	251	3.2
1515			80		5.56	0.201	5.99	19.12	251	2.6
1520			80		5.51	0.201	6.01	19.10	253	2.7
1525			80		5.54	0.201	6.07	19.08	258	2.6

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 6 sec, Discharge - 14 sec

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/16/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-03-6

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 144 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Partly Cloudy ~55°F **SCREENED?OPEN BOREHOLE INTERVAL:** 145-147 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-3-6 **SAMPLE TIME (start/finish):** 0940/1130 **SAMPLE FLOW RATE:** 50 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0815			50							
0850			50		5.46	0.236	9.44	15.22	230	76.6
0855			50		5.56	0.224	8.99	13.41	229	77.5
0900			50		5.56	0.219	9.30	12.99	231	77.8
0905			50		5.41	0.104	8.97	13.02	284	60.1
0910			50		5.69	0.198	9.21	14.77	246	59.2
0915			50		5.68	0.207	9.97	13.35	234	57.8
0920			50		5.65	0.208	10.11	13.30	239	54.3
0925			50		5.68	0.207	10.10	13.21	240	51.7
0930			50		5.69	0.207	10.05	13.24	240	45.9
0935			50		5.63	0.206	10.13	13.32	245	41.1

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 6 sec, Discharge - 24 sec

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/14/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-03-7

SAMPLERS: Chris Goldsmith & Cory Snyder **DEPTH OF PUMP INTAKE:** 162.75 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED?OPEN BOREHOLE INTERVAL:** 1625.5-163 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-3-7 **SAMPLE TIME (start/finish):** 1055/1645 **SAMPLE FLOW RATE:** 40-80 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0855		53.90	80							
0930			80		6.54	0.198	8.02	13.92	94	68.8
0935			80		6.54	0.202	7.62	14.28	90	67.6
0945			40		6.55	0.262	7.42	15.50	81	51.9
0950			40		6.49	0.262	7.82	16.15	77	41.3
0955			40		6.55	0.241	7.68	16.41	73	39.0
1000			60		6.43	0.274	7.58	16.78	54	38.7
1005			50		6.39	0.267	7.54	16.95	39	39.1
1010			50		6.36	0.264	7.26	17.19	31	34.1
1015			50		6.27	0.253	7.37	17.29	25	32.2

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 10 sec, Discharge 20 sec
0940 - No flow, adjust pressure
Drawdown can not be measured due to diameter constraints of CMT channels
Collect sample for VOC, TAL Metals (Tot & Dis), 1, 4 dioxane, Rad (Tot & Dis), and Chloride

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 4/14/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-03-7

SAMPLERS: Chris Goldsmith & Cory Snyder **DEPTH OF PUMP INTAKE:** 162.75 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED?OPEN BOREHOLE INTERVAL:** 1625.5-163 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-3-7 **SAMPLE TIME (start/finish):** 1055/1645 **SAMPLE FLOW RATE:** 40 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1020			40		6.25	0.250	7.02	17.52	23	32.8
1025			40		6.19	0.249	6.66	17.54	22	33.6
1030			40		6.14	0.248	6.56	17.81	22	32.7
1035			40		6.39	0.245	6.40	18.22	22	32.6
1040			40		6.07	0.244	6.07	18.50	23	33.9
1045			40		6.03	0.240	6.13	19.93	19	33.4
1050			40		6.01	0.240	6.07	19.02	18	35.7

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 8 sec, Discharge 22 sec

Drawdown can not be measured due to diameter constraints of CMT channels

Collect sample for VOC, TAL Metals (Tot & Dis), 1, 4 dioxane, Rad (Tot & Dis), and Chloride

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/7/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-04-1

SAMPLERS: Brad Walker **DEPTH OF PUMP INTAKE:** 71 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED?OPEN BOREHOLE INTERVAL:** 71-73 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-04-1 **SAMPLE TIME (start/finish):** 1150/1230 **SAMPLE FLOW RATE:** 95 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-90 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0920		49.40								
1115	1		55		5.63	0.343	15.81	19.89	222	0.0
1120			95		5.60	0.344	8.27	19.12	231	0.0
1125			95		5.57	0.343	7.82	19.00	246	0.0
1130			95		5.58	0.343	7.60	18.94	253	0.0
1135			95		5.58	0.342	7.50	18.89	261	0.0
1140			95		5.58	0.343	7.36	19.12	265	0.0
1145	2		95		5.58	0.343	7.25	19.37	269	0.0

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Pumped well dry after purging ~0.75 gal. Continue to purge and adjust pumping rates.
1055 reset controller to 12 sec fill, 8 sec discharge, 45 psi flow rate 55 ml/min
Drawdown can not be measured due to diameter constraints of CMT channels
Fill - 12 sec, Discharge - 10 sec, 45 psi
sampled for: VOCs, 1,4 Dioxane, TAL Metals (total & disolved), Chloride

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/6/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-04-2

SAMPLERS: Brad walker & Cory Snyder **DEPTH OF PUMP INTAKE:** 86 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~70°F **SCREENED?OPEN BOREHOLE INTERVAL:** 86-88 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-04-2 **SAMPLE TIME (start/finish):** 1310/1420 **SAMPLE FLOW RATE:** 100 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-90 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1040			100							
1100			100		5.00	0.480	8.14	18.14	302	9.1
1120	0.75		45		5.46	0.530	7.35	19.35	253	2.2
1140			45		5.42	0.544	7.31	19.51	276	0.2
1150			45		5.41	0.534	6.95	20.59	276	0.0
1200			45		5.42	0.529	7.09	20.92	276	0.0
1210			45		5.45	0.521	6.91	21.78	272	0.0
1220	1.5		50		5.47	0.522	7.41	22.19	269	4.2
1230			55		5.39	0.510	7.35	22.08	274	0.5
1240			55		5.38	0.518	7.35	21.60	279	0.7

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: 1110 - No Readings. Purged airline and sample line dry. Reset contrpller tp lower pressure and longer recharge phase.
Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/6/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-04-2

SAMPLERS: Brad walker & Cory Snyder **DEPTH OF PUMP INTAKE:** 86 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~70°F **SCREENED?OPEN BOREHOLE INTERVAL:** 86-88 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-04-2 **SAMPLE TIME (start/finish):** 1310/1420 **SAMPLE FLOW RATE:** 100 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-90 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1250	2		55		5.35	0.512	7.18	21.99	285	0.3
1300			55		5.35	0.508	6.97	22.59	286	0.6

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/6/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-04-3

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 100 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~75°F **SCREENED?OPEN BOREHOLE INTERVAL:** 101-103 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-04-3 **SAMPLE TIME (start/finish):** 1610/1715 **SAMPLE FLOW RATE:** 60 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1430		49.35	60							
1455	0.5		60		5.81	0.228	6.87	26.20	165	153
1505	1.1		60		5.76	0.220	6.53	25.71	192	84.1
1515	1.7		60		5.68	0.216	6.74	25.17	217	26.5
1525	2.3		60		5.60	0.217	7.14	24.91	233	35.3
1535	2.9		60		5.61	0.218	7.83	24.58	245	5.3
1545	3.5		60		5.62	0.219	7.93	24.92	250	3.12
1555	4.1		60		5.58	0.221	8.05	24.92	259	1.87
1605	4.7		60		5.61	0.221	7.84	25.05	257	1.22

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 10 sec, Discharge - 50 sec, 45 psi

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/6/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-04-4

SAMPLERS: Brad Walker & Cory Snyder **DEPTH OF PUMP INTAKE:** 116 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: OVercast ~70°F **SCREENED?OPEN BOREHOLE INTERVAL:** 116-118 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-04-4 **SAMPLE TIME (start/finish):** 1135/1230 **SAMPLE FLOW RATE:** 150 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-140 **Other (specify):** LaMotte 2020 **Horiba serial #** UM#

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1040			150							
1100	0.8		150		5.62	0.256	6.59	18.70	161	26.5
1105	1.6		150		5.65	0.248	6.43	18.82	157	4.7
1110	2.4		150		5.72	0.229	6.43	18.85	167	6.6
1115	3.2		150		5.62	0.228	6.66	18.76	175	12.2
1120	4.0		150		5.69	0.224	6.97	18.41	188	5.33
1125	4.8		150		5.70	0.223	6.93	18.56	197	4.60
1130	5.6		150		5.69	0.223	7.04	18.57	205	3.39

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 8 sec, Discharge - 12, 70 psi
well in good condition, both bolts and cap secure
Drawdown can not be measured due to diameter constraints of CMT channels
MS/MSD collected for VOCs

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/7/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-04-5

SAMPLERS: Chris Goldsmith, Brad Walker & Cory Snyder **DEPTH OF PUMP INTAKE:** 130 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~75°F **SCREENED?OPEN BOREHOLE INTERVAL:** 131-133 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-04-5 **SAMPLE TIME (start/finish):** 1045/1140 **SAMPLE FLOW RATE:** 75 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-140 **Other (specify):** LaMotte 2020 **Horiba serial #** 4NK

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0925			75							
0930	0.4		75		5.58	0.240	28.61	20.26	202	56.2
0935	0.8		75		5.72	0.234	19.73	19.06	148	41.7
0940	1.2		75		5.65	0.237	18.27	18.87	147	27.5
0945	1.4		75		5.62	0.241	19.50	18.57	146	25.1
0950	1.8		75		5.54	0.244	19.86	18.50	150	15.2
0955	2.2		75		5.51	0.246	19.81	18.56	152	13.0
1000	2.6		75		5.50	0.248	19.95	18.64	154	10.1
1025	4.6		75		5.60	0.251	8.54	18.05	143	16.0
1030	5.0		75		5.61	0.253	6.82	17.71	144	9.4

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 8 sec, Discharge - 22 sec. 70 psi

Drawdown can not be measured due to diameter constraints of CMT channels

1000 - DO is high. Flow thru cell emptied and allowed to refill. Result was still high DO.

Probably DO sensor malfunction. Swith Horiba at 1025

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/7/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-04-5

SAMPLERS: Chris Goldsmith, Brad Walker & Cory Snyder **DEPTH OF PUMP INTAKE:** 130 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~75°F **SCREENED?OPEN BOREHOLE INTERVAL:** 131-133 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-04-5 **SAMPLE TIME (start/finish):** 1045/1140 **SAMPLE FLOW RATE:** 75 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-140 **Other (specify):** LaMotte 2020 **Horiba serial #** UM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1035	5.4		75		5.60	0.253	6.73	17.79	147	6.9
1040	5.8		75		5.57	0.253	6.69	17.99	149	7.3

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 8 sec, Discharge - 22 sec. 70 psi
Drawdown can not be measured due to diameter constraints of CMT channels
1000 - DO is high. Flow thru cell emptied and allowed to refill. Result was still high DO.
Probably DO sensor malfunction. Swith Horiba at 1025

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/7/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-04-6

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 145 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~75°F **SCREENED?OPEN BOREHOLE INTERVAL:** 146-148 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-04-6 **SAMPLE TIME (start/finish):** 1040/1140 **SAMPLE FLOW RATE:** 60 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0900		49.55	60							
0925	2		60		5.35	0.256	15.69	21.66	165	232
0935	2.6		60		5.78	0.247	12.89	20.51	159	201
0945	3.2		60		5.68	0.291	12.31	20.55	187	143
0955	3.8		60		5.57	0.335	11.92	20.67	211	81.4
1005	4.4		60		5.50	0.356	11.76	20.55	225	71.6
1015	5.0		60		5.40	0.369	11.84	20.17	236	40.6
1025	5.6		60		5.40	0.374	12.37	20.16	244	41.1
1035	6.2		60		5.39	0.375	12.12	20.04	251	48.3

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: DTB - 147.62

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/10/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-04-7

SAMPLERS: Chris Goldsmith & Cory Snyder **DEPTH OF PUMP INTAKE:** 160 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~50°F **SCREENED?OPEN BOREHOLE INTERVAL:** 162.5-163 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-04-7 **SAMPLE TIME (start/finish):** 1050/1320 **SAMPLE FLOW RATE:** 80 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-240 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0850		49.45								
0920	2.0		75		5.78	0.329	7.91	15.41	187	430
09250	2.3		75		5.73	0.329	8.00	15.37	194	395
0930	2.6		75		5.65	0.331	7.85	15.44	206	227
0935	2.9		75		5.64	0.330	7.79	15.38	212	161
0940	3.2		75		5.63	0.331	7.65	15.44	216	152
0945	3.5		60		5.62	0.331	7.83	15.39	221	113
0955	4.1		75		5.60	0.333	7.55	15.61	230	68.8
1000	4.4		75		5.56	0.333	7.60	15.55	231	64.7
1005	4.7		75		5.59	0.333	7.59	15.51	233	73.0

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 8 sec, Discharge - 22 sec, 70 psi
0955 adjust flow rate and pressure
Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/10/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-04-7

SAMPLERS: Chris Goldsmith & Cory Snyder **DEPTH OF PUMP INTAKE:** 160 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~50°F **SCREENED?OPEN BOREHOLE INTERVAL:** 162.5-163 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-04-7 **SAMPLE TIME (start/finish):** 1050/1320 **SAMPLE FLOW RATE:** 80 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-240 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1010	5.0		75		5.59	0.334	7.56	15.53	234	39.5
1015	5.3		75		5.59	0.335	7.71	15.46	237	39.8
1020	5.6		75		5.59	0.336	7.80	15.55	240	30.5
1025	5.9		75		5.60	0.337	7.53	15.57	242	20.7
1030	6.2		75		5.59	0.337	7.63	15.53	243	18.0
1035	6.5		75		5.57	0.337	7.67	15.53	245	16.7

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 8 sec, Discharge - 22 sec, 70 psi

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/12/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-05-1

SAMPLERS: B. Walker, C. Snyder **DEPTH OF PUMP INTAKE:** 68 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Rain ~50°F **SCREENED?OPEN BOREHOLE INTERVAL:** 68.5-70.5 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-05-1 **SAMPLE TIME (start/finish):** **SAMPLE FLOW RATE:** ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-90 switch to MDVP-140 **Other (specify):** LaMotte 2020 **Horiba serial #** 4NK

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0900	Set up pump and purging at 4 CPM, Fill - 10 sec, Discharge - 5 sec, 35 psi. No flow at these settings. Increase pressure to 45 psi, 10 sec fill, 20 sec discharge. Water comes up tube during discharge, but then all of it falls back down sample line during recharge cycle. Increased discharge to 30 sec and pumped well dry after two cycles.									
1015	Pull pump and flush out with distilled water. Needle valve moved slowly at first. Freewd up needle valve after several rinses from squirt bottle of distilled water. Reinstalled puump and resumed purging. Could not maintain water in discharge line during recharge cycle. Needle valve is not seating properly. Pull pump fpr second									
1100	pull pump for second time after purging ~0.75 gallons.									
1430	Resume purging with different pump (MPVP-140) and establish flow rate.									
1450			70		6.17	0.158	10.44	12.49	125	15.2
1500			70		6.04	0.167	6.92	11.70	190	1.9
1505			70		5.94	0.170	7.29	11.43	201	0.0
1510			70		5.98	0.171	7.02	11.23	203	0.0

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 15 sec, Discharge - 15 sec, 2 CPM, 40 psi
Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/12/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-05-1

SAMPLERS: B. Walker, C. Snyder **DEPTH OF PUMP INTAKE:** 68 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Rain ~50°F **SCREENED?OPEN BOREHOLE INTERVAL:** 68.5-70.5 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-05-1 **SAMPLE TIME (start/finish):** **SAMPLE FLOW RATE:** ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-90 switch to MDVP-140 **Other (specify):** LaMotte 2020 **Horiba serial #** 4NK

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1515			70		5.94	0.172	7.17	11.04	204	0.0
1520			70		5.79	0.173	7.20	10.90	213	0.0
1525			70		5.74	0.173	7.24	10.96	210	0.0
1530			70		5.92	0.173	7.02	10.89	211	0.0
1535			70		5.75	0.173	7.39	10.92	226	0.0
1540			70		5.94	0.172	7.14	11.09	222	0.0
1545			70		5.90	0.173	7.41	11.14	232	0.0
1550			70		5.85	0.173	7.05	11.16	235	0.0
1555			70		5.92	0.172	7.21	11.15	231	0.0

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/5/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-05-2

SAMPLERS: Brad Walker & Cory Snyder **DEPTH OF PUMP INTAKE:** 90 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~80°F **SCREENED?OPEN BOREHOLE INTERVAL:** 93-95 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-05-2 **SAMPLE TIME (start/finish):** 1540/1620 **SAMPLE FLOW RATE:** 100 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-90 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1430			100							
1445			100		6.25	0.271	8.76	21.47	178	14.5
1450			100		6.12	0.268	7.90	20.72	191	18.3
1455	0.5		100		5.89	0.288	11.24	18.55	211	15.4
1500			100		5.75	0.311	12.92	17.68	220	11.9
1505	1.0		100		5.70	0.317	13.18	17.74	220	11.1
1510			100		5.71	0.319	13.25	18.14	217	8.7
1515			100		5.71	0.322	13.48	18.01	216	8.1
1520			100		5.65	0.325	13.84	17.87	217	6.6
1525	2.0		100		5.64	0.326	13.67	17.76	217	5.8
1530			100		5.63	0.327	14.34	17.29	217	5.1

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 8 sec, Discharge - 12 sec, 3 CPM, 50 psi
Sampled for VOCs, 1,4 Dioxane, Chloride, TAL Metals (total & disolved)
Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/4/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-05-3

SAMPLERS: B. Walker, C. Snyder **DEPTH OF PUMP INTAKE:** 118 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny, Breezy, ~80°F **SCREENED?OPEN BOREHOLE INTERVAL:** 118.5-120.5 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-05-3 **SAMPLE TIME (start/finish):** 1610/1650 **SAMPLE FLOW RATE:** 70 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** 4NK

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1430		51.85	70							
1500	.35		70		6.10	0.351	10.08	23.90	0	256
1505	.70		70		5.98	0.381	10.86	22.95	18	236
1510	1.0		70		5.80	0.430	12.00	22.84	69	215
1515	1.4		70		5.67	0.458	12.65	22.26	106	141
1520	1.7		70		5.50	0.472	12.93	22.70	135	121
1525	2.1		70		5.45	0.484	12.79	22.31	151	83.3
1530	2.3		70		5.47	0.494	13.20	21.89	159	75.7
1535	2.7		70		5.55	0.502	13.45	21.97	160	65.9
1540	3.0		70		5.39	0.511	14.87	21.57	174	27.1

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: PID = 0.0 ppm

Both bolts missing from flushmount cover, well cap secure.

Drawdown can not be measured due to diameter constraints of CMT channels

Total Depth - 119.9 ft TIC

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/4/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-05-3

SAMPLERS: B. Walker, C. Snyder **DEPTH OF PUMP INTAKE:** 118 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny, Breezy, ~80°F **SCREENED?OPEN BOREHOLE INTERVAL:** 118.5-120.5 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-05-3 **SAMPLE TIME (start/finish):** 1610/1650 **SAMPLE FLOW RATE:** 70 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** 4NK

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1545	3.4		70		5.41	0.513	14.18	21.60	176	34.7
1550	3.8		70		5.39	0.515	13.69	21.82	183	30.0
155	4.1		70		5.38	0.516	13.82	21.98	186	24.6
1600	4.5		70		5.37	0.517	13.77	21.84	189	23.3
1605	4.8		70		5.37	0.517	13.55	22.07	191	24.2

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/5/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-05-4

SAMPLERS: Brad Walker, Cory Snyder **DEPTH OF PUMP INTAKE:** 140 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~75°F **SCREENED?OPEN BOREHOLE INTERVAL:** 143-145 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-05-4 **SAMPLE TIME (start/finish):** 1130-1245 **SAMPLE FLOW RATE:** 105 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-140 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1015		51.90	105							
1020	0.5		105		5.59	0.214	5.86	19.30	56	484
1025	1.0		105		5.88	0.180	4.04	18.26	52	460
1030	1.5		105		5.93	0.149	3.45	17.73	73	465
1035	2.0		105		5.97	0.133	3.78	17.50	89	376
1040	2.5		105		5.90	0.124	3.71	17.26	107	247
1045	3.0		105		5.91	0.116	3.73	17.21	115	157
1050	3.5		105		5.91	0.11	4.16	17.02	127	101
1055	4.0		105		5.88	0.108	4.34	16.99	136	71.7
1100	4.5		105		5.93	0.106	4.64	17.01	140	58.3

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill 10 sec, Discharge 10 sec, at 70 psi
Bolts missing to flushmount cover, wells riser bent, cap is present
Drawdown can not be measured due to diameter constraints of CMT channels
Duplicate sample collected (DUPL-6)

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/5/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-05-4

SAMPLERS: Brad Walker, Cory Snyder **DEPTH OF PUMP INTAKE:** 140 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~75°F **SCREENED?OPEN BOREHOLE INTERVAL:** 143-145 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-05-4 **SAMPLE TIME (start/finish):** 1130-1245 **SAMPLE FLOW RATE:** 105 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-140 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1105	5.0		105		5.85	0.104	4.81	17.52	147	55.0
1110	5.5		105		5.88	0.103	5.11	18.23	145	42.6
1115	6.0		105		5.88	0.104	4.99	17.85	148	37.4
1120	6.5		105		5.91	0.103	5.07	17.75	146	37.7

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Duplicate sample collected (DUPL-6)

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/5/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-05-5

SAMPLERS: Chris Goldsmith & Clayton Hofer **DEPTH OF PUMP INTAKE:** 166 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~80°F **SCREENED?OPEN BOREHOLE INTERVAL:** 169-167 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-05-5 **SAMPLE TIME (start/finish):** 1705/1745 **SAMPLE FLOW RATE:** 75 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** UM#

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1515			75							
1530	0.5		75		6.26	0.268	6.25	28.74	-36	>800
1540	1.25		75		5.79	0.241	4.96	25.68	47	>800
1550	2.0		75		5.61	0.257	4.97	24.77	93	>800
1600	2.75		75		5.30	0.316	12.21	21.91	182	96.1
1610	3.50		75		5.39	0.319	13.13	22.68	186	69.2
1620	4.25		75		5.34	0.321	13.20	23.31	201	38.9
1630	5.0		75		5.21	0.330	13.49	23.48	216	30.3
1640	5.75		75		5.22	0.333	14.57	23.62	224	27.7
1650	6.50		75		5.22	0.334	15.20	23.54	227	28.5
1700	7.25		75		5.16	0.334	14.72	23.48	234	26.8

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: After 1550 reading switch horiba units.
Fill - 15 sec, Discharge 45 sec, 80 psi
Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/12/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-05-6

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 191 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Light Rain ~50°F **SCREENED?OPEN BOREHOLE INTERVAL:** 193.5-195.5 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-05-6 **SAMPLE TIME (start/finish):** 1100/1155 **SAMPLE FLOW RATE:** 75 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0910		52.10	75							
0930	2		75		4.85	0.100	5.83	18.91	240	>800
0935	2.35		75		5.25	0.091	4.83	17.88	166	>800
0940	2.7		75		5.28	0.090	4.80	16.84	150	>800
0945	3.15		75		5.24	0.089	4.87	16.02	126	>800
0950	3.5		75		5.25	0.090	4.95	15.54	112	>800
0955	3.85		75		5.21	0.088	5.04	15.02	105	>800
1000	4.2		75		5.24	0.087	5.23	14.60	98	>800
1005	4.55		75		5.18	0.085	5.39	14.32	102	>800
1010	4.9		75		5.20	0.082	6.31	13.87	115	>800

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: DTB - 194.2

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/12/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-05-6

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 191 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Light Rain ~50°F **SCREENED?OPEN BOREHOLE INTERVAL:** 193.5-195.5 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-05-6 **SAMPLE TIME (start/finish):** 1100/1155 **SAMPLE FLOW RATE:** 75 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1015	5.25		75		5.18	0.082	6.16	13.82	114	>800
1020	5.6		75		5.17	0.080	6.28	13.48	115	>800
1025	5.95		75		5.17	0.080	6.44	13.20	116	>800
1030	6.30		75		5.15	0.080	6.58	13.10	115	>800
1035	6.65		75		5.08	0.057	9.43	12.96	111	>800
1040	7.0		75		5.16	0.079	7.18	12.81	119	>800
1045	7.35		75		5.14	0.078	7.43	12.66	118	>800
1050	7.70		75		5.14	0.077	7.42	12.56	115	>800
1055	8.05		75		5.15	0.077	7.43	12.52	114	>800

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 10, Discharge - 50 sec, 90 psi

Apperance of sample at collection time was a dark gray. Turbidity never dropped below >800 NTU

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/6/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-05-7

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 217 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED?OPEN BOREHOLE INTERVAL:** 220.5-221 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-05-7 **SAMPLE TIME (start/finish):** 1135/1335 **SAMPLE FLOW RATE:** 80 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-240 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0920		52.85	100							
0930	1		100		6.34	0.443	18.65	20.48	9	373
0940	2		100		6.57	0.400	6.39	19.62	-20	367
0950	3		100		5.99	0.369	4.95	19.91	68	363
1000	4		100		5.84	0.358	5.21	19.81	95	350
1010	5		100		5.69	0.351	6.31	20.43	124	>800
1020	6		100		5.64	0.347	6.46	20.40	135	>800
1030	7		100		5.61	0.345	6.72	20.38	143	>800
1040	8		100		5.56	0.342	6.72	20.38	154	643
1050	9		100		5.53	0.341	6.89	20.20	158	539
1100	10		100		5.50	0.337	7.08	19.91	167	396

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 10 sec, Discharge - 30 sec, 90 psi
DTB = 219
Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/6/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-05-7

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 217 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED?OPEN BOREHOLE INTERVAL:** 220.5-221 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-05-7 **SAMPLE TIME (start/finish):** 1135/1335 **SAMPLE FLOW RATE:** 80 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-240 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1110	11		100		5.47	0.334	7.08	20.65	173	178
1120	12		100		5.46	0.332	6.83	20.51	177	142
1130	13		100		5.45	0.334	7.13	20.74	183	138

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/22/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-06-2

SAMPLERS: Chris Goldsmith, Brad walker & Cory Snyder **DEPTH OF PUMP INTAKE:** 90 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED?OPEN BOREHOLE INTERVAL:** 90-92 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-06-2 **SAMPLE TIME (start/finish):** 0930/1007 **SAMPLE FLOW RATE:** 120 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-90 **Other (specify):** LaMotte 2020 **Horiba serial #** 4NK

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0845		51.56	120							
0850	0.6		120		5.22	0.361	6.38	16.35	181	4.9
0853	1.0		120		5.22	0.361	6.11	16.34	186	4.3
0856	1.4		120		5.22	0.364	5.93	16.21	200	3.3
0859	1.8		120		5.22	0.365	5.87	16.11	210	2.9
0902	2.2		120		5.23	0.367	5.92	16.00	218	2.7
0908	3.0		120		5.24	0.370	6.00	15.78	227	2.7
0912	3.4		120		5.22	0.367	5.81	16.03	232	2.0
0915	3.8		120		5.25	0.366	5.80	16.12	234	2.1
0918	4.2		120		5.23	0.364	5.70	16.18	239	2.0

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill 10 sec, Discharge - 10 sec, 50 psi
Well in good condition - flushmount has both bolts and well has cap with tether
Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/22/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-06-2

SAMPLERS: Chris Goldsmith, Brad walker & Cory Snyder **DEPTH OF PUMP INTAKE:** 90 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Overcast ~70°F **SCREENED?OPEN BOREHOLE INTERVAL:** 90-92 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-06-2 **SAMPLE TIME (start/finish):** 0930/1007 **SAMPLE FLOW RATE:** 120 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-90 **Other (specify):** LaMotte 2020 **Horiba serial #** 4NK

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0921	4.6		120		5.25	0.364	5.73	16.22	240	1.8
0924	5.0		120		5.24	0.363	5.67	16.26	243	1.8
0927	5.4		120		5.25	0.363	5.69	16.23	244	1.8

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill 10 sec, Discharge - 10 sec, 50 psi

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/23/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-06-3

SAMPLERS: Chris Goldsmith & Cory Snyder **DEPTH OF PUMP INTAKE:** 118 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~58°F **SCREENED?OPEN BOREHOLE INTERVAL:** 118-120 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-06-7 **SAMPLE TIME (start/finish):** 1525/1610 **SAMPLE FLOW RATE:** 90 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-240 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1300			90							
1330			90		5.63	0.243	4.45	20.62	196	262
1340			90		5.51	0.250	4.34	19.76	212	109
1350			90		5.45	0.252	4.65	19.57	223	65.3
1400			90		5.41	0.255	4.80	19.47	233	45.8
1410			90		5.36	0.255	4.89	19.67	243	28
1420			90		5.37	0.254	4.90	19.80	247	19.9
1430			90		5.35	0.255	5.08	19.53	253	18.9
1440			90		5.35	0.254	5.19	19.68	257	15.2
1450			90		5.35	0.257	5.24	19.30	261	14.9

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Sample analyzed for: VOCs, 1,4 Dioxane, Chloride, TAL Metals (total & disolved)

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/23/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-06-3

SAMPLERS: Chris Goldsmith & Cory Snyder **DEPTH OF PUMP INTAKE:** 118 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~58°F **SCREENED?OPEN BOREHOLE INTERVAL:** 118-120 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-06-7 **SAMPLE TIME (start/finish):** 1525/1610 **SAMPLE FLOW RATE:** 90 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-240 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1500	3		90		5.28	0.260	5.31	18.86	268	11.6
1510			90		5.28	0.260	5.43	18.95	270	9.6
1520			90		5.26	0.260	5.66	19.02	274	8.2

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Sample analyzed for: VOCs, 1,4 Dioxane, Chloride, TAL Metals (total & disolved)

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/22/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-06-4

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 140 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Partly Cloudy ~70°F **SCREENED?OPEN BOREHOLE INTERVAL:** 150-152 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-06-4 **SAMPLE TIME (start/finish):** 1015/1055 **SAMPLE FLOW RATE:** _____ ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** _____ **Horiba Model #** U-52

Pump #: MDVP-140 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0840		51.58	100							
0855	2		100		5.50	0.250	4.00	18.39	152	306
0900	2.5		100		5.57	0.246	3.43	18.11	126	278
0905	3		100		5.51	0.251	3.66	17.57	153	224
0910	3.5		100		5.42	0.256	4.05	17.27	183	209
0915	4		100		5.38	0.257	4.31	17.21	198	211
0920	4.5		100		5.31	0.262	4.76	16.28	214	187
0925	5		100		5.31	0.256	4.73	17.18	219	186
0930	5.5		100		5.28	0.255	4.62	17.53	226	159
0935	6		100		5.28	0.254	4.76	17.79	233	158

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 5 sec, Discharge - 25 sec

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/22/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-06-4

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 140 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Partly Cloudy ~70°F **SCREENED?OPEN BOREHOLE INTERVAL:** 150-152 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-06-4 **SAMPLE TIME (start/finish):** 1015/1055 **SAMPLE FLOW RATE:** _____ ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** _____ **Horiba Model #** U-52

Pump #: MDVP-140 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0940	6.5		100		5.26	0.252	4.76	18.04	239	138
0945	7		100		5.27	0.250	4.75	18.16	241	127
0950	7.5		100		5.27	0.248	4.78	18.37	243	133
0955	8		100		5.27	0.249	4.88	18.48	247	75
1000	8.5		100		5.25	0.249	5.06	18.41	250	60
1005	9		100		5.26	0.246	4.97	14.44	251	50
1010	9.5		100		5.26	0.246	5.08	18.53	253	45

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 5 sec, Discharge - 25 sec

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/23/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-06-5

SAMPLERS: Brad Walker & Cory Snyder **DEPTH OF PUMP INTAKE:** 166 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~58°F **SCREENED?OPEN BOREHOLE INTERVAL:** 166-168 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-06-5 **SAMPLE TIME (start/finish):** 1200/1300 **SAMPLE FLOW RATE:** 90 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-240 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0850		51.58	90							
0940			90		6.10	0.247	3.50	18.90	36	87.4
0950			90		5.94	0.241	3.41	19.58	62	88.7
1000			90		5.75	0.231	3.30	20.62	83	95.6
1010			90		5.68	0.230	3.45	21.06	98	87.2
1020			90		5.63	0.232	3.97	21.33	107	85.0
1030	1.8		90		5.53	0.230	4.09	21.60	118	81.4
1040			90		5.61	0.227	4.36	21.82	112	69.1
1050			90		5.61	0.227	4.52	21.57	119	62.4
1100			90		5.58	0.229	4.84	20.76	122	52.1

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 15 sec, Discharge - 45 sec, 90 psi

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/23/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-06-5

SAMPLERS: Brad Walker & Cory Snyder **DEPTH OF PUMP INTAKE:** 166 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~58°F **SCREENED?OPEN BOREHOLE INTERVAL:** 166-168 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-06-5 **SAMPLE TIME (start/finish):** 1200/1300 **SAMPLE FLOW RATE:** 90 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-240 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1110			90		5.46	0.229	4.81	20.76	129	49.2
1120			90		5.49	0.231	5.04	20.66	128	46.4
1130			90		5.55	0.232	5.25	20.47	127	42.7
1140			90		5.45	0.233	5.32	20.99	135	40.2
1145	3.5		90		5.47	0.235	5.36	21.19	136	36.2

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Sample analyzed for: VOCs, 1,4 Dioxane, Chloride, TAL Metals (total & disolved)

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/22/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-06-6

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 179 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~70°F **SCREENED?OPEN BOREHOLE INTERVAL:** 180-182 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-06-6 **SAMPLE TIME (start/finish):** 1440/1530 **SAMPLE FLOW RATE:** 100 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-240 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**^{c}/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1305			100							
1325	2		100		6.19	0.286	5.72	22.57	14	142
1330	2.5		100		6.14	0.283	5.31	22.75	19	133
1335	3		100		6.09	0.285	5.56	21.65	33	128
1340	3.5		100		6.04	0.286	5.34	21.48	47	110
1345	4		100		5.99	0.283	5.24	21.54	61	102
1350	4.5		100		5.95	0.284	5.50	21.40	72	97.7
1355	5		100		5.91	0.283	5.56	21.34	81	91.8
1400	5.5		100		5.88	0.282	5.67	21.22	91	85.4
1405	6		100		5.85	0.283	5.86	20.97	98	87.3

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 15 sec, Discharge - 45 sec, 95 psi

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/22/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-06-6

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 179 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~70°F **SCREENED?OPEN BOREHOLE INTERVAL:** 180-182 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-06-6 **SAMPLE TIME (start/finish):** 1440/1530 **SAMPLE FLOW RATE:** 100 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-240 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1410	6.5		100		5.84	0.283	6.03	21.07	102	85.7
1415	7		100		5.82	0.284	6.13	21.04	105	84.2
1420	7.5		100		5.81	0.281	6.38	21.02	109	45
1425	8		100		5.79	0.281	6.20	21.14	112	39
1430	8.5		100		5.78	0.281	6.20	21.14	115	36
1435	9		100		5.77	0.281	6.29	21.04	117	38

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 15 sec, Discharge - 45 sec, 95 psi

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/22/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-06-7

SAMPLERS: B. Walker **DEPTH OF PUMP INTAKE:** 220 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~60°F **SCREENED?OPEN BOREHOLE INTERVAL:** 221.5-222 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-06-7 **SAMPLE TIME (start/finish):** 1025/1150 **SAMPLE FLOW RATE:** 100 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-240 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0830		52.40								
0900	0.5		55		5.91	0.452	5.78	16.63	21	800
0905			95		5.62	0.428	4.26	16.33	43	800
0910			100		6.08	0.392	3.70	16.24	25	950
0915			100		6.00	0.366	3.57	16.27	37	800
0920			100		5.95	0.351	3.55	16.37	47	700
0925			100		5.89	0.341	3.80	16.23	56	650
0940			100		5.88	0.332	5.06	16.84	71	641
0945	2		100		5.83	0.324	4.93	16.89	77	552
0950			100		5.82	0.321	4.79	17.05	81	506

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: DTB-221.23
Fill - 15 sec, Discharge - 45 sec, 120 psi
Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/22/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-06-7

SAMPLERS: B. Walker **DEPTH OF PUMP INTAKE:** 220 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Cloudy ~60°F **SCREENED?OPEN BOREHOLE INTERVAL:** 221.5-222 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-06-7 **SAMPLE TIME (start/finish):** 1025/1150 **SAMPLE FLOW RATE:** 100 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-240 **Other (specify):** LaMotte 2020 **Horiba serial #**

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0955			100		5.82	0.313	4.95	17.03	86	451
1000			100		5.79	0.312	4.95	17.16	88	429
1005			100		5.80	0.308	4.96	17.27	91	374
1010			100		5.81	0.304	4.92	17.72	95	332
1015			100		5.91	0.308	5.03	17.72	87	335
1020	3		100		5.90	0.308	5.14	17.93	90	315

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: DTB-221.23

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/11/2010-5/12/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-07-1

SAMPLERS: Brad Walker **DEPTH OF PUMP INTAKE:** 70 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~50°F **SCREENED?OPEN BOREHOLE INTERVAL:** 70-72 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-07-1 **SAMPLE TIME (start/finish):** 1355-1430 **SAMPLE FLOW RATE:** ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-90 **Other (specify):** LaMotte 2020 **Horiba serial #** 4NK

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0940		48.39								
1058			50		5.41	0.348	8.25	16.65	29	5.8
1105			50		5.85	0.342	4.64	16.33	-3	12.7
1115			50		5.75	0.335	3.89	16.69	6	24.3
1125			50		5.54	0.165	4.30	17.53	17	10.8
1225			50		6.00	0.323	3.68	19.99	9	12.3
1235	1		50		5.91	0.327	3.63	19.48	16	13.6
1245			50		5.87	0.333	3.75	18.68	20	9.9
1255	1.5		50		5.78	0.333	3.72	18.60	29	3.72
1305			50		5.66	0.000	7.62	20.08	-28	90.8

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 35 sec, Discharge - 20 sec, 45 psi
1130 - Lost flow, not refreshing flow thru cell. Reset controller to 35 psi,
Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/11/2010-5/12/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-07-1

SAMPLERS: Brad Walker **DEPTH OF PUMP INTAKE:** 70 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~50°F **SCREENED?OPEN BOREHOLE INTERVAL:** 70-72 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-07-1 **SAMPLE TIME (start/finish):** 1355-1430 **SAMPLE FLOW RATE:** ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-90 switch to MDVP-140 **Other (specify):** LaMotte 2020 **Horiba serial #** 4NK

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1310	Lost flow again. Adjust flow times and pressure, but could not maintain flow.									
1420	Pull pump and flush out with distilled water from squirt bottle. Reinstalled pump. Could not maintain water in sample line. Called Solinist for tech Support. Solinst said it sounded the the needle valve is not seating properly. Suggest pulling pump and flushing with distilled water. Pulled pump a second time. Flushed with distilled water from peristaltic pump. Verified that the needle valve moves. It was stuck when initially tried pumping (pushing) water through it.									
5/12/10	Continue purging with different pump. 0930 start purging.									
0940	0.6		60		5.77	0.327	5.40	9.59	53	89.4
0945	0.9		60		5.69	0.332	3.56	9.67	57	91.8
*0952	1.3		60		5.73	0.343	2.73	9.78	55	10.6
0959	1.7		60		5.75	0.344	2.67	9.78	54	10.1
1006	2.1		60		5.74.	0.348	2.51	9.74	56	0.0
1013	2.5		60		5.75	0.349	2.56	9.73	57	0.0
1020	2.9		70		5.78	0.350	2.50	9.73	56	0.0

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Fill - 12 sec, Discharge - 12 sec, 40 psi

*Switch to 7 min intervals to ensure that full vol. of flow thru cell is replaced between measurements.

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/10/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-07-2

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 90 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny, Windy ~55°F **SCREENED?OPEN BOREHOLE INTERVAL:** 94-96 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-07-2 **SAMPLE TIME (start/finish):** 1525/1555 **SAMPLE FLOW RATE:** 80 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-140 **Other (specify):** LaMotte 2020 **Horiba serial #** UM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1355		48.45	80							
1430	2		80		5.73	0.178	12.21	15.99	128	0.3
1435	2.4		80		5.69	0.178	11.32	16.14	96	8.46
1440	2.8		80		5.68	0.178	10.69	16.26	90	0.71
1445	3.2		80		5.74	0.178	10.58	16.35	85	1.08
1450	3.6		80		5.69	0.179	12.32	16.70	104	0.63
1455	4.0		80		5.72	0.177	12.82	16.65	91	0.52
1500	4.4		80		5.71	0.176	11.50	16.13	90	0.34
1505	4.8		80		5.68	0.177	11.40	16.47	98	0.37
1510	5.2		80		5.68	0.176	11.23	16.23	109	0.50
1515	5.6		80		5.71	0.177	11.13	16.13	110	0.61
1520	6.0		80		5.68	0.177	11.04	16.27	112	0.59

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: DTB - 95.8, Fill - 25 sec, Discharge - 35 sec, 50 psi
Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/10/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-07-3

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 118 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny, Windy ~55°F **SCREENED?OPEN BOREHOLE INTERVAL:** 119-121 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-07-3 **SAMPLE TIME (start/finish):** 1040/1120 **SAMPLE FLOW RATE:** 100 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-140 **Other (specify):** LaMotte 2020 **Horiba serial #** UM3

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0935		48.45	100							
0950	1.5		100		5.69	0.225	12.65	14.54	45	27.1
0955	2		100		5.58	0.222	8.93	14.35	42	13.3
1000	2.5		100		5.51	0.220	9.28	14.10	60	16.3
1005	3		100		5.42	0.221	9.54	14.20	82	14.4
1010	3.5		100		5.38	0.218	9.55	14.64	100	10.3
1015	4		100		5.33	0.218	9.76	14.53	115	8.0
1020	4.5		100		5.27	0.219	9.96	14.46	146	15.4
1025	5		100		5.16	0.221	10.03	14.43	159	16.6
1030	5.5		100		5.09	0.220	10.13	14.47	163	16.4
1035	6		100		5.03	0.221	10.17	14.51	172	15.8

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: DTB - 121

Fill - 5 sec, Discharge - 25 sec, 55 psi

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/11/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-07-4

SAMPLERS: Cory Snyder **DEPTH OF PUMP INTAKE:** 140 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Overcast ~70°F **SCREENED?OPEN BOREHOLE INTERVAL:** 145-147 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-07-4 **SAMPLE TIME (start/finish):** 1355-1430 **SAMPLE FLOW RATE:** 125 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-140 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1255										
1300	0.6		125		6.35	0.206	6.05	19.38	14	145
1305	1.2		125		6.08	0.183	4.36	18.60	58	141
1310	1.8		125		5.87	0.180	5.02	17.90	90	139
1315	2.4		125		5.70	0.183	6.09	17.26	121	110
1320	3.0		125		5.62	0.183	6.45	17.00	130	104
1325	3.6		125		5.55	0.184	7.04	16.74	145	82.4
1330	4.2		125		5.51	0.185	7.30	16.63	160	44.8
1335	4.8		125		5.49	0.185	7.38	16.45	170	38.7
1340	5.4		125		5.43	0.186	7.58	16.38	186	40.9

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: DTB - 145.70 TIC, Fill - 10 sec, Discharge -20 sec, 75 psi
Missing 1 bolt, well cap secure, well in good condition
Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/11/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-07-4

SAMPLERS: Cory Snyder **DEPTH OF PUMP INTAKE:** 140 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Overcast ~70°F **SCREENED?OPEN BOREHOLE INTERVAL:** 145-147 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-07-4 **SAMPLE TIME (start/finish):** 1355-1430 **SAMPLE FLOW RATE:** 125 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-140 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / **liters** (circle one)	**ft TIC** / ft BGS (circle one)	Units: ml/min	**ft TIC** / ft BGS (circle one)	SU	S/cm, **mS/cm**°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1345	6.0		125	5.49	5.49	0.186	7.57	16.32	189	36.7
1350	6.6		125		5.43	0.186	7.67	16.26	194	33.7

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes:

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/12/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-07-5

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 171 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Light Rain ~50°F **SCREENED?OPEN BOREHOLE INTERVAL:** 170-172 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-07-5 **SAMPLE TIME (start/finish):** 1610/1645 **SAMPLE FLOW RATE:** ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-240 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm[c]/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1450		48.50	80							
1515	2		80		5.90	0.177	9.01	11.38	140	332
1520	2.4		80		5.84	0.183	7.09	10.99	149	341
1525	2.8		80		5.79	0.185	6.62	10.86	117	117
1530	3.2		80		5.74	0.187	6.57	10.84	174	67.1
1535	3.6		80		5.74	0.191	6.81	10.81	188	58.7
1540	4.0		80		5.69	0.194	6.81	10.74	205	25.7
1545	4.4		80		5.64	0.199	7.27	10.82	219	15.8
1550	4.8		80		5.61	0.203	7.86	10.82	228	7.9
1555	5.2		80		5.57	0.206	8.00	11.00	238	11.5
1600	5.6		80		5.55	0.209	8.25	11.05	245	0.3
1605	6.0		80		5.54	0.209	8.38	11.08	247	0.6

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: Drawdown can not be measured due to diameter constraints of CMT channels

DTB = 170.8, Fill - 10 sec, Discharge - 50 sec, 80 psi

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/13/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-07-6

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 193 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED?OPEN BOREHOLE INTERVAL:** 197-199 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-07-6 **SAMPLE TIME (start/finish):** 1045/1155 **SAMPLE FLOW RATE:** 80 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-240 **Other (specify):** LaMotte 2020 **Horiba serial #** 4NK

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0915		48.9	80							
0930	1.2		80		6.46	0.259	5.32	16.51	-3	507
0935	1.6		80		6.37	0.262	4.85	16.16	6	418
0940	2.0		80		6.34	0.264	5.03	16.19	12	298
0945	2.4		80		6.33	0.266	5.02	16.21	17	233
0950	2.8		80		6.18	0.273	4.77	16.01	37	206
0955	3.2		80		6.13	0.277	5.38	16.07	47	157
1000	3.6		80		6.08	0.281	5.43	16.06	57	120
1005	4.0		80		6.08	0.284	5.80	16.25	62	88.0
1010	4.4		80		6.03	0.288	5.97	16.35	73	88.3

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: DTB - 195.8
Fill - 10 sec, Discharge - 50 sec, 90 psi
Drawdown can not be measured due to diameter constraints of CMT channels
DUPL-7 and MS/MSD collected

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/13/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-07-6

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 193 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Sunny ~60°F **SCREENED?OPEN BOREHOLE INTERVAL:** 197-199 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-07-6 **SAMPLE TIME (start/finish):** 1045/1155 **SAMPLE FLOW RATE:** 80 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-240 **Other (specify):** LaMotte 2020 **Horiba serial #** 4NK

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm / or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1015	4.8		80		5.92	0.291	5.99	16.40	87	72.8
1020	5.2		80		5.81	0.294	6.08	16.44	102	61.0
1025	5.6		80		5.83	0.295	6.49	16.49	107	39.4
1030	6.0		80		5.85	0.295	6.75	16.77	110	23.4
1035	6.4		80		5.84	0.296	6.92	16.91	115	12.1
1040	6.8		80		5.78	0.297	6.71	16.99	121	5.6

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: DTB - 195.8
Fill - 10 sec, Discharge - 50 sec, 90 psi
Drawdown can not be measured due to diameter constraints of CMT channels
DUPL-7 and MS/MSD collected

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/11/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-07-7

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 218 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Partly Cloudy ~55°F **SCREENED?OPEN BOREHOLE INTERVAL:** 220.5-221 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-07-7 **SAMPLE TIME (start/finish):** 1110/1400 **SAMPLE FLOW RATE:** 80 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-240 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
0920										
0945	2		80		5.69	0.340	8.96	16.18	36	139
0950	2.4		80		5.73	0.341	6.16	16.13	38	136
0955	2.8		80		5.77	0.344	5.58	16.16	41	139
1000	3.2		80		5.73	0.352	5.51	16.15	50	151
1005	3.6		80		5.71	0.367	6.06	16.18	60	161
1010	4.0		80		5.72	0.386	6.53	16.01	70	170
1015	4.4		80		5.70	0.400	7.24	16.09	80	167
1020	4.8		80		5.70	0.410	7.33	15.91	91	129
1025	5.2		80		5.67	0.415	7.23	15.97	100	109

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: DTB - 221

Fill - 10 sec, Discharge - 50 sec

Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

FORMER SYLVANIA ELECTRIC PRODUCTS FACILITY
LOW FLOW GROUNDWATER SAMPLING PURGE RECORD

DATE: 5/11/2010 **WELL OWNER:** Anchor-Kem-Lith-Ko **WELL ID:** PW-07-7

SAMPLERS: Chris Goldsmith **DEPTH OF PUMP INTAKE:** 218 ft TIC or **ft BGS** (circle one)

WEATHER CONDITIONS: Partly Cloudy ~55°F **SCREENED?OPEN BOREHOLE INTERVAL:** 220.5-221 ft TIC or **ft BGS** (circle one)

SAMPLE ID: PW-07-7 **SAMPLE TIME (start/finish):** 1110/1400 **SAMPLE FLOW RATE:** 80 ml/min

PUMP TYPE: Micro Double Valve Pump **WQ Instrument (complete and or circle at right): YSI Model #** **Horiba Model #** U-52

Pump #: MDVP-240 **Other (specify):** LaMotte 2020 **Horiba serial #** KX2

CURRENT TIME	VOLUME PURGED	DEPTH TO WATER	FLOW RATE	DRAWDOWN (± 0.3 FT)	PH (± 0.1 SU)	SPECIFIC CONDUCTIVITY (± 3%)	DISSOLVED OXYGEN (± 10%)	TEMP. (± 10%)	REDOX POTENTIAL (± 10%)	TURBIDITY (± 10%)
24 - Hour	gallons / liters (circle one)	ft TIC / ft BGS (circle one)	Units: ml/min	ft TIC / ft BGS (circle one)	SU	S/cm, mS/cm°/ or µS/cm (circle one)	mg/L (not %)	Units: °C	mV	NTUs
1030	5.6		80		5.68	0.417	7.23	16.09	107	117
1035	6.0		80		5.67	0.418	7.63	16.04	114	49.9
1040	6.4		80		5.65	0.419	7.86	15.97	120	47.8
1045	6.8		80		5.63	0.420	8.42	16.09	126	30.9
1050	7.2		80		5.60	0.419	7.73	16.41	135	20.3
1055	7.6		80		5.61	0.420	9.26	16.41	138	15.8
1100	8.0		80		5.62	0.420	9.23	16.53	140	15.9
1105	8.4		80		5.63	0.420	9.32	16.55	142	14.1

Drawdown is not to exceed 0.3 feet. Flow rate should not exceed 500 ml/min during purging or 250 ml/min during sampling. Readings should be taken every three to five minutes.
The well is considered stabilized and ready for sampling when the indicator parameters have stabilized for three consecutive readings by the measurements indicated in parenthesis.

Typical values: DO = 0.3 - 10 mg/L Redox Potential = -100 - +600 mV Turbidity = 0 - >500 NTUs

Spec. Conductivity (µS/cm) = 0.01 - 5,000; up to 10,000 in industrial, ~55,000 in high salt content water. Note: 1,000 µS/cm = 1 mS/cm

TIC = Top of Inner Casing BGS = Below Ground Surface

Notes: DTB - 221
Fill - 10 sec, Discharge - 50 sec
Drawdown can not be measured due to diameter constraints of CMT channels

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

F

APPENDIX

GREEN SEAL

Appendix F

Industrial Well Completion Reports

County Nassau

W-1951
N-69 47D

ORIGINAL--TO COMMISSION

State of New York
Department of Conservation
Division of Water Power and Control

Well No. N-6860 (on preliminary report)

LOG

Ground Surf., El.....ft. above sea

^ .....ft. 9' G/S
Top of Well

COMPLETION REPORT--LONG ISLAND WELL

Owner Edgecombe Const. Cor. (Formerly Jerry Spiegel Assocs.

Address 270 No. Broadway, Hicksville, N. Y.

Location of well n/e cor. Cantiague Rock Rd. & W. John St., Hicksville, N.Y.

Depth of well below surface 96'-4" feet

Depth to ground water from surface 57 feet

CASINGS:

Diameter 8 in. ..... in. ..... in. ..... in.
Length 86'4" ft. ..... ft. ..... ft. ..... ft.
Sealing .....
Casings removed .....

SCREENS: Make Cook Co. Openings 30 slot

Diameter 8 in. ..... in. ..... in. ..... in.
Length 10 ft. ..... ft. ..... ft. ..... ft.
Depth to top from top of casing 86'-4" ft.

PUMPING TEST: Date Apr. 4, 1960 Test or permanent pump? .....

Duration of Test ..... days 3 hours
Maximum Discharge 150 gallons per minute
Static level prior to test 57 ft. 0 in. below top of casing
Level during Max. Pumping 72 ft. 0 in. below top of casing
Maximum Drawdown 15 ft.
Approx. time of return to normal level after cessation of pumping not known hours ..... minutes

PUMP INSTALLED: Not installed

Type Sub Make Deming Model No. 6730-L6
Motive power Elec Make Deming H.P. 15
Capacity 150 g.p.m. against 135 ft. of discharge head
No. bowls or stages 3 210 ft. of total head

DROP LINE: SUCTION LINE:

Diameter 4 in. ..... in.
Length 80 ft. .....

Use of water air conditioning

Work started Mar. 28, 1960 Completed Apr. 4, 1960

Date July 9, 1960 Driller Eastern Well & Equip. Co. Inc.

License No. 251

NOTE: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job.

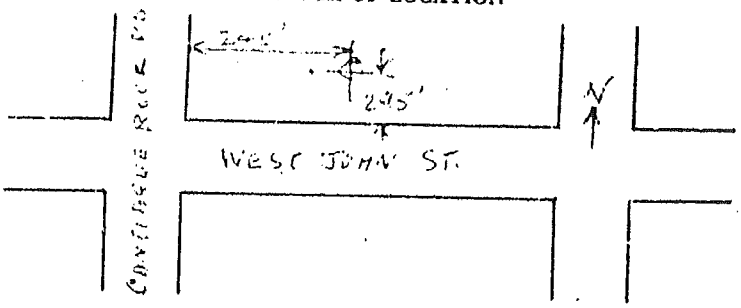
See Instructions as to Well Drillers' Licenses and Reports--pp. 5-7.

Loam and clay 3'
Clayey brown sand 5'
Clean coarse sand. Lots grits and gravel 10'
Med. to fine sand. Few grits and gravel 15'
Clean coarse sand. Lots grits and gravel 46'
Clean sharp med. to coarse sand. Lots grits & gravel 95'
Clean sharp med. sand. Lots grits and gravel 96'-6"

6/29/61 Information from Driller

STATE OF NEW YORK WATER RESOURCES JUL 11 1960 COMMISSION RECEIVED

SKETCH OF LOCATION



Locate well with respect to at least two streets or roads, showing distance from corner and front of lot.

Show North Point

County. Nassau

ORIGINAL—TO COMMISSION

State of New York
Department of Conservation
Division of Water Power and Control

Well No. N-6860 (on preliminary report)

LOG

Ground Surf., El. ..... ft. above sea

COMPLETION REPORT—LONG ISLAND WELL

..... ft.

0' G/S

Top of Well

Owner .. Jerry Spiegel Associates Edgecombe Construction Corporation

Address 270 North Broadway, Hicksville, N. Y.

Location of well n/e cor. Cantiague Rock Rd. & John St., Hicksville, N.Y.

Depth of well below surface 96'-4" feet

Depth to ground water from surface 57' feet

CASINGS:

Diameter 8 in. ..... in. ..... in. ..... in.

Length 86'-4" ft. ..... ft. ..... ft. ..... ft.

Sealing .....

Casings removed .....

SCREENS: Make Cook Co. Openings 30 slot

Diameter 8 in. ..... in. ..... in. ..... in.

Length 10 ft. ..... ft. ..... ft. ..... ft.

Depth to top from top of casing 86'-4" ft.

PUMPING TEST: Date April 4, 1960 Test or ~~permanent~~ pump? .....

Duration of Test ..... days 3 hours

Maximum Discharge 150 gallons per minute

Static level prior to test 57 ft. 0 in. below top of casing

Level during Max. Pumping 72 ft. 0 in. below top of casing

Maximum Drawdown 15 S/C 10 gal. ft.

Approx. time of return to normal level after cessation of pumping not known hours ..... minutes

PUMP INSTALLED: Not installed

Type ..... Make ..... Model No. .....

Motive power ..... Make ..... H.P. .....

Capacity ..... g.p.m. against } ..... ft. of discharge head

No. bowls or stages ..... } ..... ft. of total head

DROP LINE: SUCTION LINE:

Diameter ..... in. ..... in.

Length ..... ft. ..... ft.

Use of water air conditioning

Work started Mar. 28, 1960 Completed April 4, 1960

Date July 6, 1960 Driller Eastern Well - Equip. Co. Inc.

License No. 251

NOTE: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job.

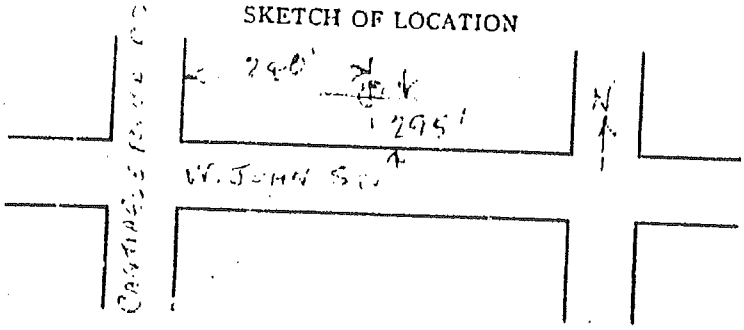
See Instructions as to Well Drillers' Licenses and Reports—pp. 5-7.

Loam and clay 3'
Clayey brown sand 5'
Clean coarse sand. Lots grits and gravel 10'
Med. to fine sand. Few grits and gravel 15'
Clean coarse sand. Lots grits and gravel 46'
Clean sharp Med. to coarse sand Lots grits. xxxxxxxxxx 95'
Clean sharp medium sand. Lots grits 96'-6"

STATE ... WATER RESOURCES JUL 7 1960 COMMISSION RECEIVED

1561M

SKETCH OF LOCATION



Locate well with respect to at least two streets or roads, showing distance from corner and front of lot.

Show North Point

ORIGINAL—TO COMMISSION

County...Nassau...

Well No. N-C203 (on preliminary report)

Replaces 1 hp

U-1671 Basin

N-9341

Recharge (Disposal)

State of New York
Department of Conservation
Division of Water Power and Control

COMPLETION REPORT—LONG ISLAND WELL

PRD Electronics

LOG

Ground Surf., El.....ft. above sea

^
.....ft.
v
Top of Well

Owner Servomechanisms, Inc.

Address John St., New Cassel, L.I., N.Y.

Location of well...same...

Depth of well below surface...365'...feet

Depth to ground water from surface...61'...feet

Log on reverse side

Pump in 6' deep pit

CASINGS:

Diameter	8 in.	in.	in.	in.
Length	231 ft.	ft.	ft.	ft.
Sealing	Welded joints			
Casings removed				

SCREENS: Make Johnson, Silicon Bo Openings #30 slot

Diameter	5 in.	Riser 4" in.	in.	in.
Length	28 ft.	30 ft.	ft.	ft.
Depth to top from top of casing	251 ft.			

PUMPING TEST: Date 6-3-57 Test or permanent pump? Test

Duration of Test...days. 4 ...hours
Maximum Discharge...210...gallons per minute
Static level prior to test...61...ft...in. below top of casing
Level during Max. Pumping 73 ft...in. below top of casing
Maximum Drawdown...12'...ft.
Approx. time of return to normal level after cessation of pumping...hours...minutes

Water temp. 51°

PUMP INSTALLED: Johnston

Type DWT Make U.S. Pumps Model No. 8-1MH

Motive power El. Make U.S. Motors H.P. 15

Capacity 200 g.p.m. against 125 ft. of discharge head

No. bowls or stages 9 195 ft. of total head

STATE OF NEW YORK
WATER POWER AND CONTROL COMMISSION
JAN 7 - 1958
RECEIVED

DROP LINE:		SUCTION LINE:	
Diameter	5 in.	5	in.
Length	71 ft.	10	ft.

Use of water...Cooling (A.C.)

Work started 5-28-57 Completed 11-15-57

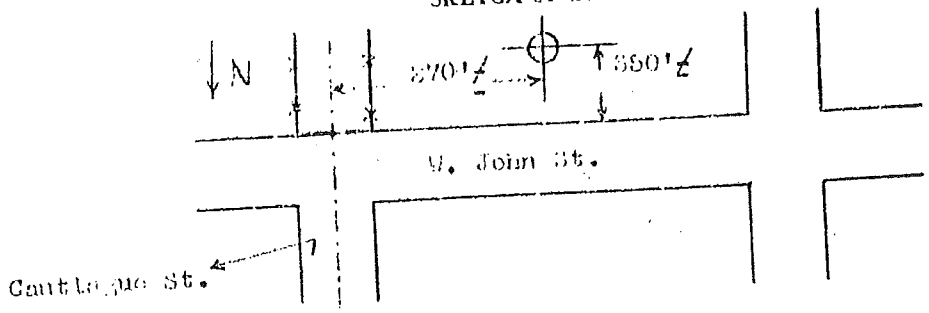
Date 1-2-58 Driller C.W. LAUMAN & CO., INC.

License No. 13

NOTE: Show log of well—materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job.

See Instructions as to Well Drillers' Licenses and Reports—pp. 5-7.

SKETCH OF LOCATION



Locate well with respect to at least two streets or roads, showing distance from corner and front of lot.

Show North Point

LOG

0-3'	Loam
3'-63'	Coarse brown sand, grits, gravel
63'-95'	Medium brown sand, some grits
95'-104'	Layers of fine br. sand and sandy clay
104'-115'	Fine br. sand, mica, some clay
115'-119'	Layers of fine gray sand and sandy clay
119'-124'	Fine multi-colored sandy clay, streaks of clay
124'-144'	Fine br. sand, streaks of clay
144'-149'	Fine multi-colored sandy clay
149'-155'	Very fine br. sand, streaks of sandy clay
155'-159'	Fine br. sand, some clay
159'-164'	Fine br. sand, streaks of sandy clay
164'-169'	Very fine br. sand, some clay, streaks of sandy clay
169'-175'	Fine br. sandy clay, mica
175'-179'	Fine br. sandy clay, streaks of clay
179'-189'	Fine br. sand, mica, streaks of sandy clay
189'-210	Very fine br. sand, some clay, mica
210'-215'	Layers of gray clay and sandy clay
215'-219'	Fine br. sand, some clay
219'-235'	Layers of fine br. sand, some clay
235'-259'	Fine multi-colored sand, some clay
259'-264'	Fine brown sand
264'-----	Fine multi-colored sandy clay

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

NASSAU County — Replaces N-9341 — N-9341 Well No.

COMPLETION REPORT – LONG ISLAND WELL

OWNER	PRD Division – Harris Corp.
ADDRESS	6801 Jericho Tpke., Syosset 11791
LOCATION OF WELL	West John St. Westbury
DEPTH OF WELL BELOW SURFACE	264 ft.
DEPTH TO GROUND WATER FROM SURFACE	59 ft.

CASINGS

DIAMETER	8 in.	in.	in.	in.
LENGTH	235 ft.	ft.	ft.	ft.

SEALING	Threaded Joint
CASINGS REMOVED	

SCREENS

MAKE	Johnson Div. – UOP
OPENINGS	#30

DIAMETER	8 in.	in.	in.	in.
LENGTH	29 ft.	ft.	ft.	ft.

DEPTH TO TOP FROM TOP OF CASING: 235'

PUMPING TEST

DATE	7/28/78
TEST OR PERMANENT PUMP?	Perm
DURATION OF TEST	days 4 hours
MAXIMUM DISCHARGE	200 gallons per min.
STATIC LEVEL PRIOR TO TEST	59 ft. in. below top of casing
LEVEL DURING MAXIMUM PUMPING	66 ft. in. below top of casing
MAXIMUM DRAWDOWN	7 ft.
Approximate time of return to normal level after [illegible] of pumping	2 hrs. min.

PUMP INSTALLED

TYPE: DWT	MAKE: U.S.	MODEL NO.: 8 DML
MOTIVE POWER: Electric	MAKE: U.S.	H.P.: 15

CAPACITY	200 g.p.m. against 125 ft. of discharge head
NUMBER BOWLS OR STAGES	9 — 125 ft. of total head

DROP LINE	SUCTION LINE
DIAMETER	5" in.
LENGTH	70' ft.
METHOD OF DRILLING	☒ rotary ☐ cable tool ☐ other
USE OF WATER	Cooling
WORK STARTED	6/27/78
COMPLETED	7/28/78

DATE	DRILLER	REGISTRATION NO.
11/13/81	R. H. Lauman Associates, Inc.	13

*NOTE: Show log of well - materials encountered, with depth below ground surface, water bearing beds and water levels in each, casings, screens, pump, additional pumping tests and other matters of interest. Describe repair job. See Instructions as to Well Drillers' Certificates of Registration and Reports, Pages 5 - 7.

DUPLICATE – Retain [illegible]ion Copy

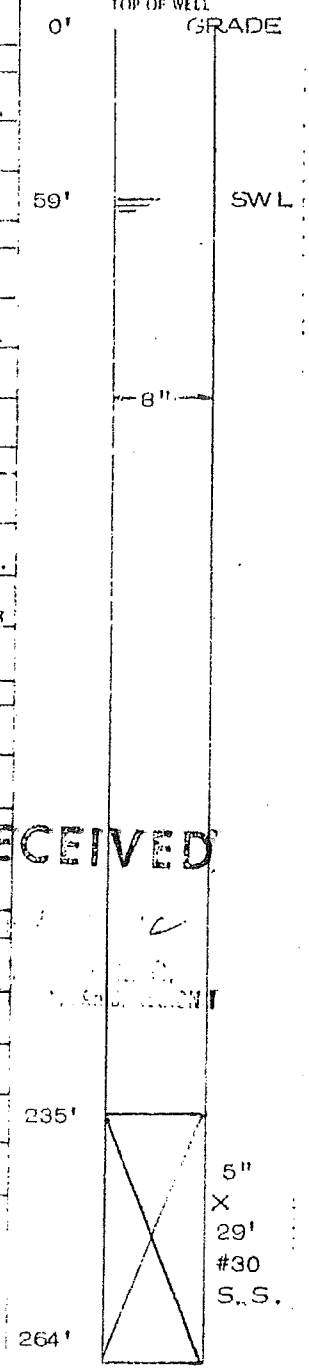
* LOG

Ground Surface

Ft. _____ ft. above sea

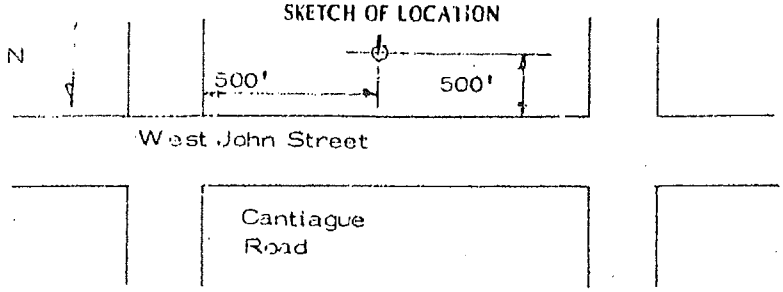
A/V _____ ft.

TOP OF WELL



RECEIVED

SKETCH OF LOCATION



Locate well with respect to at least two streets or roads, showing distance from corner and front of lot.
Show North Point

Check the Town in which the project is located:

Nassau County:

- [x] Hempstead
- [ ] North Hempstead
- [ ] Oyster Bay

Suffolk County:

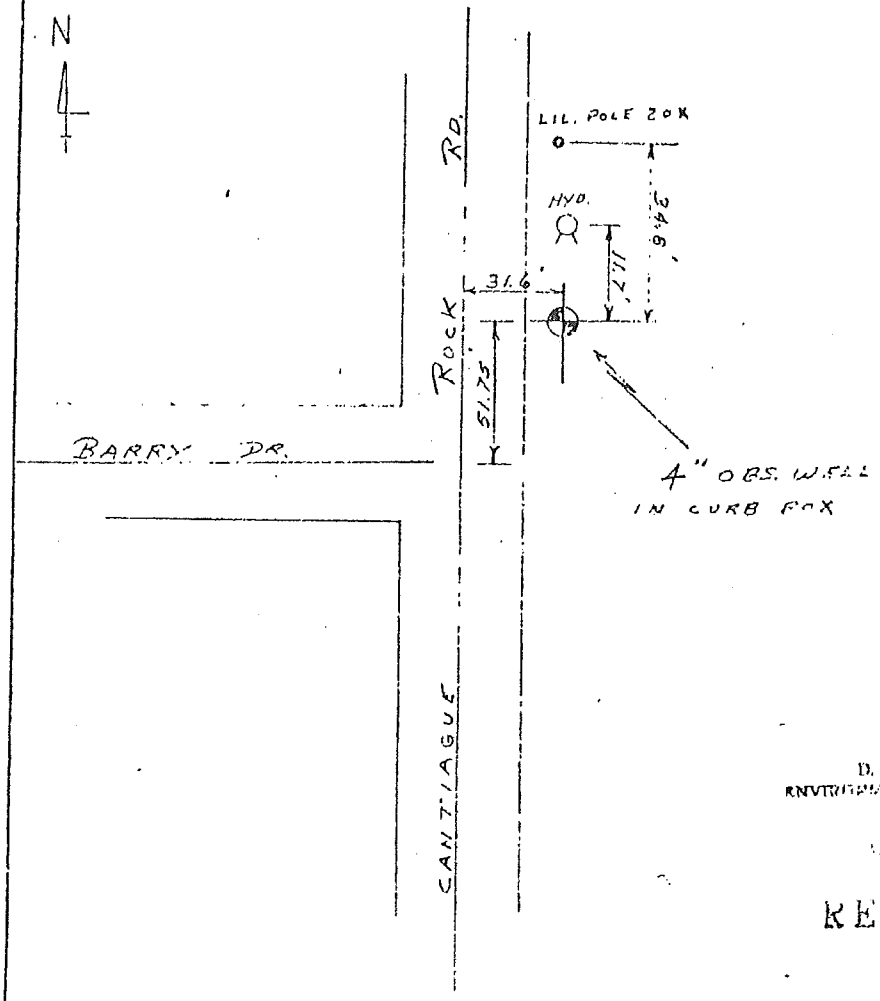
- [ ] Babylon
- [ ] Brookhaven
- [ ] East Hampton
- [ ] Huntington
- [ ] Islip
- [ ] Riverhead
- [ ] Shelter Island
- [ ] Smithtown
- [ ] Southampton
- [ ] Southold

DRILLER'S LOG:

0' - 3'	Loam
3' - 63'	Coarse Brown Sand, Grits, Gravel
63' - 95'	Medium Brown Sand, Some Grit
95' - 104'	Layers Fine Brown Sand And Sandy Clay
104' - 115'	Fine Brown Sand, MICA And Some Clay
115' - 119'	Layers Fine Gray Sand And Sandy Clay
119' - 124'	Fine Multi-Colored Sandy Clay, Streaks of Solid Clay
124' - 144'	Fine Brown Sand, Streaks of Sandy And Solid Clay
144' - 149'	Fine Multi-Colored Sandy Clay
149' - 204'	Fine Brown Sand With Streaks of Sandy Clay, Some MICA
STOP	

DEPARTMENT OF PUBLIC WORKS
Division of Sanitation & Water Supply
Nassau County, New York

NASSAU COUNTY WELL NO: O-9 — LOCATION: HICKSVILLE
N.Y. STATE NO: N 1195 — REINSTALLED: 8-18-76
TOTAL DEPTH: 115.35' — MEAS. POINT: TOP OF COUPLING
DIAMETER: 4" Dia. — ELEV. MEAS. PT: 148.30'
DEPTH TO WATER: 63.70' (8/18/76) — DRILLER: H. ULSHAFER



D. P. W. WATER POLLUTION CONTROL ANALYSIS UNIT
OCT 1 1976
RECEIVED

REMARKS:
THIS WELL WAS REINSTALLED TO 4" DIA. PIPE.

Drawn By: [illegible]
Checked By:

Date: 9/30/76
Date:

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

G

APPENDIX

GREEN SEAL

Appendix G

PRD SPDES Permit

G

ENGINEERING REPORT

PRD ELECTRONICS

SPDES PERMIT NUMBER NY-010-7824

Presented to

Chief, Compliance Section
N.Y.S. Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233

Presented by

WTM Management Corporation
420 Jericho Turnpike
Suite 207
Jericho, New York 11753

For

PRD Electronics
6801 Jericho Turnpike
Syosset, New York 11791

NYSDEC012872

April 26, 1982

Engineering Report

PRD Electronics

SPDES Permit Number NY-010-7824

APPROVED BY:

William T. Malloy 4-23-82

William T. Malloy
President
WTM Management Corporation

Donald J. Casey 4-23-82

Donald J. Casey
Professional Engineer
WTM Management Corporation

STATE OF NEW YORK
DONALD J. CASEY
No. 050945
LICENSED PROFESSIONAL ENGINEER

John W. Muenzen

John W. Muenzen
Facilities Service Manager
PRD Electronics

New York State Department
of Environmental Conservation

NYSDEC012873

2.2 Outfall 003

Outfall 003 receives blowdown discharge from the boiler. It empties to a sump on the plant's property. The water intake to the boiler is from a well at approximately the 265-foot level. The chilled water, hot water and steam systems are a closed loop system. No additives are introduced to the system. The piping diagrams covering the system can be found in Appendix A.

2.2 Outfall 003

Outfall 003 receives blowdown discharge from the boiler. It empties to a sump on the plant's property. The water intake to the boiler is from a well at approximately the 265-foot level. The chilled water, hot water and steam systems are a closed loop system. No additives are introduced to the system. The piping diagrams covering the system can be found in Appendix A.

Chemical	Formula
Sodium Hydroxide	NaOH
Stannic Chloride	$SnCl_4$
Stannous Fluoborate	---

A copy of the Industrial Chemical Survey Form submitted for outfall 001 can be found in Appendix B. Copies of laboratory analyses of the waste effluent in 001 can be reviewed in Appendix C. A review of this data indicates that a number of substances are being discharged at levels exceeding the SPDES standards.

3.2 Outfall 003

The 003 outfall is from a closed loop water system that has no chemicals added and receives its water from a 265-foot well. The intake and discharge water were sampled and analyzed and the results are found in Appendix C. The water is contaminated at the well and in general the levels of the contaminant at the discharge are slightly less then the levels at intake.

5.2 Outfall 003 *

WTM does not recommend that 003 be changed. Staff concludes that contaminants are not being introduced by the system, but rather from contaminated intake water from the well. This area is a known hot spot for ground water contamination.

Short Term, High Intensity Monitoring Program

Location: PRD Electronics
SPDES-NY-01070824

Sampling Conducted By: WTM Management Corporation
Sample Date: February 5, 1982
Lab Analysis Performed By: EcoTest Labs

Outfall Number	Effluent Parameters	Monitoring Rqmts. Measurement Frequency	Monitoring Rqmts. Sample Type	Sample Results (mg/l) 001 Discharge	003 Intake	003 Discharge
001 Discharge, 003 Intake and 003 Discharge	C5-C10 Aliphatic Hydrocarbons	Once/day	Grab	<0.005	0.009	0.008
	Benzene	three consecutive days	"	<0.001	<0.001	<0.001
	Toluene		"	0.017	<0.002	<0.002
	P-xylene		"	0.39	<0.002	<0.002
	M-xylene	"	"	1.4	<0.002	<0.002
	O-xylene	"	"	0.64	0.025	0.02
	O-Dichlorobenzene	"	"	<0.01	0.010	0.032
	M-Dichlorobenzene	"	"	<0.01	<0.005	<0.005
	P-Dichlorobenzene	"	"	0.01	<0.005	<0.005
	1,1,2-Trichloro-1,2,2 Trifluoroethane	"	"	<0.001	0.02	0.055
	Methylene Chloride	"	"	0.5	<0.05	<0.05
	Trans-1,2-dichloroethene	"	"	<0.005	<0.05	<0.05
	1,1-Dichloroethane	"	"	<0.005	<0.05	<0.05
	Cis-1,2-dichloroethene	"	"	<0.005	0.11	0.25
	Chloroform	"	"	<0.001	<0.01	<0.01
	1,1,1-trichloroethane	"	"	<0.001	0.028	0.03
	Carbon Tetrachloride	"	"	<0.001	<0.01	<0.01
	1,2-Dichloroethane	"	"	<0.005	<0.05	<0.05
	Trichloroethylene	"	"	<0.001	1.7	1.7
	Dichloropropane	"	"	<0.005	<0.05	<0.05
	Bromodichloromethane	"	"	<0.001	<0.01	<0.01
	Tetrachloroethylene	"	"	<0.001	<0.43	<0.41
	Chlorodibromomethane	"	"	<0.001	<0.01	<0.01
	Bromoform	"	"	<0.001	<0.01	<0.01

Short Term, High Intensity Monitoring Program

Location: PRD Electronics
SPDES-NY-01070824

Sampling Conducted By: WTM Management Corporation
Sample Date: February 4, 1982
Lab Analysis Performed By: EcoTest Labs

Outfall Number	Effluent Parameter	Monitoring Rqmts. Measurement Frequency	Monitoring Rqmts. Sample Type	Sample Results (mg/l) 001 Discharge	003 Intake	003 Discharge
001 Discharge, 003 Intake and 003 Discharge	C5-C10 Aliphatic Hydrocarbons	Once/day	Grab	<0.05	0.01	0.008
	Benzene	three con-	"	0.005	<0.001	<0.001
	Toluene	secutive	"	0.1	<0.002	<0.002
	P-xylene	days	"	10.0	<0.002	<0.002
	M-xylene	"	"	35.0	<0.002	<0.002
	O-xylene	"	"	18.0	0.026	0.021
	O-Dichlorobenzene	"	"	0.01	0.016	0.022
	M-Dichlorobenzene	"	"	0.02	<0.005	<0.005
	P-Dichlorobenzene	"	"	0.01	<0.005	<0.005
	1,1,2-Trichloro-1,2,2 Trifluoroethane	"	"	<0.001	0.067	0.051
	Methylene Chloride	"	"	0.096	<0.05	<0.05
	Trans-1,2-dichloroethene	"	"	<0.005	<0.05	<0.05
	1,1-Dichloroethane	"	"	<0.005	<0.05	<0.05
	Cis-1,2-dichloroethene	"	"	<0.005	0.25	0.19
	Chloroform	"	"	<0.001	<0.01	<0.01
	1,1,1-trichloroethane	"	"	<0.001	0.028	0.036
	Carbon Tetrachloride	"	"	<0.001	<0.01	<0.01
	1,2-Dichloroethane	"	"	<0.005	<0.05	<0.05
	Trichloroethylene	"	"	<0.001	1.7	1.7
	Dichloropropane	"	"	<0.005	<0.05	<0.05
	Bromodichloromethane	"	"	<0.001	<0.01	<0.01
	Tetrachloroethylene	"	"	<0.001	0.4	0.42
	Chlorodibromomethane	"	"	<0.001	<0.01	<0.01
	Bromoform	"	"	<0.001	<0.01	<0.01

Short Term, High Intensity Monitoring Program

Location: PRD Electronics
SPDES-NY-01070824

Sampling Conducted By: WTM Management Corporation
Sample Date: February 3, 1982
Lab Analysis Performed By: EcoTest Labs

Outfall Number	Effluent Parameters	Monitoring Rqmts. Measurement Frequency	Monitoring Rqmts. Sample Type	Sample Results (mg/l) 001 Discharge	003 Intake	003 Discharge
001 Discharge, 003 Intake and 003 Discharge	C5-C10 Aliphatic Hydrocarbons	Once/day	Grab	<0.05	0.02	0.012
	Benzene	three con-	"	<0.01	<0.001	<0.001
	Toluene	secutive	"	0.012	<0.002	<0.002
	P-xylene	days	"	0.8	0.002	<0.002
	M-xylene	"	"	2.8	0.007	0.005
	O-xylene	"	"	1.4	0.037	0.032
	O-Dichlorobenzene	"	"	<0.01	0.032	0.016
	M-Dichlorobenzene	"	"	<0.01	0.008	0.005
	P-Dichlorobenzene	"	"	<0.01	<0.005	<0.005
	1,1,2-Trichloro-1,2,2 Trifluoroethane	"	"	<0.001	0.055	0.057
	Methylene Chloride	"	"	0.08	<0.05	<0.05
	Trans-1,2-dichloroethene	"	"	<0.005	<0.05	<0.05
	1,1-Dichloroethane	"	"	<0.005	<0.05	<0.05
	Cis-1,2-dichloroethene	"	"	<0.005	0.2	0.5
	Chloroform	"	"	<0.001	<0.01	<0.01
	1,1,1-trichloroethane	"	"	<0.001	0.026	0.028
	Carbon Tetrachloride	"	"	<0.001	<0.01	<0.01
	1,2-Dichloroethane	"	"	<0.005	<0.05	<0.05
	Trichloroethylene	"	"	<0.001	1.7	1.7
	Dichloropropane	"	"	<0.005	<0.05	<0.05
	Bromodichloromethane	"	"	<0.001	<0.01	<0.01
	Tetrachloroethylene	"	"	0.003	0.35	0.34
	Chlorodibromomethane	"	"	<0.001	<0.01	<0.01
	Bromoform	"	"	<0.001	<0.01	<0.01

NYSDEC012880

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

H

APPENDIX

GREEN SEAL

Appendix H

Stone Environmental, Inc. Standard Operating Procedures

STANDARD OPERATING PROCEDURE

SEI-10.1.6

DETERMINATION OF AROMATIC AND CHLORINATED VOLATILE ORGANICS AND LIGHTWEIGHT PETROLEUM HYDROCARBONS (TYPICAL RANGE C4-C16) COMPOUNDS USING SOLID PHASE MICROEXTRACTION (SPME) AND A GAS CHROMATOGRAPH IN SOIL AND WATER SAMPLES (MODIFIED SW846 METHODS 8021/8015& ASTM D6520)

SOP Number: SEI-10.1.6
Revision Number: 6

Date Issued: 02/21/03
Date of Revision: 5/26/09

1.0 OBJECTIVE

This method is designed to measure the concentration of specified volatiles organic compounds (VOCs) and various classes of petroleum hydrocarbon compounds in water and soil samples using solid phase microextraction (SPME) and a Gas Chromatograph equipped with a capillary column. Specific VOCs of interest may include but are not limited to vinyl chloride, cis-1, 2-dichloroethene, trans-1, 2-dichloroethene, trichloroethene, tetrachloroethene, benzene, toluene, ethylbenzene, m & p xylene, and o-xylene (typically reported as total xylene). The petroleum hydrocarbon compounds of interest include: gasoline, kerosene, No. 2 Fuel Oil, and diesel fuel (specifically hydrocarbons between the ranges of C4-C16).

2.0 SUMMARY OF METHOD

This method provides gas chromatographic conditions for the detection of certain aromatic and chlorinated VOCs and petroleum hydrocarbons (typical range C4-C16). The Gas Chromatograph is equipped with a narrow bore capillary column and a Flame Ionization Detector (FID). Samples are prepared in 24 mL extraction vials. The SPME fiber is then exposed to the headspace above the sample for a set number of minutes while the sample is rapidly stirred. The exposure time must be consistent for all standards and samples (typically eight minutes). The absorbed analytes are thermally desorbed from the SPME fiber in the injection port of a Gas Chromatograph and transferred to the capillary column.

This method is suitable for analysis of water, soils, and wastes.

Soil samples are collected in approximately 10-12 gram cores preserved in methanol (10 mLs) in 40 mL VOA vials and water samples are collected in 40 mL VOA vials with no headspace.

This method is based on EPA SW-846 Methods 8000, 8021B and 8015 and ASTM Method D6520.

3.0 DEFINITIONS

SPME – Solid Phase Microextraction

VOC – Volatile Organic Compounds

QA/QC – Quality Assurance/Quality Control

Lightweight petroleum hydrocarbons- typically gasoline range organic petroleum hydrocarbons in the carbon range of C4-C16.

Laboratory Control Sample (LCS) - A reagent water or method blank matrix spiked with the analytes of interest. The spike recovery is used to evaluate method accuracy and control.

Instrument Blank – Involves only the SPME fiber. The fiber is exposed to laboratory room air (for a time equal to the exposure time for the samples and calibration standards) prior to analysis. The instrument blank is used to measure contamination associated with laboratory room air, the fiber, and the GC.

Method Blank - A reagent water or soil sample spiked with surrogates and subjected to the same preparation procedures as the associated samples. The method blank is used to measure contamination associated with that of the instrument blank and the reagents (dilution water and solvents that contain QC standards) used as part of the program. The surrogate recoveries of the method blank are used as matrix-free laboratory controls.

EPA - U.S. Environmental Protection Agency.

4.0 INTERFERENCES

When analyzing for VOCs, samples can be contaminated by diffusion of volatile organics (particularly chlorofluorocarbons and methylene chloride), through the sample container septum during shipment and storage. A trip blank prepared from organic-free reagent water and carried through sampling and subsequent storage and handling must serve as a check on such interferences.

Sulfur dioxide is a potential interference in the analysis for vinyl chloride.

Contamination by carryover can occur whenever high-concentration and low-concentration samples are analyzed in sequence. To reduce the potential for carryover, the sample syringe or purging device must be rinsed out between samples with an appropriate solvent. Whenever an unusually concentrated sample is encountered, it should be followed by injection of a method blank to check for cross contamination.

Purging vessels and syringes should be adequately cleaned and flushed prior to use. All glassware must be kept scrupulously cleaned. Clean all glassware as soon as possible after use by rinsing with the last solvent used or analyte-free water. Clean dry glassware shall be stored in a clean environment.

The flame ionization detector (FID) is a non-selective detector. There is a potential for many non-target compounds present in samples to interfere with this analysis.

5.0 SAFETY ISSUES

1. Laboratory personnel should take extra care when working with standards. When working with neat standards, make certain that there is adequate ventilation and that Nitrile or Latex gloves are worn and if necessary safety glasses.
2. If necessary and appropriate, a site-specific health and safety plan shall be created for each study site and followed.
3. Field visits may involve accessing remote areas. Health and safety concerns regarding these field visits are minimal, however, hazards such as slip, trip and falls, poisonous plant and dangerous animals, as well as getting vehicles stuck in remote areas, do present considerable health and safety issues. To help ensure field staff's health and safety in remote areas, all field staff are to have daily communication with the project manager or another appropriate SEI employee.
4. All chemicals are required to be received with a Material Safety Data Sheets (MSDS). MSDSs shall be made available to all personnel involved in the sampling and testing.

6.0 EQUIPMENT AND SUPPLIES

1. Gas Chromatograph: Analytical system complete with gas chromatograph and all required accessories, including a detector, column supplies, gases, syringes and data system to determine peak areas and perform integrations. Hewlett Packard 5890 Series II.
2. Analytical Column: RTX-VMS 20m x 0.18 mm ID, 1.1 um film.
3. Detector: Flame ionization detector (FID).
4. Array of Microsyringes: range 5-1000 uL.
5. Balance: Top loading, capable of weighing accurately to 0.01 grams (soil samples only).
6. Sample introduction and preparation apparatus: SPME Fiber type 100 µm polydimethylsiloxane (PDMS) and/or 85 µm Carboxen/PDMS fiber, magnetic hot plate and magnetic stirrers, tube clamp and stand.
7. VOA vials: 40 mL collection containers with Teflon®-lined septum and 24 mL extraction vials

7.0 REAGENTS AND STANDARDS

1. Reagents: Organic-free reagent water demonstrated to be free of compounds of interest (spring water, carbon filtered and/or deionized). Purge and Trap Grade or equivalent grade methanol (demonstrated to be free of analytes and stored away from other solvents).
2. Stock standards – Stock standards may either be prepared from pure standard materials or purchased as certified solutions. Secondary dilution standards are prepared accordingly using stock standard solutions, which contain the compounds of interest, either singly or mixed together. Typically, for this method the stock standards are obtained from an approved vendor mixed together. A certificate of

analysis is retained by the laboratory and maintained on file or on file with the vendor. The aqueous standards are prepared at concentrations as listed in Section 9.0 and prepared in accordance with Table 2 which is an Example of the Standard Preparation Calculation Sheet. Calibration standards at a minimum of five different concentrations for VOC analytes and at a minimum of three for petroleum hydrocarbon compounds are prepared in water.

Stone's SOP No. SEI-4.7.5 *Labeling, Preparation and Storage of Reagents, Solutions and Standards* provides procedures on properly labeling, preparing and storing of reagents and standards used in the mobile laboratory for analytical methods. This SOP should be review by the analyst before labeling, preparing and storing standards within the mobile laboratory.

8.0 SAMPLE COLLECTION AND HANDLING

8.1 Sample Collection

1. Aqueous samples are collected in 40 mL Teflon®-lined septum VOA vials filled to ensure that no headspace is present. If storage of these samples is expected to exceed seven days, aqueous samples should be preserved with hydrochloric acid (HCL) to a pH of < 2.

2. Soil samples are collected in approximately 10-12 gram cores, and placed in 40 mL vials. A soil aliquot of approximately 10-12 grams of sample is placed in a VOA vial with 10 mL of methanol. If available, a separate aliquot of soil from the sample location will be collected in a 40 mL vial (with no preservative) for percent moisture determination.

8.2 Handling and Holding Times

1. Unpreserved water samples must be analyzed within 7 days of collection. Preserved (preserved with HCl to a pH of < 2) water samples must be analyzed within 14 days of collection. Soil samples collected in methanol must be analyzed within 14 days from collection. All samples shall be stored at 4 ° Ç ± 2 ° C. Samples are allowed to come to room temperature just prior to analysis. All samples for this program are typically analyzed within one or two days from collection, therefore, holding times should not be a concern.

2. If samples were preserved and analyses are performed after 7 days from collection, pH determination (water samples only) should be performed. Once the sample aliquots have been taken from the VOA vial for analysis, the pH of the water sample must be determined. The purpose of the pH determination is to ensure that all VOA samples were acidified in the field. Test the pH by placing one or two drops of sample on the pH paper (do not add pH paper to the vial). Record the pH of each sample, and report these data in the SDG Narrative, following the instructions. No pH adjustment is to be performed.

3. If necessary, a separate soil sample aliquot will be collected in a 40 mL vial or equivalent for percent moisture content so that results can be adjusted for %moisture and reported as dry weight rather than as received. Percent moisture is determined as follows: Percent Moisture Determination - Immediately after weighing the sample for analysis, weigh 5-10 g of the soil/sediment into a tared crucible. Determine the percent moisture by drying overnight at 105 °C. If available, allow to cool in a dessicator before weighing. Concentrations of individual analytes will be reported relative to the dry weight of soil/sediment.

$$\text{Percent Moisture} = \frac{\text{Mass of wet sample (g)} - \text{Mass of dry sample (g)}}{\text{Mass of wet sample (g)}}$$

9.0 PROCEDURES

9.1 Typical GC Program

Oven Temp: 50°C (4.00 min) to 160°C at 15°C/min to 200°C at 40°C/min, hold for 1 min.

Carrier Gas: Helium, 1.0 ml/min (set at 50°C)

Detector: FID

Injector: 240°C, splitless (close 3 min)

Liner: 0.75 mm ID splitless/split injection port

Flow rates: Helium 1.0 ml/min

Air 450 ml/min

Hydrogen 33 ml/min

Helium makeup 30 ml/min

9.2 GC Column

Analytical Column: RTX-VMS 20m x 0.18 mm ID, 1.1 um film

9.3 Material Preparation:

SPME: Fiber Type: 100 µm polydimethylsiloxane (PDMS).

SPME Fiber Type for low level waters only: 85 µm Carboxen/PDMS

SPME Extraction: The SPME-absorbent polymer fiber is exposed to the headspace above a water sample (24 mLs sample preparation vial, sample and ¼ tsp, salt; headspace created by removing approximately 2 mLs from the 24 mL preparation vial) for 8 minutes while the sample is rapidly stirred on a magnetic stirring plate. The fiber is retracted into the holder, and transferred to the GC injection port. Each magnetic stirrer is rinsed three times with volatile free water prior to use. For

soil samples; an aliquot of the methanol extract (1mL but not more than 2 mL) is prepared in the 24 mL water preparation vial, and prepared and analyzed in the same manner as a water sample above. For air samples, the SPME fiber is exposed directly to the same through the Teflon-line septum located on the Tedlar bag. Exposure time of the fiber to the air sample will be the same for all samples and calibration standards. Prior to use, each fiber must be conditioned for at least one hour in the GC inlet at 240°C.

9.4 Reference Standard Preparation

Calibration Standards: Labeling - SOP SEI 4.7.5

9.5 Operating Procedure

9.5.1 Calibration Criteria

9.5.1.1 Initial Calibration (ICAL):

1. Five-point calibration for VOC compounds (10, 40, 100, 200, 500 ppb). The low standard must be set at the practical quantitation limit (PQL). Low level standards (1,2,5,10, 20 ppb)
2. Three-point calibration for petroleum hydrocarbon standards (200, 500, 2,000 ppb of Number 2 Fuel Oil). If appropriate and necessary based on the observed chromatographic pattern of the petroleum hydrocarbons detected in site samples, a three-point calibration for Diesel and No. 6 Fuel Oil (200, 500, 2000 ppb) will be prepared. It should be noted that this headspace methodology will only detect the lightweight petroleum hydrocarbons associated with these fuel oils.
3. Calibration range must encompass the expected sample concentration; therefore, if site samples are expected to be higher in concentration than the calibration range, adjustments to the calibration range and samples will be documented and made accordingly.
4. The linearity of the calibration curves must be assessed and are used for all quantitation. Volatile organic compounds use an internal standard procedure (internal standard; fluorobenzene). Linear regression is used for quantitation and the correlation coefficient (r) of each compound must be greater than 0.995 ($r^2 = 0.990$). Depending upon the on-site program acceptable correlation coefficient may be set at 0.99 in accordance with SW846 8000.
5. For the petroleum hydrocarbon compounds external standard calibration will be performed using a specific window (specifically all peaks encompassing approximately (C4-C16) at approximately 3.0 to 9.0 minutes. The correlation coefficient of the calibration must be greater than 0.99 (> 0.99).

9.5.1.2 Continuing Calibration (CCV):

1. A mid-point continuing calibration verification standard for VOC compounds at 100 ppb (low level: 5 ppb) must be analyzed daily: prior to sample analysis in order to verify the initial calibration; after every 15 analytical runs which include environmental and QC samples; and at the close of an analytical sequence. A percent difference between the expected concentration and actual concentration is calculated. The percent difference (%D) values for each compound must be less than or equal to 20%.

$$\%D = \frac{\text{Expected Conc. - Actual Conc.}}{\text{Expected Conc.}}$$

2. A mid-point CCV standard for petroleum hydrocarbons (500 ppb for diesel or No. 2) must be analyzed daily; prior to sample analysis in order to verify the initial calibration; and if necessary, at the close of an analytical sequence. A percent difference of the daily concentration gasoline range petroleum hydrocarbons found compared to the nominal concentration is calculated. The percent difference values for petroleum hydrocarbons must be less than or equal to ± 30%.

$$\%D = \frac{\text{Expected Conc. - Actual Conc.}}{\text{Expected Conc.}}$$

9.5.1.3 Initial Calibration Verification Standard (ICV):

A QC sample from a second (independent) source will be analyzed directly after the ICAL. The ICV sample will contain all the VOC compounds of interest at the mid-point (40-100 ppb or 5 ppb for low level waters). Recovery Limits for the ICV will be 70-130%, if compounds are determined to be poor performers then the recoveries shall be 60-140% for the ICV.

$$\%\ \text{Recovery} = \frac{\text{Actual Concentration}}{\text{Expected Concentration}}$$

9.5.2 Retention Time Windows and Pattern Recognition

The laboratory shall identify single component target analytes on the basis of retention time windows (± 0.04 minutes from the ICAL or daily CCV). Petroleum hydrocarbons are distinguished on the basis of the ranges of retention times for characteristic components in each type of fuel. During the initial calibration, the retention time window of these components is established and documented. Once the range and retention time window is established, they will be used for the identification of the compounds of interest.

9.5.3 Sample Preparation:

Water samples: An aliquot of sample, sufficient to get the highest concentration constituents into the upper half of the linear range, is transferred to a 24 mL extraction vial and spiked with the surrogate (bromofluorobenzene at 41.67 ppb) and internal standard (fluorobenzene at 41.67 ppb). The SPME fiber is then exposed to the headspace above the sample for eight minutes while the sample is rapidly stirred with a magnetic stirrer on a magnetic plate. The eight minutes is measured using a bench-top timer. Extraction time may be modified depending on the anticipated equilibration response of the target analytes at given concentrations.

Soil samples: Preserved in methanol; 10-12 g core of soil is added to 10 mL of methanol containing an appropriate amount of bromofluorobenzene. After addition of the site soil and prior to analysis, the vial is mixed for five minutes. An aliquot of methanol, sufficient to get the highest concentration constituents into the upper half of the linear range but not to exceed 2 mL, is diluted to volume with analyte free water and ¼ tsp. salt in a 24 mL vial, and analyzed using SPME in the same manner as a water sample.

9.5.4 Analysis of Samples:

Analysis of samples is performed using SPME followed by analysis on a GC equipped with a narrow bore capillary column and a FID. For this program the fiber is exposed to the headspace above the sample. Therefore a small portion is discarded from the 24 ml vial prior to exposure. The exposure time needs to be consistent (8 minutes for this method). To facilitate the release of the analytes from their respective media, the sample is rapidly stirred throughout the extraction. The adsorbed analytes are thermally desorbed in the injection port of the GC and transferred to the capillary column.

9.5.5 Surrogate (SS) and Internal Standard (ISTD) Compounds for VOC compounds

Compound	**Amount Spiked (Low level, Carboxen)**
Bromofluorobenzene (SS)	41.67 ppb (12.48 ppb)
Fluorobenzene (ISTD)	41.67 ppb (4.16 ppb)

9.5.6 Surrogate Spike Compound for Petroleum Hydrocarbons Compounds

Compound	**Amount Spiked**
Fluorobenzene	41.67 ppb (4.16 ppb)

9.5.7 ICV Preparation

Compounds and spike amounts are below (may vary depending on project specific needs). Water samples will be spiked at 40-100 ppb; the amount may change to account for the concentration of a particular analyte found in the sample being analyzed.

9.5.8 LCS Preparation

For a waters program, compounds and spike amounts are specified below or vary depending upon project specific needs. Waters will be spiked at around the mid-point of the calibration.

For the soils program, the soil LCS will be prepared in the same manner as the soil samples, an aliquot (1 mL) of methanol will be prepared in the SPME preparation vial spiked with VOCs of interest, and prepared in the same manner as the soil MS/MSD.

9.5.9 Matrix Spike and Matrix Spike Duplicate (MS/MSD) Compounds:

Compounds and spike amounts are below. Water samples will be spiked at the mid-point of the calibration; the amount may change to account for the concentration of a particular analyte found in the sample being analyzed as a MS. For soil samples, an appropriate amount of the target analytes is spiked into the 10 mL of methanol and grams of site soil when it comes back from the field. Samplers must collect additional sample volume for MS/MSD analyses Matrix Spike Analyses will contain only the VOC compounds of interest.

9.5.10 Matrix Spike and Matrix Spike Duplicate (MS/MSD) and LCS Compounds:

Analyte	CAS #	MS/MSD/ LCS Spiked Amounts
Vinyl Chloride	75-01-4	40-100
1,1-Dichloroethene	75-35-4	40-100
trans-1,2-Dichloroethene	156-60-5	40-100
1,1-Dichloroethane	75-34-3	40-100
cis-1,2-Dichloroethene	156-59-2	40-100
1,1,1-Trichloroethane	71-55-6	40-100
Benzene	71-43-2	40-100
1,2-Dichloroethane	107-06-2	40-100
Trichloroethene	79-01-6	40-100
Toluene	108-88-3	40-100
Tetrachloroethene	127-18-4	40-100
Chlorobenzene	108-90-7	40-100
Ethylbenzene	100-41-4	40-100
M+p-Xylenes	108-38-3 106-42-3	40-100

Analyte	CAS #	MS/MSD/ LCS Spiked Amounts
o-Xylene	95-47-6	40-100
1,3-Dichlorobenzene	541-73-1	40-100
1,4-Dichlorobenzene	106-46-7	40-100
1,2-Dichlorobenzene	95-50-1	40-100
**Total Petroleum Hydrocarbons as Fuel Oil No. 2		500-2000

Note: For water samples the MS will be spiked at 40-100 ppb or at 5 ppb depending upon the program; the amount may change to account for the concentration of a particular analyte found in the sample being analyzed as a MS. For soil samples, an appropriate amount of the target analytes is spiked into the 10 mL of methanol when the sample comes back from the field. Samplers will collect additional samples for MS/MSD analyses.

9.5.11 Target Compound List Compounds

Analyte	CAS #	PQL Water (ug/L)	PQL Soil (ug/Kg)	Approximate MDLs (water)	Approximate MDLs (soil)
Vinyl Chloride	75-01-4	20	480	5.4	330
1,1-Dichloroethene	75-35-4	10	240	3.6	205
trans-1,2-Dichloroethene	156-60-5	10	240	3.4	167
1,1-Dichloroethane	75-34-3	10	240	1.8	72
cis-1,2-Dichloroethene	156-59-2	10	240	4.0	62
1,1,1-Trichloroethane	71-55-6	10	240	4.8	63
Benzene	71-43-2	10	240	0.86	199
1,2-Dichloroethane	107-06-2	10	240	6.0	199
Trichloroethene	79-01-6	10	240	1.6	160
Toluene	108-88-3	10	240	1.6	142
Tetrachloroethene	127-18-4	10	240	4.0	207
Chlorobenzene	108-90-7	10	240	1.3	61
Ethylbenzene	100-41-4	10	240	3.3	223
M+p-Xylenes	108-38-3 106-42-3	10	240	3.4	187
o-Xylene	95-47-6	10	240	3.4	187
1,3-Dichlorobenzene	541-73-1	10	240	3.0	195
1,4-Dichlorobenzene	106-46-7	10	240	2.8	185
1,2-Dichlorobenzene	95-50-1	10	240	3.11	165
**Total Petroleum Hydrocarbons as Fuel Oil No. 2		500	2400	n/a	n/a
Other compounds not listed here may be analyzed for as verified by a successful method verification study.					

* Low Level PQLs can be achieved for all compounds at 1 ppb using the Carboxen Fiber.

**Note: If upon visual inspection of the chromatogram the petroleum hydrocarbon compounds are suspected to be that of No. 6 Fuel Oil or heavier weight hydrocarbons, the PQL will be higher; approximately 200 ug/L for waters and 2400 ug/kg for soils. PQLs are sample dependent and may change based on sample dilutions or sample amounts used during the analysis; adjustments to the PQLs will be made accordingly.

10.0 CALCULATIONS

Identification of the project- specific VOCs in the sample chromatogram is achieved by comparing the retention times generated by the calibration standards, continuing calibration standard and other fortified QC samples. Retention times must be within ± 0.04 minutes from the ICAL. If a retention time shift is observed in the CCV or daily ICV, then adjustments to the daily retention time windows will be made accordingly. Quantification of the VOCs is determined by comparison to the internal standard and linear regression for that analyte from the initial calibration curve.

Quantification of the lightweight petroleum hydrocarbon compounds is determined by summing the peak areas found in the chromatographic window of the sample and using a linear regression of the calibration curve. The SPME gas chromatograph (GC) headspace method will detect only those petroleum hydrocarbon compounds that are lightweight, i.e., those that are typically found in gasoline, kerosene, a portion of No. 2 Fuel Oil and diesel. Therefore, the petroleum hydrocarbon results will be used on a semi-quantitative basis.

The concentration of each analyte in the sample may be determined by calculating the amount of standard injected, from the peak response, using the calibration curve as noted above.

For the analysis of the petroleum hydrocarbons, sum the area of all peaks eluting between approximately 3.0-9.0minutes (set range should be used for both standards and samples). This area is used to calculate petroleum hydrocarbons.

Range concentration = Dilution x (Total FID Area – Surrogate Area).

Use the HP Chemstation software to calculate sample hydrocarbon range concentrations for water in ug/L and soil in ug/Kg.

11.0 QUALITY CONTROL AND CORRECTIVE ACTION

11.1 Instrument Blank (SPME Fiber Blank)

To be performed once daily at the start of the analytical day. All target analyte concentrations detected in the instrument blank must be less than one-half the PQL value prior to continuing.

11.2 Method Blank

One per analytical batch (15 samples) directly after the calibration standard and after highly contaminated samples to demonstrate that there is no carry over into subsequent samples. All target

analyte concentrations detected in the method blank must be less than one-half the PQL value prior to continuing.

11.3 Surrogate Standards

Surrogate recoveries should be 70-130% for water samples and 60-140% for soil samples. Samples with surrogate recoveries falling outside of quality control limits should be reanalyzed once. If the reanalysis of the sample is also outside the quality control limits, then it will be determined that the problem may be associated with the sample matrix and noted as such.

11.4 Initial Calibration Verification Standard (ICV)

A QC sample from a second (independent) source than that of the initial calibration will be analyzed directly after the ICAL or CCV. The ICV sample will contain all the VOC compounds of interest at mid point of the calibration curve. Recovery Limits for the ICV will be 70-130%. This sample may also be used as the laboratory control sample (LCS). Daily LCS range 70-130%.

11.5 Laboratory Control Sample (LCS)

For a waters program: a QC sample from a second (independent) source than that of the initial calibration will be analyzed directly after the ICAL or CCV. The LCS sample will contain all the VOC compounds of interest at the mid-point of the calibration range. Recovery Limits for the LCS will be 70-130%.

For the soils program, the soil LCS will be prepared in the same manner as the soil samples, an aliquot (1 mL) of methanol will be prepared in the SPME preparation vial spiked with VOCs of interest at the midpoint of the calibration, and prepared in the same manner as the soil MS/MSD. Recovery Limits for the LCS will be 70-130%.

11.6 Matrix Spike and Matrix Spike Duplicate (MS/MSD) Analysis

An MS/MSD analysis is required every set of twenty samples or as specified by the client. A sample will be chosen by client to perform a matrix spike analysis. The control limits for the matrix spike recoveries will be derived empirically using the most recently acquired group of data. If no data is available, advisory recovery limits (set forth by the USEPA, SW 846 Methodologies) of 70-130% will be used.

$$\% \text{ Recovery} = \frac{\text{Sample Spiked Concentration} - \text{Un-Spiked Sample Concentration}}{\text{Spike Concentration}}$$

11.7 Lab Duplicate

If necessary, a random sample is run in duplicate and the results are compared. The relative percent difference (RPD) should not exceed 30% for waters and 50% for soils.

11.8 CORRECTIVE ACTION

Quality Control Check	*Minimum Frequency*	*Acceptance Criteria*	*Corrective Action*
Initial Calibration (ICAL)	As necessary.	Minimum of five points for VOCs. Correlation coefficient must be > 0.995. (some programs >0.99) Minimum of three points for petroleum hydrocarbon. Low standard must not exceed reporting limit. Petroleum hydrocarbon > 0.99.	Verify solution integrity and check instrument performance. Perform necessary maintenance and recalibrate instrument. Reanalyze all affected samples.
Initial Calibration Verification (ICV) / Laboratory Control Sample (LCS)	One per calibration (following acceptable ICAL) or after CCV or in place of a CCV in the waters program.	QC limits are 70 to 130% for target compounds. Note: Limits may be adjusted based on the program should as required by DOD QMS	Reanalyze once; if still out verify solution integrity or ICAL solution integrity, and instrument performance. Re-prepare and reanalyze all associated samples.
Retention Time (RT) Window Study	Every new column installation	All target compounds and surrogates in all standards must fall within the established window of ± 0.04 minutes from ICAL	Perform system maintenance. Reanalyze affected samples.
Continuing Calibration Verification (CCV)	One after each 15 samples window and must be followed by a method blank if more samples are to be analyzed	See Section 9.0. ≤ ± 20% for VOCs ≤ ±30 % for petroleum hydrocarbons	Verify solution integrity and instrument performance. Reanalyze standard once, if still out, recalibrate and reanalyze affected samples.
Method Blanks	One per preparation batch	Target Compounds < one-half reporting limit	Investigate source of contamination. Re-prepare and reanalyze all associated samples.
Matrix Spike (MS) and Matrix Spike Duplicate (MSD)	One set per 20 samples of a similar matrix	QC limits are 70-130%. RPD not to exceed 30% for waters and 50% for soil samples.	Reanalyze once; if still out, verify solution integrity and instrument performance. If necessary analyze a LCS or ICV and if acceptable, narrate as possible matrix effect.

11.9 Data Review and Data Integrity

The analyst is responsible for primary data review of data generated from the sample analysis. Analyses will be documented in the instrument run log. Maintenance is documented in the Instrument Maintenance Logbook. Instrument calibrations and recoveries of all QC samples must be within specified control limits. If instrument calibration or the recoveries of any QC sample exceed specified tolerances, then the affected sample results are evaluated and generally the samples are submitted for re-analysis. To determine if analytical results are acceptable, a qualified and independent QA/QC program shall conduct a secondary review on a weekly basis. A QA/QC Checklist (Attachment 1) is used to indicate any problems with the referenced analytical batches. The QA/QC checklist will also address any corrective action taken. All calibrations, calculations, and transcriptions are checked for accuracy and QC sample results are evaluated against specified limits. If instrument calibration and recoveries of all QC samples are within the specified criteria, then the data reports will be submitted to the Project Manager as final results with no qualifiers. If recoveries of any QC samples exceed specified limits and re-analysis is not an option, then the samples will be qualified as estimated with a "J" qualifier (J= The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.). Data will not be reported if significant QC issues affect the batch analyses.

12.0 POLLUTION PREVENTION & WASTE MANAGEMENT

Pollution prevention encompasses any technique that reduces or eliminates the quantity or toxicity of waste at the point of generation. Numerous opportunities for pollution prevention exist in laboratory operation. The United States Environmental Protection Agency (USEPA) has established a prevention hierarchy of environmental management techniques that places pollution prevention as the management option of first choice. Whenever feasible, laboratory personnel should use pollution prevention techniques to address their waste generation. When wastes cannot be feasibly reduced at the source, the agency recommends recycling as the next best option.

The quantity of chemical purchased should be based on expected usage during its shelf life and disposal cost of unused material. Actual reagent preparation volumes should reflect anticipated usage and reagent stability.

For information about pollution prevention that may be applicable to laboratories and research institutions, consult "Less is Better: Laboratory Chemical Management for Waste Reduction", available from the American Chemical Society's Department of Government Regulations and Science Policy, 1155 16th Street N.W., Washington, D.C. 20036; (202) 872-4477.

The USEPA requires that laboratory waste management practices conducted be consistent with all applicable rules and regulations. Excess reagents, samples, and method process wastes should be characterized and disposed of in an acceptable manner. The Agency urges laboratories to protect the air, water and land by minimizing and controlling all releases from hoods and bench operations,

complying with the letter and spirit of any waste regulations, particularly the hazardous waste identification rules and land disposal restrictions. For further information on waste management consult the "Waste Management Manual for Laboratory Personnel", available from the American Chemical Society.

13.0 REFERENCES

Pawliszyn, Janusz, 1999, Applications of Solid Phase Microextraction, *in* RSC Chromatography Monographs; Smith, Roger S., Series Editor, Royal Society of Chemistry, Cambridge, UK, 655 p.

SW846. ASTM D6520.

"Less is Better: Laboratory Chemical Management for Waste Reduction", available from the American Chemical Society's Department of Government Regulations and Science Policy, 1155 16th Street N.W., Washington, D.C. 20036; (202) 872-4477.

14.0 TABLES, DIAGRAMS, FLOWCHARTS, AND VALIDATION DATA

Attachment 1: Sample GC Laboratory QA/QC Checklist

15.0 AUTHORIZATION

Authored by: _____ Date: _____

David Crosby, Project Geoscientist

Approved by: _____ Date: _____

Christopher T. Stone, President

16.0 REVISION HISTORY

Revision Number 1

1. Minor wording edits

Revision Number 2

Unknown

Revision Number 3

1. Added Section 12.0 Pollution Prevention
2. Added Section 16.0 Revision History

Revision Number 4

1. Added Section 9.4 Reference Standard Preparation
2. Clarification and verbiage on the Laboratory Control Sample.
3. Corrections to Table 1 under PQLs and concentration of MS/MSD spike.
4. Added two new paragraphs under Section 8.2 Sample Handling for pH determinations and percent moisture determination.

Revision Number 5

1. Redefine and decouple the Laboratory Control Sample from the ICV for a soil sample program. Add Sections: 9.5.8.
2. Change Section 11.0 to read Section 11.4 ICV, Section 11.5 LCS and 11.6 MS/MSD.

Revision Number 6

1. Update Sections 9.5.10 and 9.5.11 to include PQLs and MDLs for both soil and waters for all compounds accredited for under the NELAC program.
2. Removed methanol from the 4th sentence since the magnetic stirrers are just rinsed with VOA free water.

Attachment I

SAMPLE GC LABORATORY QA/QC CHECKLIST

GC LABORATORY QA/QC CHECKLIST

Date:_____

QC Analysis	Criteria	Filename(s):
IC Calibration:	%RSD ± 30% VOCs, >0.99 (other)	
CC Calibration:	%D ± 20 % VOCs, ± 30% (Other)	
SPME Fiber Blank:	< 1/3 reporting limit	
Method Blank:	< 1/2 reporting limit	
ICV Standard:	70-130%	
ICV/LCS:	70-130%	
MS/MSD Analysis:	70-130%	
Surrogate Standards:	70-130% waters, 60-140% for soil samples	
Other (describe):		

Comments/Corrective Action:

Prepared By: _____

Reviewed By:_____

NA = None Available

I:\GLP_NELAC\SOP\SEI_SOPs\Ch10_EnvDrill\SEI_Current\SEI-10.1.6.doc

Attachment 2

EXAMPLE STANDARD PREPARATION CALCULATION SHEET

STONE ENVIRONMENTAL INC

Gas Chromatography Laboratory

HP-5

Standard Prep Log

08/16/05-a1					dmkc	
FID WS						
100	ppm					
x: 8/31/05						
Compound	Vendor	Lot	Exp	Conc (mg/ml)	Amount	
Custom VOC	S	LB18097	8/16/2006	20	20	ul
1,1-DCA	A	B2090306	6/22/2006	20	20	ul
1,1,1-TCA	A	B3050086	6/22/2006	10	40	ul
8020 Mix	A	B1070292	8/31/2005	2	200	ul
1,1-DCE	A	B4050042	1/21/2006	20	20	ul
BFB	A	B4110093	5/17/2006	25	16	ul
MeOH	OmniSolv	44090	3/1/2008	into	3684	ul
				Total	4000	ul

STANDARD OPERATING PROCEDURE

SEI-10.15.5

THE DETERMINATION OF VOLATILE ORGANIC COMPOUNDS BY GAS CHROMATOGRAPHY / MASS SPECTROMETRY (GC/MS) (SW846 USEPA METHOD 8260B)

SOP Number: SEI-10.15.5
Revision Number: 5

Date Issued: 08/19/04
Date of Revision: 03/20/08

1.0 OBJECTIVE

This method, based on SW846 USEPA Method 8260B for the analyses of volatile organic compounds, is designed to measure the concentration of specified volatile organic compounds (VOCs) in water, soil and air samples using solid phase microextraction (SPME) and a Gas Chromatograph equipped with a capillary column and mass spectrometer. Specific VOCs of interest are outlined in Table 1.

2.0 SUMMARY OF METHOD

This method provides gas chromatographic conditions for the detection of certain aromatic and chlorinated VOCs. Soil and water samples are prepared in 24 mL extraction vials. The SPME fiber is then exposed to the headspace above the sample for a set number of minutes while the sample is rapidly stirred. Air samples are collected in Tedlar bags and the SPME fiber is exposed directly to the sample through the Teflon®-lined syringe septum. The exposure time must be consistent for all standards and samples (typically eight minutes). The absorbed analytes are thermally desorbed from the SPME fiber in the injection port of a Gas Chromatograph and transferred to a narrow bore capillary column. A temperature program is used to enhance separation as the analytes are carried through the column to the ion source of the mass spectrometer. The ionized molecules are focused and separated according to their mass/charge (m/z) ratio by a quadrupole analyzer. The signal is amplified by an electron multiplier and interpreted by the mass spectrometer data system to produce a total ion chromatogram and mass spectra for every point on the chromatogram. The instrument's mass spectrometer can be set in scan mode or selective ion monitoring mode (SIM). SIM mode is typically used to achieve lower reporting limits.

This method is suitable for analysis of air, water, soils, and wastes.

Soil and waste samples are collected in approximately 10-12 gram cores preserved in methanol (10 mL) in 40 mL VOA vials and water samples are collected in 40 mL VOA vials with no headspace. All samples are analyzed as waters on the GC/MS.

This method is based on USEPA 8260B, *Volatile Organic Compounds by Gas Chromatography Mass Spectrometry (GC/MS)* and ASTM Method D6520, *Solid Phase Micro-extraction of water and its headspace for analysis of Volatile and Semi-volatile Organic Compounds.*

3.0 DEFINITIONS

Accuracy: the degree of agreement between a measurement and true or expected value, or between the average of a number of measurements and the true or expected value.

Batch: environmental samples, which are prepared and/or analyzed together with the same process, using the same lot(s) of reagents. A preparation batch is composed of one to 20 environmental samples of a similar matrix, meeting the above-mentioned criteria.

Corrective Action: action taken to eliminate the causes of an existing non-conformance, defect or other undesirable situation in order to prevent recurrence.

Demonstration of Capability (DOC): procedure to establish the ability to generate acceptable accuracy and precision.

Instrument Blank: a blank matrix that is the same as the processed sample matrix (i.e. extract, digestate, condensate) and introduced onto the instrument for analysis.

Laboratory Control Sample (LCS): a blank matrix spiked with a known amount of analyte(s), processed simultaneously with, and under the same conditions as, samples through all steps of the analytical procedure.

Matrix: the substrate of a test sample.

Matrix Duplicate (MD): duplicate aliquot of a sample processed and analyzed independently; under the same laboratory conditions; also referred to as Sample Duplicate; Laboratory Duplicate.

Matrix Spike (MS): field sample to which a known amount of target analyte(s) is added.

Matrix Spike Duplicate (MSD): a replicate matrix spike.

Method Blank: a blank matrix processed simultaneously with, and under the same conditions as, samples through all steps of the analytical procedure.

Precision: an estimate of variability. It is an estimate of agreement among individual measurements of the same physical or chemical property, under prescribed similar conditions.

Quality Assurance (QA): an integrated system of activities involving planning, quality control, quality assessment, reporting and quality improvement to ensure that a product or service meets defined standards of quality with a stated level of confidence.

Quality Control (QC): the overall system of technical activities, the purpose of which is to measure and control the quality of a product or service.

Quality Control Sample: a control sample, generated at the laboratory or in the field, or obtained from an independent source, used to monitor a specific element in the sampling and/or testing process.

Quantitation Limit (QL): the minimum amount of a substance that can be quantitatively measured with a specified degree of confidence and within the accuracy and precision guidelines of a specific measurement system. The QL can be based on the MDL, and is generally calculated as 3-5 times the MDL, however, there are analytical techniques and methods where this relationship is not applicable. Also referred to as Practical Quantitation Level (PQL), Estimated Quantitation Level (EQL), Limit of Quantitation (LOQ).

Reporting Limit (RL): The level to which data is reported for a specific test method and/or sample. The RL is generally related to the QL. The RL must be minimally at or above the MDL.

Selective Ion Monitoring: A configuration of the mass spectrometer in which the intensities of several specific ion beams are recorded rather than the entire mass spectrum.

Spike: a known amount of an analyte added to a blank, sample or sub-sample.

Standard Operating Procedure (SOP): a written document which details the method of an operation, analysis or action whose techniques and procedures are thoroughly prescribed and which is accepted as the method for performing certain routine or repetitive tasks.

SPME – Solid Phase Microextraction

Tedlar Bag – Inflatable sample container, used to trap air samples for analysis, equipped with a Teflon®-lined syringe septum that allows a SPME fiber to come in contact with the air sample.

VOC – Volatile Organic Compounds

QA/QC – Quality Assurance/Quality Control

4.0 INTERFERENCES

When analyzing for VOCs, samples can be contaminated by diffusion of volatile organics (particularly chlorofluorocarbons and methylene chloride), through the sample container septum during shipment and

storage. A trip blank prepared from organic-free reagent water and carried through sampling and subsequent storage and handling must serve as a check on such interferences.

Contamination by carryover can occur whenever high-concentration and low-concentration samples are analyzed in sequence. To reduce the potential for carryover, the sample syringe or purging device must be rinsed out between samples with an appropriate solvent. Whenever an unusually concentrated sample is encountered, it should be followed by injection of a method blank to check for cross contamination.

Purging vessels and syringes should be adequately cleaned and flushed prior to use. All glassware must be kept scrupulously cleaned. Clean all glassware as soon as possible after use by rinsing with the last solvent used or analyte-free water. Store clean dry glassware in a clean environment.

5.0 SAFETY ISSUES

1. Laboratory personnel should take extra care when working with standards. When working with neat standards, make certain that there is adequate ventilation and that Nitrile or Latex gloves are worn and if necessary, safety glasses.
2. If necessary and appropriate, a site-specific health and safety plan shall be created for each study site and followed.
3. Field visits may involve accessing remote areas. Health and safety concerns regarding these field visits are minimal, however, hazards such as slip, trip and falls, poisonous plant and dangerous animals, as well as getting vehicles stuck in remote areas, do present considerable health and safety issues. To help ensure field staff's health and safety in remote areas, all field staff are to have daily communication with the project manager or another appropriate SEI employee.
4. All chemicals are required to be received with a Material Safety Data Sheets (MSDS). MSDSs shall be made available to all personnel involved in the sampling and testing.

6.0 EQUIPMENT AND SUPPLIES

1. Gas Chromatograph: Analytical system complete with gas chromatograph and all required accessories, column supplies, gases, syringes and data system to determine peak areas and perform integrations. Hewlett Packard 5890 Series II.
2. Mass Spectrometer: Hewlett Packard 5971 MSD.
3. Analytical Column: SPB-624 10m x 0.20mm ID, 1.1 um film or equivalent
4. Array of Microsyringes: range 5-1000 uL.
5. Balance: Top loading, capable of weighing accurately to 0.01 grams (soil samples only).
6. Sample introduction and preparation apparatus: SPME Fiber type 100 µm polydimethylsiloxane (PDMS) and/or 85 µm Carboxen/PDMS fiber, magnetic hot plate and magnetic stirrers, tube clamp and stand.

7. VOA vials: 40 mL collection containers with Teflon®-lined septum and 24 mL extraction vials

7.0 REAGENTS AND STANDARDS

Reagents:

1. Organic-free reagent water demonstrated to be free of compounds of interest (spring water, carbon filtered and/or deionized).
2. Purge and Trap Grade or equivalent grade methanol (demonstrated to be free of analytes and stored away from other solvents).

Stock standards:

Stock standards may either be prepared from pure standard materials or purchased as certified solutions. Secondary dilution standards are prepared using stock standard solutions, which contain the compounds of interest, either as single compounds or mixed together. Typically, for this method the stock standards are obtained from an approved vendor and mixed together. A certificate of analysis is retained by the laboratory and maintained on file or on file with the vendor. The aqueous standards are prepared at concentrations as listed in Section 9.0 and prepared in accordance with Table 2 which is an Example of the Standard Preparation Calculation Sheet. Gas standards are purchased in mixtures of site-specific target analytes.

Calibration standards are prepared at a minimum of five to six different concentrations levels for VOC analytes.

Stone's SOP No. SEI-4.7.5 *Labeling, Preparation and Storage of Reagents, Solutions and Standards* provides procedures on properly labeling, preparing and storing of reagents and standards used in the mobile laboratory for analytical methods. This SOP should be reviewed by the analyst before labeling, preparing and storing standards within the mobile laboratory.

8.0 SAMPLE COLLECTION AND HANDLING

8.1 Sample Collection

1. Aqueous samples are collected in 40 mL Teflon®-lined septum VOA vials filled to ensure that no headspace is present. If storage of these samples is expected to exceed seven days, aqueous samples should be preserved with hydrochloric acid (HCl) to a pH of < 2.
2. Soil and waste samples are collected in approximately 10-12 gram cores, and placed in 40 mL vials with 10 mL of methanol. If available, a separate aliquot of soil from the sample location will be collected in a 40 mL vial (with no preservative) for percent moisture determination.
3. Air samples are collected in Tedlar bags. The target analytes shall be concentrated on the SPME fiber by exposing the fiber directly to sample through the Teflon®-lined septum. Air samples must be analyzed within 3 days of collection.

8.2 Handling and Holding Times

1. Unpreserved water samples must be analyzed within 7 days of collection. Preserved (preserved with HCl to a pH of < 2) water samples must be analyzed within 14 days of collection. Soil samples collected in methanol must be analyzed within 14 days from collection. All samples shall be stored at 4 ° Ç ± 2 ° C. Samples are allowed to come to room temperature just prior to analysis. All samples for this program are typically analyzed within one or two days from collection, therefore, holding times should not be a concern.

2. If preserved vials received and analyses are performed after 7 days from collection, pH determination (water samples only) should be performed. Once the sample aliquots have been taken from the VOA vial for analysis, the pH of the water sample must be determined. The purpose of the pH determination is to ensure that all VOA samples were acidified in the field. Test the pH by placing one or two drops of sample on the pH paper (do not add pH paper to the vial). Record the pH of each sample, and report these data in the SDG Narrative, following the instructions. No pH adjustment is to be performed.

3. If necessary, a separate soil sample aliquot will be collected in a 40 mL vial or equivalent for percent moisture content so that results can be adjusted for %moisture and reported as dry weight rather than as received. Percent moisture is determined as follows: Percent Moisture Determination - Immediately after weighing the sample for analysis, weigh 5-10 g of the soil/sediment into a tared crucible. Determine the percent moisture by drying overnight at 105 °C. If available, allow to cool in a dessicator before weighing. Concentrations of individual analytes will be reported relative to the dry weight of soil/sediment.

   Percent moisture - %Moisture = gms of wet sample – gms of dry sample/gms of wet sample

9.0 PROCEDURES

9.1 Typical GC Program

Oven Temp: 50°C (4.00 min) to 160°C at 15°C/min to 200°C at 40°C/min, hold for 1 min.

Flow Rate: Helium, 1.0 mL/min, 8 PSI, set at 45°C

Detector: MSD, scan mode, 45-190 amu, (or as necessary to 35-300 amu)

Injector: 240°C, splitless (close 1.5 min)

Liner: 0.75 mm ID splitless/split injection port

9.2 GC Column

Column: SPB-624 16m x 0.20mm ID, 1.1 um film, equivalent

9.3 Material Preparation:

SPME: Fiber Type: 100 µm polydimethylsiloxane (PDMS).

SPME Fiber Type for low level waters only: 85 µm Carboxen/PDMS

SPME Extraction: The SPME-absorbent polymer fiber is exposed to the headspace above a water sample (24 mLs sample preparation vial, sample and ¼ tsp, salt; headspace created by removing approximately 2 mLs from the 24 mL preparation vial) for 8 minutes while the sample is rapidly stirred on a magnetic stirring plate. The fiber is retracted into the holder, and transferred to the GC injection port. Each magnetic stirrer is rinsed three times with methanol and a final rinse with volatile free water prior to use. For soil samples; an aliquot of the methanol extract (1mL but not more than 2 mL) is prepared in the 24 mL water preparation vial, and prepared and analyzed in the same manner as a water sample above. For air samples, the SPME fiber is exposed directly to the same through the Teflon-line septum located on the Tedlar bag. Exposure time of the fiber to the air sample will be the same for all samples and calibration standards. Prior to use, each fiber must be conditioned for at least one hour in the GC inlet at 240°C.

9.4 Operating Procedure

9.4.1 4-Bromofluorobenzene

The following ion abundances must be met before analysis of calibration standards, environmental samples and at the beginning of a 12-hour analytical sequence by analyzing BFB in a check standard, method blank or as a single injection:

BFB Key Ions and Ion Abundance Criteria	
Mass	Ion Abundance Criteria
50	15.0-40.0 percent of mass 95
75	30.0-60.0 percent of mass 95
95	base peak, 100 percent relative abundance
96	5.0-9.0 percent of mass 95
173	less than 2.0 percent of mass 174
174	>50.0 percent of mass 95
175	5.0-9.0 percent of mass 174
176	95.0-101.0 percent of mass 174
177	5.0-9.0 percent of mass 176

9.4.2 Calibration Criteria

9.4.2.1 Initial Calibration (ICAL):

1. Five to Six-point calibration for VOC compounds using a SIM configuration is as follows: 1, 2, 5, 10, 20, 40, 100 ppb. A six-point calibration for VOC compounds using the Scan configuration are as follows: 5, 10, 20, 50, 100 and 200 ppb. In either configuration, the low standard must be set at the practical quantitation limit (PQL). A typical calibration range for air (ppb_v/v) will be similar to that of water and will be chosen on a site specific basis.
2. Calibration range must encompass the expected sample concentration; therefore, if site samples are expected to be higher in concentration than the calibration range, adjustments to the calibration range and samples will be documented and made accordingly.
3. The linearity of the calibration curves must be assessed and are used for all quantitation. Volatile organic compounds in soil and water use an internal standard procedure (internal standard; fluorobenzene). Average response factors are used for quantitation and the average relative standard deviation (%RSD) of each compound must be less than 20%. Depending upon the field on-site program, 25% RSD may be acceptable.
4. Volatile organic carbons in air use an external calibration procedure. Linear regression is used for quantitation and the correlation coefficient (r) of each compound must be greater than 0.995 (r^2 = 0.990). Depending upon the on-site program acceptable correlation coefficient may be set at 0.99 in accordance with SW846 8000.

9.4.2.2 System Performance Check Compounds (SPCC) and Calibration Check Compounds (CCC):

SPCC's must meet the minimum average response factor given in Table 1. CCC's should have a %RSD less than or equal to 20% if they are target compounds. Otherwise, CCC's must be equal to or less than 30%.

9.4.2.3 Continuing Calibration (CCV):

1. A mid-point continuing calibration verification standard for VOC compounds (10 ppb or 50ppb) must be analyzed every 12 hours, prior to sample analysis in order to verify the initial calibration. A percent difference of the expected concentration is compared to the actual concentration. The percent difference values for each compound must be less than or equal to 20%.

$$\%D = \frac{ExpectedConcentration - ActualConcentration}{ExpectedConcentration}$$

The CCV may also be used to demonstrate that the BFB criteria shown in 10.4.1 have been met.

9.4.2.4 Initial Calibration Verification Standard (ICV):

A QC sample from a second (independent) source will be analyzed directly after the ICAL. The ICV sample will contain all the VOC compounds of interest at the mid-point (40-100 ppb or 5 ppb for low level waters). Recovery Limits for the ICV will be 70-130%, if compounds are determined to be poor performers then the recoveries shall be 60-140% for the ICV.

$$\%Rec. = \frac{\text{Actual Conc.}}{\text{Expected Conc.}}$$

9.4.3 Retention Time Windows and Pattern Recognition

The laboratory shall identify single component target analytes by comparison of its mass spectrum to a reference spectrum. The retention time for each analyte should be within ± 0.04 minutes from the ICAL or daily CCV.

9.4.4 Sample Preparation:

Water samples: An aliquot of sample, sufficient to get the highest concentration constituents into the upper half of the linear range, is transferred to a 24 mL extraction vial, ¼ tsp. salt is added to the vial and spiked with the surrogate (bromofluorobenzene between 4.17 and 16.67 ppb) and internal standard (fluorobenzene between 4.17 and 16.67 ppb). The SPME fiber is then exposed to the headspace (headspace created by removing approximately 2 mL from preparation vial) above the sample for 8 minutes while the sample is rapidly stirred with a magnetic stirrer on a magnetic plate. The 8 minutes is measured using a bench-top timer. Extraction time may be modified depending on the anticipated equilibration response of the target analytes at given concentrations.

Soil samples: Preserved in methanol; 10-12 g core of soil is added to 10 mL of methanol containing an appropriate amount of bromofluorobenzene. After addition of the site soil and prior to analysis, the vial is mixed for five minutes. An aliquot of methanol, sufficient to get the highest concentration constituents into the upper half of the linear range but not to exceed 2 mL, is diluted to volume with analyte free water and ¼ tsp. salt in a 24 mL vial, and analyzed using SPME in the same manner as a water sample.

Air samples: Exposure of the SPME fiber to the air sample occurs directly through the Teflon®-lined septum in the Tedlar bag. Exposure time, measured using a bench-top timer,

may be modified depending on the anticipated equilibration response of the target analytes at given concentrations. There is no surrogate or internal standard for air sampling.

9.4.5 Analysis of Samples:

Analysis of samples is performed using SPME followed by analysis on a GC equipped with a narrow bore capillary column and a MSD. For this program the fiber is exposed to the headspace above the sample. A small portion of sample is discarded from the 24 ml vial prior to exposure to generate headspace. The exposure time needs to be consistent (8 minutes for this method). To facilitate the release of the analytes from their respective media, the sample is rapidly stirred throughout the extraction. The adsorbed analytes are thermally desorbed in the injection port of the GC and transferred to the capillary column.

9.4.6 Surrogate (SS) and Internal Standard (ISTD) Compounds for VOC compounds

Compound	**Amount Spiked**
Bromofluorobenzene (SS)	Range: 4.17 to 16.67 ppb
Fluorobenzene (ISTD)	Range: 4.17 to 16.67 ppb

9.4.7 LCS Preparation

Compounds and spike amounts are on Table 1. For a waters program, compounds and spike amounts are specified according to project specific needs. Waters will be spiked at around the mid-point of the calibration.

For the soils program, the soil LCS will be prepared in the same manner as the soil samples, an aliquot (1 mL) of methanol will be prepared in the SPME preparation vial, spiked with VOCs of interest, and prepared in the same manner as the soil MS/MSD.

9.4.8 Matrix Spike and Matrix Spike Duplicate (MS/MSD) Compounds:

Compounds and spike amounts are on Table 1. For water samples the MS in SIM configuration will be spiked at 10 ppb; the amount may change to account for the concentration of a particular analyte found in the sample being analyzed as a MS. For soil samples, an appropriate amount of the target analytes are spiked into the 10 mL of methanol. Matrix Spike Analyses will contain only the VOC compounds of interest. For air, MS/MSD are performed by spiking air standards into the Tedlar bag prior to sampling.

9.4.9 Target Compound List Compounds

A Target Compound List with Practical Quantitation Limits can be found on Table 1.

10.0 CALCULATIONS

Identification of the project specific VOCs in the sample chromatogram is based on retention time and on comparison of the sample mass spectrum with characteristic ions in a reference mass spectrum. Retention times must be within ± 0.02 minutes from the ICAL. If a retention time shift is observed in the CCV or daily ICV, then adjustments to the daily retention time windows will be made accordingly. The relative intensities of the characteristic ions must agree within 30% of these ions in the reference spectrum. Quantification of the VOCs is determined by comparison to the internal standard and average response factor for the target ion of the analyte.

The concentration of each analyte in the sample may be determined by calculating the amount of standard injected, from the target ion peak response, using the calibration curve. The calculations are as noted below.

Concentrations of Unknowns

Method 8260B does not include reporting of tentatively identified compounds (TIC). However, reporting of up to 10 TIC's whose peak heights are ≥ 10% of the nearest internal standard may be requested or ≥ 40% of the nearest internal standard may be requested for low concentration analyses. Concentrations are calculated using the following formula using an assumed response factor (RF) of 1:

$$C_{(x)} = \frac{C_{(IS)} * A_{(x)}}{A_{(IS)}} * DF$$

Where:

$C_{(x)}$= Concentration of Unknown (µg/L).

$C_{(IS)}$= Concentration of internal standard (µg/L).

DF = Dilution Factor

$A_{(x)}$ = Area of Unknown

$A_{(IS)}$= Area of associated internal standard.

Concentrations of Calibrated Compounds:

$$C_{(x)} = \frac{A_{(x)} * C_{(IS)}}{A_{(IS)} * \overline{RRF}} * DF$$

Where:

$C_{(x)}$ = Concentration of compound (µg/L)

$C_{(IS)}$ = Concentration of associated internal standard (µg/L).

DF = Dilution Factor.

$A_{(IS)}$ = Area of quantitation ion for associated internal standard.

$A_{(x)}$ = Area of quantitation ion for compound.

RRF = Average Relative Response Factor from five-point initial calibration.

Data Reporting - Based on the mass spectra and the project specific field program, it is appropriate to report values between the MDL and the RL. In this region, an analyte can be qualitatively detected, but not accurately quantified. Any data point reported in this region is flagged with a "J" qualifier. Stone reports sample specific RL's. Sample specific RL's are derived by taking into account various sample specific data, which can include the amount of the sample subject to testing, % moisture, dilution factor, interferences and the base RL's for the analysis.

Typical Reporting qualifiers are as follows:

B = Analyte is found in the associated method blank as well as the sample.

D = Compound is identified in an analysis at a secondary dilution factor.

E = Compound quantitation is above the instrument's calibration range for this analysis.

J = Indicates an estimated quantitation value.

U = Compound was analyzed for but not detected. Value reported is the method reporting limit.

11.0 QUALITY CONTROL AND CORRECTIVE ACTION

11.1 Instrument Blank (SPME Fiber Blank)

To be performed once daily at the start of the analytical day. All target analyte areas detected in the instrument blank must be less than one-third the area of the analyte at the PQL value prior to continuing.

11.2 4-Bromofluorobenzene

To be performed every 12 hours, at the start of the analytical day and before beginning acquisition of a calibration curve. Criteria can be found in section 9.4.1.

11.3 Continuing Calibration Verification

To be performed every 12 hours, at the start of the analytical day. Percent differences must be less than or equal to 20%

11.4 Method Blank

One per analytical batch (12 hours or 20 samples) directly after the calibration standard and after highly contaminated samples to demonstrate that there is no carry over into subsequent samples. All target analyte concentrations detected in the method blank must be less than one-half the PQL value prior to continuing.

11.5 Surrogate Standards

Surrogate recoveries should be 70-130 % in water samples and 60-140 % in soil samples. Samples with surrogate recoveries falling outside of quality control limits should be reanalyzed once. If the reanalysis of the sample is also outside the quality control limits, then it will be determined that the problem may be associated with the sample matrix and noted as such.

11.6 Initial Calibration Verification Standard (ICV)

A QC sample from a second (independent) source than that of the initial calibration will be analyzed directly after the ICAL or CCV. The ICV sample will contain all the VOC compounds of interest at mid point of the calibration curve. Recovery Limits for the ICV will be 70-130%. This sample may also be used as the laboratory control sample (LCS). Daily LCS range 70-130%.

11.7 Laboratory Control Sample (LCS)

For a waters program, compounds and spike amounts are specified according to project specific needs. Waters will be spiked at around the mid-point of the calibration. For the soils program, the soil LCS will be prepared in the same manner as the soil samples, an aliquot (1 mL) of methanol will be prepared in the SPME preparation vial, spiked with VOCs of interest, and prepared in the same manner as the soil MS/MSD. Recovery Limits for the LCS will be 70-130% and 40-160% for poor performers. The recovery range is set to 70-130% and 40-160% for poor performers.

11.8 Matrix Spike and Matrix Spike Duplicate (MS/MSD) Analysis

An MS/MSD analysis is required every set of twenty samples or as specified by the client. A sample will be chosen by client to perform a matrix spike analysis. The control limits for the matrix spike recoveries will be derived empirically using the most recently acquired group of data. If no data is available, advisory recovery limits (set forth by the USEPA, SW 846 Methodologies) of 70-130% and 60-140% for poor performers will be used.

$$\%\text{Recovery} = \frac{\text{Sample Spiked Concentration} - \text{Un-Spiked Sample Concentration}}{\text{Spiked Concentration}}$$

11.9 CORRECTIVE ACTION

Quality Control Check	*Minimum Frequency*	*Acceptance Criteria*	*Corrective Action*
Initial Calibration (ICAL)	As necessary.	Minimum of five to six points for VOCs. Minimum RRF and Maximum %RSD on Table 1 or a correlation factor (r) of 0.99 for linear regression.	Verify solution integrity and check instrument performance. Perform necessary maintenance and recalibrate instrument. Reanalyze all affected samples.
Initial Calibration Verification (ICV) and/or Laboratory Control Sample (LCS)	One per calibration (following acceptable ICAL)	QC limits are 70 to 130% for target compounds. This same standard may be used as the daily LCS in which the QC limits are set to 70-130% for target compounds and 60-140% for poor performers. Note: Limits may be adjusted based on the program should as required by DOD QMS.	Reanalyze once; if still out verify solution integrity or ICAL solution integrity, and instrument performance. Re-prepare and reanalyze all associated samples.
Retention Time (RT) Window Study	Every new column installation	All target compounds and surrogates in all standards must fall within the established window of ± 0.02 minutes from ICAL	Perform system maintenance. Reanalyze affected samples.
Continuing Calibration Verification (CCV)	To be performed every 12 hours, at the start of the analytical day	See Section 9.0. ≤ ± 20%D for VOCs	Verify solution integrity and instrument performance. Reanalyze standard once, if still out, recalibrate and reanalyze affected samples.
Method Blanks	One per preparation batch	Target Compounds < one-third reporting limit	Investigate source of contamination. Re-prepare and reanalyze all associated samples.
Matrix Spike (MS) and Matrix Spike Duplicate (MSD)	One set per 20 samples of a similar matrix	QC limits are 70-130%D and 60-140%D for poor performers. RPD not to exceed 30% for waters RPD not to exceed 50% for soil samples.. In air, QC limits are 60-140%D. RPD not to exceed 40%.	Reanalyze once; if still out, verify solution integrity and instrument performance. If necessary analyze a LCS or ICV and if acceptable, narrate as possible matrix effect.
4-Bromofluorobenzene	every 12 hours or at the start of a new analytical day, and before acquisition of a new calibration curve	See section 9.4.1.	Reanalyze once, if still out, MS should be retuned and adjusted to meet all criteria before continuing

11.10 Data Review

The analyst is responsible for primary data review of data generated from the sample analysis. Analyses will be documented in the instrument run log. Maintenance is documented in the Instrument Maintenance Logbook. Instrument calibrations and recoveries of all QC samples must be within specified control limits. If instrument calibration or the recoveries of any QC sample exceed specified tolerances, then the affected sample results are evaluated and generally the samples are submitted for re-analysis. Manual integrations should be kept to a minimum and date and initialed by the analyst. To determine if analytical results are acceptable, a qualified and independent QA/QC program shall conduct a secondary review on a weekly basis. A QA/QC Checklist (Attachment 1) is used to indicate any problems with the referenced analytical batches. The QA/QC checklist will also address any corrective action taken. All calibrations, calculations, and transcriptions are checked for accuracy and QC sample results are evaluated against specified limits. If instrument calibration and recoveries of all QC samples are within the specified criteria, then the data reports will be submitted to the Project Manager as final results with no qualifiers. If recoveries of any QC samples exceed specified limits and re-analysis is not an option, then the samples will be qualified as estimated with a "J" qualifier (J= The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.). Data will not be reported if significant QC issues affect the batch analyses.

12.0 POLLUTION PREVENTION & WASTE MANAGEMENT

Pollution prevention encompasses any technique that reduces or eliminates the quantity or toxicity of waste at the point of generation. Numerous opportunities for pollution prevention exist in laboratory operation. The United States Environmental Protection Agency (USEPA) has established a prevention hierarchy of environmental management techniques that places pollution prevention as the management option of first choice. Whenever feasible, laboratory personnel should use pollution prevention techniques to address their waste generation. When wastes cannot be feasibly reduced at the source, the agency recommends recycling as the next best option.

The quantity of chemical purchased should be based on expected usage during its shelf life and disposal cost of unused material. Actual reagent preparation volumes should reflect anticipated usage and reagent stability.

For information about pollution prevention that may be applicable to laboratories and research institutions, consult "Less is Better: Laboratory Chemical Management for Waste Reduction", available from the American Chemical Society's Department of Government Regulations and Science Policy, 1155 16th Street N.W., Washington, D.C. 20036; (202) 872-4477.

The USEPA requires that laboratory waste management practices conducted be consistent with all applicable rules and regulations. Excess reagents, samples, and method process wastes should be characterized and disposed of in an acceptable manner. The Agency urges laboratories to protect the air, water and land by minimizing and controlling all releases from hoods and bench operations, complying with

the letter and spirit of any waste regulations, particularly the hazardous waste identification rules and land disposal restrictions. For further information on waste management consult the "Waste Management Manual for Laboratory Personnel", available from the American Chemical Society.

13.0 REFERENCES

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http://www.epa.gov/epaoswer/hazwaste/test/pdfs/8260b.pdf

National Environmental Laboratory Accreditation Conference (NELAC), Quality Assurance Systems Standards, Chapter 5, Approved May 2001, Effective July 2003

ASTM6520, Solid Phase Micro-extraction of water and its headspace for analysis of Volatile and Semi-volatile Organic Compounds

14.0 TABLES, DIAGRAMS, FLOWCHARTS, AND VALIDATION DATA

Attachment 1: Sample GC Laboratory QA/QC Checklist

Table 1: Analyte Details – PQLs and MS/MSD Spike values shown are for SIM Configuration

Analyte	CAS #	Minimum RRF	Maximum %RSD	PQL Water (ug/L)	PQL Air (ppbv/v)	PQL Soil (ug/Kg)	MS/MSD amount (ppb)
Chloromethane (SPCC)	74-87-3	0.01	20%	5	1-50	120	10-50
Vinyl Chloride (CCC)	75-01-4	0.01	20%	2	1-50	48	10-50
Chloroethane	75-00-3	0.01	20%	2	1-50	48	10-50
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.01	20%	2	1-50	48	10-50
1,1-Dichloroethene (CCC)	75-35-4	0.01	20%	2	1-50	48	10-50
*+Acetone	67-64-1	0.01	20%	50	1-50	1200	100-200
+Carbon Disulfide	75-15-0	0.01	20%	2	1-50	48	10-50
+Methylene Chloride	75-90-2	0.01	20%	2	1-50	48	10-50
+t-Butyl-methyl ether	1634-04-4	0.01	20%	2	1-50	48	10-50
trans-1,2-Dichloroethene	156-60-5	0.01	20%	2	1-50	48	10-50
1,1-Dichloroethane (SPCC)	75-34-3	0.10	20%	2	1-50	48	10-50
cis-1,2-Dichloroethene	156-59-2	0.01	20%	2	1-50	48	10-50
*+2-Butanone	78-93-3	0.01	20%	50	1-50	1200	100-200
Chloroform (CCC)	67-66-3	0.01	20%	2	1-50	48	10-50
1,1,1-Trichloroethane	71-55-6	0.01	20%	2	1-50	48	10-5
Cylcohexane	110-82-7	0.01	20%	2	1-50	48	10-50
Carbon Tetrachloride	56-23-5	0.01	20%	2	1-50	48	10-50
Benzene	71-43-2	0.01	20%	2	1-50	48	10-50
1,2-Dichloroethane	107-06-2	0.01	20%	2	1-50	48	10-50
Trichloroethene	79-01-6	0.01	20%	2	1-50	48	10-50
Methyl Cyclohexane	108-87-2	0.01	20%	2	1-50	48	10-50
1,2-Dichloropropane (CCC)	78-87-5	0.01	20%	2	1-50	48	10-50
Bromodichloromethane	75-27-4	0.01	20%	2	1-50	48	10-50
cis-1,3-Dichloropropene	10061-01-5	0.01	20%	2	1-50	48	10-50
*+4-Methyl-2-pentanone	108-10-1	0.01	20%	50	1-50	1200	100-200
Toluene (CCC)	108-88-3	0.01	20%	2	1-50	48	10-50
Trans-1,3-Dichloropropene	10061-02-6	0.01	20%	2	1-50	48	10-50
1,1,2-Trichloroethane	79-00-5	0.01	20%	2	1-50	48	10-50
Tetrachloroethene	127-18-4	0.01	20%	2	1-50	48	10-50
+2-Hexanone	591-78-6	0.01	20%	50	1-50	1200	100-200
Dibromochloromethane	124-48-1	0.01	20%	2	1-50	48	10-50
1,2-Dibromoethane	106-93-4	0.01	20%	2	1-50	48	10-50
Chlorobenzene (SPCC)	108-90-7	0.30	20%	2	1-50	48	10-50
Ethylbenzene	100-41-4	0.01	20%	2	1-50	48	10-50
M+p-Xylenes	108-38-3 106-42-3	0.01	20%	2	1-50	48	10-50
o-Xylene	95-47-6	0.01	20%	2	1-50	48	10-5

Analyte	CAS #	Minimum RRF	Maximum %RSD	PQL Water (ug/L)	PQL Air (ppbv/v)	PQL Soil (ug/Kg)	MS/MSD amount (ppb)
Styrene	100-42-5	0.01	20%	2	1-50	48	10-50
Bromoform (SPCC)	75-252	0.10	20%	2	1-50	48	10-50
Isopropylbenzene	98-82-8	0.01	20%	2	1-50	48	10-50
Bromofluorobenzene	460-00-4	0.01	20%	2	1-50	48	10-50
1,1,2,2-Tetrachloroethane (SPCC)	79-34-5	0.30	20%	2	1-50	48	10-50
1,3-Dichlorobenzene	541-73-1	0.01	20%	2	1-50	48	10-50
1,4-Dichlorobenzene	106-46-7	0.01	20%	2	1-50	48	10-50
1,2-Dichlorobenzene	95-50-1	0.01	20%	2	1-50	48	10-50
+1,2-Dibromo-3-chloropropane	96-12-8	0.01	20%	2	1-50	48	10-50
1,2,4-Trichlorobenzene	120-82-1	0.01	20%	2	1-50	48	10-50
* Ketones are not typically included in analyte list unless specified by the client. Values shown are estimates only.							
+- Poor Performer Other compounds not listed here may be analyzed for as verified by a successful method verification study.							

Table 2: Example Standard Preparation Calculation Sheet

STONE ENVIRONMENTAL INC

Gas Chromatography Laboratory

HP-5

Standard Prep Log

08/16/05-a1					dmkc	
FID WS						
100	ppm					
x: 8/31/05						
Compound	Vendor	Lot	Exp	Conc (mg/ml)	Amount	
Custom VOC	S	LB18097	8/16/2006	20	20	ul
1,1-DCA	A	B2090306	6/22/2006	20	20	ul
1,1,1-TCA	A	B3050086	6/22/2006	10	40	ul
8020 Mix	A	B1070292	8/31/2005	2	200	ul
1,1-DCE	A	B4050042	1/21/2006	20	20	ul
BFB	A	B4110093	5/17/2006	25	16	ul
MeOH	OmniSolv	44090	3/1/2008	into	3684	ul
				Total	4000	ul

15.0 AUTHORIZATION

Authored by: _____ Date: _____

David Crosby, Project Geoscientist

Approved by: _____ Date: _____

Seth Pitkin, Vice President

16.0 REVISIONS

Revision 1:

1. Included the analytical process to analyze air in a tedlar bag using SPME and SW846 Method 8260.

Revision 2:

1. Allow a range for the concentration of the internal standard from 8.33 to 16.67 ppb.
2. Section 9.4. Included text to allow for the BFB tune evaluation to be performed as part of a check standard prior to running calibration standards and environmental samples.
3. Table 1. Adjust chloromethane and bromomethane reporting limits to 10 ppb for waters and 120 ppb for soils.
4. Include calibration by linear regression in Section 11.9.

Revision 3:

1. Adjust frequency for continuing calibration check standard from one per 15 analytical runs to one at the beginning of each analytical day.
2. Adjustment of reporting limits to reflect latest method detection limit study.

Revision 4:

1. Add reference to SIM mode analysis on the GC/MS in Sections 2.0, 3.0, and 9.4.2., and definition under Section 3.0.
2. Change EPA to USEPA were applicable.
3. Update typical GC Program parameters in Section 9.1
4. Update QC recovery limits for LCS/ICV from 70-130% to 70-130% and 70-160% for poor performers wherever applicable (Section 11.0) and in Attachment I.
5. Update SS/IS spike concentrations to be an allowed range.
6. Add specifics regarding standard preparation procedures in Section 7.0 referencing the SEI-4.7.5 SOP

and added Table 2 Example Standard Preparation Calculation Worksheet in Section 14.0.

7. Added two new paragraphs under Section 8.2 Sample Handling for pH determinations and percent moisture determination.

Revision 5:

1. Take out reference to an LCS in section 9.4.
2. Add clarification to the LCS Section 9.4.7 regarding the preparation and analysis of soils.
3. Change Section 11.0 to read Section 11.6 ICV, Section 11.7 LCS and 11.8 MS/MSD.

Attachment I

SAMPLE GC LABORATORY QA/QC CHECKLIST

GC LABORATORY QA/QC CHECKLIST

Date:_____

QC Analysis	Criteria	Filename(s):
IC Calibration:	%RSD ± 15/20% VOCs, >0.99 (other)	
CC Calibration:	%D ± 20 % VOCs, ± 30% (Other)	
SPME Fiber Blank:	< 1/3 reporting limit	
Method Blank:	< 1/2 reporting limit	
ICV Standard:	70-130% (60-140% for poor performers)	
ICV/LCS:	70-130% (60-140% for poor performers)	
MS/MSD Analysis:	70-130% (60-140% for poor performers)	
Surrogate Standards:	70-130% waters, 60-140% in soils and air	
Other (describe):		

Comments/Corrective Action:

Prepared By: _____

Reviewed By:_____

NA = None Available

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

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APPENDIX

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APPENDIX

Appendix I

Stone Environmental Profile Data

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 10/15 - 10/22/2002
Date Analyzed: 10/15 - 10/23/2002

PROFILE ID = P-01

		VOC DATA, ug/L											INORGANIC DATA, mg/L				
Depth	Elevation (ft amsl)	Vinyl Chloride		trans-Dichloroethene		cis-Dichloroethene		Trichloroethene		Tetrachloroethene		% SS	Fe^{+2}	Total Fe	Ammonia	Chloride	Total Chlorine
78.7	65.79	1	U	1	U	1	U	7		1	U	88	0.84	1.18	0.05	183	0.26
88.7	55.80	1	U	1	U	1	U	1	U	1	U	94	0.55	0.56	0.05	321	0.03
98.7	45.78	1	U	1	U	1	U	1	U	1	U	89	0.20	0.22	0.04	275	0.02
108.2	36.31	1	U	1	U	1	U	1	U	1	U	92	NS	NS	NS	NS	NS
117.6	26.93	1	U	1	U	1	U	1	U	1	U	92	0.24	0.80	0.07	221	0.02
127.6	16.90	1	U	1	U	1	U	1	U	1	U	82	0.33	0.27	0.11	40	ND
137.6	6.88	1	U	1	U	1	U	1	U	1	U	93	0.24	0.43	0.09	89	ND
147.1	-2.62	1	U	1	U	1	U	1	U	1	U	101	0.08	0.19	0.05	48	ND
157.3	-12.76	1	U	1	U	1	U	1	U	1	U	99	0.27	0.87	0.22	97	0.15
167.2	-22.73	1	U	1	U	1	U	1	U	1	U	104	0.09	0.23	0.18	363	0.09
177.2	-32.71	1	U	1	U	1	U	1	U	1	U	87	0.02	0.09	0.05	227	0.04
187.2	-42.71	1	U	1	U	1	U	1	U	1	U	88	0.04	0.03	0.06	27	ND
197.6	-53.11	1	U	1	U	1	U	1	U	1	U	82	0.47	1.99	0.40	42	ND
207.3	-62.78	1	U	1	U	1	U	1	U	1	U	84	0.12	1.16	0.16	38	ND
217.1	-72.62	1	U	1	U	1	U	1	U	1	U	82	0.02	0.22	0.06	35	ND
229.1	-84.65	1	U	1	U	1	U	1	U	1	U	79	0.14	0.50	0.21	42	ND
237.5	-93.01	1	U	1	U	1	U	1	U	1	U	79	0.23	0.56	0.31	43	ND
245.0	-100.54	1	U	1	U	1	U	1	U	1	U	82	0.21	0.90	0.42	50	0.43
257.6	-113.08	NS		NS		NS		NS		NS			NS	NS	NS	NS	NS
266.5	-122.01	1	U	1	U	1	U	1	U	1	U	79	0.39	14	14*	24	ND
276.5	-132.00	1	U	1	U	1	U	1	U	1	U	76	0.36	2.68	5.0*	26	ND
286.5	-142.01	1	U	1	U	1	U	1	U	1	U	81	0.23	0.95	0.33*	30	1.31
301.2	-156.67	1	U	1	U	1	U	1	U	1	U	92	0.41	1.53	0.53*	34	0.12

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
U = Undetected below the specified reporting limit.
%SS = Surrogate Recovery
ND = Value below detection limit.
NS = Not Sampled
**** Ammonia test results elevated by high degree of sample turbitity.***
[1] Sample did not have enough volume to run at 1 ppb detection limit

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 10/15-10/20/02, 11/21-12/05/02
Date Analyzed: 10/15-10/20/02, 11/21-12/05/02

PROFILE ID = P-02

		VOC DATA, ug/L												INORGANIC DATA, mg/L				
Depth	Elevation (ft amsl)	Vinyl Chloride		trans-Dichloroethene		cis-Dichloroethene		Trichloroethene		Tetrachloroethene		% SS	Fe^{+2}	Total Fe	Ammonia	Chloride	Total Chlorine
78.2	66.08	1		1	U	1	U	1	U	43		99	0.28	0.73	ND	ND	ND
89.3	55.00	1	U	1	U	1	U	1	U	89		102	0.43	0.29	0.12	ND	0.29
98.8	45.46	1	U	1	U	1	U	1	U	1	U	92	0.10	0.23	0.12	145	0.05
109.4	34.88	1	U	1	U	1	U	1	U	1	U	85	NS	NS	NS	NS	NS
118.6	25.67	1	U	1	U	1	U	1	U	1	U	91	0.02	0.14	0.06	84	0.02
129.0	15.23	1	U	1	U	1	U	1	U	1	U	94	0.04	0.07	0.06	163	0.22
139.9	4.40	1	U	1	U	1	U	1	U	1	U	89	0.03	ND	0.06	66	ND
149.5	-5.25	1	U	1	U	1	U	1	U	1	U	107	0.04	0.20	0.10	148	0.03
159.9	-15.64	1	U	1	U	1	U	1	U	1	U	96	0.06	0.12	0.12	126	ND
170.3	-26.07	1	U	1	U	1	U	1	U	1	U	96	0.04	0.14	0.10	48	0.01
181.5	-37.20	1	U	1	U	1	U	1	U	1	U	113	0.13	0.20	0.35	162	0.03
190.0	-45.75	1	U	1	U	1	U	1	U	1	U	90	0.10	0.31	0.31	48	ND
200.0	-55.74	1	U	1	U	1	U	1	U	1	U	92	0.12	0.43	0.44	48	ND
207.9	-63.62	1	U	1	U	1	U	1	U	1	U	98	0.39	0.71	0.12	47	ND
217.8	-73.59	1	U	1	U	1	U	1	U	1	U	98	0.60	0.95	0.30	63	0.12
228.0	-83.78	1	U	1	U	1	U	1	U	1	U	99	0.40	0.55	0.07	132	0.01
238.0	-93.79	1	U	1	U	1	U	1	U	1	U	101	0.73	2.75	0.44	261	0.22
248.1	-103.80	1	U	1	U	1	U	1	U	1	U	102	0.56	0.85	0.24	280	0.13
258.2	-113.97	1	U	1	U	1	U	1	U	1	U	95	0.13	0.26	0.22	325	0.03
266.6	-122.30	1	U	1	U	1	U	1	U	1	U	92	0.30	0.39	0.49	38	0.06
277.1	-132.85	1	U	1	U	1	U	1	U	1	U	92	0.07	0.25	0.20	24	0.04
287.1	-142.85	1	U	1	U	1	U	1	U	1	U	94	0.10	0.23	0.27	21	0.07
297.1	-152.85	1	U	1	U	1	U	1	U	1	U	95	0.32	0.71	0.71	23	0.13
302.1	-157.80	1	U	1	U	1	U	1	U	1	U	97	ND	0.39	1.05	27	ND

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
U = Undetected below the specified reporting limit.
%SS = Surrogate Recovery
ND = Value below detection limit.
NS = Not Sampled
**** Ammonia test results elevated by high degree of sample turbitity.***
[1] Sample did not have enough volume to run at 1 ppb detection limit

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 11/18-11/21/02
Date Analyzed: 11/18-11/21/02

PROFILE ID = P-03

		VOC DATA, ug/L												INORGANIC DATA, mg/L				
Depth	Elevation (ft amsl)	Vinyl Chloride		trans-Dichloroethene		cis-Dichloroethene		Trichloroethene		Tetrachloroethene		% SS	Fe^{+2}	Total Fe	Ammonia	Chloride	Total Chlorine
87.4	55.8	1	U	1	U	1	U	**1**		**31**		105	1.13	1.5	0.26	14	0.06
97.4	45.8	1	U	1	U	1	U	**2**		**21**		103	0.38	0.62	0.30	13	0.02
107.4	35.8	1	U	1	U	**1**		**3**		**11**		100	0.81	1.86	1.44	45	0.15
117.4	25.8	1	U	1	U	1	U	1	U	**5**		104	0.95	2.14	0.66	58	0.15
127.4	15.8	1	U	1	U	1	U	1	U	1	U	103	0.31	2.24	0.07	452	0.18
137.4	5.8	1	U	1	U	1	U	1	U	1	U	103	0.52	2.54	0.58	461	0.33
147.4	-4.2	1	U	1	U	1	U	1	U	1	U	98	0.78	0.87	0.12	359	0.01
157.4	-14.2	1	U	1	U	1	U	1	U	1	U	92	0.66	0.79	0.07	354	ND
167.4	-24.2	1	U	1	U	1	U	1	U	1	U	96	0.46	0.71	0.09	390	0.02
177.4	-34.2	1	U	1	U	1	U	1	U	1	U	100	0.52	0.59	0.05	499	ND
187.4	-44.2	1	U	1	U	1	U	1	U	1	U	89	0.14	0.23	0.07	393	ND
197.4	-54.2	1	U	1	U	1	U	1	U	1	U	103	0.28	0.36	0.03	494	ND
207.4	-64.2	1	U	1	U	1	U	1	U	1	U	94	0.38	0.48	0.05	384	ND
217.4	-74.2	1	U	1	U	1	U	1	U	1	U	98	0.64	1.09	0.35	287	0.13
227.4	-84.2	1	U	1	U	1	U	1	U	1	U	101	0.59	1.28	0.29	275	0.09
237.4	-94.2	1	U	1	U	1	U	1	U	1	U	102	0.50	0.66	0.06	328	0.01
247.4	-104.2	1	U	1	U	1	U	1	U	1	U	95	0.21	0.74	0.21	480	0.09
257.4	-114.2	1	U	1	U	1	U	1	U	1	U	93	0.40	0.92	0.30	710	0.14
267.4	-124.2	1	U	1	U	1	U	1	U	1	U	98	0.51	0.66	0.07	810	ND
277.4	-134.2	1	U	1	U	1	U	1	U	1	U	97	0.40	0.62	0.07	1002	ND
287.4	-144.2	1	U	1	U	1	U	1	U	1	U	107	0.10	0.28	0.06	650	ND
297.4	-154.2	1	U	1	U	1	U	1	U	1	U	110	0.34	0.50	0.23	692	ND
302.4	-159.2	1	U	1	U	1	U	1	U	1	U	104	0.90	1.29	0.60	608	0.15

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
U = Undetected below the specified reporting limit.
%SS = Surrogate Recovery
ND = Value below detection limit.
NS = Not Sampled
**** Ammonia test results elevated by high degree of sample turbitity.***
[1] Sample did not have enough volume to run at 1 ppb detection limit

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 10/28-11/02/02
Date Analyzed: 10/28-11/02/02

PROFILE ID = P-04

		VOC DATA, ug/L											INORGANIC DATA, mg/L				
Depth	Elevation (ft amsl)	Vinyl Chloride		trans-Dichloroethene		cis-Dichloroethene		Trichloroethene		Tetrachloroethene		% SS	Fe^{+2}	Total Fe	Ammonia	Chloride	Total Chlorine
77.5	64.79	1	U	1	U	1	U	**7**		**32**		97	0.14	0.31	0.02	10	ND
87.4	54.84	1	U	1	U	1	U	**4**		**39**		82	0.15	0.27	0.16	15	ND
97.2	45.07	1	U	1	U	1	U	**2**		**67**		81	0.19	0.37	0.04	31	ND
106.74 [1]	35.50	20	U	20	U	20	U	20	U	20	U	80	0.61	1.26	0.55	41	ND
117.3	24.99	1	U	1	U	**3**		**46**		**2**		87	0.58	0.71	0.01	46	ND
127.4	14.83	20	U	20	U	**22**		**270**		20	U	84	0.44	0.75	0.11	76	0.02
137.5	4.77	20	U	20	U	**21**		**150**		20	U	86	0.53	0.65	0.07	79	0.01
147.6 [1]	-5.36	20	U	20	U	20	U	20	U	20	U	86	1.03	1.12	0.05	71	ND
157.6	-15.39	1	U	1	U	**1**		**12**		**1**		91	0.36	0.65	0.12	102	0.02
167.6	-25.31	1	U	1	U	**2**		**18**		**1**		78	0.39	0.66	0.22	99	0.06
177.5	-35.26	1	U	1	U	1	U	1	U	1	U	97	0.15	0.26	0.07	108	ND
187.5	-45.26	1	U	1	U	1	U	1	U	1	U	92	0.19	0.33	0.08	70	0.03
197.7	-55.41	1	U	1	U	1	U	1	U	1	U	95	0.37	0.45	0.05	136	0.01
207.7	-65.49	1	U	1	U	1	U	1	U	1	U	95	0.30	0.42	0.05	97	0.01
217.7	-75.41	1	U	1	U	1	U	1	U	1	U	105	0.34	0.43	0.09	192	0.05
227.8	-85.51	1	U	1	U	1	U	1	U	1	U	97	0.60	0.79	0.11	222	0.06
237.8	-95.51	1	U	1	U	1	U	1	U	1	U	98	0.59	0.66	0.02	315	0.02
247.8	-105.51	1	U	1	U	1	U	1	U	1	U	90	0.37	0.70	0.30	369	0.09
257.9	-115.61	1	U	1	U	1	U	1	U	1	U	93	0.29	0.97	0.33	333	0.23
267.9	-125.61	1	U	1	U	1	U	1	U	1	U	94	0.48	0.60	0.09	468	0.02
277.9	-135.61	1	U	1	U	1	U	1	U	1	U	95	0.46	0.66	0.20	453	0.04

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
U = Undetected below the specified reporting limit.
%SS = Surrogate Recovery
ND = Value below detection limit.
NS = Not Sampled
**** Ammonia test results elevated by high degree of sample turbitity.***
[1] Sample did not have enough volume to run at 1 ppb detection limit

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 10/28-11/02/02
Date Analyzed: 10/28-11/02/02

PROFILE ID = P-05

		VOC DATA, ug/L												INORGANIC DATA, mg/L				
Depth	Elevation (ft amsl)	Vinyl Chloride		trans-Dichloroethene		cis-Dichloroethene		Trichloroethene		Tetrachloroethene		% SS	Fe^{+2}	Total Fe	Ammonia	Chloride	Total Chlorine
77.5	66.79	20	U	20	U	20	U	**21**		**1,400**		87	0.18	0.25	0.04	ND	ND
87.5	56.79	20	U	20	U	20	U	20	U	**340**		86	0.41	0.80	0.29	12	ND
97.5	46.79	1	U	1	U	**1**		7		**49**		82	0.13	0.27	0.09	ND	0.03
107.5	36.79	20	U	20	U	20	U	20	U	**140**		83	0.33	0.54	0.14	ND	0.03
117.3	27.04	1	U	1	U	1	U	1	U	**55**		78	0.27	0.48	0.11	129	0.03
127.5	16.79	1	U	1	U	1	U	1	U	**11**		85	0.27	0.48	0.04	173	0.01
137.5	6.79	1	U	1	U	1	U	**1**		**22**		84	0.17	0.27	0.05	185	0.01
147.5	-3.21	1	U	1	U	1	U	**3**		**17**		85	0.57	0.72	0.12	214	0.03
157.5	-13.21	1	U	1	U	1	U	1	U	**3**		88	0.54	0.71	0.12	230	0.03
167.5	-23.21	1	U	1	U	1	U	**1**		**9**		85	0.84	0.97	0.11	314	0.05
177.5	-33.21	1	U	1	U	**2**		**7**		**26**		71	0.65	0.77	0.06	332	0.03
187.5	-43.21	1	U	1	U	1	U	**2**		**13**		88	0.59	0.73	0.08	350	0.04
197.4	-53.11	1	U	1	U	1	U	1	U	**7**		74	0.61	0.69	0.09	422	0.01
207.4	-63.11	1	U	1	U	1	U	1	U	**2**		75	0.31	0.39	0.04	431	0.02
217.4	-73.11	1	U	1	U	1	U	1	U	1	U	82	0.01	0.12	0.05	445	0.01
227.4	-83.11	1	U	1	U	1	U	1	U	1	U	96	0.31	0.41	0.03	485	0.02
237.4	-93.11	1	U	1	U	1	U	1	U	1	U	96	0.59	0.79	0.08	541	0.07
247.4	-103.11	1	U	1	U	1	U	1	U	1	U	92	0.69	1.13	0.13	360	0.09
262.5	-118.21	1	U	1	U	1	U	1	U	1	U	96	1.05	4.25	1.56	715	0.37
272.4	-128.11	1	U	1	U	1	U	**1**		**10**		94	0.55	3.14	0.70	850	0.18
282.4	-138.11	1	U	1	U	1	U	1	U	**110**		99	0.47	1.20	0.50	650	0.13
292.4	-148.11	1	U	1	U	1	U	**3**		**15**		99	1.22	1.55	0.26	1040	0.08
299.0	-154.73	1	U	1	U	1	U	1	U	**8**		93	1.14	2.70	0.78	810	0.28

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
U = Undetected below the specified reporting limit.
%SS = Surrogate Recovery
ND = Value below detection limit.
NS = Not Sampled
**** Ammonia test results elevated by high degree of sample turbitity.***
[1] Sample did not have enough volume to run at 1 ppb detection limit

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 11/13-11/18/02
Date Analyzed: 11/13-11/18/02

PROFILE ID = P-06

		VOC DATA, ug/L												INORGANIC DATA, mg/L				
Depth	Elevation (ft amsl)	Vinyl Chloride		trans-Dichloroethene		cis-Dichloroethene		Trichloroethene		Tetrachloroethene		% SS	Fe^{+2}	Total Fe	Ammonia	Chloride	Total Chlorine
82.8	60.39	20	U	20	U	20	U	28		5,600		103	1.89	1.96	0.07	9.00	0.15
92.8	50.39	20	U	20	U	20	U	20	U	1,800		106	1.09	1.24	0.09	7.75	0.27
102.8	40.39	20	U	20	U	20	U	20	U	1,100		95	0.50	0.6	0.06	33.12	0.12
112.8	30.39	1	U	1	U	1	U	1	U	14		108	0.10	0.28	0.07	99	0.07
122.8	20.39	1	U	1	U	1	U	1	U	4		104	0.31	0.66	0.12	137	0.01
132.8	10.39	1	U	1	U	1	U	1	U	4		99	0.13	0.35	0.09	231	0.00
142.8	0.39	1	U	1	U	1	U	1	U	4		97	0.34	0.58	0.07	300	0.12
152.8	-9.61	1	U	1	U	1	U	1	U	6		106	0.01	0.35	0.10	143	0.02
162.8	-19.61	1	U	1	U	1	U	1	U	6		102	0.06	0.07	0.06	67	ND
172.8	-29.61	1	U	1	U	1	U	1	U	12		106	0.07	0.17	0.13	119	0.04
182.8	-39.61	1	U	1	U	1	U	1	U	4		103	0.03	0.05	0.08	362	0.01
192.8	-49.61	1	U	1	U	1	U	1	U	3		105	0.1	0.21	0.11	301	0.02
202.8	-59.61	1	U	1	U	1	U	1	U	2		103	0.2	0.30	0.04	348	0.02
212.8	-69.61	1	U	1	U	1	U	1	U	1		90	0.28	0.35	0.05	410	0.13
222.8	-79.61	1	U	1	U	1	U	1	U	2		93	0.24	0.27	0.05	498	ND
232.8	-89.61	1	U	1	U	1	U	1	U	3		105	0.4	0.52	0.06	582	0.01
242.4	-99.21	1	U	1	U	1	U	1	U	1	U	90	1.33	1.46	0.04	458	0.01
252.4	-109.21	1	U	1	U	1	U	1	U	1	U	97	0.46	0.46	0.02	705	ND
262.4	-119.21	1	U	1	U	1	U	1	U	1	U	98	0.03	0.16	0.07	746	0.02
272.4	-129.21	1	U	1	U	1	U	1	U	5		103	0.01	0.18	0.09	851	ND
282.4	-139.21	1	U	1	U	1	U	1	U	10		103	0.90	0.98	0.15	836	0.01
291.5	-148.31	1	U	1	U	1	U	1		5		102	0.07	0.24	0.17	871	0.03

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
U = Undetected below the specified reporting limit.
%SS = Surrogate Recovery
ND = Value below detection limit.
NS = Not Sampled
**** Ammonia test results elevated by high degree of sample turbitity.***
[1] Sample did not have enough volume to run at 1 ppb detection limit

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 11/19-12/04/02
Date Analyzed: 11/19-12/04/02

PROFILE ID = P-07

		VOC DATA, ug/L											INORGANIC DATA, mg/L				
Depth	Elevation (ft amsl)	Vinyl Chloride		trans-Dichloroethene		cis-Dichloroethene		Trichloroethene		Tetrachloroethene		% SS	Fe^{+2}	Total Fe	Ammonia	Chloride	Total Chlorine
82.4	62.13	1	U	1	U	1	U	1	U	1	U	95	2.11	2.61	0.34	144	0.09
92.4	52.13	1	U	1	U	1	U	1	U	1	U	99	1.57	2.11	0.27	132	0.11
102.4	42.13	1	U	1	U	1	U	1	U	1	U	90	0.66	1.17	0.29	160	0.07
112.4	32.13	1	U	1	U	1	U	1	U	1	U	96	2.36	3.08	0.52	234	0.10
122.1	22.43	1	U	1	U	1	U	1	U	1	U	108	0.92	1.53	0.61	338	0.11
132.4	12.13	1	U	1	U	1	U	1	U	1	U	99	0.95	2.23	0.74	119	0.24
142.4	2.13	1	U	1	U	1	U	**2**		1	U	105	1.47	2.05	0.42	109	0.15
152.4	-7.87	1	U	1	U	1	U	**1**		1	U	100	0.99	1.15	0.17	148	0.02
162.4	-17.87	1	U	1	U	1	U	1	U	1	U	102	2.1	2.70	0.43	163	0.2
172.4	-27.87	1	U	1	U	1	U	1	U	1	U	94	1.24	1.66	0.35	128	0.06
182.4	-37.87	1	U	1	U	1	U	1	U	1	U	100	0.40	0.99	0.35	167	0.13
192.4	-47.87	1	U	1	U	1	U	1	U	1	U	104	1.13	1.71	0.42	199	0.15
202.4	-57.87	1	U	1	U	1	U	1	U	1	U	103	1.78	2.46	0.51	204	0.16
212.4	-67.87	1	U	1	U	1	U	1	U	1	U	100	1.03	1.22	1.34	133	0.55
222.4	-77.87	1	U	1	U	1	U	1	U	1	U	91	0.26	0.41	0.12	96	ND
232.4	-87.87	1	U	1	U	1	U	1	U	1	U	97	1.27	1.46	0.11	73	0.03
242.4	-97.87	1	U	1	U	1	U	1	U	1	U	98	1.06	1.10	0.06	90	ND
252.8	-108.27	1	U	1	U	1	U	1	U	1	U	92	0.81	1.06	0.16	75	0.04
262.8	-118.27	1	U	1	U	1	U	1	U	1	U	105	0.76	1.01	0.22	57	0.08
272.8	-128.27	1	U	1	U	1	U	**2**		1	U	103	1.18	1.31	0.11	48	0.02
282.8	-138.27	1	U	1	U	1	U	1	U	1	U	104	1.20	1.29	0.09	62	0.04
292.8	-148.27	1	U	1	U	1	U	**5**		**1**		101	1.27	1.77	0.21	32	0.12
301.0	-156.47	1	U	1	U	1	U	1	U	1	U	101	0.58	0.71	0.13	89	0.04

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
U = Undetected below the specified reporting limit.
%SS = Surrogate Recovery
ND = Value below detection limit.
NS = Not Sampled
**** Ammonia test results elevated by high degree of sample turbitity.***
[1] Sample did not have enough volume to run at 1 ppb detection limit

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 12/03-12/07/02
Date Analyzed: 12/03-12/07/02

PROFILE ID = P-08

		VOC DATA, ug/L												INORGANIC DATA, mg/L				
Depth	Elevation (ft amsl)	Vinyl Chloride		trans-Dichloroethene		cis-Dichloroethene		Trichloroethene		Tetrachloroethene		% SS	Fe^{+2}	Total Fe	Ammonia	Chloride	Total Chlorine
77.6	66.54	1	U	1	U	1	U	1	U	1	U	103	0.65	0.96	0.09	4	0.01
87.6	56.54	1	U	1	U	1	U	1	U	1	U	101	0.73	1.65	0.27	12	0.20
97.6	46.54	1	U	1	U	1	U	1	U	1	U	101	3.27	3.38	0.26	167	0.07
107.6	36.54	1	U	1	U	1	U	3		1	U	103	1.58	1.80	0.12	95	0.04
117.6	26.54	1	U	1	U	1	U	1	U	1	U	100	1.00	1.28	0.13	87	0.07
127.6	16.54	1	U	1	U	1	U	5		1		109	1.19	1.46	0.19	65	0.06
137.6	6.54	1	U	1	U	1	U	3		1	U	102	1.53	1.64	0.11	74	0.03
147.6	-3.46	1	U	1	U	1	U	1		1	U	101	2.03	2.18	0.04	101	ND
157.6	-13.46	1	U	1	U	1	U	1		1	U	99	1.71	1.74	0.04	159	0.01
167.6	-23.46	1	U	1	U	1	U	1		1	U	98	0.54	0.76	0.07	202	0.01
177.6	-33.46	1	U	1	U	1	U	1	U	1	U	106	1.60	1.70	0.15	268	0.01
187.6	-43.46	1	U	1	U	1	U	1	U	1	U	102	1.97	2.34	0.25	148	0.06
197.6	-53.51	1	U	1	U	1	U	5		1		102	0.06	2.05	0.77	41	0.28
207.6	-63.46	1	U	1	U	1	U	5		2		103	1.10	1.37	0.15	62	0.06
217.6	-73.46	1	U	1	U	1	U	3		1	U	98	1.80	2.66	0.37	87	0.23
227.6	-83.46	1	U	1	U	1	U	9		2		111	0.79	0.95	0.05	43	ND
237.6	-93.46	1	U	1	U	1	U	8		2		111	1.06	1.30	0.07	31	0.01
247.6	-103.51	1	U	1	U	1	U	5		2		110	0.82	1.06	0.05	32	0.01
257.6	-113.46	1	U	1	U	1	U	4		1		98	0.65	0.72	0.03	59	ND
267.6	-123.46	1	U	1	U	1	U	2		1	U	107	0.81	0.96	0.02	101	0.01
277.6	-133.46	1	U	1	U	1	U	2		1	U	101	2.02	2.27	0.14	103	0.08
287.6	-143.46	1	U	1	U	1	U	1	U	1	U	91	0.46	0.50	0.04	27	0.02
297.6	-153.46	3		1	U	1	U	1	U	1	U	108	2.9	3.22	0.12	220	ND
302.6	-158.51	1	U	1	U	1	U	1	U	1	U	94	3.08	3.40	0.10	280	0.03

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
U = Undetected below the specified reporting limit.
%SS = Surrogate Recovery
ND = Value below detection limit.
NS = Not Sampled
**** Ammonia test results elevated by high degree of sample turbitity.***
[1] Sample did not have enough volume to run at 1 ppb detection limit

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 11/13-11/17/02
Date Analyzed: 11/13-11/17/02

PROFILE ID = P-09

		VOC DATA, ug/L												INORGANIC DATA, mg/L				
Depth	Elevation (ft amsl)	Vinyl Chloride		trans-Dichloroethene		cis-Dichloroethene		Trichloroethene		Tetrachloroethene		% SS	Fe^{+2}	Total Fe	Ammonia	Chloride	Total Chlorine
82.6	58.96	1	U	1	U	1	U	1	U	**12**		109	0.12	0.24	0.05	9.13	0
92.6	48.96	20	U	20	U	20	U	20	U	**380**		98	1.15	1.37	0.15	11.63	0.36
102.6	38.96	20	U	20	U	20	U	**30**		**4,400**		106	0.93	0.98	0.06	27.25	0.12
112.6	28.96	20	U	20	U	20	U	**24**		**3,800**		95	0.98	1.11	0.12	13	0.16
122.6	18.96	20	U	20	U	20	U	20	U	**3,200**		99	0.69	1.14	0.38	13	0.02
132.6	8.96	20	U	20	U	20	U	20	U	**290**		99	0.11	3.22	0.76	59	0.03
142.6	-1.04	1	U	1	U	1	U	1	U	**6**		103	0.00	0.21	0.09	87	ND
152.6	-11.04	1	U	1	U	1	U	1	U	**4**		95	0.02	0.11	0.09	87	0.00
162.6	-21.04	1	U	1	U	1	U	1	U	**4**		101	0.31	1.71	0.12	97	0.17
172.6	-31.04	1	U	1	U	1	U	1	U	**5**		103	0.11	0.44	0.33	83	0.04
182.6	-41.03	1	U	1	U	1	U	1	U	**11**		102	0.02	0.32	0.08	110	0.02
192.6	-51.04	1	U	1	U	1	U	1	U	**12**		107	0.06	0.35	0.14	123	0.06
202.6	-61.04	1	U	1	U	1	U	1	U	**2**		109	0.12	0.56	0.38	121	0.02
212.6	-71.04	1	U	1	U	1	U	1	U	**2**		103	0.09	0.41	0.55	141	0.12
222.6	-81.03	1	U	1	U	1	U	1	U	**2**		109	ND	0.05	0.04	214	ND
232.6	-91.03	1	U	1	U	1	U	1	U	**2**		98	0.08	0.28	0.13	300	0.04
242.6	-101.04	1	U	1	U	1	U	1	U	**1**		101	0.13	0.72	0.22	410	0.13
252.6	-111.03	1	U	1	U	1	U	1	U	**8**		89	0.30	0.42	0.06	502	ND
263.0	-121.38	1	U	1	U	1	U	1	U	**4**		97	0.03	0.15	0.05	337	ND
272.6	-131.03	1	U	1	U	1	U	1	U	**3**		98	NS	NS	NS	NS	NS

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
U = Undetected below the specified reporting limit.
%SS = Surrogate Recovery
ND = Value below detection limit.
NS = Not Sampled
**** Ammonia test results elevated by high degree of sample turbitity.***
[1] Sample did not have enough volume to run at 1 ppb detection limit

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 11/03-11/05/02
Date Analyzed: 11/03-11/05/02

PROFILE ID = P-10

		VOC DATA, ug/L												INORGANIC DATA, mg/L				
Depth	Elevation (ft amsl)	Vinyl Chloride		trans-Dichloroethene		cis-Dichloroethene		Trichloroethene		Tetrachloroethene		% SS	Fe^{+2}	Total Fe	Ammonia	Chloride	Total Chlorine
77.7	63.27	20	U	20	U	20	U	**38**		**460**		93	0.14	0.25	0.04	11	0.02
87.8	53.12	20	U	20	U	20	U	20	U	**300**		94	1.23	1.33	0.05	26	ND
97.9	43.02	20	U	20	U	20	U	**21**		**360**		94	0.40	0.73	0.12	65	0.06
108.0	32.97	20	U	20	U	20	U	**24**		**380**		93	0.16	0.39	0.18	17	0.05
118.1	22.87	20	U	20	U	20	U	**23**		**660**		93	0.46	0.58	0.13	66	0.03
128.0	12.97	20	U	20	U	20	U	**20**		**620**		122	1.96	2.07	0.06	78	0.01
138.0	2.97	1	U	1	U	1	U	**2**		**91**		98	0.86	2.16	1.80	10	0.11
148.0	-7.03	20	U	20	U	20	U	20	U	**270**		94	0.22	8.75	0.30	10	0.23
158.0	-17.03	20	U	20	U	20	U	20	U	**220**		98	4.00	9.00	5.00	57	0.04
168.1	-27.13	1	U	1	U	1	U	1	U	**2**		104	1.18	1.89	0.55	149	0.08
178.1	-37.13	1	U	1	U	1	U	1	U	**2**		106	1	2.58	1.50	182	0.52
188.2	-47.23	1	U	1	U	1	U	1	U	**4**		98	0.34	0.60	0.28	209	0.06
198.2	-57.23	1	U	1	U	1	U	1	U	**2**		100	0.55	4.75	3.50	215	0.18
208.1	-67.18	1	U	1	U	1	U	1	U	**1**		104	0.42	1.49	0.36	253	0.28
218.1	-77.19	1	U	1	U	1	U	1	U	**2**		103	0.81	1.36	0.31	269	0.19
226.7	-85.73	1	U	1	U	1	U	1	U	**1**		108	0.23	0.33	0.06	347	ND
238.0	-97.08	1	U	1	U	1	U	1	U	**1**		112	0.54	0.87	0.11	430	0.01
247.8	-106.88	1	U	1	U	1	U	1	U	**1**		101	0.87	7.87	0.37	470	0.05
257.9	-116.98	1	U	1	U	1	U	1	U	**3**		100	3.18	20.25	2.50	653	ND
264.5	-123.58	1	U	1	U	1	U	1	U	**8**		114	1.28	1.81	0.37	535	ND

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
U = Undetected below the specified reporting limit.
%SS = Surrogate Recovery
ND = Value below detection limit.
NS = Not Sampled
**** Ammonia test results elevated by high degree of sample turbitity.***
[1] Sample did not have enough volume to run at 1 ppb detection limit

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 11/03-11/05/02
Date Analyzed: 11/03-11/05/02

PROFILE ID = P-11

		VOC DATA, ug/L												INORGANIC DATA, mg/L				
Depth	Elevation (ft amsl)	Vinyl Chloride		trans-Dichloroethene		cis-Dichloroethene		Trichloroethene		Tetrachloroethene		% SS	Fe^{+2}	Total Fe	Ammonia	Chloride	Total Chlorine
87.0	53.92	1	U	1	U	1	U	1	U	**7**		104	0.53	11.00	0.65	21	0.09
97.4	43.52	1	U	1	U	1	U	1	U	**140**		92	1.09	1.38	0.15	25	0.06
107.4	33.52	1	U	1	U	1	U	1	U	**6**		95	0.88	1.36	0.31	20	0.09
117.4	23.52	1	U	1	U	1	U	1	U	**2**		94	0.26	5.75	3.75	13	0.23
127.4	13.52	1	U	1	U	1	U	1	U	**1**		97	0.69	0.91	0.24	27	0.01
137.4	3.52	1	U	1	U	1	U	1	U	**2**		95	0.74	1.19	0.47	56	0.03
147.4	-6.48	1	U	1	U	1	U	1	U	**2**		105	0.09	0.38	0.07	62	0.02
157.4	-16.48	1	U	1	U	**1**		**28**		**4**		97	0.02	0.22	0.07	63	0.01
167.4	-26.48	20	U	20	U	**36**		**380**		20	U	100	0.58	1.14	0.40	67	0.07
177.4	-36.48	20	U	20	U	**50**		**720**		20	U	103	0.92	1.47	0.36	68	0.11
187.4	-46.48	20	U	20	U	20	U	**210**		20	U	102	0.69	3.03	0.75	73	0.18
197.4	-56.48	1	U	1	U	**6**		**73**		**5**		101	0.46	2.01	0.96	75	0.18
207.4	-66.48	1	U	1	U	**3**		**31**		**2**		102	0.11	0.21	0.05	75	0.01
217.4	-76.51	1	U	1	U	1	U	**2**		1	U	105	0.31	0.82	0.19	89	0.06
227.4	-86.48	1	U	1	U	1	U	1	U	1	U	100	0.46	0.82	0.12	106	0.05
237.4	-96.48	1	U	1	U	1	U	1	U	1	U	107	0.57	1.50	0.35	88	0.06
247.2	-106.28	1	U	1	U	1	U	1	U	1	U	99	0.26	0.56	0.15	87	0.05
257.4	-116.51	1	U	1	U	1	U	1	U	1	U	100	0.17	0.30	0.08	115	ND
267.4	-126.48	1	U	1	U	1	U	1	U	**1**		102	0.039	2.75	0.08	159	ND
277.4	-136.48	1	U	1	U	1	U	1	U	**4**		108	0.47	0.82	0.21	369	0.06
281.1	-140.21	1	U	1	U	1	U	1	U	**3**		97	0.47	0.72	0.19	367	0.03

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
U = Undetected below the specified reporting limit.
%SS = Surrogate Recovery
ND = Value below detection limit.
NS = Not Sampled
**** Ammonia test results elevated by high degree of sample turbitity.***
[1] Sample did not have enough volume to run at 1 ppb detection limit

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 11/13-11/20/02
Date Analyzed: 11/13-11/20/02

PROFILE ID = P-12

		VOC DATA, ug/L												INORGANIC DATA, mg/L				
Depth	Elevation (ft amsl)	Vinyl Chloride		trans-Dichloroethene		cis-Dichloroethene		Trichloroethene		Tetrachloroethene		% SS	Fe^{+2}	Total Fe	Ammonia	Chloride	Total Chlorine
78.9	64.10	20	U	20	U	**42**		**100**		**13,000**		99	0.23	0.41	0.13	12	0.02
87.9	55.06	20	U	20	U	20	U	20	U	**210**		103	0.11	0.56	0.09	11	0.08
97.9	45.03	1	U	1	U	1	U	1	U	**19**		110	0.52	0.61	0.09	124	0.21
108.0	34.95	1	U	1	U	1	U	1	U	**11**		108	0.48	0.57	0.08	157	0.18
118.1	24.89	1	U	1	U	1	U	1	U	**7**		106	0.48	1.28	0.46	145	0.72
128.0	14.94	1	U	1	U	1	U	1	U	**5**		106	0.25	0.33	0.05	262	0.02
137.6	5.32	1	U	1	U	1	U	1	U	**5**		106	0.23	0.31	0.08	245	0.02
146.4	-3.41	1	U	1	U	1	U	1	U	**5**		105	0.17	1.01	0.41	145	0.04
157.8	-14.85	1	U	1	U	1	U	1	U	**5**		108	ND	0.07	ND	81	1.05
167.6	-24.63	1	U	1	U	1	U	1	U	**4**		108	0.06	0.55	0.63	133	0.02
180.3	-37.33	**11**		1	U	1	U	1	U	**52**		96	0.13	0.41	0.43	90	0.06
187.6	-44.68	**9**		1	U	1	U	1	U	**100**		101	1.76	2.60	0.75	154	0.03
197.8	-54.83	**8**		1	U	1	U	1	U	**49**		99	1.72	1.95	0.75	209	0.04
207.4	-64.45	1	U	1	U	1	U	1	U	1	U	109	0.21	0.43	0.07	212	ND
217.7	-74.75	1	U	1	U	1	U	1	U	1	U	98	0.32	0.74	0.14	304	ND
227.5	-84.50	1	U	1	U	1	U	1	U	1	U	94	0.46	0.63	0.012	227	0.03
237.5	-94.50	1	U	1	U	1	U	1	U	1	U	90	0.31	1.06	0.46	600	0.16
247.4	-104.43	1	U	1	U	1	U	1	U	1	U	92	0.03	0.15	0.07	180	ND
257.4	-114.43	1	U	1	U	1	U	1	U	1	U	104	2.01	3.88	0.63	466	1.74
267.5	-124.55	1	U	1	U	1	U	1	U	1	U	92	0.61	0.76	0.38	430	0.47
278.3	-135.35	1	U	1	U	1	U	1	U	**19**		109	0.14	0.38	0.47	669	0.02
287.4	-144.45	1	U	1	U	1	U	1	U	1	U	90	0.21	0.48	0.36	33	0.01
297.1	-154.15	1	U	1	U	1	U	1	U	**5**		102	0.13	0.55	0.31	707	0.02

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
U = Undetected below the specified reporting limit.
%SS = Surrogate Recovery
ND = Value below detection limit.
NS = Not Sampled
**** Ammonia test results elevated by high degree of sample turbitity.***
[1] Sample did not have enough volume to run at 1 ppb detection limit

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 12/06-12/11/02
Date Analyzed: 12/06-12/11/02

PROFILE ID = P-13

		VOC DATA, ug/L											INORGANIC DATA, mg/L				
Depth	Elevation (ft amsl)	Vinyl Chloride		trans-Dichloroethene		cis-Dichloroethene		Trichloroethene		Tetrachloroethene		% SS	Fe^{+2}	Total Fe	Ammonia	Chloride	Total Chlorine
76.6	63.67	20	U	20	U	20	U	20	U	**650**		101	0.86	1.13	0.16	32	0.02
86.6	53.67	20	U	20	U	20	U	20	U	**250**		105	1.23	2.08	0.48	43	0.08
96.6	43.67	20	U	20	U	20	U	20	U	**1,200**		101	1.96	2.83	0.72	63	0.15
106.6	33.67	20	U	20	U	20	U	20	U	**580**		101	0.69	1.42	0.48	82	0.08
116.6	23.67	20	U	20	U	20	U	20	U	**270**		99	2.28	3.55	NS	106	0.10
126.6	13.67	1	U	1	U	1	U	1	U	**12**		97	1.56	2.41	0.77	46	0.17
136.6	3.67	1	U	1	U	1	U	1	U	**2**		104	0.68	0.90	0.18	51	0.05
146.6	-6.33	1	U	1	U	1	U	1	U	**3**		102	0.49	0.71	0.24	111	0.05
156.6	-16.33	1	U	1	U	1	U	**5**		**5**		102	1.0	1.71	0.4	105	0.08
166.6	-26.33	1	U	1	U	1	U	**14**		**6**		102	0.04	0.20	0.12	93	ND
176.6	-36.33	1	U	1	U	1	U	**15**		**3**		107	0.26	0.51	0.23	90	0.04
186.6	-46.33	1	U	1	U	1	U	**16**		**2**		110	0.78	1.41	0.38	70	0.07
196.6	-56.33	1	U	1	U	1	U	**13**		**4**		105	0.49	0.95	0.42	14	0.1
206.6	-66.33	1	U	1	U	**1**		**21**		**10**		107	0.09	0.16	0.07	88	0.01
217.3	-77.03	1	U	1	U	**3**		74		**5**		97	0.02	0.10	0.00	82	ND
227.3	-87.03	6	U	6	U	**20**		**290**		**19**		99	0.14	0.26	0.04	110	0.01
237.3	-97.03	2	U	2	U	**6**		**130**		**9**		101	1.07	1.41	0.48	51	0.27
247.3	-107.03	1	U	1	U	1	U	**3**		**2**		94	0.63	0.63	5.25	120	0.03
260.7	-120.43	1	U	1	U	**18**		**330**		**17**		99					
267.3	-127.03	1	U	1	U	1	U	**8**	U	1	U	95					

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
U = Undetected below the specified reporting limit.
%SS = Surrogate Recovery
ND = Value below detection limit.
NS = Not Sampled
**** Ammonia test results elevated by high degree of sample turbitity.***
[1] Sample did not have enough volume to run at 1 ppb detection limit

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 12/06-12/10/02
Date Analyzed: 12/06-12/10/02

PROFILE ID = P-14

		VOC DATA, ug/L												INORGANIC DATA, mg/L				
Depth	Elevation (ft amsl)	Vinyl Chloride		trans-Dichloroethene		cis-Dichloroethene		Trichloroethene		Tetrachloroethene		% SS	Fe^{+2}	Total Fe	Ammonia	Chloride	Total Chlorine
77.8	62.64	2	U	2	U	**9**		**57**		**77**		98	18	22	NS	21	0.11
85.8	54.64	2	U	2	U	**16**		**19**		**150**		99	21	21	0.50	24	0.15
95.2	45.29	1	U	1	U	**2**		**8**		**31**		100	18	22	1.20	13	0.20
105.3	35.21	1	U	1	U	1	U	**2**		**10**		109	14	15	1.80	6	0.1
115.1	25.32	1	U	1	U	**25**		**23**		**12**		100	11	13	0.80	10	ND
125.2	15.24	1	U	1	U	1	U	**5**		**13**		104	7.3	7.6	0.30	63	0.02
135.1	5.39	1	U	1	U	1	U	**2**		**18**		100	1.00	1.30	0.75	23	0.13
145.0	-4.58	1	U	1	U	1	U	**1**		**6**		103	0.92	1.04	0.13	55	0.02
155.1	-14.61	1	U	1	U	1	U	**3**		**3**		103	0.78	1.41	0.38	70	0.07
165.3	-24.88	1	U	1	U	1	U	**3**		**2**		111	1.00	1.35	0.30	95	0.12
175.4	-34.89	1	U	1	U	1	U	**3**		**1**		108	0.88	1.31	0.27	106	0.05
185.5	-45.04	1	U	1	U	1	U	**1**		**2**		103	0.48	0.62	0.07	102	0.02
195.4	-54.96	1	U	1	U	1	U	1	U	1	U	95	0.83	1.42	0.43	85	0.14
204.7	-64.24	1	U	1	U	1	U	1	U	1	U	105	0.66	1.62	0.20	86	0.27
214.8	-74.34	1	U	1	U	1	U	1	U	1	U	98	0.69	1.30	0.19	86	0.14
224.9	-84.41	1	U	1	U	1	U	1	U	1	U	97	0.05	0.10	0.01	74	0.03
234.9	-94.48	1	U	1	U	1	U	**2**		**9**		106	0.50	0.89	0.11	230	0.08
244.8	-104.36	1	U	1	U	1	U	**3**		**20**		96	0.84	1.50	0.16	470	0.14

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
U = Undetected below the specified reporting limit.
%SS = Surrogate Recovery
ND = Value below detection limit.
NS = Not Sampled
**** Ammonia test results elevated by high degree of sample turbitity.***
[1] Sample did not have enough volume to run at 1 ppb detection limit

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client:	GTEOSI
Location:	Hicksville, NY
Project ID:	Groundwater Profiling
SEI #:	03-1402
Date Sampled:	5/27 - 6/02/03
Date Analyzed:	5/27 - 6/02/03
Report Date:	6/02/03

HOLE ID = P15

Depth	VOC DATA, ug/L												INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS		Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
79.7	20	U	3	U	3	U	3	U	280	J	102		0.12	0.23	0.14	34	ND	3 U	Detect
89.7	4	U	4	U	34	J	26		1800	J	115		0.07	0.11	0.03	33	ND	4 U	4 U
99.7	20	U	20	U	120	J	230		18000	J	109		0.09	0.17	0.08	31	ND	20 U	20 U
109.7	20	U	20	U	180	J	280		15000	J	104		0.15	0.21	0.03	23	ND	20 U	20 U
119.7	20	U	20	U	20	U	67		2500		100		0.11	0.17	0.07	38	ND	20 U	20 U
129.7	2	U	2	U	2	U	2	U	120		98		ND	0.05	0.05	99	ND	2 U	2 U
139.7	1	U	1	U	1	U	1	U	14		86		ND	0.08	0.07	129	0.03	1 U	1 U
149.7	1	U	1	U	1	U	1	U	22		107		ND	ND	0.03	119	0.03	1 U	1 U
159.7	1	U	1	U	1	U	1	U	11		100		ND	0.03	0.06	75	0.02	1 U	1 U
169.7	1	U	1	U	1	U	1	U	14		88		ND	ND	0.07	89	ND	1 U	1 U
179.7	1	U	1	U	1	U	1	U	10		87		ND	0.04	0.07	102	0.02	1 U	1 U
189.7	1	U	1	U	1	U	1	U	10		89		ND	0.08	0.07	49	0.02	1 U	1 U
199.7	1	U	1	U	1	U	1	U	9		93		ND	0.04	0.08	48	0.03	1 U	1 U
208.0	1	U	1	U	1	U	1	U	13		90		0.24	1.03	0.95	54	0.15	1 U	1 U
218.0	1	U	1	U	1	U	1	U	1	U	85		ND	0.08	0.05	59	0.02	1 U	1 U
228.0	1	U	1	U	1	U	1	U	1	U	90		0.03	0.42	0.13	170	0.03	1 U	1 U
240.0	1	U	1	U	1	U	1	U	5		92		0.05	0.40	0.17	248	0.06	1 U	1 U
290.1	20	U	20	U	20	U	20	U	190		103		0.24	0.53	0.34	376	0.13	20 U	20 U
300.1	1	U	1	U	1	U	1	U	19		104		0.36	0.88	0.60	293	0.27	1 U	1 U
310.1	1	U	1	U	1	U	1	U	2		90		0.33	1.09	0.35	128	0.29	1 U	1 U
329.1	1	U	1	U	1	U	1	U	1	U	96		ND	0.05	0.04	210	ND	1 U	1 U
339.1	1	U	1	U	1	U	1	U	1	U	88		ND	ND	0.02	135	ND	1 U	1 U

Depth	VOC DATA, ug/L																													
	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
79.7	1	U	7	J	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
89.7	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	115
99.7	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	109
109.7	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	104
119.7	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	100
129.7	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	98
139.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	86
149.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	107
159.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
169.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	88
179.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	87
189.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	89
199.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	93
208.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	90
218.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	85
228.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	90
240.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	92
290.1	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	20	U	103
300.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	104
310.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	90
329.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	96
339.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	88

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 12/08-12/11/02
Date Analyzed: 11/08-12/11/02

PROFILE ID = P-16

		VOC DATA, ug/L												INORGANIC DATA, mg/L				
Depth	Elevation (ft msl)	Vinyl Chloride		trans-Dichloroethene		cis-Dichloroethene		Trichloroethene		Tetrachloroethene		% SS	Fe^{+2}	Total Fe	Ammonia	Chloride	Total Chlorine
81.0	57.67	40	U	60	U	**150**		**200**		**22,000**		97	0.49	0.95	0.42	14	0.1
91.0	47.67	40	U		U	**70**		**100**		**19,000**		97	1.30	1.42	0.11	9	0.04
101.0	37.67	2	U	2	U	2	U	2	U	**110**		100	0.22	0.86	0.14	15	0.01
111.0	27.67	1	U	1	U	1	U	1	U	**30**		104	0.31	0.41	0.16	7	0.02
121.0	17.67	1	U	1	U	1	U	1	U	**26**		104	0.39	0.46	0.08	77	0.04
131.0	7.67	1	U	1	U	1	U	1	U	**20**		106	0.30	0.42	0.06	76	0.02
141.0	-2.33	1	U	1	U	1	U	1	U	**17**		104	0.37	0.53	0.06	87	0.06
151.0	-12.33	1	U	1	U	1	U	1	U	**16**		102	0.11	0.24	0.11	69	0.01
161.0	-22.33	1	U	1	U	1	U	**1**		**13**		100	0.33	0.76	0.40	61	0.16
171.0	-32.33	1	U	1	U	1	U	**2**		**10**		101	0.27	0.35	0.11	54	0.01
181.0	-42.33	1	U	1	U	1	U	1	U	**11**		96	0.19	0.41	0.16	65	0.04
191.0	-52.33	1	U	1	U	1	U	**1**		**8**		95	0.29	0.35	0.05	60	ND
201.0	-62.33	1	U	1	U	1	U	1	U	**7**		90	0.28	0.40	0.08	39	0.02
211.0	-72.33	1	U	1	U	1	U	1	U	**8**		101	0.13	0.21	0.08	53	0.02
221.0	-82.33	1	U	1	U	1	U	1	U	**7**		106	0.34	2.04	0.41	60	0.11
231.0	-92.33	1	U	1	U	1	U	1	U	**8**		100	0.05	0.23	0.08	78	0.01
241.0	-102.33	1	U	1	U	1	U	1	U	**5**	U						
251.0	-112.33	1	U	1	U	1	U	1	U	**12**	U						

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
U = Undetected below the specified reporting limit.
%SS = Surrogate Recovery
ND = Value below detection limit.
NS = Not Sampled
**** Ammonia test results elevated by high degree of sample turbitity.***
[1] Sample did not have enough volume to run at 1 ppb detection limit

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 4/24 - 4/27/03
Date Analyzed: 4/24 - 5/09/03
Report Date: 5/09/03

HOLE ID = P17

	VOC DATA, ug/L											INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
73.3	1	U	1	U	1	U	1	U	1	U	82	0.09	0.50	0.29	12	0.04	NA	NA
82.3	1	U	1	U	1	U	1	U	1	U	99	0.11	0.19	0.07	18	ND	NA	NA
92.3	1	U	1	U	1	U	1	U	1	U	83	0.06	0.18	0.08	26	0.03	NA	NA
102.3	1	U	1	U	1	U	1	U	1	U	109	ND	0.38	0.09	83	0.02	1 U	1 U
112.3	1	U	1	U	1	U	1	U	1	U	84	ND	0.12	0.03	62	ND	NA	NA
122.3	1	U	1	U	1	U	1	U	1	U	84	0.02	0.10	0.07	73	ND	NA	NA
132.2	1	U	1	U	1	U	1	U	1	U	76	ND	0.07	0.03	72	ND	NA	NA
142.2	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ	93	0.43	1.95	0.48	73	0.33	NA	NA
152.3	1	U	1	U	1	U	1	U	1	U	101	0.04	0.22	0.16	81	0.02	1 U	1 U
162.3	1	U	1	U	1	U	1	U	1	U	90	0.23	1.86	0.44	69	0.20	1 U	1 U
172.2	1	U	1	U	1	U	1	U	1	U	103	0.04	0.15	0.20	68	ND	1 U	1 U
183.1	1	U	1	U	1	U	1	U	1	U	92	0.05	0.09	0.05	66	ND	1 U	1 U
193.1	1	U	1	U	1	U	1	U	1	U	105	0.14	0.43	0.38	67	0.06	1 U	1 U
203.1	1	U	1	U	1	U	1	U	1	U	96	0.26	1.01	0.58	70	0.12	1 U	1 U
213.1	1	U	1	U	1	U	1	U	1	U	97	0.68	3.04	1.64	47	0.52	1 U	1 U
223.1	1	U	1	U	1	U	1	U	1	U	110	0.16	0.73	0.40	56	0.10	1 U	1 U

	VOC DATA, ug/L																													
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
73.3	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		82
82.3	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		99
92.3	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		83
102.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109
112.3	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		84
122.3	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		84
132.2	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		76
142.2	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		93
152.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
162.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	90
172.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103
183.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92
193.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	105
203.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
213.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
223.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	110

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled .
NA = Not Analyzed for this analyte.

STONE ENVIRONMENTAL INC

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 10/04-10/10/2003
Date Analyzed: 10/04-10/10/2003
Report Date: 10/10/2003

HOLE ID =P18	VOC DATA, ug/L																				INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	%SS										Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
76.7	1	U	1	U	1	U	1	U	2		102										0.06	0.08	0.06	23	ND	1U	1U
86.7	1	U	1	U	1	U	1	U	1	U	95										ND	ND	ND	83	0.04	1U	1U
96.7	1	U	1	U	1	U	1	U	1	U	98										0.05	0.19	0.14	114	0.03	1U	1U
106.7	1	U	1	U	1	U	1	U	1	U	96										ND	0.06	0.05	122	0.02	1U	1U
116.7	1	U	1	U	1	U	1	U	1	U	94										0.08	0.33	0.34	185	0.07	1U	1U
126.7	1	U	1	U	1	U	1	U	2		97										ND	0.03	0.04	190	0.02	1U	1U
136.7	1	U	1	U	1	U	1	U	4		101										ND	0.03	0.04	64	0.03	1U	1U
146.7	1	U	1	U	1	U	1	U	6		100										0.68	1.03	0.23	97	0.03	1U	1U
156.7	1	U	1	U	1	U	1	U	1	U	92										ND	0.05	0.03	47	0.04	1U	1U
166.7	1	U	1	U	1	U	1		1	U	105										0.37	0.96	0.54	37	0.07	1U	1U
176.7	1	U	1	U	1	U	4		1	U	97										0.12	0.63	0.23	35	0.04	1U	1U
186.7	1	U	1	U	1	U	1		1	U	109										ND	0.03	0.03	54	ND	1U	1U
207.7	1	U	1	U	1	U	14		1	U	100										0.06	0.08	0.01	57	ND	1U	1U
217.7	1	U	1	U	1	U	10		1	U	99										0.07	0.07	0.01	67	ND	Detect	1U
227.7	1	U	1	U	8		51		1	U	100										0.08	0.11	0.03	47	ND	1U	1U
237.7	1	U	1	U	5		35		1	U	108										ND	0.16	ND	52	ND	1U	1U
247.7	1	U	1	U	2		15		1		92										0.05	0.10	0.03	50	0.03	Detect	1U
257.7	1	U	1	U	2		20		1	U	93										0.17	0.40	0.32	76	0.11	Detect	1U
267.7	1	U	1	U	1	U	6		1		103										0.24	2.70	0.28	45	0.18	Detect	1U
277.7	1	U	1	U	1	U	4		1	U	103										0.03	0.06	0.04	53	0.02	Detect	1U
287.7	1	U	1	U	1	U	4		1	U	99										0.04	0.15	0.06	40	0.04	Detect	1U
302.7	1	U	1	U	1	U	2		1	U	103										0.19	0.35	0.1	42	0.08	Detect	1U
328.3	1	U	1	U	1	U	6		1	U	106										0.21	1.09	0.15	29	0.08	1U	1U
335.8	1	U	1	U	1	U	10		1		106										0.03	0.26	0.06	33	0.03	1U	1U
344.0	1	U	1	U	1	U	1	U	1	U	98										0.12	1.01	0.11	7	0.52	1U	1U
350.3	1	U	1	U	1	U	8		1	U	105										0.05	0.12	0.21	31	0.04	1U	1U

	VOC DATA, ug/L																																		
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS										
76.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102										
86.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95										
96.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98										
106.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96										
116.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94										
126.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97										
136.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101										
146.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100										
156.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92										
166.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	105										
176.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97										
186.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109										
207.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100										
217.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99										
227.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100										
237.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108										
247.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92										
257.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	93										
267.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	UJ	1	UJ	1	UJ	103										
277.7	1	U	1	U	1		1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103										
287.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99										
302.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103										
328.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	106										
335.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	106										
344.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98										
350.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	105										

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 8/04 - 8/13/03
Date Analyzed: 8/04 - 8/13/03
Report Date: 8/14/2003

HOLE ID = P20	VOC DATA, ug/L												INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
79.6	1	U	1	U	1	U	1	U	1	U	90	ND	0.12	0.14	26	0.02	1U	1U
89.6	1	U	1	U	1	U	1	U	1	U	92	ND	0.06	0.04	167	0.02	1U	1U
99.6	1	U	1	U	1	U	1	U	1	U	82	0.05	0.17	0.17	33	0.03	1U	1U
109.6	1	U	1	U	1	U	1	U	1	U	83	0.14	0.18	0.03	25	ND	1U	1U
119.6	1	U	1	U	1	U	1	U	1	U	85	0.11	0.14	0.03	18	ND	1U	1U
129.6	1	U	1	U	1	U	1	U	1	U	84	0.07	0.15	0.13	19	ND	1U	1U
139.6	1	U	1	U	1	U	1	U	1	U	100	0.15	0.29	0.29	30	0.05	1U	1U
149.6	1	U	1	U	1	U	1	U	1	U	91	ND	0.06	0.03	53	0.02	1U	1U
159.6	1	U	1	U	1	U	1	U	1	U	91	0.05	0.09	0.02	83	ND	1U	1U
169.6	1	U	1	U	1	U	1	U	1	U	83	0.04	0.06	0.03	69	ND	1U	1U
179.6	1	U	1	U	1	U	1	U	1	U	90	0.06	0.13	0.04	32	0.02	1U	1U
189.6	1	U	1	U	1	U	1	U	1	U	91	0.08	0.17	0.08	70	ND	1U	1U
209.7	1	U	1	U	1	U	1	U	1		96	0.09	0.44	0.22	64	0.04	1U	1U
220.7	1	U	1	U	1	U	1	U	18		95	0.08	0.27	0.06	246	ND	1U	1U
229.7	1	U	1	U	1	U	1	U	2		103	0.07	0.28	0.14	56	0.07	1U	1U
269.6	1	U	1	U	1	U	1	U	20		94	0.06	0.15	0.17	186	0.04	1U	1U
281.9	1	U	1	U	1	U	1	U	8		87	0.07	0.89	0.42	65	0.12	1U	1U
289.6	1	U	1	U	1	U	1	U	10		87	0.03	0.07	0.05	51	0.02	1U	1U
298.7	1	U	1	U	1	U	2		41		95	0.09	0.27	0.11	34	0.02	1U	1U
309.6	8	U	8	U	8	U	8	U	595		98	0.07	0.12	0.08	92	ND	8U	8U
319.6	4	UJ	4	UJ	4	UJ	14	J	281	J	102	0.04	0.06	0.05	143	ND	4U	4U
328.2	1	UJ	1	UJ	1	UJ	1	UJ	5	J	75	ND	0.03	0.03	74	ND	1U	1U
339.6	1	U	1	U	1	U	1	U	1	U	96	ND	ND	0.05	49	ND	1U	1U
349.6	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ	89	ND	ND	0.02	59	0.02	1U	1U
359.6	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ	98	0.12	0.22	0.30	27	0.02	1U	1U
369.6	1	U	1	U	1	U	1	U	2		104	1.60	2.50	8.80	140	ND	1U	1U
379.6	1	U	1	U	1	U	1	U	5		91	0.11	0.17	0.28	412	0.05	1U	1U
392.0	1	U	1	U	1	U	1	U	4		108	0.04	0.73	0.12	320	0.02	1U	1U
428.0	1	U	1	U	1	U	1		8		104	ND	0.04	0.10	650	0.02	1U	1U
462.9	1	U	1	U	1	U	3		12		118	0.08	0.25	0.07	835	0.06	1U	1U
469.2	1	U	1	U	1	U	10		25		117	0.04	0.15	0.13	1140	0.06	1U	1U
476.7	1	U	1	U	1	U	1	U	17		122	ND	0.12	0.06	463	0.03	1U	1U

	VOC DATA, ug/L																													
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
79.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	90
89.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92
99.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	82
109.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	83
119.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	85
129.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	84
139.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
149.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91
159.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91
169.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	83
179.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	90
189.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91
209.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
220.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95
229.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103
269.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94
281.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	87
289.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	87
298.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95
309.6	8	U	8	U	8	U	8	U	8	U	8	U	8	U	16	U	8	U	8	U	8	U	8	U	98
319.6	4	UJ	4	UJ	4	UJ	4	UJ	4	UJ	4	UJ	4	UJ	8	UJ	4	UJ	4	UJ	4	UJ	4	UJ	102
328.2	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ	2	UJ	1	UJ	1	UJ	1	UJ	1	UJ	75
339.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
349.6	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ	2	UJ	1	UJ	1	UJ	1	J	1	UJ	89
359.6	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ	1	UJ	2	UJ	1	UJ	1	UJ	1	UJ	1	UJ	98
369.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
379.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91
392.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108
428.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
462.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	118
469.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	117
476.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	122

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 6/24 - 7/01/03
Date Analyzed: 6/24 - 7/02/03
Report Date: 7/02/03

HOLE ID = P23	VOC DATA, ug/L																		INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113		1,2-DCA / Benzene	
80.1	1	U	1	U	1	U	1	U	13		109	ND	0.06	0.06	35	ND	1 U		1 U	
90.1	8	U	8	U	8	U	8	U	510		104	0.05	0.16	0.10	34	ND	8 U		8 U	
100.1	20	U	20	U	20	U	20	U	3100		108	0.06	0.12	0.10	61	ND	20 U		20 U	
110.1	3	U	3	U	3	U	3	U	240		113	0.07	0.17	0.13	43	0.02	3 U		3 U	
120.1	1	U	1	U	1	U	1	U	26		115	0.03	0.07	0.06	50	ND	1 U		1 U	
130.1	1	U	1	U	1	U	1	U	7		82	0.09	0.25	0.21	45	0.02	1 U		1 U	
140.1	1	U	1	U	1	U	1	U	6		77	0.03	0.35	0.22	51	0.02	1 U		1 U	
150.1	1	U	1	U	1	U	1	U	4		107	0.09	2.75	2.30	68	0.35	Detect		1 U	
160.1	1	U	1	U	1	U	23		13		82	1.80	2.94	2.25	66	0.03	Detect		1 U	
170.1	1	U	1	U	1	U	7		6		80	ND	0.19	0.14	67	0.03	1 U		1 U	
180.1	1	U	1	U	10		110		11		84	0.03	0.05	0.18	65	0.05	1 U		1 U	
190.1	3	U	3	U	13		150		12		114	0.85	3.10	1.40	81	0.63	3 U		3 U	
200.1	1	U	1	U	3		48		5		112	ND	0.18	0.12	135	0.04	1 U		1 U	
210.1	1	U	1	U	1	U	1	U	2		80	0.19	0.58	0.42	85	0.12	1 U		1 U	
220.1	1	U	1	U	2		31		3		111	ND	0.04	0.06	108	ND	1 U		1 U	
227.7	1	U	1	U	2		44		4		111	0.09	0.61	0.33	87	0.10	1 U		1 U	
239.8	1	U	1	U	1	U	2		1	U	103	0.05	0.10	0.11	82	0.02	1 U		1 U	
252.0	1	U	1	U	1	U	19		27		111	0.03	0.15	0.13	75	0.02	1 U		1 U	
262.0	1	U	1	U	1	U	14		7		99	0.03	0.09	1.60	108	ND	1 U		1 U	
287.0	1	U	1	U	1	U	6		9		111	0.15	2.41	0.45	247	0.09	1 U		1 U	
293.5	1	U	1	U	1	U	2		9		111	0.45	1.25	0.75	403	0.30	1 U		1 U	
334.1	1	U	1	U	1	U	11		1		107	0.04	0.06	0.09	163	0.04	1 U		1 U	
343.4	1	U	1	U	1	U	4		10		99	ND	ND	0.07	499	0.02	1 U		1 U	
347.4	1	U	1	U	1	U	1		3		99	ND	0.05	0.03	208	0.02	1 U		1 U	

	VOC DATA, ug/L																															
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
80.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109
90.1	8	U	8	U	8	U	8	U	8	U	8	U	8	U	16	U	8	U	8	U	8	U	8	U	104
100.1	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	108
110.1	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	113
120.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	115
130.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	82
140.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	77
150.1	1	U	1	U	1		1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	107
160.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	82
170.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	80
180.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	84
190.1	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	114
200.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	112
210.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	80
220.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	111
227.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	111
239.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103
252.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	2		111
262.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99
287.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	111
293.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	111
334.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	107
343.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99
347.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 6/16 - 6/19/03
Date Analyzed: 6/16 - 6/19/03
Report Date: 6/19/03

HOLE ID = P-24

	VOC DATA, ug/L											INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
77.4	1	U	1	U	1	U	1	U	1	U	102	ND	0.15	0.08	23	0.03	1 U	1 U
87.4	1	U	1	U	1	U	1	U	1	U	98	0.06	0.20	0.05	73	0.04	1 U	1 U
97.4	1	U	1	U	1	U	1	U	1	U	98	0.68	1.33	0.68	87	0.57	1 U	1 U
107.4	1	U	1	U	1	U	1	U	1	U	98	0.13	0.40	0.27	92	0.12	1 U	1 U
115.4	1	U	1	U	1	U	1	U	1	U	98	0.10	0.20	0.16	92	0.06	1 U	1 U
127.3	1	U	1	U	1	U	1	U	1	U	102	ND	0.10	0.06	135	ND	**Detect**	1 U
137.3	1	U	1	U	1	U	**1**		1	U	104	0.06	0.25	0.1	173	0.03	**Detect**	1 U
147.3	1	U	1	U	1	U	**2**		1	U	98	0.10	0.12	0.04	185	ND	**Detect**	1 U
157.3	1	U	1	U	1	U	1	U	1	U	97	0.07	0.11	0.03	208	ND	**Detect**	1 U
167.3	1	U	1	U	1	U	1	U	1	U	96	ND	0.05	ND	221	ND	1 U	1 U
177.3	1	U	1	U	1	U	1	U	1	U	95	0.12	0.30	0.09	295	0.04	**Detect**	1 U
187.3	1	U	1	U	1	U	**2**		1	U	95	ND	0.06	0.03	280	0.02	**Detect**	1 U
197.3	1	U	1	U	1	U	**2**		1	U	104	ND	0.07	0.02	250	0.02	**Detect**	1 U
207.3	1	U	1	U	**2**		**8**		1	U	105	ND	0.03	0.02	122	0.02	**Detect**	1 U
217.3	1	U	1	U	**3**		**25**	Z	**2**		110	ND	0.05	0.05	87	0.03	**Detect**	1 U
227.3	1	U	1	U	**1**		**9**		1	U	110	0.08	0.25	0.13	95	0.03	**Detect**	1 U
237.3	1	U	1	U	1	U	1	U	1	U	104	ND	0.08	0.03	77	0.02	**Detect**	1 U
247.3	2	U	2	U	2	U	**6**		2	U	107	ND	0.10	0.06	72	0.04	**Detect**	2 U
257.3	1	U	1	U	1	U	**5**		1	U	105	ND	ND	ND	74	0.02	**Detect**	1 U
267.3	1	U	1	U	1	U	1	U	1	U	100	0.09	0.13	0.11	113	0.04	**Detect**	1 U
277.3	1	U	1	U	1	U	1	U	1	U	102	0.05	0.16	0.09	131	0.03	**Detect**	1 U
287.3	1	U	1	U	1	U	1	U	1	U	104	ND	0.06	0.02	81	0.03	**Detect**	1 U
297.3	1	U	1	U	1	U	1	U	1	U	101	0.18	0.46	0.24	64	0.04	**Detect**	1 U

	VOC DATA, ug/L																								
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
77.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
87.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98
97.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98
107.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98
115.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98
127.3	1	U	1	U	1	U	**7**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
137.3	1	U	1	U	1	U	**11**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
147.3	1	U	1	U	1	U	**12**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98
157.3	1	U	1	U	1	U	**18**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
167.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
177.3	1	U	1	U	1	U	**7**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95
187.3	1	U	1	U	1	U	**25**	Z	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95
197.3	1	U	1	U	1	U	**20**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
207.3	1	U	1	U	**1**		**94**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	105
217.3	1	U	1	U	**3**		**130**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	110
227.3	1	U	1	U	**1**		**92**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	110
237.3	1	U	1	U	1	U	**11**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
247.3	2	U	2	U	2	U	**71**		2	U	2	U	2	U	4	U	2	U	2	U	2	U	2	U	107
257.3	1	U	1	U	1	U	**33**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	105
267.3	1	U	1	U	1	U	**6**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
277.3	1	U	1	U	1	U	**2**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
287.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
297.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client:	GTEOSI
Location:	Hicksville, NY
Project ID:	Groundwater Profiling
SEI #:	03-1402
Date Sampled:	7/08 - 7/14/03
Date Analyzed:	7/08 - 7/14/03
Report Date:	7/14/03

HOLE ID = P25	VOC DATA, ug/L											INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
79.7	1	U	1	U	1	U	1	U	1		109	0.04	0.15	0.06	29	0.02	1 U	1 U
89.7	1	U	1	U	1	U	1	U	1	U	108	ND	0.12	0.06	37	0.02	1 U	1 U
99.7	1	U	1	U	1	U	1	U	1	U	110	ND	0.10	0.05	92	ND	1 U	1 U
109.7	1	U	1	U	1	U	1	U	3		94	ND	0.06	0.06	90	0.02	1 U	1 U
119.7	1	U	1	U	1	U	1	U	8		107	ND	0.07	0.05	77	0.02	1 U	1 U
129.7	1	U	1	U	1	U	1	U	6		96	ND	0.04	0.04	21	0.02	1 U	1 U
139.7	1	U	1	U	1		30		1		109	ND	0.04	0.02	34	ND	1 U	1 U
149.7	1	U	1	U	1	U	3		2		97	ND	0.08	0.06	69	0.02	1 U	1 U
159.7	1	U	1	U	3		47		7		105	0.11	1.53	1.55	68	0.09	1 U	1 U
169.7	1	U	1	U	1	U	12		1	U	111	0.09	0.27	0.3	48	0.05	1 U	1 U
179.7	1	U	1	U	2		27		1	U	113	ND	0.08	0.04	73	0.02	1 U	1 U
189.7	1	U	1	U	7		56		1	U	100	0.05	0.13	0.09	78	0.05	1 U	1 U
199.7	1	U	1	U	20		160		1		120	0.16	0.34	0.22	61	0.11	1 U	1 U
209.7	1	U	1	U	20		140		2		120	0.12	0.52	0.19	42	0.07	1 U	1 U
219.7	1	U	1	U	20		140		2		118	0.10	0.55	0.26	41	0.06	1 U	1 U
229.5	3	U	3	U	23		310		3		118	0.08	0.38	0.13	46	0.06	3 U	3 U
239.5	1	U	1	U	9		100		2		108	0.06	0.12	0.22	41	0.04	1 U	1 U
249.5	1	U	1	U	5		61		2		96	ND	ND	ND	50	ND	1 U	1 U
259.5	1	U	1	U	4		52		1	U	118	0.02	0.09	0.12	57	ND	1 U	1 U
269.5	1	U	1	U	1	U	2		1	U	112	0.09	0.39	0.25	57	0.09	1 U	1 U
275.8	1	U	1	U	1	U	1	U	1	U	103	ND	0.05	0.07	49	0.03	1 U	1 U
290.0	1	U	1	U	1	U	15		1	U	116	ND	0.07	0.05	83	0.02	1 U	1 U
300.0	1	U	1	U	1	U	4		1	U	113	ND	0.42	0.18	105	0.03	1 U	1 U
310.0	1	U	1	U	1	U	4		1	U	109	ND	0.08	0.09	88	0.02	1 U	1 U
320.0	1	U	1	U	1	U	1	U	1	U	100	ND	0.19	0.14	58	ND	1 U	1 U
330.0	1	U	1	U	1	U	1	U	1	U	96	0.12	0.65	0.29	55	0.03	1 U	1 U
340.0	1	U	1	U	1	U	1	U	1	U	96	ND	0.05	0.06	64	0.02	1 U	1 U
349.4	1	U	1	U	1	U	10		1		103	ND	ND	ND	193	ND	1 U	1 U
370.0	1	U	1	U	1	U	1	U	1	U	109	0.11	0.36	0.4	62	0.04	1 U	1 U
379.2	1	U	1	U	1	U	1	U	1	U	109	0.07	0.12	0.16	30	ND	1 U	1 U

	VOC DATA, ug/L																								
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
79.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109
89.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108
99.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	110
109.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94
119.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	107
129.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
139.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109
149.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
159.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	105
169.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	111
179.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	113
189.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
199.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	120
209.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	120
219.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	118
229.5	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	118
239.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108
249.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
259.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	118
269.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	112
275.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103
290.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	116
300.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	113
310.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109
320.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
330.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
340.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
349.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103
370.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109
379.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated v[illegible]
ND = Value be[illegible]tion limit.

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client:	GTEOSI
Location:	Hicksville, NY
Project ID:	Groundwater Profiling
SEI #:	03-1402
Date Sampled:	5/12 - 5/20/03
Date Analyzed:	5/12 - 5/20/03
Report Date:	5/20/03

HOLE ID =P26

Depth	VOC DATA, ug/L												INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS		Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
76.9	1	U	1	U	1	U	1	U	1	U	110		ND	0.27	0.14	263	ND	1 U	1 U
86.8	1	U	1	U	1	U	1	U	1	U	113		0.08	0.89	0.40	310	0.16	1 U	1 U
96.8	1	U	1	U	1	U	1	U	1	U	103		0.03	0.95	0.35	478	0.18	1 U	1 U
106.8	1	UJ	1	U	1	U	1	U	1	U	102		0.12	0.64	0.23	107	0.07	1 U	1 U
116.8	1	UJ	1	U	1	U	1	U	1	U	100		0.23	1.58	0.47	128	0.23	1 U	1 U
126.8	1	UJ	1	U	1	U	1	U	1	U	103		0.05	0.24	0.15	132	0.05	1 U	1 U
136.8	1	UJ	1	U	1	U	1	U	1	U	97		0.29	1.55	1.5	124	0.26	1 U	1 U
146.8	1	U	1	U	1	U	1	U	1	U	100		0.04	0.11	0.08	243	ND	1 U	1 U
152.3	1	U	1	U	1	U	1	U	1	U	101		0.25	7.60	3.2	122	0.12	1 U	1 U
162.3	1	U	1	U	1	U	1	U	1	U	100		0.31	1.21	0.53	143	0.27	1 U	1 U
172.3	1	U	1	U	1	U	1	U	1	U	102		0.23	1.01	0.7	207	0.3	1 U	1 U
182.3	1	U	1	U	1	U	1	U	1	U	105		0.04	0.13	0.12	97	0.04	1 U	1 U
192.3	1	U	1	U	1	U	1	U	1	U	98		0.15	1.76	1.45	137	0.29	1 U	1 U
202.3	1	U	1	U	1	U	1	U	1	U	105		0.08	0.48	0.26	132	0.05	1 U	1 U
211.3	1	U	1	U	1	U	1	U	1	U	93		0.23	1.88	0.53	108	0.17	1 U	1 U
221.3	1	U	1	U	1	U	1	U	1	U	111		0.17	0.56	0.55	81	0.22	1 U	1 U
231.3	1	U	1	U	1	U	1	U	1	U	108		0.03	0.32	0.14	94	0.03	1 U	1 U
241.3	1	U	1	U	1	U	1	U	1	U	109		0.21	0.38	0.39	89	0.16	1 U	1 U
257.3	1	UJ	1	U	1	U	1	U	1	U	93		0.10	0.42	0.28	79	0.15	1 U	1 U
267.1	1	UJ	1	U	1	U	1	U	1	U	89		0.44	0.97	0.63	95	0.39	1 U	1 U
276.5	1	U	1	U	1	U	1	U	1	U	112		0.04	0.28	0.63	114	0.05	1 U	1 U
286.5	1	U	1	U	1	U	5		1		114		ND	0.95	0.9	61	0.15	Detect	1 U
295.9	1	U	1	U	1	U	2		1	U	117		ND	0.49	0.22	34	0.03	Detect	1 U

Depth	VOC DATA, ug/L																																	
	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
76.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	110
86.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	113
96.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103
106.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
116.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
126.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103
136.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
146.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
152.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
162.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
172.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
182.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	105
192.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98
202.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	105
211.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	93
221.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	111
231.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108
241.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109
257.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	2		1	U	1	U	93
267.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	89
276.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	112
286.5	1	U	1	U	1		1		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	114
295.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	117

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 5/03 - 5/08/03
Date Analyzed: 5/03 - 5/08/03
Report Date: 5/08/03

HOLE ID = P27

Depth	VOC DATA, ug/L: Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	INORGANIC DATA, mg/L: Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	COELUTING COMPOUNDS: 1,1-DCE / Freon 113	1,2-DCA / Benzene
79.8	1	U	1	U	1	U	1	U	19		99	0.28	0.38	0.11	36	ND	1 U	1 U
89.8	1	U	1	U	1	U	1	U	22		92	0.28	0.36	0.02	99	ND	1 U	1 U
99.8	1	U	1	U	1	U	1	U	28		101	0.09	0.14	ND	60	ND	1 U	1 U
109.8	1	U	1	U	1	U	1	U	1	U	95	0.10	0.25	0.18	22	ND	1 U	1 U
119.8	1	U	1	U	1	U	1	U	21		103	0.11	0.23	0.06	32	ND	1 U	1 U
129.8	1	U	1	U	1	U	1	U	1	U	108	0.12	0.36	0.22	31	0.05	1 U	1 U
139.8	1	U	1	U	1	U	3		1		103	0.11	0.16	0.04	50	ND	1 U	1 U
149.8	1	U	1	U	1	U	1	U	4		99	0.09	0.16	0.03	63	ND	1 U	1 U
159.8	1	U	1	U	1	U	5		2		82	0.15	0.43	0.14	92	0.02	1 U	1 U
169.8	1	U	1	U	1	U	2		4		87	0.47	1.62	0.53	86	0.32	1 U	1 U
179.8	1	U	1	U	1	U	1	U	6		93	0.70	2.56	0.60	111	0.55	1 U	1 U
189.8	1	U	1	U	1	U	2		2		89	0.17	0.71	0.36	67	0.07	1 U	1 U
199.8	1	U	1	U	1	U	7		2		90	ND	0.26	0.15	82	0.05	1 U	1 U
209.8	1	U	1	U	2		30		1		99	ND	0.06	0.05	66	0.04	1 U	1 U
219.8	1	U	1	U	5		75		3		95	0.10	0.38	0.23	79	0.11	1 U	1 U
229.5	20	U	20	U	21		360		20	U	101	ND	0.10	0.04	62	0.04	20 U	20 U
239.5	20	U	20	U	25		450		20	U	101	0.04	0.09	ND	61	0.03	20 U	20 U
267.0	1	U	1	U	6		76		6		100	0.04	0.11	0.13	74	0.03	1 U	1 U
277.0	1	U	1	U	1	U	2		3		81	0.10	0.39	0.20	159	0.07	1 U	1 U

Depth	VOC DATA, ug/L: Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
79.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99
89.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92
99.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
109.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95
119.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103
129.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108
139.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103
149.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99
159.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	82
169.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	87
179.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	93
189.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	89
199.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	90
209.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99
219.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95
229.5	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	101
239.5	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	101
267.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
277.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	81

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 5/02 - 5/06/03
Date Analyzed: 5/02 - 5/06/03
Report Date: 5/06/03

HOLE ID = P28

	VOC DATA, ug/L													INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	1-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
77.9	20	U	20	U	20	U	20	U	1500		100	ND	0.06	0.10	22.5	ND	20 U	20 U
87.0	1	U	1	U	1	U	1		97		98	0.07	0.84	0.63	35	0.05	1 U	1 U
97.0	2	U	2	U	2	U	2	U	160		103	0.03	0.08	0.07	22	ND	2 U	2 U
107.0	2	U	2	U	2	U	2	U	2	U	93	0.16	0.60	0.31	79	0.07	2 U	2 U
117.0	1	U	1	U	1	U	1	U	1	U	95	0.00	0.06	0.05	140	ND	1 U	1 U
127.0	1	U	1	U	1	U	1	U	1	U	104	0.16	0.45	0.29	195	0.05	1 U	1 U
137.0	1	U	1	U	1	U	1	U	1	U	108	0.09	0.94	0.75	75	0.09	1 U	1 U
147.0	1	U	1	U	1	U	1	U	1	U	103	0.06	0.26	0.16	125	ND	1 U	1 U
160.8	1	U	1	U	1	U	1	U	1	U	104	0.04	0.12	0.14	84	ND	1 U	1 U
167.0	1	U	1	U	1	U	1	U	1	U	89	0.15	0.61	0.37	79	0.08	1 U	1 U
177.0	1	U	1	U	1	U	1	U	1	U	88	0.09	0.43	0.19	93	0.03	1 U	1 U
187.0	1	U	1	U	1	U	1	U	1	U	94	0.01	0.12	0.06	140	0.03	1 U	1 U
197.0	1	U	1	U	1	U	1	U	1	U	90	0.03	0.17	0.11	156	0.03	1 U	1 U
207.0	1	U	1	U	1	U	1	U	1	U	95	ND	0.05	0.05	182	0.02	1 U	1 U
217.0	1	U	1	U	1	U	1	U	1	U	96	ND	0.30	0.23	87	0.06	1 U	1 U
227.0	1	U	1	U	1	U	1	U	1	U	96	0.05	0.28	0.11	140	0.06	1 U	1 U
237.0	1	U	1	U	1	U	1	U	1	U	92	0.10	0.41	0.19	110	0.12	1 U	1 U
247.0	1	U	1	U	1	U	1	U	1	U	95	0.08	1.29	0.21	147	0.12	1 U	1 U

	VOC DATA, ug/L																											
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
77.9	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	100
87.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98
97.0	2	U	2	U	2	U	2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U	2	U	103
107.0	2	U	2	U	2	U	2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U	2	U	93
117.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95
127.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
137.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108
147.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103
160.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
167.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	89
177.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	88
187.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94
197.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	90
207.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95
217.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
227.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
237.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92
247.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC DRAFT

Mobile Laboratory Results Sheet

Client:	GTEOSI
Location:	Hicksville, NY
Project ID:	Groundwater Profiling
SEI #:	03-1402
Date Sampled:	9/16-9/23/2003
Date Analyzed:	9/16-9/23/2003
Report Date:	9/23/2003

HOLE ID =P29

	VOC DATA, ug/L											INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
79.5	1	U	1	U	1	U	1	U	1	U	94	ND	ND	0.03	21	ND	1U	1U
89.5	1	U	1	U	1	U	1	U	1	U	97	0.07	0.34	0.33	46	0.08	1U	1U
99.5	1	U	1	U	1	U	1	U	1	U	91	0.03	0.18	0.14	51	0.05	1U	1U
109.5	1	U	1	U	1	U	1	U	1	U	83	0.22	1.07	0.56	46	0.16	1U	1U
119.5	1	U	1	U	1	U	**2**		1	U	100	ND	0.06	0.04	22	ND	1U	1U
129.5	1	U	1	U	1	U	1	U	1	U	93	ND	0.06	0.03	11	ND	1U	1U
139.5	1	U	1	U	1	U	1	U	1	U	119	ND	0.06	0.03	15	ND	1U	1U
149.5	1	U	1	U	1	U	1	U	1	U	96	ND	0.09	0.04	28	0.03	1U	1U
159.5	1	U	1	U	1	U	1	U	1	U	96	ND	0.12	0.03	38	ND	1U	1U
169.4	1	U	1	U	1	U	1	U	1	U	97	ND	ND	0.03	45	ND	1U	1U
176.7	1	U	1	U	1	U	1	U	1	U	92	0.09	0.36	0.32	32	0.06	1U	1U
191.3	1	U	1	U	1	U	1	U	1	U	101	0.06	0.23	0.25	37	0.06	1U	1U
200.8	1	U	1	U	1	U	1	U	**16**		106	ND	0.04	0.05	42	0.02	1U	1U
231.0	1	U	1	U	1	U	1	U	**106**		118	ND	0.10	0.06	68	ND	1U	1U
239.5	1	U	1	U	1	U	1	U	**22**		116	0.67	1.77	0.23	81	ND	1U	1U
249.9	1	U	1	U	1	U	1	U	**2**		110	0.06	0.23	0.11	96	ND	1U	1U
259.5	1	U	1	U	1	U	1	U	**19**		102	ND	0.10	0.03	282	ND	1U	1U
268.4	1	U	1	U	1	U	1	U	**14**		104	ND	0.03	0.05	108	ND	1U	1U
278.4	1	U	1	U	1	U	1	U	**10**		100	ND	0.06	0.04	62	0.03	1U	1U
289.9	1	U	1	U	1	U	1	U	1	U	101	ND	ND	0.04	39	0.02	1U	1U
299.6	1	U	1	U	1	U	1	U	1	U	98	0.04	0.17	0.05	44	0.03	1U	1U
310.2	1	U	1	U	1	U	1	U	**48**		106	ND	0.08	0.05	45	0.02	1U	1U
318.9	1	U	1	U	1	U	1	U	**14**		106	ND	0.08	0.05	46	0.02	1U	1U
329.9	1	U	1	U	1	U	1	U	**10**		103	0.06	0.09	0.09	20	0.02	1U	1U
339.5	1	U	1	U	1	U	1	U	**10**		102	0.09	0.85	0.20	29	0.06	1U	1U
360.0	1	U	1	U	1	U	1	U	**1**		102	ND	0.07	0.05	93	0.04	1U	1U
369.2	1	U	1	U	1	U	1	U	**2**		102	0.03	0.11	0.10	130	0.02	1U	1U
390.0	1	U	1	U	1	U	1	U	1	U	83	ND	0.07	0.04	53	ND	1U	1U
410.7	1	U	1	U	1	U	1	U	**3**		89	0.03	0.12	0.09	251	0.05	1U	1U

	VOC DATA, ug/L																								
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
79.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94
89.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
99.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91
109.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	83
119.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
129.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	93
139.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	119
149.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
159.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
169.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
176.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92
191.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
200.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	106
231.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	118
239.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	**2**		116
249.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	110
259.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
268.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
278.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
289.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
299.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98
310.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	106
318.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	106
329.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103
339.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
360.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
369.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
390.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	83
410.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	89

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sar

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 9/30 -10/08/2003
Date Analyzed: 9/30 -10/08/2003
Report Date: 10/8/2003

HOLE ID =P30	VOC DATA, ug/L																INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	1-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
79.6	1	U	1	U	1	U	1	U	1	U	87	0.06	0.31	0.23	59	0.06	1U	1U
89.6	1	U	1	U	1	U	1	U	2		91	0.22	0.55	0.37	53	0.13	Detect	1U
99.6	1	U	1	U	1	U	1	U	1	U	98	0.48	1.45	1.70	49	0.31	Detect	1U
119.6	1	U	1	U	1	U	1	U	1	U	101	ND	0.10	0.14	55	0.03	1U	1U
128.8	1	U	1	U	1	U	1	U	1	U	90	0.03	0.23	0.27	55	0.05	1U	1U
139.6	1	U	1	U	1	U	1	U	1	U	83	0.77	6.61	1.40	47	0.20	1U	1U
149.6	1	U	1	U	1	U	1	U	1	U	97	0.30	0.90	0.64	38	0.24	1U	1U
186.3	1	U	1	U	1	U	1	U	1	U	104	ND	0.30	0.14	23	ND	1U	1U
194.4	1	U	1	U	1	U	1	U	1	U	89	ND	0.73	0.07	27	0.02	1U	1U
204.6	1	U	1	U	1	U	1	U	1		82	ND	0.03	0.02	29	0.02	1U	1U
214.6	1	U	1	U	1	U	1	U	3		82	ND	0.03	0.03	45	ND	1U	1U
224.6	1	U	1	U	1	U	1	U	7		82	0.04	0.14	0.16	53	0.02	1U	1U
232.9	1	U	1	U	1	U	1	U	5		80	0.17	0.39	0.39	49	0.09	1U	1U
244.6	1	U	1	U	1	U	1	U	66		97	0.17	0.49	0.29	55	0.09	1U	1U
260.9	1	U	1	U	1	U	1	U	1	U	103	ND	0.04	0.03	48	0.02	1U	1U
269.0	1	U	1	U	1	U	1	U	1	U	95	0.15	0.45	0.44	39	0.11	1U	1U
279.0	1	U	1	U	1	U	1	U	1	U	95	ND	0.07	0.04	124	0.03	1U	1U
289.0	1	U	1	U	1	U	1	U	1	U	97	ND	0.04	0.02	44	0.02	1U	1U
298.6	1	U	1	U	1	U	1	U	1	U	101	0.04	0.07	0.03	34	0.04	1U	1U
307.5	1	U	1	U	1	U	1	U	1	U	96	0.03	0.14	0.06	21	0.04	1U	1U
331.0	1	U	1	U	1	U	1	U	1	U	97	ND	0.07	0.09	18	ND	1U	1U
340.0	1	U	1	U	1	U	1	U	8		100	0.12	0.23	0.25	20	0.06	1U	1U
345.3	1	U	1	U	1	U	1	U	6		102	ND	ND	0.04	21	ND	1U	1U
390.8	1	U	1	U	1	U	1	U	1	U	99	0.22	1.72	0.58	21	0.13	1U	1U
399.2	1	U	1	U	1	U	1	U	1	U	102	0.10	0.54	0.27	12	0.09	1U	1U
406.6	1	U	1	U	1	U	1	U	1	U	97	ND	0.13	0.05	14	ND	1U	1U

	VOC DATA, ug/L																											
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
79.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	87
89.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91
99.6	1	U	1	U	27		57		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98
119.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
128.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	90
139.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	83
149.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
186.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
194.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	89
204.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	82
214.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	82
224.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	82
232.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	80
244.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
260.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103
269.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95
279.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95
289.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
298.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
307.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
331.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
340.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
345.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
390.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99
399.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
406.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 1/5-1/24/2004
Date Analyzed: 1/5-1/24/2004
Report Date: 1/24/2004

HOLE ID =P31

VOC DATA, ug/L

Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS
79.3	1	U	1	U	1	U	1	U	1	U	93
89.3	1	U	1	U	1	U	1	U	1	U	99
99.3	1	U	1	U	1	U	1	U	1	U	93
111.7	1	U	1	U	1	U	1	U	1	U	93
124.3	1	U	1	U	1	U	1	U	1	U	92
134.3	1	U	1	U	1	U	1	U	1	U	93
143.3	1	U	1	U	1	U	1	U	1	U	88
184.3	1	U	1	U	1	U	1	U	1	U	104
190.4	1	U	1	U	1	U	1	U	1	U	94
199.3	1	U	1	U	1	U	1	U	1	U	103
223.8	1	U	1	U	1	U	1	U	1	U	88
233.1	1	U	1	U	1	U	1	U	1	U	82
244.3	1	U	1	U	1	U	1	U	1	U	88
254.3	1	U	1	U	1	U	1	U	1	U	89
263.7	1	U	1	U	1	U	1	U	1	U	92
284.3	1	U	1	U	1	U	1	U	1	U	98
294.3	1	U	1	U	1	U	1	U	1	U	103
304.3	1	U	1	U	1	U	1	U	1	U	92
344.3	1	U	1	U	1	U	1	U	1	U	103
351.6	1	U	1	U	1	U	1	U	1	U	105
363.2	3	J	1	U	1	U	1	U	1	U	90
374.3	1	U	1	U	1	U	1	U	1	U	91
404.3	1	U	1	U	1	U	1	U	1	U	91
414.3	1	U	1	U	1	U	1	U	1	U	85
444.3	1	U	1	U	1	U	1	U	1	U	104
451.4	1	U	1	U	1	U	1	U	1	U	107

INORGANIC DATA, mg/L

Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine Total
0.08	0.21	0.22	86	0.06
0.12	0.20	0.33	163	0.07
0.18	0.60	0.58	160	0.13
0.16	0.89	0.44	116	0.07
0.20	0.32	0.21	87	0.11
0.09	0.27	0.33	80	0.08
0.08	0.29	0.35	85	0.05
ND	0.09	0.05	44	0.03
0.03	0.17	0.16	48	0.03
0.11	0.53	0.36	48	0.03
0.07	0.20	0.27	61	0.06
ND	0.03	0.06	55	ND
0.10	0.22	0.23	65	0.07
0.11	0.20	0.26	43	0.06
0.11	0.63	0.41	30	0.05
ND	0.05	0.08	18	0.02
ND	ND	0.04	41	0.02
0.13	0.97	0.69	40	0.07
0.24	0.54	0.28	30	0.08
0.07	0.86	0.11	21	0.14
0.12	0.33	0.29	25	0.08
0.07	0.20	0.21	21	0.04
0.03	0.07	0.06	14	ND
0.11	0.39	0.71	17	ND
ND	0.05	0.08	10	0.03
0.06	0.24	0.16	35	ND

COELUTING COMPOUNDS

1,1-DCE / Freon 113	1,2-DCA / Benzene
1U	1U
1U	1U
1U	1U
1U	1U
1U	1U
1U	1U
1U	1U
1U	1U
1U	1U
1U	1U
1U	1U
1U	1U
1U	1U
1U	1U
1U	1U
1U	1U
1U	1U
1U	1U
1U	1U
1U	1U
1U	1U
1U	1U
1U	1U
1U	1U

VOC DATA, ug/L

Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
79.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	93
89.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99
99.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	93
111.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	93
124.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	**2**	U	92
134.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	93
143.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	88
184.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
190.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94
199.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103
223.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	88
233.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	82
244.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	88
254.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	89
263.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92
284.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98
294.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103
304.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92
344.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	**54**		103
351.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	105
363.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	90
374.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91
404.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91
414.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	85
444.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
451.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	107

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

Preliminary Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 2/9-2/19/2004
Date Analyzed: 2/9-2/19/2004
Report Date: 2/19/2004

HOLE ID =P32	VOC DATA, ug/L																				INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	%SS										Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
80.0	1	U	1	U	1	U	1	U	1	U	76										0.04	0.15	0.12	132	0.04	1U	1U
89.4	1	U	1	U	1	U	1	U	1	U	76										0.03	0.08	0.09	194	0.06	1U	1U
99.4	1	U	1	U	1	U	1	U	1	U	114										0.14	0.42	0.34	276	0.10	1U	1U
109.4	1	U	1	U	1	U	1	U	1	U	86										0.16	0.45	0.34	66	0.12	1U	1U
119.4	1	U	1	U	1	U	1	U	1	U	110										0.23	0.49	0.51	67	0.12	1U	1U
128.8	1	U	1	U	1	U	1	U	1	U	108										0.09	0.32	0.38	61	0.11	1U	1U
139.4	1	U	1	U	1	U	1	U	1	U	93										0.20	0.83	0.58	72	0.13	1U	1U
174.4	1	U	1	U	1	U	1	U	1	U	110										0.36	1.99	0.68	57	0.11	1U	1U
184.4	1	U	1	U	1	U	1	U	1	U	109										0.11	0.33	0.24	83	0.09	1U	1U
194.4	1	U	1	U	1	U	1	U	1	U	92										0.10	0.44	0.27	80	0.10	1U	1U
224.4	1	U	1	U	1	U	9		1	U	94										0.04	0.07	0.02	35	0.03	Detect	1U
234.4	1	U	1	U	1		13		2		89										0.05	0.11	0.07	24	0.04	Detect	1U
241.0	1	U	1	U	1	U	3		1	U	96										0.03	0.07	0.04	33	0.03	Detect	1U
251.8	1	U	1	U	1	U	5		1	U	101										0.06	0.19	0.13	30	0.05	Detect	1U
259.4	1	U	1	U	1	U	3		1	U	85										0.04	0.05	0.03	33	0.03	Detect	1U
269.4	1	U	1	U	1	U	3		1	U	97										0.03	0.12	0.12	25	0.03	Detect	1U
279.4	1	U	1	U	1	U	2		1	U	98										0.16	0.51	0.36	25	0.06	Detect	1U
289.4	1	U	1	U	1	U	1	U	1	U	110										ND	0.04	0.03	22	0.03	1U	1U
299.4	1	U	1	U	1	U	1	U	1	U	106										0.19	0.86	0.69	23	0.08	1U	1U
309.4	1	U	1	U	1	U	1	U	1	U	114										0.05	0.08	0.06	27	0.02	1U	1U
352.0	1	U	1	U	1	U	1	U	1	U	106										0.04	0.09	0.06	20	0.03	1U	1U
359.2	1	U	1	U	1	U	1	U	1	U	94										0.05	0.10	0.09	25	0.04	1U	1U
369.2	1	U	1	U	1	U	1	U	1	U	93										0.08	0.18	0.14	25	0.05	1U	1U
379.3	1	U	1	U	1	U	1	U	1	U	97										0.10	0.36	0.26	20	0.10	1U	1U
387.8	1	U	1	U	1	U	1	U	1	U	89										0.05	0.13	0.11	20	0.04	1U	1U
411.3	1	U	1	U	1	U	1	U	1	U	85										0.05	0.09	0.16	19	0.03	1U	1U
419.3	1	U	1	U	1	U	1	U	1	U	89										0.03	0.05	0.02	19	0.04	1U	1U
426.7	1	U	1	U	1	U	1	U	1	U	90										ND	0.07	0.02	17	0.02	1U	1U
460.9	1	U	1	U	1	U	1	U	1	U	88										0.07	0.16	0.06	15	0.04	1U	1U
481.0	1	U	1	U	1	U	1	U	1	U	87										0.09	0.13	0.07	12	0.04	1U	1U
488.9	1	U	1	U	1	U	1	U	1	U	84										0.03	0.03	0.08	11	0.03	1U	1U

	VOC DATA, ug/L																															
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS							
80.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	76							
89.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	76							
99.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	114							
109.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	86							
119.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	110							
128.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108							
139.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	93							
174.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	110							
184.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109							
194.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92							
224.4	1	U	1	U	3		2		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94							
234.4	1	U	1	U	3		2		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	89							
241.0	1	U	1	U	3		1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96							
251.8	1	U	1	U	4		1		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101							
259.4	1	U	1	U	5		3		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	85							
269.4	1	U	1	U	2		1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97							
279.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98							
289.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	110							
299.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	106							
309.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	114							
352.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	106							
359.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94							
369.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	93							
379.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97							
387.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	89							
411.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	85							
419.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	89							
426.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	90							
460.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	88							
481.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	87							
488.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	84							

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 12/05-12/15/2003
Date Analyzed: 12/05-12/15/2003
Report Date: 12/15/2003

HOLE ID =P33

Depth	VOC DATA, ug/L																						INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS												Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
79.6	1	U	1	U	1	U	1	U	1	U	82												0.04	0.17	0.11	825	0.05	1U	1U
89.6	1	U	1	U	1	U	1	U	1	U	84												0.05	0.39	0.25	1320	0.07	1U	1U
99.6	1	U	1	U	1	U	1	U	1	U	94												0.09	0.53	0.39	233	0.16	1U	1U
109.6	1	U	1	U	1	U	1	U	1	U	93												0.04	0.22	0.14	365	0.08	1U	1U
119.6	1	U	1	U	1	U	1	U	1	U	89												0.16	0.57	0.51	302	0.15	1U	1U
129.6	1	U	1	U	1	U	1	U	1	U	97												0.05	0.19	0.09	438	0.05	1U	1U
139.6	1	U	1	U	1	U	1	U	1	U	95												0.03	0.19	0.15	570	0.06	1U	1U
149.6	1	U	1	U	1	U	1	U	1	U	93												0.07	0.23	0.16	568	0.05	1U	1U
159.6	1	U	1	U	1	U	1	U	1	U	89												0.04	0.19	0.11	450	0.06	Detect	1U
169.6	1	U	1	U	1	U	1		1	U	91												0.04	0.08	0.05	84	0.06	Detect	1U
179.6	1	U	1	U	1	U	1	U	1	U	91												ND	0.08	0.05	221	0.05	Detect	1U
189.6	1	U	1	U	1	U	1	U	1	U	92												0.03	0.13	0.11	233	0.05	Detect	1U
198.1	1	U	1	U	1	U	1	U	1	U	89												ND	0.07	0.04	302	0.04	Detect	1U
214.6	1	U	1	U	1	U	1	U	1	U	86												0.73	1.63	0.30	490	0.33	1U	1U
224.6	1	U	1	U	1	U	1	U	1	U	104												0.08	0.19	0.05	795	0.03	1U	1U
234.6	2	UJ	1	U	1	U	1	U	1	U	101												ND	0.09	0.02	1170	0.03	1U	1U
244.6	5	J	1	U	1	U	1	U	1	U	104												0.24	0.37	0.03	1650	0.19	1U	1U
254.6	5	J	1	U	1	U	1	U	1	U	100												ND	0.12	0.04	1775	0.03	1U	1U
264.6	1	U	1	U	1	U	1	U	1	U	99												0.16	0.63	0.54	980	0.05	1U	1U
274.6	1	U	1	U	1	U	1	U	1	U	101												ND	ND	0.05	990	ND	1U	1U
284.6	1	U	1	U	1	U	1	U	1	U	104												0.14	0.18	0.37	22	0.05	1U	1U
294.6	1	U	1	U	1	U	1	U	1	U	102												ND	ND	0.04	16	0.02	1U	1U
304.6	1	U	1	U	1	U	1	U	1	U	98												0.07	0.16	0.17	31	0.09	1U	1U
344.3	1	U	1	U	1	U	1	U	1	U	91												0.93	1.20	0.22	18	0.03	1U	1U
374.3	1	U	1	U	1	U	1	U	1	U	97												0.06	0.21	0.08	21	0.05	1U	1U
412.4	1	U	1	U	1	U	1	U	1	U	99												0.05	0.13	0.05	13	0.02	1U	1U
423.8	2		1	U	1	U	1	U	1	U	94												0.09	0.14	0.15	13	0.07	1U	1U
432.6	2		1	U	1	U	1	U	1	U	93												ND	0.10	ND	10	0.02	1U	1U
454.3	1	U	1	U	1	U	1	U	1	U	103												0.51	1.45	0.24	11	0.24	1U	1U
481.1	1	U	1	U	1	U	1	U	1	U	113												0.08	0.26	0.09	11	0.04	1U	1U

Depth	VOC DATA, ug/L																																		%SS
	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q											
79.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											82
89.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											84
99.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											94
109.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											93
119.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											89
129.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											97
139.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											95
149.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											93
159.6	1	U	1	U	1		1		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											89
169.6	1	U	1	U	5		5		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											91
179.6	1	U	1	U	2		2		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											91
189.6	1	U	1	U	1		2		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											92
198.1	1	U	1	U	2		2		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											89
214.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											86
224.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											104
234.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											101
244.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											104
254.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											100
264.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											99
274.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											101
284.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											104
294.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											102
304.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											98
344.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											91
374.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											97
412.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											99
423.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											94
432.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											93
454.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											103
481.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											113

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated va...
ND = Value be... ...tion limit.
NS = Not San...

STONE ENVIRONMENTAL INC DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 11/21-12/03/2003
Date Analyzed: 11/21-12/03/2003
Report Date: 12/3/2003

HOLE ID =P34	VOC DATA, ug/L											INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
79.6	1	U	1	U	1	U	1	U	1	U	91	0.08	0.26	0.11	111	0.02	1U	1U
89 6	1	U	1	U	1	U	1	U	1	U	94	0.19	0.39	0.10	146	0.04	1U	1U
99.6	1	U	1	U	1	U	1	U	1	U	88	0.16	0.40	0.05	32	ND	1U	1U
109.6	1	U	1	U	1	U	1	U	1	U	83	0.22	0.51	0.54	72	0.09	1U	1U
119.6	1	U	1	U	1	U	1	U	1	U	89	0.15	0.67	0.42	146	0.04	1U	1U
129.6	1	U	1	U	1	U	1	U	1	U	91	0.05	0.27	0.12	42	0.03	1U	1U
139.6	1	U	1	U	1	U	1	U	1	U	84	0.04	0.16	0.07	67	0.02	1U	1U
154.6	1	U	1	U	1	U	1	U	1	U	88	0.03	0.10	0.03	59	0.03	1U	1U
164.6	1	U	1	U	1	U	1	U	1	U	89	0.05	0.07	0.04	65	0.02	1U	1U
174.6	1	U	1	U	1	U	1	U	1	U	100	0.04	0.12	0.10	75	0.03	1U	1U
184.6	1	U	1	U	1	U	1	U	1	U	102	0.04	0.14	0.10	72	0.03	1U	1U
194.6	1	U	1	U	1	U	1	U	1	U	94	0.03	0.07	0.04	76	0.02	1U	1U
204.6	1	U	1	U	1	U	**2**		1	U	89	ND	0.11	0.09	74	0.03	1U	1U
214.6	1	U	1	U	1	U	**1**		1	U	84	0.05	0.11	0.09	75	0.04	1U	1U
224.6	1	U	1	U	1	U	**3**		**1**		94	0.03	0.05	0.03	57	0.02	**Detect**	1U
234.6	1	U	1	U	1	U	**2**		**2**		99	0.04	0.10	0.06	31	ND	**Detect**	1U
244.6	1	U	1	U	1	U	**2**		**2**		92	0.05	0.09	0.08	27	ND	**Detect**	1U
254.6	1	U	1	U	1	U	**5**		**1**		102	0.04	0.07	0.05	31	0.02	**Detect**	1U
264.6	1	U	1	U	1	U	**3**		**1**		106	0.05	0.22	0.12	30	0.05	**Detect**	1U
284.6	1	U	1	U	1	U	**13**		**1**		92	0.24	1.45	0.27	34	0.11	**Detect**	1U
294.6	1	U	1	U	1	U	**15**		**2**		101	0.26	0.58	0.15	36	0.11	**Detect**	1U
304.5	1	U	1	U	1	U	**10**		**1**		96	0.05	0.10	0.04	35	0.02	**Detect**	1U
324.5	1	U	1	U	1	U	**12**		**1**		85	ND	0.08	0.02	40	0.02	**Detect**	1U
334.5	1	U	1	U	1	U	**6**		1	U	87	ND	ND	ND	33	0.02	**Detect**	1U
352.7	1	U	1	U	1	U	1	U	1	U	114	0.05	0.11	0.08	23	0.02	1U	1U
384.4	1	U	1	U	1	U	1	U	1	U	76	ND	0.06	0.02	14	ND	1U	1U
394.6	1	U	1	U	1	U	1	U	1	U	77	ND	0.04	0.13	22	0.03	1U	1U
401.6	1	U	1	U	1	U	1	U	1	U	80	0.05	0.08	0.13	25	0.04	1U	1U

	VOC DATA, ug/L																								
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
79.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91
89.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94
99.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	88
109.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	83
119.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	89
129.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91
139.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	84
154.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	88
164.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	89
174.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
184.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
194.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94
204.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	89
214.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	84
224.6	1	U	1	U	1	U	**1**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94
234.6	1	U	1	U	1	U	**2**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99
244.6	1	U	1	U	**2**		**3**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92
254.6	1	U	1	U	**3**		**4**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
264.6	1	U	1	U	**3**		**4**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	106
284.6	1	U	1	U	**7**		**7**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92
294.6	1	U	1	U	**6**		**8**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
304.5	1	U	1	U	**7**		**7**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
324.5	1	U	1	U	**5**		**7**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	85
334.5	1	U	1	U	**6**		**4**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	87
352.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	114
384 4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	76
394.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	77
401.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	80

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 7/9 - 7/14/03
Date Analyzed: 7/9 - 7/14/03
Report Date: 7/14/03

HOLE ID = P35

	VOC DATA, ug/L											INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
77.2	1	U	1	U	1	U	1	U	**10**		95	0.04	0.09	0.02	21	ND	1 U	1 U
87.2	1	U	1	U	1	U	1	U	**7**		101	ND	0.07	0.04	14	0.04	1 U	1 U
97.2	1	U	1	U	1	U	1	U	**11**		89	ND	0.11	0.11	16	0.03	1 U	1 U
107.2	1	U	1	U	1	U	1	U	1	U	106	NS	NS	NS	NA	NS	1 U	1 U
117.2	1	U	1	U	1	U	1	U	**4**		110	ND	0.54	0.10	43	0.03	1 U	1 U
127.2	1	U	1	U	1	U	**20**		1	U	107	ND	0.05	0.05	75	0.02	1 U	1 U
137.2	1	U	1	U	**9**		**97**		**5**		118	0.03	0.08	0.07	51	0.03	1 U	1 U
147.2	1	U	1	U	**12**		**110**		**1**		101	0.03	0.12	0.06	65	ND	1 U	1 U
157.2	1	U	1	U	**18**		**100**		**20**		113	ND	0.19	0.05	100	ND	1 U	1 U
167.2	4	U	4	U	**27**		**400**		**6**		107	0.06	0.12	0.11	62	0.02	4 U	4 U
177.2	1	U	1	U	**12**		**110**		**2**		102	ND	0.05	0.09	169	0.02	1 U	1 U
187.2	1	U	1	U	**5**		**37**		1	U	115	0.16	0.38	0.30	197	0.1	1 U	1 U
197.2	1	U	1	U	**4**		**51**		**1**		108	ND	0.04	0.10	255	ND	1 U	1 U
207.2	1	U	1	U	**2**		**36**		1	U	118	ND	0.06	0.07	94	0.02	1 U	1 U
217.2	1	U	1	U	**5**		**62**		**1**		94	0.16	0.39	0.25	57	0.09	1 U	1 U
227.2	1	U	1	U	1	U	**2**		1	U	110	0.04	0.10	0.10	43	0.02	1 U	1 U
237.2	1	U	1	U	1	U	**1**		1	U	110	ND	0.10	0.04	107	ND	1 U	1 U
247.2	1	U	1	U	1	U	1	U	1	U	113	0.04	0.08	0.10	96	0.02	1 U	1 U
257.2	1	U	1	U	1	U	1	U	1	U	92	ND	ND	0.04	94	ND	1 U	1 U
267.2	1	U	1	U	1	U	1	U	1	U	110	0.03	0.08	0.08	93	ND	1 U	1 U
277.2	1	U	1	U	1	U	1	U	1	U	104	ND	0.06	0.09	72	0.03	1 U	1 U
292.2	1	U	1	U	1	U	1	U	1	U	93	0.40	2.40	0.50	370	0.3	1 U	1 U
322.2	1	U	1	U	1	U	1	U	1	U	104	0.03	0.09	0.11	447	0.04	1 U	1 U
332.2	1	U	1	U	1	U	1	U	**1**		109	0.14	0.26	0.40	402	0.05	1 U	1 U
342.2	1	U	1	U	1	U	1	U	**2**		107	ND	0.22	0.11	443	0.05	1 U	1 U
347.2	1	U	1	U	1	U	1	U	1	U	103	1.60	50.80	7.00	59	0.4	1 U	1 U

	VOC DATA, ug/L																									
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
77.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95
87.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
97.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	89
107.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	106
117.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	110
127.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	107
137.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	118
147.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
157.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	113
167.2	4	U	4	U	4	U	4	U	4	U	4	U	4	U	8	U	4	U	4	U	4	U	4	U	107
177.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
187.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	115
197.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108
207.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	118
217.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94
227.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	110
237.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	110
247.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	113
257.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92
267.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	110
277.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
292.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	93
322.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
332.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109
342.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	107
347.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 8/18 - 8/26/03
Date Analyzed: 8/19 - 8/26/03
Report Date: 8/26/2003

HOLE ID =P36	VOC DATA, ug/L													INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
Equip. Blank	1	U	1	U	1	U	1	U	1	U	118						1U	1U
76.7	1	U	1	U	1	U	**3**		**4**		121	0.16	0.53	0.23	106	0.10	1U	1U
86.7	1	U	1	U	1	U	**20**		**20**		119	ND	0.52	0.15	40	0.02	1U	1U
96.7	20	U	20	U	**45**		**240**		**210**		119	0.64	1.91	0.60	50	0.04	20U	20U
106.7	20	U	20	U	**120**		**740**		**580**		119	3.70	4.5	0.32	53	0.06	20U	20U
116.7	2	U	2	U	**37**		**120**		**64**		122	7.00	7.2	0.22	66	0.07	2U	2U
126.7	2	U	2	U	**46**		**85**		**64**		117	23.90	25.1	0.24	66	ND	2U	2U
136.7	1	U	1	U	**33**		**32**		**23**		114	3.70	5.2	0.06	36	ND	**Detect**	1U
146.7	2	U	2	U	2	U	**18**		**120**		119	13.80	16.6	0.58	45	0.02	2U	2U
156.7	5	U	5	U	5	U	**69**		**410**		101	14.70	**16.7**	0.70	8	ND	5U	5U
166.7	5	U	5	U	5	U	**52**		**430**		101	3.50	6.4	0.58	23	0.05	5U	5U
176.7	5	U	5	U	5	U	**240**		**310**		106	0.25	3.8	1.1	44	0.11	5U	5U
186.7	5	U	5	U	5	U	**9**		**530**		107	0.34	1.56	0.30	120	0.03	5U	5U
196.7	2	U	2	U	2	U	**2**	U	**180**		92	0.33	1.23	0.70	122	0.08	2U	2U
206.7	1	U	1	U	1	U	**1**	U	**43**		100	0.08	0.11	0.22	146	0.03	1U	1U
216.7	1	U	1	U	1	U	**1**	U	**2**		107	0.10	0.79	0.25	182	0.05	1U	1U
226.7	1	U	1	U	1	U	**1**	U	**11**		111	0.13	1.06	0.20	268	0.07	1U	1U
236.7	1	U	1	U	1	U	1	U	1	U	92	0.04	0.23	0.11	316	0.03	1U	1U
266.8	1	U	1	U	1	U	**12**		**11**		102	ND	0.04	0.04	428	ND	1U	1U
282.0	2	U	2	U	**3**		**190**		2	U	98	0.05	0.11	0.05	121	ND	**Detect**	2U
292.4	3	U	3	U	3	U	**51**		**290**		99	ND	0.03	0.07	613	0.06	3U	3U
328.4	1	U	1	U	1	U	**16**		**65**		97	0.10	0.22	0.25	710	0.06	1U	1U
371.3	1	U	1	U	1	U	1	U	**5**		100	0.32	0.66	0.14	159	0.03	1U	1U
475.2	1	U	1	U	1	U	1	U	1	U	104	0.07	0.67	0.17	53	0.03	1U	1U

	VOC DATA, ug/L																													
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
Equip. Blank	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	118
76.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	121
86.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	119
96.7	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	**1400**		119
106.7	20	U	20	U	20	U	20	U	20	U	20	U	**150**		**220**		**330**		**45**		**40**		**5000**		119
116.7	2	U	2	U	2	U	2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U	**24**		122
126.7	2	U	2	U	2	U	2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U	**15**		117
136.7	1	U	1	U	**10**		1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	**9**		114
146.7	2	U	2	U	**4**		2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U	**6**		119
156.7	5	U	5	U	5	U	5	U	5	U	5	U	5	U	10	U	5	U	5	U	5	U	5	U	101
166.7	5	U	5	U	5	U	5	U	5	U	5	U	5	U	10	U	5	U	5	U	5	U	5	U	101
176.7	5	U	5	U	5	U	5	U	5	U	5	U	5	U	10	U	5	U	5	U	5	U	5	U	106
186.7	5	U	5	U	5	U	5	U	5	U	5	U	5	U	10	U	5	U	5	U	5	U	5	U	107
196.7	2	U	2	U	2	U	2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U	2	U	92
206.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	**1**		100
216.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	**1**		107
226.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	**2**		111
236.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	**1**		92
266.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
282.0	2	U	2	U	2	U	2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U	2	U	98
292.4	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	99
328.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
371.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
475.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client:	GTEOSI
Location:	Hicksville, NY
Project ID:	Groundwater Profiling
SEI #:	03-1402
Date Sampled:	8/19 - 8/27/03
Date Analyzed:	8/19 - 8/27/03
Report Date:	8/27/2003

HOLE ID =P37

Depth	VOC DATA, ug/L Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	INORGANIC DATA, mg/L Fe+2	Fe, Total	Ammonia	Chloride	Chlorine, Total	COELUTING COMPOUNDS 1,1-DCE / Freon 113	1,2-DCA / Benzene
79.3	1	U	1	U	1	U	1	U	1	U	118	ND	0.15	0.04	16	ND	1U	1U
90.0	1	U	1	U	1	U	1	U	**15**		120	4.40	11.0	0.42	24	ND	1U	1U
100.0	2	U	2	U	2	U	2	U	**220**		116	0.16	0.59	0.19	18	ND	2U	2U
110.0	2	U	2	U	2	U	2	U	**220**		105	1.28	1.50	0.20	34	ND	2U	2U
120.0	1	U	1	U	1	U	**24**		**30**		115	0.41	0.64	0.15	40	0.02	1U	1U
130.0	1	U	1	U	1	U	**37**		**13**		109	0.18	0.27	1.0	40	ND	1U	1U
140.0	1	U	1	U	1	U	**29**		**5**		110	10.90	12.1	1.4	46	ND	1U	1U
150.0	1	U	1	U	1	U	**11**		**27**		111	33.20	41.2	1.8	65	ND	1U	1U
160.0	1	U	1	U	1	U	**8**		**110**		116	0.24	0.27	2.8	45	ND	1U	1U
170.0	1	U	1	U	1	U	**6**		**5**		101	0.22	1.45	0.40	106	0.03	1U	1U
180.0	1	U	1	U	1	U	**4**		**2**		108	4.10	5.8	0.80	111	0.05	1U	1U
190.0	1	U	1	U	1	U	**1**		**1**		108	2.60	4.0	4.5	130	0.02	1U	1U
224.6	1	U	1	U	1	U	**6**		**9**		107	0.21	1.30	2.6	218	0.18	1U	1U
264.9	1	U	1	U	1	U	**2**		**3**		102	0.10	1.31	0.13	182	0.07	1U	1U
274.9	1	U	1	U	1	U	**4**		**7**		103	ND	0.24	0.09	210	0.04	1U	1U
284.4	12	U	12	U	12	U	**520**		**1100**		104	0.05	0.20	0.08	250	ND	12U	12U
304.8	2	U	2	U	2	U	**120**		**83**		102	0.44	1.82	0.70	193	0.24	2U	2U
314.8	1	U	1	U	1	U	**49**		**36**		96	ND	0.10	0.06	128	ND	1U	1U
324.8	1	U	1	U	1	U	**1**		**3**		105	0.07	0.17	0.21	55	0.05	1U	1U
333.2	1	U	1	U	1	U	1	U	**2**		101	ND	0.24	0.13	103	ND	1U	1U
356.2	1	U	1	U	1	U	**2**		**14**		105	0.12	0.47	0.32	224	0.08	1U	1U
385.0	1	U	1	U	1	U	1	U	1	U	108	ND	0.04	0.03	30	0.05	1U	1U
394.5	1	U	1	U	1	U	1	U	1	U	101	0.15	0.80	0.20	24	0.07	1U	1U

VOC DATA, ug/L

Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
79.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	118
90.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	120
100.0	2	U	2	U	2	U	2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U	2	U	116
110.0	2	U	2	U	2	U	2	U	2	U	2	U	2	U	4	U	2	U	3		2	U	2	U	105
120.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	115
130.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109
140.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	110
150.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	111
160.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	116
170.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
180.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108
190.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108
224.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	107
264.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
274.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103
284.4	12	U	12	U	12	U	12	U	12	U	12	U	12	U	24	U	12	U	12	U	12	U	**38**		104
304.8	2	U	2	U	2	U	2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U	2	U	102
314.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
324.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	105
333.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
356.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	105
385.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108
394.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 9/16-9/24/2003
Date Analyzed: 9/16-9/24/2003
Report Date: 9/24/2003

HOLE ID =P38	VOC DATA, ug/L																		INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	1-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	%SS								Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
76.7	1	U	1	U	1	U	1	U	1	U	93								ND	0.15	0.04	114	ND	1U	1U
86.7	1	U	1	U	1	U	1	U	1		88								0.03	0.09	0.07	39	0.04	1U	1U
96.8	1	U	1	U	1	U	1	U	3		93								ND	0.17	0.11	41	0.04	1U	1U
106.7	1	U	1	U	1	U	1	U	4		99								ND	0.20	0.12	38	0.02	1U	1U
116.7	1	U	1	U	1	U	1	U	5		94								0.31	0.33	0.18	24	0.05	1U	1U
126.7	1	U	1	U	1	U	1	U	34		90								0.03	0.19	0.08	20	ND	1U	1U
136.7	1	U	1	U	1	U	1	U	45		106								0.09	0.16	0.05	19	ND	1U	1U
146.7	1	U	1	U	1	U	3		54		102								0.10	0.63	0.18	22	0.03	Detect	1U
152.5	4	U	4	U	10		220		310		110								0.23	0.30	1.0	47	ND	Detect	4U
166.3	1	U	1	U	1	U	1	U	100		110								0.20	0.27	3.9	213	ND	1U	1U
176.3	1	U	1	U	1	U	1		48		112								0.18	0.25	1.7	215	ND	1U	1U
186.3	1	U	1	U	1	U	1	U	38		108								0.28	0.32	8.8	193	ND	Detect	1U
207.5	1	U	1	U	1	U	16		9		113								0.18	0.47	5.2	145	ND	Detect	1U
216.3	1	U	1	U	1		31		26		93								0.19	0.62	2.7	135	0.04	Detect	1U
226.3	4	U	4	U	15		360		50		104								0.11	0.46	0.48	50	0.07	4U	4U
260.7	1	U	1	U	1	U	1	U	2		99								0.15	0.44	0.13	26	0.05	Detect	1U
312.9	1	U	1	U	1		43		11		101								ND	0.07	0.04	41	0.02	1U	1U
322.9	2	U	2	U	2	U	100		54		98								0.12	0.34	0.08	37	0.05	2U	2U
332.3	3	U	3	U	14		310		32		103								0.16	0.55	0.12	54	0.03	3U	3U
341.1	5	U	5	U	28		470		7		97								ND	ND	0.06	45	0.04	5U	5U
370.1	2	U	2	U	3		160		31		104								0.04	0.10	0.06	61	0.04	2U	2U
381.3	1	U	1	U	1	U	34		7		98								ND	0.04	0.03	39	ND	1U	1U
391.3	1	U	1	U	1	U	23	E	3		89								ND	ND	ND	34	ND	1U	1U
400.2	1	U	1	U	1	U	1	U	1	U	89								NS	NS	NS	NS	NS	1U	1U

	VOC DATA, ug/L																															
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichloropenzene	Q	1,2-Dichlorobenzene	Q	%SS							
76.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	93							
86.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	88							
96.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	93							
106.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99							
116.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94							
126.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	90							
136.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	106							
146.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102							
152.5	4	U	4	U	4	U	4	U	4	U	4	U	4	U	8	U	4	U	4	U	4	U	7		110							
166.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	110							
176.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	112							
186.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108							
207.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1		113							
216.3	1	U	1	U	2		1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	2		93							
226.3	4	U	4	U	4	U	4	U	4	U	4	U	4	U	8	U	4	U	4	U	4	U	4	U	104							
260.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99							
312.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101							
322.9	2	U	2	U	2	U	2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U	2	U	98							
332.3	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	103							
341.1	5	U	5	U	5	U	5	U	5	U	5	U	5	U	10	U	5	U	5	U	5	U	5	U	97							
370.1	2	U	2	U	2	U	2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U	2	U	104							
381.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98							
391.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	89							
400.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	89							

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

DRAFT

STONE ENVIRONMENTAL INC

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 7/23 - 7/30/03
Date Analyzed: 7/23 - 7/30/03
Report Date: 7/30/03

HOLE ID = P42

Depth	VOC DATA, ug/L Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	INORGANIC DATA, mg/L Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	COELUTING COMPOUNDS 1,1-DCE / Freon 113	1,2-DCA / Benzene
79.6	1	U	1	U	1	U	1	U	1	U	91	0.03	0.07	0.02	15	0.02	1 U	1 U
89.6	1	U	1	U	1	U	1	U	1	U	91	ND	0.06	0.03	26	0.03	1 U	1 U
99.6	1	U	1	U	1	U	1	U	1	U	99	0.03	0.08	0.06	65	0.02	1 U	1 U
109.6	1	U	1	U	1	U	1	U	1	U	102	ND	0.07	0.07	79	0.02	1 U	1 U
119.6	20	U	20	U	**180**		**80**		**1600**		110	0.16	0.27	2.90	37	0.02	20 U	20 U
129.6	20	U	20	U	**95**		**34**		**1900**		112	0.15	0.24	1.40	39	0.02	20 U	20 U
139.6	20	U	20	U	**130**		**45**		**4600**		113	9.80	10.05	0.55	40	ND	20 U	20 U
149.6	20	U	20	U	**75**		**29**		**2200**		112	0.26	0.54	0.14	49	0.02	20 U	20 U
159.6	20	U	20	U	**36**		20	U	**1300**		119	26.70	31.90	0.67	76	0.03	20 U	20 U
169.4	1	U	1	U	**2**		**20**		**8**		107	0.11	0.14	2.45	172	ND	1 U	1 U
179.6	20	U	20	U	**87**		**160**		**760**		118	0.06	0.12	0.07	88	ND	20 U	20 U
189.6	20	U	20	U	20	U	20	U	**750**		113	0.03	0.07	0.05	51	ND	20 U	20 U
197.7	1	U	1	U	1	U	**5**	U	**48**		112	ND	0.03	0.26	62	0.02	1 U	1 U
202.8	1	U	1	U	1	U	1	U	**87**		111	ND	0.05	0.20	76	ND	1 U	1 U
217.2	20	U	20	U	20	U	**31**		**2400**		112	ND	0.04	0.05	49	ND	20 U	20 U
224.6	20	U	20	U	20	U	**44**		**2300**		115	0.08	0.12	0.05	51	ND	20 U	20 U
234.6	20	U	20	U	**22**		**310**		**1200**		109	0.10	0.33	0.35	73	ND	20 U	20 U
276.4	3	U	3	U	3	U	**7**		**290**		114	ND	0.05	ND	78	ND	3 U	3 U
287.9	1	U	1	U	1	U	1	U	**80**		117	ND	0.10	0.03	78	ND	1 U	1 U
298.0	1	U	1	U	1	U	**17**		**110**		116	ND	0.06	ND	164	ND	1 U	1 U
308.6	2	U	2	U	2	U	**35**		**150**		116	0.05	0.12	0.02	348	ND	2 U	2 U
319.8	1	U	1	U	1	U	**25**		**130**		117	0.16	0.20	2.05	486	ND	1 U	1 U
329.8	3	U	3	U	3	U	**20**		**150**		121	0.14	0.19	1.85	496	ND	3 U	3 U
336.8	3	U	3	U	3	U	**17**		**190**		117	0.16	0.24	0.10	395	ND	3 U	3 U
354.6	3	U	3	U	3	U	**13**		**240**		117	0.20	0.22	0.05	241	ND	3 U	3 U
389.5	1	U	1	U	1	U	**2**		**73**		82	0.20	0.84	0.07	394	0.04	1 U	1 U
410.1	1	U	1	U	1	U	**2**	U	**26**		83	0.03	0.20	0.10	678	ND	1 U	1 U
424.5	1	U	1	U	1	U	1	U	**2**		82	0.03	0.17	0.10	252	0.03	1 U	1 U
434.5	1	U	1	U	1	U	1	U	1	U	80	0.06	0.41	0.35	615	ND	1 U	1 U

Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	VOC DATA, ug/L Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
79.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91
89.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91
99.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99
109.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
119.6	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	110
129.6	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	112
139.6	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	113
149.6	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	112
159.6	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	119
169.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	107
179.6	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	118
189.6	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	**21**		113
197.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	112
202.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	111
217.2	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	112
224.6	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	115
234.6	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	109
276.4	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	114
287.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	117
298.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	116
308.6	2	U	2	U	2	U	2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U	2	U	116
319.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	**9**		117
329.8	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	121
336.8	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	117
354.6	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	117
389.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	82
410.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	83
424.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	82
434.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	80

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sam...

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 9/9-9/24/2003
Date Analyzed: 9/9-9/24/2003
Report Date: 9/24/2003

HOLE ID =P43

VOC DATA, ug/L

Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS		Fe, Total	Ammonia	Chloride	Chlorine, Total
79.9	1	U	1	U	1	U	9		2		90	ND	0.03	ND	20	0.02
89.9	1	U	1	U	1	U	5		2		100	ND	0.08	1.1	25	ND
99.9	1	U	1	U	1	U	2		2		99	0.46	1.30	2.5	31	0.23
109.9	1	U	1	U	1	U	11		7		105	0.03	0.07	2.0	45	ND
119.9	1	U	1	U	10		38		20		104	0.08	0.19	2.4	45	ND
129.9	140		20	U	710		1100		590		108	0.13	0.63	1.6	26	0.09
139.9	97		20	U	720		710		600		110	0.06	0.46	1.4	28	0.03
150.1	180		20	U	1300		730		1800		110	0.12	0.46	5.3	48	0.08
161.7	210		20	U	1400		320		1400		111	0.04	0.16	3.3	48	ND
169.9	150		20	U	1100		810		1000		112	0.21	1.39	3.0	55	0.13
179.9	23		4	U	78		35		370		111	16.6	18.3	1.4	88	0.17
189.9	1		1	U	5		5		24		96	0.25	2.36	2.1	173	ND
199.9	44		20	U	320		200		1500		115	0.03	0.10	4.3	124	ND
233.9	48		10	U	170		170		720		112	0.03	0.29	9.2	132	0.02
246.7	5		1	U	54		85		150		112	0.16	0.24	0.24	84	0.02
254.9	6	U	6	U	74		38		500		101	0.25	0.79	2.6	200	0.06
264.9	3	U	3	U	58		29		290		104	0.05	0.08	7.8	235	ND
274.9	2	U	2	U	18		18		160		101	0.22	1.49	9.0	278	ND
284.9	3	U	3	U	12		24		220		103	0.05	0.13	7.8	254	0.02
294.9	1	U	1	U	7		19		110		101	ND	0.04	8.0	256	ND
304.9	2	U	2	U	3		57		143		104	0.26	0.44	7.8	262	0.11
324.5	2	U	2	U	2	U	21		130		101	NS	NS	NS	NS	NS
334.2	1	U	1	U	1	U	1	U	1	U	104	NS	NS	NS	NS	NS

COELUTING COMPOUNDS

1,1-DCE / Freon 113	1,2-DCA / Benzene
1U	1U
1U	1U
1U	1U
1U	1U
Detect	1U
Detect	20U
20U	20U
20U	20U
20U	20U
20U	20U
20U	20U
4U	4U
1U	1U
20U	20U
10U	10U
1U	1U
6U	6U
3U	3U
2U	2U
3U	3U
Detect	1U
2U	2U
2U	2U
1U	1U

VOC DATA, ug/L

Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
79.9	1	U	1	U	1	U	1	U	1	U	1	1	U	2	U	1	U	1	U	1	U	1	U	90
89.9	1	U	1	U	1	U	1	U	1	U	1	1	U	2	U	1	U	1	U	1	U	1	U	100
99.9	1	U	1	U	1	U	1	U	1	U	1	1	U	2	U	1	U	1	U	1	U	1	U	99
109.9	1	U	1	U	1	U	1	U	1	U	1	1	U	2	U	1	U	1	U	1	U	1	U	105
119.9	1	U	1	U	1	U	1	U	1	U	1	1	U	2	U	1	U	1	U	1	U	1	U	104
129.9	20	U	20	U	20	U	20	U	20	U	20	20	U	40	U	20	U	20	U	20	U	20	U	108
139.9	20	U	20	U	20	U	20	U	20	U	20	20	U	40	U	20	U	20	U	20	U	20	U	110
150.1	20	U	20	U	20	U	20	U	20	U	20	20	U	40	U	20	U	20	U	20	U	20	U	110
161.7	20	U	20	U	20	U	20	U	20	U	20	20	U	40	U	20	U	20	U	20	U	270		111
169.9	20	U	20	U	20	U	20	U	20	U	20	20	U	40	U	20	U	20	U	20	U	20	U	112
179.9	4	U	4	U	4	U	4	U	4	U	4	4	U	8	U	4	U	4	U	4	U	4	U	111
189.9	1	U	1	U	1	U	1	U	1	U	1	1	U	2	U	1	U	1	U	1	U	5		96
199.9	20	U	20	U	20	U	20	U	20	U	20	20	U	40	U	20	U	20	U	20	U	20	U	115
233.9	10	U	10	U	10	U	10	U	10	U	10	10	U	20	U	10	U	10	U	10	U	12		112
246.7	1	U	1	U	1	U	1	U	1	U	1	1	U	2	U	1	U	1	U	1	U	7		112
254.9	6	U	6	U	6	U	6	U	6	U	6	6	U	12	U	6	U	6	U	6	U	6	U	101
264.9	3	U	3	U	3	U	3	U	3	U	3	3	U	6	U	3	U	3	U	3	U	3		104
274.9	2	U	2	U	2	U	2	U	2	U	2	2	U	4	U	2	U	2	U	2	U	3		101
284.9	3	U	3	U	3	U	3	U	3	U	3	3	U	6	U	3	U	3	U	3	U	8		103
294.9	1	U	1	U	1	U	1	U	1	U	1	1	U	2	U	1	U	1	U	1	U	2		101
304.9	2	U	2	U	2	U	2	U	2	U	2	2	U	4	U	2	U	2	U	2	U	13		104
324.5	2	U	2	U	2	U	2	U	2	U	2	2	U	4	U	2	U	2	U	2	U	4		101
334.2	1	U	1	U	1	U	1	U	1	U	1	1	U	2	U	1	U	1	1	1	U	1	U	104

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client:	GTEOSI
Location:	Hicksville, NY
Project ID:	Groundwater Profiling
SEI #:	03-1402
Date Sampled:	9/2 -9/10/2003
Date Analyzed:	9/2 -9/10/2003
Report Date:	9/10/2003

HOLE ID =P44	VOC DATA, ug/L												INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
79.8	1	U	1	U	1	U	**5**		**3**		92	0.08	0.18	0.17	36	0.02	1U	1U
89.8	1	U	1	U	**66**		**200**		**67**		109	0.36	0.72	0.57	58	0.16	1U	1U
99.3	5	U	5	U	**9**		**510**		**81**		95	0.15	0.30	0.50	43	0.00	5U	5U
109.8	20	U	20	U	**2100**		**700**		**130**		107	0.04	0.13	0.08	58	ND	20U	20U
121.6	20	U	20	U	**2100**		**580**		**180**		102	ND	0.08	0.45	49	ND	20U	20U
131.1	20	U	20	U	**1100**		**660**		**360**		106	0.34	1.88	2.30	42	0.15	20U	20U
139.8	**24**		10	U	**400**		**300**		**220**		111	0.05	0.51	2.10	33	0.04	10U	10U
149.8	**31**		12	U	**510**		**500**		**330**		103	0.20	0.98	2.70	42	0.06	12U	12U
159.8	20	U	20	U	**990**		**620**		**600**		102	0.13	0.37	2.40	46	ND	20U	20U
169.8	20	U	20	U	**1000**		**470**		**570**		104	0.21	1.09	0.71	40	0.07	20U	20U
179.8	20	U	20	U	**440**		**480**		**1800**		106	0.18	0.95	3.70	34	0.05	20U	20U
189.8	10	U	10	U	**660**		**280**		**470**		109	ND	0.10	2.90	74	ND	10U	10U
199.8	**19**		10	U	**260**		**360**		**740**		110	0.10	0.52	3.50	77	0.32	10U	10U
215.8	6	U	6	U	**240**		**130**		**63**		94	0.04	0.11	0.28	54	ND	**Detect**	6U
229.2	10	U	10	U	**820**	E	**380**		**140**		95	0.06	0.18	5.20	61	ND	**Detect**	10U
239.9	8	U	8	U	**460**		**210**		**110**		97	0.05	0.11	2.90	86	ND	**Detect**	8U
249.9	**2**		1	U	**57**		**34**		**30**		100	0.03	0.12	3.50	135	ND	**Detect**	1U
257.1	1	U	1	U	**4**		**15**		**17**		98	0.04	0.07	2.10	204	ND	**Detect**	1U
284.9	1	U	1	U	**28**		**31**		**53**		105	0.30	0.64	6.80	208	0.02	1U	1U
299.9	8	U	8	U	**210**		**260**		**320**		105	0.04	0.16	3.70	79	ND	8U	8U
307.9	6	U	6	U	**120**		**220**		**200**		101	0.17	1.23	4.10	79	0.06	6U	6U
339.8	6	U	6	U	6	U	**280**		**220**		100	0.17	0.33	0.24	251	0.04	**Detect**	6U
349.8	4	U	4	U	4	U	**130**		**170**		100	0.06	0.27	0.12	270	ND	4U	4U
356.1	6	U	6	U	6	U	**310**		**260**		105	0.13	0.18	0.10	182	ND	6U	6U

	VOC DATA, ug/L																														
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
79.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92
89.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109
99.3	5	U	5	U	5	U	5	U	5	U	5	U	5	U	10	U	5	U	5	U	5	U	5	U	95
109.8	20	U	20	U	20	U	**46**		20	U	20	U	20	U	40	U	20	U	20	U	20	U	**490**		107
121.6	20	U	20	U	20	U	**84**		20	U	20	U	20	U	40	U	20	U	20	U	20	U	**600**		102
131.1	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	**650**		106
139.8	10	U	10	U	10	U	10	U	10	U	10	U	10	U	20	U	10	U	10	U	10	U	**460**		111
149.8	12	U	12	U	12	U	12	U	12	U	12	U	12	U	24	U	12	U	12	U	12	U	**350**		103
159.8	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	**180**		102
169.8	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	**210**		104
179.8	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	**90**		106
189.8	10	U	10	U	10	U	10	U	10	U	10	U	10	U	20	U	10	U	10	U	10	U	**140**		109
199.8	10	U	10	U	10	U	10	U	10	U	10	U	10	U	20	U	10	U	10	U	10	U	**63**		110
215.8	6	U	6	U	6	U	**12**		6	U	6	U	6	U	12	U	6	U	6	U	6	U	**180**		94
229.2	10	U	10	U	10	U	**150**		10	U	10	U	10	U	20	U	10	U	10	U	10	U	**55**		95
239.9	8	U	8	U	8	U	**52**		8	U	8	U	8	U	16	U	8	U	8	U	8	U	**51**		97
249.9	1	U	1	U	1	U	**7**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	**8**		100
257.1	1	U	1	U	1	U	**4**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	**2**		98
284.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	**7**		105
299.9	8	U	8	U	8	U	8	U	8	U	8	U	8	U	16	U	8	U	8	U	8	U	**31**		105
307.9	6	U	6	U	6	U	6	U	6	U	6	U	6	U	12	U	6	U	6	U	6	U	**19**		101
339.8	6	U	6	U	6	U	6	U	6	U	6	U	6	U	12	U	6	U	6	U	6	U	6	U	100
349.8	4	U	4	U	4	U	4	U	4	U	4	U	4	U	8	U	4	U	4	U	4	U	4	U	100
356.1	6	U	6	U	6	U	6	U	6	U	6	U	6	U	12	U	6	U	6	U	6	U	6	U	105

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value just below calibration range
E=Estimated value exceeding the calibration range
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC | DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 8/4 - 8/13/03
Date Analyzed: 8/4 - 8/13/03
Report Date: 8/14/2003

HOLE ID = P45

VOC DATA, ug/L

Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS
71.3	1	U	1	U	1	U	1	U	1	U	84
81.3	1	U	1	U	1	U	1	U	1	U	88
91.3	1	U	1	U	1	U	1	U	1		82
101.3	1	U	1	U	10		29		38		95
111.3	1	U	1	U	21		56		59		98
121.3	4	U	4	U	37		171		141		99
131.3	2	U	2	U	11		69		7		104
151.3	1	U	1	U	1	U	3		3		91
167.3	1	U	1	U	1	U	1	U	1	U	91
177.3	1	U	1	U	1	U	2		15		85
187.3	1	U	1	U	1	U	2		14		97
197.3	1	U	1	U	1	U	2		8		97
207.3	1	U	1	U	1	U	2		19		96
217.3	1	U	1	U	1	U	2		10		90
227.3	1	U	1	U	1	U	1		14		93
237.3	1	U	1	U	1	U	3		5		92
270.8	2	U	2	U	2	U	68		61		97
281.7	4	U	4	U	4	U	276		20		98
291.7	4	U	4	U	4	U	63		270		100
301.7	1	U	1	U	1	U	15		33		105
311.7	1	U	1	U	1	U	24		42		100
321.7	1	U	1	U	1	U	29		52		95
340.1	1	U	1	U	1	U	3		22		97
351.8	1	U	1	U	1	U	1	U	3		104
366.4	1	U	1	U	1	U	2		21		116

Depth	INORGANIC DATA, mg/L: Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	COELUTING COMPOUNDS: 1,1-DCE / Freon 113	1,2-DCA / Benzene
71.3	ND	0.04	0.02	212	0.02	1U	1U
81.3	ND	0.04	ND	12	0.02	1U	1U
91.3	ND	0.08	0.05	28	0.02	1U	1U
101.3	0.09	0.27	0.09	28	ND	1U	1U
111.3	0.49	0.15	0.08	27	ND	1U	1U
121.3	0.13	0.27	0.09	34	ND	4U	4U
131.3	0.40	0.74	0.65	27	0.11	2U	2U
151.3	ND	0.24	1.80	96	ND	1U	Detect
167.3	0.10	0.23	0.15	117	0.02	1U	1U
177.3	ND	0.14	0.08	214	0.05	1U	1U
187.3	ND	0.09	0.09	328	0.03	1U	1U
197.3	0.05	0.22	0.42	326	ND	1U	1U
207.3	0.09	0.39	0.19	349	0.06	1U	1U
217.3	0.15	0.27	0.58	343	ND	1U	1U
227.3	ND	ND	0.06	413	0.03	1U	1U
237.3	ND	0.06	0.06	503	0.02	1U	1U
270.8	ND	0.14	0.06	273	ND	2U	2U
281.7	0.32	0.49	0.10	76	0.03	Detect	4U
291.7	ND	0.06	0.05	553	0.03	4U	4U
301.7	ND	ND	0.06	663	0.02	1U	1U
311.7	0.04	0.11	0.05	658	ND	1U	1U
321.7	ND	0.05	0.03	820	0.03	1U	1U
340.1	0.06	0.32	0.06	295	0.04	1U	1U
351.8	ND	0.04	0.03	286	0.02	1U	1U
366.4	0.11	0.18	0.11	173	0.04	1U	1U

VOC DATA, ug/L

Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
71.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	84
81.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	88
91.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	82
101.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95
111.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98
121.3	4	U	4	U	4	U	4	U	4	U	4	U	4	U	8	U	4	U	4	U	4	U	4	U	99
131.3	2	U	2	U	3		2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U	2	U	104
151.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91
167.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91
177.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	85
187.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
197.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
207.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
217.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	90
227.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	93
237.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92
270.8	2	U	2	U	2	U	2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U	2	U	97
281.7	4	U	4	U	4	U	4	U	4	U	4	U	4	U	8	U	4	U	4	U	4	U	4	U	98
291.7	4	U	4	U	4	U	4	U	4	U	4	U	4	U	8	U	4	U	4	U	4	U	4	U	100
301.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	105
311.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
321.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95
340.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
351.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
366.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	116

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 8/19 -9/8/03
Date Analyzed: 8/19 -9/8/03
Report Date: 9/8/2003

HOLE ID =P46

Depth	VOC DATA, ug/L Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	INORGANIC DATA, mg/L Fe+2	Fe, Total	Ammonia	Chloride	Chlorine, Total	COELUTING COMPOUNDS 1,1-DCE / Freon 113	1,2-DCA / Benzene
79.6	1	U	1	U	1	U	1	U	1	U	119	ND	0.20	0.11	27	0.05	1U	1U
89.6	1	U	1	U	1	U	1	U	1	U	108	ND	ND	0.03	10	0.02	1U	1U
99.6	1	U	1	U	1	U	1	U	1	U	109	0.37	1.24	0.54	11	0.24	1U	1U
109.6	1	U	1	U	1	U	1	U	1	U	101	0.05	0.14	0.13	5	ND	1U	1U
119.6	6	U	6	U	6	U	6	U	**550**		104	ND	0.05	0.03	32	0.02	6U	6U
129.6	1	U	1	U	1	U	1	U	**9**		99	0.06	0.27	0.15	15	0.07	1U	1U
139.6	1	U	1	U	1	U	1	U	1	U	108	ND	0.12	0.08	12	0.02	1U	1U
149.6	1	U	1	U	1	U	1	U	1	U	116	0.17	0.69	0.34	69	0.10	1U	1U
159.6	1	U	1	U	1	U	1	U	1	U	108	0.19	0.67	0.19	137	0.11	1U	1U
169.6	1	U	1	U	1	U	1	U	1	U	106	0.24	0.35	0.09	108	ND	1U	1U
179.6	1	U	1	U	1	U	1	U	1	U	106	0.37	0.75	0.31	125	0.16	1U	1U
189.6	1	U	1	U	1	U	1	U	1	U	115	ND	0.04	0.04	72	0.02	1U	1U
199.6	1	U	1	U	1	U	1	U	1	U	86	0.08	0.16	0.10	59	0.06	1U	1U
209.6	1	U	1	U	1	U	1	U	1	U	109	0.05	0.13	0.05	41	0.02	1U	1U
215.2	1	U	1	U	1	U	1	U	1	U	100	ND	0.04	0.02	48	ND	1U	1U
275.4	1	U	1	U	1	U	**62**		**49**		104	0.07	0.20	0.13	712	0.05	1U	1U
284.3	1	U	1	U	1	U	**4**		**50**		101	ND	0.03	0.07	683	ND	1U	1U
291.7	2	U	2	U	2	U	**3**		**150**		100	0.31	0.55	0.46	471	0.13	2U	2U
298.4	2	U	2	U	2	U	**4**		**220**		100	ND	0.07	0.07	99	ND	2U	2U
307.7	3	U	3	U	3	U	**13**		**260**		101	0.20	0.21	0.34	527	0.03	3U	3U
318.4	2	U	2	U	2	U	**4**		**240**		106	ND	0.10	0.06	361	ND	2U	2U
330.2	1	U	1	U	1	U	**5**		**120**		107	ND	0.04	0.07	271	0.02	1U	1U
340.2	1	U	1	U	1	U	1	U	**50**		104	ND	ND	0.03	261	0.02	1U	1U
348.3	1	U	1	U	1	U	1	U	**4**		104	0.13	0.19	0.26	362	0.06	1U	1U
360.2	1	U	1	U	1	U	1	U	**7**		105	ND	0.03	0.10	685	0.03	1U	1U
389.3	1	U	1	U	1	U	**3**		**22**		102	ND	ND	0.04	703	0.02	1U	1U
399.3	1	U	1	U	1	U	**2**		**14**		97	0.08	0.20	0.23	620	0.05	1U	1U
409.3	1	U	1	U	1	U	**1**		**11**		109	ND	ND	0.02	595	0.02	1U	1U
419.3	1	U	1	U	1	U	**2**		**13**		99	0.17	0.45	0.35	758	0.12	1U	1U
430.0	1	U	1	U	1	U	**4**		**17**		101	0.36	2.5	0.52	1148	0.33	1U	1U
438.5	**2**		1	U	1	U	**5**		**20**		94	0.07	0.49	0.19	908	0.07	1U	1U
470.3	1	U	1	U	1	U	**7**		**15**		101	ND	0.13	0.02	778	0.03	1U	1U
480.3	1	U	1	U	1	U	1	U	**7**		97	0.03	0.18	0.15	343	0.07	1U	1U
490.3	1	U	1	U	1	U	1	U	**4**		88	0.15	0.56	0.27	190	0.13	1U	1U
498.1	1	U	1	U	1	U	1	U	**8**		95	NS	NS	NS	NS	NS	1U	1U

Depth	VOC DATA, ug/L Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
79.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	119
89.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108
99.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109
109.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
119.6	6	U	6	U	6	U	6	U	6	U	6	U	6	U	12	U	6	U	6	U	6	U	6	U	104
129.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99
139.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108
149.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	116
159.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108
169.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	106
179.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	106
189.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	115
199.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	86
209.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109
215.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
275.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
284.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
291.7	2	U	2	U	2	U	2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U	2	U	100
298.4	2	U	2	U	2	U	2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U	2	U	100
307.7	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	101
318.4	2	U	2	U	2	U	2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U	2	U	106
330.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	107
340.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
348.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
360.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	105
389.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
399.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
409.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109
419.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99
430.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
438.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94
470.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
480.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
490.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	88
498.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Location:	GTEOSI
Project ID:	Hicksville, NY
SEI #:	Groundwater Profiling
Date Sampled:	03-1402
Date Analyzed:	9/2 - 9/11/2003
Report Date:	9/2 - 9/11/2003
	9/11/2003

HOLE ID =P47 DF	VOC DATA, ug/L											INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
77.1	1	U	1	U	1	U	1	U	1	U	92	ND	0.12	0.10	190	0.03	1U	1U
87.1	1	U	1	U	1	U	1	U	**2**		101	ND	0.10	0.05	117	0.02	1U	1U
97.1	1	U	1	U	1	U	1	U	**2**		92	ND	0.07	0.10	104	ND	1U	1U
107.1	1	U	1	U	1	U	1	U	**4**		98	0.34	0.81	0.51	81	0.20	1U	1U
117.1	1	U	1	U	1	U	**1**		**410**		111	ND	0.03	0.04	204	ND	1U	1U
127.1	1	U	1	U	1	U	1	U	**66**		104	0.06	0.15	0.11	259	0.04	1U	1U
137.1	1	U	1	U	1	U	1	U	**3**		96	0.15	0.57	0.34	167	0.13	1U	1U
147.0	1	U	1	U	1	U	1	U	**240**		115	0.07	0.13	0.20	310	0.04	1U	1U
157.0	3	U	3	U	3	U	3	U	**290**		110	0.47	2.55	10.60	286	0.33	3U	3U
164.0	1	U	1	U	1	U	1	U	1	U	103	0.03	0.34	0.17	61	0.05	1U	1U
177.0	1	U	1	U	1	U	**2**		**12**		103	0.05	0.17	8.60	107	ND	**Detect**	1U
187.0	1	U	1	U	1	U	**6**		**3**		100	0.12	0.60	2.20	59	0.03	1U	1U
197.0	3	U	3	U	3	U	**170**		**180**		100	0.06	0.43	0.80	94	ND	3U	3U
205.7	1	U	1	U	1	U	**11**		**8**		105	0.08	1.16	5.80	76	0.11	**Detect**	1U
217.0	1	U	1	U	1	U	**46**		**11**		102	0.10	0.32	2.50	62	0.03	1U	1U
227.0	1	U	1	U	1	U	**77**		**14**		101	0.06	0.09	2.90	43	ND	1U	1U
247.0	10	U	10	U	**10**		**450**		**130**		103	ND	0.06	0.09	54	0.04	10U	10U
272.0	1	U	1	U	1	U	**18**		**64**		104	ND	0.08	ND	249	ND	1U	1U
282.0	1	U	1	U	1	U	**37**		**21**		105	0.29	0.55	ND	97	0.03	1U	1U
308.5	1	U	1	U	1	U	**41**		**17**		104	ND	0.04	ND	59	ND	1U	1U
317.0	6	U	6	U	6	U	**310**		**150**		100	0.03	0.13	0.03	64	ND	6U	6U
327.7	1	U	1	U	1	U	**16**		**10**		98	0.03	0.21	0.21	50	0.10	1U	1U
337.0	3	U	3	U	**6**		**200**		**35**		101	0.05	0.12	0.07	57	0.05	3U	3U
344.1	3	U	3	U	**13**		**280**		**21**		103	0.10	0.22	0.20	81	0.06	3U	3U
368.4	4	U	4	U	**11**		**310**		**28**		109	0.16	0.34	0.48	83	0.08	4U	4U
377.0	3	U	3	U	**9**		**280**		**21**		99	0.03	0.10	0.05	77	ND	3U	3U
387.0	**2**		1	U	1	U	**46**		**9**		97	0.15	0.92	0.41	58	0.11	1U	1U
397.0	1	U	1	U	1	U	**3**		**1**		100	0.18	0.22		37	ND	1U	1U

	VOC DATA, ug/L																								
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
77.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92
87.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
97.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92
107.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98
117.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	111
127.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
137.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
147.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	115
157.0	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	110
164.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103
177.0	1	U	1	U	**2**		1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103
187.0	1	U	1	U	**2**		1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
197.0	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	**11**		100
205.7	1	U	1	U	**4**		1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	105
217.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
227.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
247.0	10	U	10	U	10	U	10	U	10	U	10	U	10	U	20	U	10	U	10	U	10	U	**21**		103
272.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
282.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	105
308.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
317.0	6	U	6	U	6	U	6	U	6	U	6	U	6	U	12	U	6	U	6	U	6	U	6	U	100
327.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98
337.0	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	101
344.1	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	103
368.4	4	U	4	U	4	U	4	U	4	U	4	U	4	U	8	U	4	U	4	U	4	U	4	U	109
377.0	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	99
387.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
397.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 10/21-10/30/2003
Date Analyzed: 10/21-10/30/2003
Report Date: 10/30/2003

HOLE ID =P49	VOC DATA, ug/L													INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
74.3	1	U	1	U	1	U	1	U	1	U	94	0.07	0.17	0.06	6.75	ND	1U	1U
84.3	1	U	1	U	1	U	1	U	1	U	93	0.10	0.25	0.2	6.4	ND	1U	1U
94.3	1	U	1	U	1	U	1	U	5		96	0.35	0.61	0.46	49.5	ND	1U	1U
104.3	1	U	1	U	1	U	1	U	2		95	0.08	0.14	0.11	78.0	ND	1U	1U
114.3	1	U	1	U	1	U	1	U	12		111	0.28	0.36	0.45	90.5	0.13	1U	1U
124.3	1	U	1	U	4		1		210		106	0.18	0.27	0.24	16.5	0.05	1U	1U
134.3	12	U	12	U	40		12	U	1900		107	0.12	0.20	0.15	20.5	0.03	12U	12U
144.3	1	U	1	U	5		1		180		107	0.36	0.52	0.58	24.25	0.11	1U	1U
167.3	1	U	1	U	1	U	1	U	1	U	94	0.09	0.16	0.07	67.5	0.09	1U	1U
177.3	1	U	1	U	1	U	1	U	1	U	96	0.02	0.03	ND	89.5	0.02	1U	1U
222.3	1	U	1	U	4		1		20		93	0.38	0.88	1.7	375	0.23	1U	1U
232.3	1	U	1	U	3		1	U	3		92	0.61	1.39	1.2	102	0.41	1U	1U
239.3	1	U	1	U	1	U	1	U	1	U	97	0.42	0.49	0.63	70	0.27	1U	1U
249.3	1	U	1	U	1	U	1	U	6		108	0.01	0.03	0.03	310	0.06	1U	1U
261.0	1	U	1	U	1	U	1	U	8		101	0.07	0.14	0.09	468	0.02	1U	1U
269.3	1	U	1	U	20	U	21		91		108	0.20	0.78	NC	314	0.1	1U	1U
284.3	1	U	1	U	1		69		47		108	0.21	0.58	1.6	376	ND	Detect	1U
314.0	1	UJ	1	U	1	U	29		37		105	0.26	0.36	3.8	575	0.12	1U	1U
324.0	1	UJ	1	U	1	U	31		87		112	0.07	0.15	0.21	590	0.04	1U	1U
333.0	3	U	3	U	3	U	100		180		99	0.18	0.38	0.33	487	0.12	3U	3U
340.8	3	U	3	U	3	U	110		200		106	0.05	0.09	0.16	510	0.08	3U	3U
394.1	1	U	1	U	1	U	3		26		112	0.44	1.07	0.21	552	0.17	1U	1U
423.0	1	U	1	U	1	U	2		45		111	0.07	0.16	0.08	667.5	0.05	1U	1U
444.1	1	U	1	U	1	U	1	U	66		90	0.30	0.45	0.22	850	0.15	1U	1U
463.2	1	UJ	1	U	1	U	12		33		84	0.33	0.58	0.54	840	ND	1U	1U

	VOC DATA, ug/L																													
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
74.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94
84.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	93
94.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
104.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95
114.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	111
124.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	106
134.3	12	U	12	U	12	U	12	U	12	U	12	U	12	U	24	U	12	U	12	U	12	U	12	U	107
144.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	107
167.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94
177.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
222.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	93
232.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92
239.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
249.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108
261.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
269.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	2		108
284.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108
314.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	105
324.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	112
333.0	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	99
340.8	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	106
394.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	112
423.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	111
444.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	90
463.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	84

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 10/21-10/29/2003
Date Analyzed: 10/21-10/29/2003
Report Date: 10/29/2003

HOLE ID =P50

Depth	VOC DATA, ug/L																INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	Fe^{+2}	Fe, Total	Ammonia	Chloride	Chloride, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
82.9	1	U	1	U	1	U	3		2		96	2.79	14	0.59	193	ND	1U	1U
89.9	1	U	1	U	1	U	1	U	1	U	100	11.00	12	0.35	8	ND	1U	1U
99.9	1	U	1	U	1	U	5		14		102	17.7	20	0.47	13.25	0.02	1U	1U
109.9	190		1		13		8		33		102	23.7	27.4	0.6	11.8	0.07	Detect	1U
119.9	200		12	U	1200		220		360		102	36.80	41.2	0.6	16.5	0.09	Detect	12U
129.9	41		20	U	1500		550		1100		107	29.30	32.4	0.41	22.6	ND	Detect	20U
139.9	65		12	U	1000		230		300		96	26.00	26.6	0.33	25.7	ND	Detect	12U
149.9	57		12	U	1300		140		470		108	31.70	32.6	0.37	34.5	ND	Detect	12U
159.9	1	U	1	U	4		24		160		108	0.38	0.68	0.26	113.25	0.26	1U	1U
169.9	1	U	1	U	1	U	1		43		98	0.12	0.70	0.18	257	0.06	1U	1U
179.9	1	U	1	U	1	U	9		99		107	0.18	0.64	0.52	260	0.11	1U	1U
189.9	1	U	1	U	1	U	1	U	8		103	1.00	2.90	1.4	290	0.58	1U	1U
198.5	1	U	1	U	1	U	1	U	25		107	0.52	1.52	3.9	314	0.16	1U	1U
206.6	1	U	1	U	1	U	1	U	15		109	0.34	0.56	1.6	272	0.04	1U	1U
242.6	1	U	1	U	1	U	1		36		97	0.21	0.40	2.7	317	0.04	1U	1U
249.9	1	U	1	U	7		17		27		103	0.03	0.17	4.3	168.25	0.07	Detect	1U
259.9	1	U	1	U	1	U	5		30		107	0.13	0.28	2.8	308	ND	1U	1U
267.4	1	U	1	U	19		37		48		107	0.14	0.24	3.8	252	0.04	Detect	1U
279.9	1	U	1	U	4		12		38		108	0.23	0.36	3.4	344	0.06	1U	1U
289.9	1	U	1	U	7		17		38		113	0.10	0.17	6.8	332	0.03	1U	1U
299.2	1	U	1	U	1	U	25		55		110	0.34	0.56	7.0	475	0.07	1U	1U
309.9	1	U	1	U	1	U	28		76		107	0.16	0.22	7.4	590	ND	Detect	1U
319.9	6	U	6	U	6	U	360		310		106	0.29	0.37	3.4	420	0.04	6U	6U
327.1	6	U	6	U	6	U	260		390		113	0.14	0.20	0.03	380	ND	6U	6U
342.6	3	UJ	3	U	3	U	44		140		112	ND	ND	0.11	605	ND	3U	3U
349.9	1	U	1	U	1	U	21		66		98	0.02	0.03	0.02	502.5	ND	1U	1U
359.9	1	U	1	U	1	U	1		5		89	0.01	0.05	ND	424	0.03	1U	1U
370.5	1	U	1	U	1	U	3		28		91	0.04	0.06	0.08	422	0.02	1U	1U
376.7	1	U	1	U	1	U	3		33		96	0.01	0.01	0.03	494	ND	1U	1U
385.9	1	U	1	U	1	U	1	U	2		111	0.03	0.05	0.02	94.75	0.03	1U	1U
413.4	1	U	1	U	1	U	1	U	36		91	0.01	0.41	ND	645.8	ND	1U	1U
424.1	1	U	1	U	1	U	2		14		106	0.04	0.14	0.06	603	0.03	1U	1U
439.9	1	U	1	U	1	U	5		15		92	0.02	0.14	0.05	730	0.02	1U	1U

Depth	VOC DATA, ug/L																																	
	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
82.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
89.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	3		100
99.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
109.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
119.9	12	U	12	U	12	U	12	U	12	U	12	U	12	U	24	U	12	U	12	U	12	U	12	U	102
129.9	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	107
139.9	12	U	12	U	12	U	12	U	12	U	12	U	12	U	24	U	12	U	12	U	12	U	12	U	96
149.9	12	U	12	U	12	U	12	U	12	U	12	U	12	U	24	U	12	U	12	U	12	U	12	U	108
159.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108
169.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98
179.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	107
189.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103
198.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	107
206.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109
242.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
249.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	2		103
259.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	2	U	1
267.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	3		107
279.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	2		108
289.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	2		113
299.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	2		110
309.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	13		107
319.9	6	U	6	U	6	U	6	U	6	U	6	U	6	U	12	U	6	U	6	U	6	U	11		106
327.1	6	U	6	U	6	U	6	U	6	U	6	U	6	U	12	U	6	U	6	U	6	U	6	U	113
342.6	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	112
349.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98
359.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	89
370.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91
376.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
385.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	111
413.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91
424.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	106
439.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 10/21-10/30/2003
Date Analyzed: 10/21-10/30/2003
Report Date: 10/30/2003

HOLE ID =P51	VOC DATA, ug/L												INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
78.0	1	U	1	U	1	U	1	U	1	U	93	0.25	0.63	0.57	24	0.24	1U	1U
88.0	1	U	1	U	1	U	1	U	1	U	102	0.19	0.64	0.34	12	0.10	1U	1U
97.8	1	U	1	U	1	U	3		15		106	0.18	0.45	0.27	30	0.22	1U	1U
107.8	1	U	1	U	1	U	5		59		106	0.04	0.09	0.05	35	ND	1U	1U
117.8	3	U	3	U	4		41		150		105	8.50	9.5	0.8	31.3	0.05	Detect	3U
127.8	3	U	3	U	4		49		140		96	13.10	15.7	3.6	28	0.24	Detect	3U
137.8	8	U	8	U	33		140		770		109	NS	20	NS	23.25	NS	8U	8U
147.8	4	U	4	U	18		81		380		114	14.40	15.50	0.30	13.6	0.03	4U	4U
158.0	3	U	3	U	3	U	63		280		107	2.77	2.89	0.28	44.25	0.04	3U	3U
167.8	1	U	1	U	1	U	1		5		99	0.11	0.24	0.10	154	ND	1U	1U
177.8	1	U	1	U	1	U	2		6		92	0.17	0.42	0.24	189	0.06	1U	1U
187.8	1	U	1	U	27		26		28		104	NS	NS	NS	NS	NS	Detect	1U
201.2	1	U	1	U	63		58		61		112	0.08	0.08	8.00	142	0.02	1U	1U
226.8	1	U	1	U	4		9		20		101	0.25	0.43	4.2	244	0.06	1U	1U
236.8	1	U	1	U	4		10		25		102	0.39	0.54	3.6	148	0.05	1U	1U
246.8	1	U	1	U	18		130		150		107	0.04	0.11	3.8	137.5	ND	Detect	1U
256.8	1	U	1	U	19		47		53		104	0.49	1.13	5.6	116	0.09	1U	1U
266.7	1	U	1	U	4		24		32		100	0.17	0.79	5.4	136	0.06	1U	1U
276.8	1	U	1	U	41		54		65		116	0.26	0.36	5.0	114.7	0.03	1U	1U
286.8	1	U	1	U	1	U	11		9		108	0.10	0.13	5.2	119.8	ND	1U	1U
295.3	1	U	1	U	1	U	13		24		109	ND	0.07	4.0	176	ND	1U	1U
301.1	1	U	1	U	1	U	18		21		90	0.28	0.31	8.0	338	0.06	1U	1U
321.0	1	U	1	U	2		180		140		108	0.26	0.30	2.6	365	0.05	Detect	1U
327.9	6	U	6	U	6	U	600		350		110	0.10	0.13	0.03	222	ND	Detect	6U
336.9	6	U	6	U	6	U	530		350		97	0.24	0.28	0.2	300	0.03	6U	6U
346.9	3	U	3	U	3	U	72		270		96	0.09	0.09	0.08	388	ND	3U	3U
363.3	1	UJ	1	U	1	U	3		26		116	0.02	0.08	0.07	359	0.05	1U	1U
371.8	1	UJ	1	U	1	U	3		44		115	ND	0.07	0.05	685	ND	1U	1U
381.8	1	UJ	1	U	1	U	7		98		116	0.05	0.09	0.15	239	0.07	1U	1U

	VOC DATA, ug/L																												
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
78.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	93
88.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
97.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	106
107.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	106
117.8	3	U	3	U	9		3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	105
127.8	3	U	3	U	6		3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	96
137.8	8	U	8	U	8	U	8	U	8	U	8	U	8	U	16	U	8	U	8	U	8	U	8	U	109
147.8	4	U	4	U	4	U	4	U	4	U	4	U	4	U	8	U	4	U	4	U	4	U	4	U	114
158.0	3	U	3	U	4		3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	107
167.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99
177.8	1	U	1	U	1		1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92
187.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	8		104
201.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	2		112
226.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	2		101
236.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
246.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	9		107
256.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	4		104
266.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	3		100
276.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	116
286.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	2		108
295.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	7		109
301.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	4		90
321.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	3		108
327.9	6	U	6	U	6	U	6	U	6	U	6	U	6	U	12	U	6	U	6	U	6	U	6	U	110
336.9	6	U	6	U	6	U	6	U	6	U	6	U	6	U	12	U	6	U	6	U	6	U	9		97
346.9	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	96
363.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	116
371.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	115
381.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	116

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client:	GTEOSI
Location:	Hicksville, NY
Project ID:	Groundwater Profiling
SEI #:	03-1402
Date Sampled:	11/04-11/20/2003
Date Analyzed:	11/04-11/20/2003
Report Date:	11/20/2003

HOLE ID =P52

Depth	VOC DATA, ug/L Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS
80.0	1	U	1	U	1	U	1	U	1	U	91
90.0	1	U	1	U	1	U	1	U	1	U	107
100.0	1	U	1	U	1	U	1	U	1	U	90
110.0	1	U	1	U	1	U	1	U	1	U	92
120.0	1	U	1	U	1	U	1	U	1	U	102
130.0	1	U	1	U	1	U	1	U	1	U	89
140.0	1	U	1	U	1	U	1	U	**2**		90
150.0	1	U	1	U	1	U	1	U	**11**		86
160.0	1	U	1	U	1	U	1	U	1	U	100
170.0	1	U	1	U	1	U	1	U	1	U	109
180.0	1	U	1	U	1	U	1	U	1	U	90
224.5	1	U	1	U	1	U	1	U	1	U	107
232.3	1	U	1	U	1	U	1	U	**2**		89
243.7	1	U	1	U	1	U	**4**		**21**		102
254.5	1	U	1	U	1	U	**18**		**60**		96
264.5	1	U	1	U	1	U	**11**		**68**		102
274.5	1	U	1	U	1	U	**15**		**46**		94
283.5	1	U	1	U	1	U	**1**		**9**		86
291.7	1	U	1	U	1	U	**2**		**12**		87
299.5	1	U	1	U	1	U	1	U	**4**		92
319.2	1	U	1	U	1	U	**10**		**140**		101
327.2	4	U	4	U	4	U	4	U	**350**		108
339.2	3	U	3	U	3	U	**5**		**130**		106
364.2	1	U	1	U	1	U	1	U	**33**		93
374.4	1	U	1	U	1	U	1	U	**3**		93
395.4	1	U	1	U	1	U	1	U	**28**		101
404.5	1	U	1	U	1	U	**2**		**17**		98
414.2	1	U	1	U	1	U	**7**		**18**		93
444.4	1	U	1	U	1	U	**3**		**68**		93
474.7	1	U	1	U	1	U	1	U	**4**		106
483.4	1	U	1	U	1	U	1	U	**5**		84

Depth	INORGANIC DATA, mg/L Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	COELUTING COMPOUNDS 1,1-DCE / Freon 113	1,2-DCA / Benzene
80.0	0.03	0.12	ND	ND	ND	1U	1U
90.0	0.06	0.11	0.04	ND	ND	1U	1U
100.0	0.03	0.18	0.07	58	ND	1U	1U
110.0	0.27	1.57	0.47	22	ND	1U	1U
120.0	0.11	0.35	0.27	22	0.06	1U	1U
130.0	0.11	0.28	0.08	32	ND	1U	1U
140.0	0.14	0.18	0.05	35	ND	1U	1U
150.0	ND	0.10	0.04	24	ND	1U	1U
160.0	ND	0.13	0.11	42	ND	1U	1U
170.0	ND	0.09	0.06	40	ND	1U	1U
180.0	0.31	0.66	0.20	119	0.04	1U	1U
224.5	ND	0.16	0.05	86	0.02	1U	1U
232.3	ND	0.03	ND	94	0.04	1U	1U
243.7	0.17	0.34	0.39	93	0.05	1U	1U
254.5	0.06	0.18	0.18	370	0.05	1U	1U
264.5	0.06	0.27	0.29	281	0.07	1U	1U
274.5	0.13	0.27	0.20	478	0.05	1U	1U
283.5	ND	ND	0.03	440	0.04	1U	1U
291.7	0.08	0.17	0.22	470	0.07	1U	1U
299.5	0.06	0.14	0.13	450	0.03	1U	1U
319.2	0.18	0.39	0.20	283	0.11	1U	1U
327.2	0.04	0.22	0.28	325	0.05	4U	4U
339.2	0.14	0.22	0.44	133	0.08	3U	3U
364.2	ND	0.04	0.05	242	0.04	1U	1U
374.4	ND	0.06	0.06	425	0.03	1U	1U
395.4	0.06	0.20	0.17	665	0.05	1U	1U
404.5	0.08	0.34	0.15	608	0.05	1U	1U
414.2	ND	0.03	0.03	835	0.04	1U	1U
444.4	0.12	0.68	0.26	865	0.05	1U	1U
474.7	0.40	2.06	1.1	793	0.4	1U	1U
483.4	0.11	0.49	0.21	485	0.05	1U	1U

VOC DATA, ug/L

Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
80.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91
90.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	107
100.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	90
110.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92
120.0	1	U	1	U	1	U	**1**		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
130.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	89
140.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	90
150.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	86
160.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
170.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109
180.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	90
224.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	107
232.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	89
243.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
254.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
264.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
274.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94
283.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	86
291.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	87
299.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92
319.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
327.2	4	U	4	U	4	U	4	U	4	U	4	U	4	U	8	U	4	U	4	U	4	U	4	U	108
339.2	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	106
364.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	93
374.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	93
395.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
404.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98
414.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	93
444.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	93
474.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	106
483.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	84

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

DRAFT

STONE ENVIRONMENTAL INC

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 11/20-12/12/2003
Date Analyzed: 11/20-12/12/2003
Report Date: 12/12/2003

HOLE ID =P53

Depth	VOC DATA, ug/L Vinyl Chloride	Q	1-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	INORGANIC DATA, mg/L Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	COELUTING COMPOUNDS 1,1-DCE / Freon 113	1,2-DCA / Benzene
76.4	1	U	1	U	1	U	1	U	1	U	84	0.06	0.15	0.07	5	ND	1U	1U
86.4	1	U	1	U	1	U	1	U	1	U	81	ND	0.07	0.05	56	ND	1U	1U
96.4	1	U	1	U	1	U	1	U	1	U	82	ND	0.09	0.04	69	0.04	1U	1U
106.4	1	U	1	U	1	U	1	U	1	U	100	ND	0.05	0.05	109	0.04	1U	1U
116.4	1	U	1	U	1	U	1	U	**2**		107	0.05	0.14	0.09	62	0.04	1U	1U
126.4	1	U	1	U	1	U	**1**		**30**		111	0.10	0.22	0.18	52	0.03	1U	1U
136.4	20	U	20	U	**390**		**140**		**9400**		110	0.15	0.25	0.22	20	ND	20U	20U
146.4	12	U	12	U	**87**		**29**		**1600**		106	0.04	0.13	0.06	35	ND	12U	12U
156.4	1	U	1	U	1	U	1	U	**9**		110	0.06	0.26	0.27	84	0.04	1U	1U
165.7	1	U	1	U	1	U	1	U	**4**		101	0.03	0.11	0.07	89	0.03	1U	1U
176.4	1	U	1	U	1	U	1	U	**15**		96	0.05	0.21	0.24	85	0.06	1U	1U
188.9	10	U	10	U	**63**		**150**		**650**		104	0.06	0.11	0.22	110	ND	10U	10U
212.6	1	U	1	U	1	U	1	U	**2**		115	0.06	0.11	1.6	92	ND	1U	1U
221.4	1	U	1	U	**27**		**20**		**88**		107	0.18	0.44	2.4	107	0.07	1U	1U
231.4	6		6	U	**170**		**91**		**220**		98	0.20	0.22	6.4	182	ND	6U	6U
238.6	1	U	1	U	**24**		**10**		**24**		97	0.05	0.10	7.4	215	ND	1U	1U
248.4	1	U	1	U	**2**		1	U	**3**		94	0.06	0.14	5.8	239	0.03	1U	1U
256.4	1	U	1	U	**20**	J	**6**		**21**		102	0.15	1.01	4.2	218	0.04	1U	1U
266.4	1	U	1	U	1	U	1	U	**5**		108	0.14	0.23	0.28	80	0.08	1U	1U
276.4	1	U	1	U	1	U	**12**		**96**		96	0.09	0.13	0.15	252	0.05	1U	1U
286.4	3	U	3	U	3	U	**23**		**140**		99	0.17	0.32	0.36	262	0.10	3U	3U
295.5	3	U	3	U	3	U	**61**		**110**		100	0.43	0.90	2.4	357	0.20	3U	3U
306.0	1	U	1	U	1	U	**10**		**42**		101	0.09	0.16	1.6	430	ND	1U	1U
313.3	1	U	1	U	1	U	**16**		**96**		107	0.24	0.43	0.7	500	0.12	1U	1U
331.1	1	U	1	U	1	U	**25**		**79**		102	0.19	0.27	0.9	543	0.07	1U	1U
340.1	3	U	3	U	3	U	3	U	**190**		112	ND	0.04	ND	237	0.03	3U	3U
366.7	4	U	4	U	4	U	**7**		**250**		108	0.09	0.27	0.15	333	0.10	4U	4U
391.6	1	U	1	U	1	U	**4**		**23**		115	0.05	0.13	0.04	473	0.06	1U	1U
401.1	1	U	1	U	1	U	**3**		**15**		79	0.16	0.28	0.36	548	0.09	1U	1U
410.2	1	U	1	U	1	U	**3**		**25**		106	0.06	0.35	0.13	705	0.03	1U	1U
426.8	1	U	1	U	1	U	1	U	1	U	107	ND	0.04	0.07	184	0.02	1U	1U
480.9	1	U	1	U	1	U	1	U	**120**		96	0.39	1.14	0.15	795	0.30	1U	1U
487.4	1	U	1	U	1	U	1	U	**80**		110	0.06	0.10	0.08	776	0.06	1U	1U
497.0	1	U	1	U	1	U	1	U	**25**		110	0.18	1.00	0.12	480	0.09	1U	1U
504.8	1	U	1	U	1	U	1	U	**31**		96	0.05	0.08	0.05	573	0.06	1U	1U

Depth	VOC DATA, ug/L Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
76.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	84
86.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	81
96.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	82
106.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
116.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	107
126.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	111
136.4	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	110
146.4	12	U	12	U	12	U	12	U	12	U	12	U	12	U	24	U	12	U	12	U	12	U	12	U	106
156.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	110
165.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
176.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
188.9	10	U	10	U	10	U	10	U	10	U	10	U	10	U	20	U	10	U	10	U	10	U	**19**		104
212.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	115
221.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	**3**		107
231.4	6	U	6	U	6	U	6	U	6	U	6	U	6	U	12	U	6	U	6	U	6	U	**8**		98
238.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
248.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94
256.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
266.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108
276.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
286.4	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	99
295.5	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	**10**		100
306.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	**2**		101
313.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	**1**		107
331.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	**2**		102
340.1	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	20	U	112
366.7	4	U	4	U	4	U	4	U	4	U	4	U	4	U	8	U	4	U	4	U	4	U	4	U	108
391.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	115
401.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	79
410.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	**3**		106
426.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	107
480.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	**2**		96
487.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	110
497.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	110
504.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 11/04-11/18/2003
Date Analyzed: 11/04-11/18/2003
Report Date: 11/18/2003

HOLE ID =P54	VOC DATA, ug/L												INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
74.2	1	UJ	1	U	1	U	7		4		77	0.17	0.27	0.11	42	ND	1U	1U
87.6	1	UJ	1	U	8		56		25		111	0.35	0.43	0.42	63	0.05	1U	1U
97.6	8	U	8	U	200		240		130		109	0.33	0.38	0.11	48	ND	8U	8U
107.6	20	U	20	U	1000		350		250		111	0.24	0.37	0.3	41	ND	20U	20U
117.6	4		3	U	24		64		110		104	0.27	0.39	1.2	39	0.03	3U	3U
127.6	7		4	U	11		66		250		103	0.17	0.21	0.8	44	ND	4U	4U
137.6	4		3	U	3	U	27		100		110	0.16	0.28	0.7	61	ND	3U	3U
147.7	6	U	6	U	31		120		460		119	1.01	1.04	1.2	37	ND	6U	6U
155.8	3	U	3	U	5		43		150		112	0.31	0.43	2.2	94	ND	3U	3U
165.9	12	U	12	U	52		190		1000		105	0.45	0.53	0.59	39	ND	12U	12U
177.6	6	U	6	U	6	U	63		240		99	0.31	0.43	0.69	76	ND	6U	6U
187.6	1	U	1	U	3		13		13		93	0.20	0.30	1.3	178	ND	1U	1U
226.6	1	U	1	U	1	U	5		20		109	0.07	0.37	8.8	240	0.04	1U	1U
236.6	1	U	1	U	1	U	5		21		91	0.18	0.90	4.0	255	0.04	1U	1U
246.6	1	U	1	U	1	U	2		12		90	0.29	0.58	1.3	264	0.03	1U	1U
256.6	1	U	1	U	3		11		32		104	0.33	0.37	4.8	286	ND	1U	1U
268.0	3	U	3	U	89		91		109		103	0.34	2.59	10.4	154	ND	3U	3U
276.4	2	U	2	U	29		48		70		97	0.21	0.25	12.2	194	0.04	Detect	2U
285.4	1	U	1	U	9		32		46		106	0.09	0.12	8.2	122	ND	1U	1U
296.3	4	U	4	U	24		83		190		99	0.13	0.16	1.4	185	0.02	4U	4U
303.6	3	U	3	U	4		71		111		98	0.43	0.46	1.6	229	ND	3U	3U
326.3	3	U	3	U	3	U	53		110		103	0.11	0.14	3.25	456	ND	3U	3U
334.4	3	U	3	U	3	U	54		100		111	0.27	0.28	2.3	403	ND	3U	3U
343.0	6	U	6	U	6	U	390		260		103	0.24	0.25	0.07	254	ND	6U	6U
351.3	3	U	3	U	3	U	49		170		103	0.09	0.10	0.19	395	0.05	3U	3U
360.8	3	U	3	U	3	U	39		130		108	0.08	0.16	0.22	335	0.05	3U	3U
400.1	1	U	1	U	1	U	1	U	1	U	98	ND	0.08	0.05	30	0.04	1U	1U
411.1	1	U	1	U	1	U	1	U	5		106	ND	ND	0.02	52	0.02	1U	1U
421.0	1	U	1	U	1	U	1	U	5		86	0.04	0.08	0.06	52	0.03	1U	1U
431.0	1	U	1	U	1	U	1	U	3		80	0.12	0.24	0.24	68	0.09	1U	1U
437.1	1	U	1	U	1	U	1	U	3		80	0.25	0.41	0.56	82	0.20	1U	1U

	VOC DATA, ug/L																															
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
74.2	1	UJ	1	UJ	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	77
87.6	1	UJ	1	UJ	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	111
97.6	8	U	8	U	8	U	8	U	8	U	8	U	8	U	16	U	8	U	8	U	8	U	240		109
107.6	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	2700		111
117.6	3	U	3	U	5		3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	37		104
127.6	4	U	4	U	7		4	U	4	U	4	U	4	U	8	U	4	U	4	U	4	U	4		103
137.6	3	U	3	U	6		3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3		110
147.7	6	U	6	U	6	U	6	U	6	U	6	U	6	U	12	U	6	U	6	U	6	U	22		119
155.8	3	U	3	U	3		3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	5		112
165.9	12	U	12	U	12	U	12	U	12	U	12	U	12	U	24	U	12	U	12	U	12	U	20		105
177.6	6	U	6	U	6	U	6	U	6	U	6	U	6	U	12	U	6	U	6	U	6	U	6	U	99
187.6	1	U	1	U	1		1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	5		93
226.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109
236.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91
246.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	90
256.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	2		104
268.0	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	7		103
276.4	2	U	2	U	2	U	2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U	5		97
285.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	5		106
296.3	4	U	4	U	4	U	4	U	4	U	4	U	4	U	8	U	4	U	4	U	4	U	37		99
303.6	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	11		98
326.3	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	10		103
334.4	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	8		111
343.0	6	U	6	U	6	U	6	U	6	U	6	U	6	U	12	U	6	U	6	U	6	U	6	U	103
351.3	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	103
360.8	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	108
400.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98
411.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	106
421.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	86
431.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	80
437.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	80

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

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Mobile Laboratory Results Sheet

Client:	GTEOSI
Location:	Hicksville, NY
Project ID:	Groundwater Profiling
SEI #:	03-1402
Date Sampled:	1/11/04 - 2/06/04
Date Analyzed:	1/11/04 - 2/06/04
Report Date:	2/6/2004

HOLE ID =P55

Depth	VOC DATA, ug/L										
	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS
74.6	1	U	1	U	1	U	1	U	1	U	93
84.1	1	U	1	U	1	U	1	U	1	U	90
94.6	1	U	1	U	1	U	1	U	1	U	96
104.6	1	U	1	U	1	U	1	U	1	U	95
114.6	1	U	1	U	1	U	1	U	1	U	99
124.6	1	U	1	U	1	U	2		1	U	95
134.6	1	U	1	U	1	U	1	U	1	U	87
144.6	1	U	1	U	1	U	1	U	1	U	95
154.6	2		1	U	18		8		1	U	88
164.6	610		12	U	1200		98		12	U	114
174.6	580		12	U	140		54		22		109
186.2	450		12	U	570		250		42		108
244.4	8	U	8	U	120		470		320		111
254.4	20	U	20	U	310		560		4600		111
264.4	13		12	U	53		580		1400		107
271.0	12	U	12	U	37		660		1300		107
294.3	12	U	12	U	14		1000		510		107
304.5	8	U	8	U	8	U	740		250		114
312.0	4	U	4	U	4	U	240		120		114
334.6	12	U	12	U	12	U	1300		650		117
340.4	6	U	6	U	6	U	390		180		109
364.4	1	U	1	U	1	U	1		1	U	103
374.4	1	U	1	U	1	U	69		43		102
381.6	1	U	1	U	1	U	1	U	1	U	93
404.4	1	U	1	U	1	U	5		1	U	86
425.4	1	U	1	U	1	U	2		1		87
434.4	1	U	1	U	1	U	1	U	1	U	90
442.3	1	U	1	U	1	U	1		1	U	89
474.4	1	U	1	U	1	U	1	U	1	U	86

Depth	INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
	Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
74.6	0.04	0.23	0.09	40	0.03	1U	1U
84.1	ND	0.06	0.05	14	0.02	1U	1U
94.6	ND	0.04	0.06	13	0.02	1U	1U
104.6	ND	0.12	0.08	11	0.03	1U	1U
114.6	0.04	0.22	0.14	9	0.05	1U	1U
124.6	0.10	0.54	0.25	14	0.06	1U	1U
134.6	0.12	0.26	0.27	10	0.05	1U	1U
144.6	ND	0.07	0.06	10	0.04	1U	1U
154.6	0.11	0.24	0.17	14	0.03	1U	1U
164.6	0.19	0.75	1.6	54	0.06	Detect	Detect
174.6	0.14	0.23	3.6	66	ND	Detect	Detect
186.2	0.23	0.75	2.4	75	0.07	Detect	Detect
244.4	0.11	1.02	6.9	44	0.06	8U	8U
254.4	0.16	0.72	7	46	0.04	20U	20U
264.4	0.12	0.20	6.6	82	0.02	Detect	12U
271.0	0.15	0.34	5.4	80	ND	Detect	12U
294.3	0.22	0.36	1.2	38	0.09	12U	12U
304.5	0.04	0.06	ND	72	0.04	8U	8U
312.0	ND	0.05	ND	49	0.06	Detect	4U
334.6	0.24	0.30	0.07	96	ND	12U	12U
340.4	0.03	0.09	0.02	80	0.03	9U	9U
364.4	NS	NS	NS	NS	NS	1U	1U
374.4	0.06	2.37	0.21	71	0.03	1U	1U
381.6	NS	NS	NS	NS	NS	1U	1U
404.4	0.28	0.55	0.18	37	0.08	1U	1U
425.4	0.26	0.54	0.10	27	0.04	1U	1U
434.4	ND	0.05	ND	25	ND	1U	1U
442.3	ND	0.03	ND	28	0.02	1U	1U
474.4	NS	NS	NS	NS	NS	1U	1U

Depth	VOC DATA, ug/L											
	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q
74.6	1	U	1	U	1	U	1	U	1	U	1	U
84.1	1	U	1	U	1	U	1	U	1	U	1	U
94.6	1	U	1	U	1	U	1	U	1	U	1	U
104.6	1	U	1	U	1	U	1	U	1	U	1	U
114.6	1	U	1	U	1	U	1	U	1	U	1	U
124.6	1	U	1	U	1	U	1	U	1	U	1	U
134.6	1	U	1	U	1	U	1	U	1	U	1	U
144.6	1	U	1	U	1	U	1	U	1	U	1	U
154.6	1	U	1	U	1	U	1	U	1	U	1	U
164.6	12	U	12	U	12	U	12	U	12	U	130	
174.6	12	U	12	U	12	U	12	U	12	U	220	
186.2	12	U	12	U	12	U	12	U	12	U	140	
244.4	8	U	8	U	8	U	8	U	8	U	8	U
254.4	20	U	20	U	20	U	25		20	U	20	U
264.4	12	U	12	U	12	U	12	U	12	U	12	U
271.0	12	U	12	U	12	U	12	U	12	U	12	U
294.3	12	U	12	U	12	U	12	U	12	U	12	U
304.5	8	U	8	U	8	U	8	U	8	U	8	U
312.0	4	U	4	U	4	U	4	U	4	U	4	U
334.6	12	U	12	U	12	U	12	U	12	U	12	U
340.4	6	U	6	U	6	U	6	U	6	U	6	U
364.4	1	U	1	U	1	U	1	U	1	U	1	U
374.4	1	U	1	U	1	U	1	U	1	U	1	U
381.6	1	U	1	U	1	U	1	U	1	U	1	U
404.4	1	U	1	U	1	U	1	U	1	U	1	U
425.4	1	U	1	U	1	U	1	U	1	U	1	U
434.4	1	U	1	U	1	U	1	U	1	U	1	U
442.3	1	U	1	U	1	U	1	U	1	U	1	U
474.4	1	U	1	U	1	U	1	U	1	U	1	U

Depth	VOC DATA, ug/L												
	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
74.6	1	U	2	U	1	U	1	U	1	U	1	U	93
84.1	1	U	2	U	1	U	1	U	1	U	1	U	90
94.6	1	U	2	U	1	U	1	U	1	U	1	U	96
104.6	1	U	2	U	1	U	1	U	1	U	1	U	95
114.6	1	U	2	U	1	U	1	U	1	U	1	U	99
124.6	1	U	2	U	1	U	1	U	1	U	1	U	95
134.6	1	U	2	U	1	U	1	U	1	U	1	U	87
144.6	1	U	2	U	1	U	1	U	1	U	1	U	95
154.6	1	U	2	U	1	U	1	U	1	U	1	U	88
164.6	12	U	24	U	17		12	U	12	U	200		114
174.6	12	U	24	U	12	U	12	U	12	U	54		109
186.2	12	U	24	U	12	U	12	U	12	U	95		108
244.4	8	U	16	U	8	U	8	U	8	U	13		111
254.4	20	U	40	U	20	U	20	U	20	U	140		111
264.4	12	U	24	U	12	U	12	U	12	U	22		107
271.0	12	U	24	U	12	U	12	U	12	U	28		107
294.3	12	U	24	U	12	U	12	U	12	U	25		107
304.5	8	U	16	U	8	U	8	U	8	U	8	U	114
312.0	4	U	8	U	4	U	4	U	4	U	4	U	114
334.6	12	U	24	U	12	U	12	U	12	U	12	U	117
340.4	6	U	12	U	6	U	6	U	6	U	6	U	109
364.4	1	U	2	U	1	U	1	U	1	U	1	U	103
374.4	1	U	2	U	1	U	1	U	1	U	1	U	102
381.6	1	U	2	U	1	U	1	U	1	U	1	U	93
404.4	1	U	2	U	1	U	1	U	1	U	2		86
425.4	1	U	2	U	1	U	1	U	1	U	1		87
434.4	1	U	2	U	1	U	1	U	1	U	1	U	90
442.3	1	U	2	U	1	U	1	U	1	U	1	U	89
474.4	1	U	2	U	1	U	1	U	1	U	1	U	86

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 1/21-1/29/2004
Date Analyzed: 1/21-1/29/2004
Report Date: 1/29/2004

HOLE ID =P56

Depth	VOC DATA, ug/L Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	INORGANIC DATA, mg/L Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	COELUTING COMPOUNDS 1,1-DCE / Freon 113	1,2-DCA / Benzene
76.6	1	U	1	U	1	U	1	U	**180**		111	0.20	0.42	0.05	16	0.06	1U	1U
86.6	1	U	1	U	1	U	1	U	1	U	99	0.07	0.16	0.05	15	ND	1U	1U
96.6	1	U	1	U	1	U	1	U	1	U	91	0.04	0.11	0.05	14	ND	1U	1U
106.6	**35**	J	1	U	1	U	1	U	1	U	102	0.04	0.15	0.06	90	0.03	1U	1U
116.6	**22**	J	1	U	1	U	1	U	1	U	95	0.04	0.07	0.06	125	0.05	1U	1U
126.6	**10**	J	1	U	1	U	1	U	1	U	91	0.21	0.44	0.27	106	0.14	1U	1U
136.6	**7**	J	1	U	1	U	1	U	1	U	88	ND	0.11	0.07	165	0.04	1U	1U
146.6	**3**	J	1	U	1	U	1	U	1	U	100	ND	0.11	0.05	180	0.06	1U	1U
156.6	**1**	J	1	U	1	U	1	U	1	U	94	ND	0.19	0.17	70	0.03	1U	1U
166.6	1	U	1	U	1	U	1	U	1	U	99	0.07	0.12	0.07	287	0.06	1U	1U
176.6	1	U	1	U	1	U	1	U	1	U	94	0.06	0.22	0.10	290	0.05	1U	1U
186.6	1	U	1	U	1	U	1	U	1	U	99	0.09	0.69	0.24	108	0.03	1U	1U
194.0	1	U	1	U	1	U	1	U	1	U	104	0.16	0.58	0.42	244	0.07	1U	1U
211.5	1	U	1	U	1	U	1	U	1	U	101	ND	0.16	0.05	179	0.04	1U	1U
221.5	1	U	1	U	1	U	1	U	1	U	103	ND	0.06	0.02	212	0.05	1U	1U
231.5	1	U	1	U	1	U	1	U	1	U	99	0.04	0.61	0.18	181	0.05	1U	1U
241.5	1	U	1	U	1	U	1	U	1	U	113	0.11	0.68	0.29	156	0.13	1U	1U
251.5	1	U	1	U	1	U	1	U	1	U	103	0.03	0.05	0.04	82	0.06	1U	1U
261.5	1	U	1	U	1	U	1	U	1	U	110	0.08	0.32	0.20	52	0.09	1U	1U
305.9	1	U	1	U	1	U	1	U	1	U	96	0.04	0.20	0.11	148	0.05	1U	1U
316.5	1	U	1	U	1	U	1	U	1	U	89	ND	0.11	0.03	24	0.05	1U	1U
324.2	1	U	1	U	1	U	1	U	1	U	94	0.04	0.06	0.08	62	0.05	1U	1U
346.6	1	U	1	U	1	U	1	U	1	U	97	0.11	0.78	0.23	32	0.12	1U	1U
354.0	1	U	1	U	1	U	1	U	1	U	104	0.07	0.17	0.14	33	0.06	1U	1U
388.6	1	U	1	U	1	U	1	U	1	U	85	0.03	0.14	0.03	16	0.03	1U	1U

VOC DATA, ug/L

Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
76.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	**1**		111
86.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99
96.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91
106.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
116.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95
126.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91
136.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	88
146.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
156.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94
166.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99
176.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94
186.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99
194.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
211.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
221.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103
231.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99
241.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	113
251.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103
261.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	110
305.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
316.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	89
324.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94
346.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
354.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
388.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	85

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 11/04-11/12/2003
Date Analyzed: 11/04-11/12/2003
Report Date: 11/12/2003

HOLE ID =P58	VOC DATA, ug/L																						INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS												Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
79.7	1	UJ	1	U	1	U	1	U	1	U	84												ND	ND	ND	23	0.06	1U	1U
89.7	1	UJ	1	U	1	U	1	U	1	U	84												0.09	0.22	0.2	21	0.03	1U	1U
99.7	1	UJ	1	U	1	U	1	U	1	U	84												0.22	0.38	0.4	33	0.12	1U	1U
109.7	1	U	1	U	1	U	1	U	1	U	96												0.33	0.67	0.46	28	0.21	1U	1U
119.7	1	U	1	U	1	U	1	U	2		92												0.06	0.13	0.14	ND	0.04	1U	1U
129.7	1	U	1	U	1	U	1	U	1	U	95												0.26	0.67	0.53	ND	0.12	1U	1U
139.7	1	U	1	U	1	U	1	U	1	U	109												0.11	0.21	0.21	102	0.06	1U	1U
149.7	1	U	1	U	1	U	1	U	1	U	109												0.09	0.31	0.26	13	0.05	1U	1U
159.7	1	U	1	U	1	U	1	U	1	U	108												0.19	0.31	0.29	76	0.07	1U	1U
169.7	1	U	1	U	1	U	1	U	1	U	94												0.19	0.20	0.05	93	0.1	1U	1U
179.7	1	U	1	U	1	U	1	U	1	U	107												0.23	0.49	0.41	67	0.09	1U	1U
189.7	1	U	1	U	1	U	1	U	1	U	90												0.05	0.10	0.07	76	0.03	1U	1U
196.0	1	U	1	U	1	U	1	U	1	U	91												0.21	0.44	0.56	98	0.16	1U	1U
213.2	1	U	1	U	1	U	1	U	3		91												ND	0.31	0.09	62	ND	1U	1U
274.7	1	U	1	U	1	U	1		50		101												ND	0.04	0.05	638	0.02	1U	1U
284.7	1	U	1	U	1	U	1	U	43		100												0.04	0.14	0.14	591	0.03	1U	1U
294.7	1	U	1	U	1	U	1		46		101												0.12	0.16	0.22	315	0.03	1U	1U
304.7	1	U	1	U	2		2		49		106												0.27	0.33	0.40	81	0.06	1U	1U
314.7	3	U	3	U	3	U	3	U	120		110												0.06	0.07	0.03	111	0.02	3U	3U
323.2	1	U	1	U	1	U	1	U	1	U	102												0.03	0.05	0.07	51	ND	1U	1U
342.3	1	U	1	U	1	U	1	U	1	U	90												0.05	0.22	0.08	86	0.03	1U	1U
402.4	1	U	1	U	1	U	1		15		98												0.30	0.42	0.07	552	0.17	1U	1U
432.1	1	U	1	U	1	U	2		15		99												0.05	0.15	0.10	900	0.04	1U	1U
471.4	1	U	1	U	1	U	13		19		94												0.04	0.11	0.06	953	0.04	1U	1U

	VOC DATA, ug/L																																		
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS										
79.7	1	UJ	1	UJ	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	84										
89.7	1	UJ	1	UJ	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	84										
99.7	1	UJ	1	UJ	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96										
109.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92										
119.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95										
129.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109										
139.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109										
149.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108										
159.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94										
169.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	107										
179.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	90										
189.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91										
196.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91										
213.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101										
274.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100										
284.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101										
294.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	106										
304.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	110										
314.7	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	102										
323.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	90										
342.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98										
402.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99										
432.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94										
471.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U											

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 071867-R
Date Sampled: 02/02/2007-02/21/2007
Date Analyzed: 02/02/2007-02/21/2007
Report Date: 3/8/2007

HOLE ID = P-102

VOC DATA, ug/L

Depth	Vinyl Chloride			1-Dichloroethene			c-Dichloroethene			Trichloroethene			Tetrachloroethene			%SS
	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	
75.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	121
85.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	124
95.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	93
105.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	113
115.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
138.1	1	U	1	1	U	1	1	U	1	1	U	1	1		1	93
150.5	1	U	1	1	U	1	1	U	1	1	U	1	2		1	121
160.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	96
170.5	1	U	1	1	U	1	1	U	1	1	U	1	1		1	100
180.4	1	U	1	1	U	1	1	U	1	2		1	3		1	96
205.2	1	U	1	1	U	1	1		1	2		1	33		1	89
215.2	1	U	1	1	U	1	5		1	7		1	170		10	88
225.2	1	U	1	1	U	1	1	U	1	2		1	24		1	87
235.2	1	U	1	1	U	1	1	U	1	3		1	35		1	82
245.2	1	U	1	1	U	1	1	U	1	6		1	48		1	98
257.7	1	U	1	1	U	1	2		1	7		1	500		1	94
265.2	1	U	1	1	U	1	13		1	240	J	240	4800		240	93
275.2	1	U	1	1	U	1	9		1	378	J	100	2900		100	90
283.4	1	U	1	1	U	1	4		1	81		1	1200		24	95
309.4	1	U	1	1	U	1	7		1	14		1	1900		24	114
320.3	1	U	1	1	U	1	1	U	1	1	U	1	71		1	107
329.3	1	U	1	1	U	1	1	U	1	1	U	1	80		1	111
340.3	1	U	1	1	U	1	1	U	1	1	U	1	70		1	108
361.8	1	U	1	1	U	1	1	U	1	1	U	1	98		24	108
370.6	1	U	1	1	U	1	1	U	1	1	U	1	19		1	113
381.0	1	U	1	1	U	1	1	U	1	1	U	1	21		1	105
389.9	1	U	1	1	U	1	1	U	1	3		1	83		10	114
422.1	1	U	1	1	U	1	1	U	1	1	U	1	1		1	109
431.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	112
449.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
459.8	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
474.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103

INORGANIC DATA, mg/L

Fe2+	Fe, Total	Ammonia	Chloride	Chloride, Total
0.37	0.69	0.22	82	0.28
0.28	0.56	0.22	35	0.05
0.40	0.80	0.34	67	0.40
0.24	0.39	0.03	16	ND
0.11	0.24	0.03	20	ND
0.52	0.68	2.5	29	ND
0.45	0.50	2.5	19	ND
0.34	1.02	1.6	48	0.12
0.70	2.70	5.9	26	0.92
0.63	0.81	7.2	66	ND
0.23	0.37	2.8	31	ND
0.32	0.36	4.5	51	ND
0.22	0.39	8.8	20	ND
0.36	0.52	4.0	34	0.02
0.47	0.49	6.2	29	ND
0.31	0.44	9.4	35	ND
0.38	0.64	8.00	19	0.10
0.35	0.71	0.70	13	0.13
NA	NA	NA	NA	NA
0.06	0.23	0.17	32	0.02
0.06	0.20	0.30	72	ND
0.04	0.18	0.04	107	0.03
0.04	0.27	0.08	100	0.02
0.06	0.21	0.07	68	0.03
0.03	0.20	0.08	42	0.03
0.02	0.13	0.04	29	0.02
0.02	0.12	0.04	12	ND
0.22	0.80	0.20	47	0.15
0.10	0.37	0.10	4	0.06
0.02	0.16	0.06	3	ND
0.07	0.23	0.29	28	0.02
ND	0.10	0.04	27	ND

Freons, ug/L

Freon 113			Freon 123			Freon 1234		
Value	Q	DF	Value	Q	DF	Value	Q	DF
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
3		1	1	U	1	1	U	1
4		1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1

VOC DATA, ug/L

Depth	1,1-Dichloroethene			1,1-Dichloroethane			1,1,1-Trichloroethane			1,1,2,2-Tetrachloroethane			Carbon Tetrachloride			Benzene			1,2-Dichloroethane			Toluene			Chlorobenzene			Ethylbenzene			m,p-Xylene			o-Xylene			1,3-Dichlorobenzene			1,4-Dichlorobenzene			1,2-Dichlorobenzene			%SS
	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	
75.5	1	U	1	1	U	1	1	U	1	NA			1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	121
85.5	1	U	1	1	U	1	1	U	1	NA			1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	124
95.5	1	U	1	1	U	1	1	U	1	NA			1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	93
105.5	1	U	1	1	U	1	1	U	1	NA			1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	113
115.5	1	U	1	1	U	1	1	U	1	NA			1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
138.1	1	U	1	1	U	1	1		1	NA			1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	93
150.5	1	U	1	2		1	2		1	NA			1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	121
160.4	1	U	1	1	U	1	1	U	1	NA			1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	96
170.5	1		1	3		1	4		1	NA			1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
180.4	1	U	1	1	U	1	1	U	1	NA			1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	96
205.2	1	U	1	1	U	1	1	U	1	NA			1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	89
215.2	1	U	1	1	U	1	1	U	1	NA			1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	8		1	1	U	1	88
225.2	1		1	3		1	3		1	NA			1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	87
235.2	1	U	1	1	U	1	1	U	1	NA			1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	82
245.2	1	U	1	1	U	1	1	U	1	NA			1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	98
257.7	1	U	1	1	U	1	1	U	1	NA			1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	94
265.2	1	U	1	1	U	1	1	U	1	NA			5		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	7		1	1	U	1	93
275.2	1	U	1	1	U	1	1	U	1	NA			5		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	90
283.4	1	U	1	1	U	1	1	U	1	NA			1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	3		1	1	U	1	95
309.4	1	U	1	1	U	1	1	U	1	1		1	1		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
320.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
329.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
340.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
361.8	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
370.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	113
381.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
389.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
422.1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
431.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	112
449.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
459.8	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
474.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103

Samples with >100 ppb total VOC's cannot be run on a carbopak fiber and will have detection limits of 20 ppb

%SS = Surrogate Recovery

U = Undetected below the specified reporting limit.

J = Estimated value.

ND = Value below detection limit.

NA = Not Analyzed.

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 4/18 - 4/28/05
Date Analyzed: 4/18 - 4/28/05
Report Date: 5/19/2005

HOLE ID =P103

Depth	VOC DATA, ug/L — Vinyl Chloride Value	Q	DF	t-Dichloroethene Value	Q	DF	c-Dichloroethene Value	Q	DF	Trichloroethene Value	Q	DF	Tetrachloroethene Value	Q	DF	% SS	INORGANIC DATA, mg/L — Fe^{2+}	Fe Total	Ammonia	Chloride	Chlorine Total	COELUTING COMPOUNDS Freon 113 / Freon 123A	Q	DF
74.0	4	U	4	4	U	4	4	U	4	19		4	430		1	105	nd	0.04	0.02	26	0.50	4	U	4
84.5	1	U	1	1	U	1	1	U	1	1		1	60		1	105	0.05	0.21	0.13	10	0.05	1	U	1
94.5	1	U	1	1	U	1	1	U	1	1		1	18		1	84	0.06	0.35	0.03	25	0.03	1	U	1
104.5	1	U	1	1	U	1	1	U	1	1		1	11		1	83	0.26	2.37	1	68	nd	1	U	1
114.5	1	U	1	1	U	1	1	U	1	1	U	1	3		1	83	nd	0.10	nd	89	0.04	1	U	1
124.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	80	0.10	0.42	0.9	131	0.04	1	U	1
134.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84	0.16	0.58	0.35	174	0.04	1	U	1
144.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	87	0.10	0.25	0.07	155	0.03	1	U	1
154.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	82	1.40	4.80	0.04	185	0.06	1	U	1
164.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	81	0.10	0.29	0.09	149	0.08	1	U	1
174.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	86	0.11	0.32	0.11	66	0.07	1	U	1
184.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84	0.07	0.24	0.08	180	0.03	1	U	1
194.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	78	0.04	0.11	0.04	167	0.03	1	U	1
204.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	81	0.11	0.28	0.22	205	0.07	1	U	1
214.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	77	0.03	0.06	0.11	255	0.04	1	U	1
224.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	81	0.06	0.18	0.11	151	0.03	1	U	1
234.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	86	0.04	0.09	0.08	218	0.03	1	U	1
244.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84	0.03	0.04	nd	329	nd	1	U	1
253.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84	0.12	0.24	0.22	483	0.05	1	U	1
264.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	83	0.06	0.19	0.15	568	0.38	1	U	1
274.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84	nd	0.08	0.03	658	0.03	1	U	1
284.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	78	0.06	0.30	nd	745	0.03	1	U	1
294.3	1	U	1	1	U	1	1	U	1	1	U	1	5		1	76	0.05	0.20	nd	841	0.04	1	U	1
303.5	1	U	1	1	U	1	1	U	1	1	U	1	8		1	83	nd	0.03	nd	978	0.02	1	U	1
333.4	1	U	1	1	U	1	1	U	1	1	U	1	8		1	83	0.04	0.12	nd	421	nd	1	U	1
344.2	1	U	1	1	U	1	1	U	1	3		1	2		1	76	0.17	0.75	0.54	41	0.05	1	U	1
354.2	1	U	1	1	U	1	1	U	1	3		1	1	U	1	81	0.13	0.16	0.45	18	0.08	1	U	1
376.1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	78	0.25	0.40	0.37	17	0.09	1	U	1
384.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	80	0.07	0.12	0.08	21	nd	1	U	1
394.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	82	0.12	0.18	0.18	12	0.03	1	U	1
404.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84	0.14	0.22	0.37	14	0.08	1	U	1

VOC DATA, ug/L

Depth	1,1-Dichloroethene Value	Q	DF	Freon 123 Value	Q	DF	1,1-Dichloroethane Value	Q	DF	1,1,1-Trichloroethane Value	Q	DF	Benzene Value	Q	DF	1,2-Dichloroethane Value	Q	DF	Toluene Value	Q	DF
74.0	4	U	4	4	U	4	4	U	4	4	U	4	4	U	4	4	U	4	4	U	4
84.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
94.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
104.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
114.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
124.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
134.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
144.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
154.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
164.5	1		1	1	U	1	2		1	2		1	1	U	1	1	U	1	1	U	1
174.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
184.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
194.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
204.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
214.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
224.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
234.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
244.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
253.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
264.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
274.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
284.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
294.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
303.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
333.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
344.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1		1	1	U	1
354.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
376.1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
384.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
394.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
404.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1

Depth	Chlorobenzene Value	Q	DF	Ethylbenzene Value	Q	DF	m,p-Xylene Value	Q	DF	o-Xylene Value	Q	DF	1,3-Dichlorobenzene Value	Q	DF	1,4-Dichlorobenzene Value	Q	DF	1,2-Dichlorobenzene Value	Q	DF	%SS
74.0	4	U	4	4	U	4	8	U	4	4	U	4	4	U	4	4	U	4	4	U	4	105
84.5	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
94.5	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84
104.5	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	83
114.5	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	83
124.5	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	80
134.5	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84
144.5	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	87
154.5	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	82
164.5	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	81
174.5	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	86
184.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84
194.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	78
204.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	81
214.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	77
224.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	81
234.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	86
244.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84
253.3	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84
264.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	83
274.2	1	U	1	1	U	1	2	U	1	1	U	1	1		1	1	U	1	1	U	1	84
284.3	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	78
294.3	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	76
303.5	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	83
333.4	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	83
344.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	76
354.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	81
376.1	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	78
384.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	80
394.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	82
404.2	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled
DF =Laboratory Dilution Factor

STONE ENVIRONMENTAL INC

Mobile Laboratory Results Sheet

Client:	GTEOSI
Location:	Hicksville, NY
Project ID:	Groundwater Profiling
SEI #:	071867-R
Date Sampled:	02/28/2007-03/20/2007
Date Analyzed:	02/28/2007-03/20/2007
Report Date:	3/22/2007

HOLE ID = P-104

VOC DATA, ug/L

Depth	Vinyl Chloride Value	Q	DF	1,1-Dichloroethene Value	Q	DF	1,2-Dichloroethene Value	Q	DF	Trichloroethene Value	Q	DF	Tetrachloroethene Value	Q	DF	%SS
75.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
85.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
93.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
105.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
112.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	113
147.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
155.1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
163.8	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
173.1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
184.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
195.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	118
205.0	1	U	1	1	U	1	1	U	1	4		1	5		1	108
215.0	1	U	1	1	U	1	1	U	1	1	U	1	3		1	98
224.7	1	U	1	1	U	1	1		1	47		1	530		10	99
235.0	1	U	1	1	U	1	10		1	140		10	560		10	107
245.0	1	U	1	1	U	1	10		1	230		10	1000		10	112
253.7	1	U	1	1	U	1	1	U	1	2		1	11		1	105
267.8	1	U	1	1	U	1	1		1	47		1	39		1	109
291.3	1	U	1	1	U	1	2		1	19		1	30		1	105
313.9	1	U	1	1	U	1	8		1	210		5	530		5	111
320.0	1	U	1	1	U	1	9		1	940		10	900		10	107
330.0	1	U	1	1	U	1	9		1	730		10	720		10	113
340.0	1	U	1	1	U	1	11		1	840		10	1000		10	108
348.7	1	U	1	1	U	1	20		1	89		10	3300		10	113
377.4	1	U	1	1	U	1	11		1	24		1	3100		10	108
385.0	1	U	1	1	U	1	10		1	18		1	2100		10	113
394.7	1	U	1	1	U	1	2		1	3		1	240		10	113
400.0	1	U	1	1	U	1	1	U	1	1		1	95		1	115
411.0	1	U	1	1	U	1	1	U	1	1	U	1	39		1	112
419.6	1	U	1	1	U	1	1	U	1	1	U	1	63		10	113
427.9	1	U	1	1	U	1	1	U	1	1	U	1	21		1	116
441.1	1	U	1	1	U	1	1	U	1	1	U	1	12		1	120
450.0	1	U	1	1	U	1	1	U	1	1	U	1	15		1	117
461.7	1	U	1	1	U	1	1	U	1	1	U	1	7		1	112
471.0	1	U	1	1	U	1	1	U	1	1	U	1	4		1	103
482.4	1	U	1	1	U	1	1	U	1	1	U	1	1		1	121
489.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	120

INORGANIC DATA, mg/L

Fe²⁺	Fe, Total	Ammonia	Chloride	Chlorine, Total
ND	0.32	0.06	113	ND
NA	NA	NA	NA	NA
0.06	0.43	0.28	48	0.04
ND	0.18	ND	38	ND
0.05	0.35	0.18	102	0.03
ND	0.12	0.02	67	ND
ND	0.21	0.02	79	ND
ND	0.19	ND	43	ND
0.04	0.28	0.18	45	0.02
0.11	0.43	0.21	42	0.05
0.12	0.56	0.25	48	0.07
0.23	1.32	0.90	49	0.24
0.15	0.39	0.24	44	0.02
0.36	0.41	0.03	40	ND
0.15	1.04	0.44	28	0.04
0.05	1.90	0.40	14	0.12
0.41	0.51	0.07	12	ND
0.03	0.14	0.07	22	ND
0.46	25.70	4.9	10	0.68
0.10	0.35	0.19	ND	ND
0.04	0.15	0.14	15	ND
0.09	0.20	0.02	14	ND
0.08	0.14	0.04	16	ND
0.07	0.16	0.09	16	0.03
ND	0.35	0.11	32	0.03
0.03	0.09	0.11	47	ND
0.05	0.17	0.19	75	0.05
ND	0.10	0.04	39	ND
0.06	0.11	0.06	19	ND
ND	0.27	0.04	34	0.02
0.09	0.21	0.12	39	0.06
0.10	0.22	0.17	35	0.09
0.04	0.06	0.13	26	0.10
ND	ND	0.03	ND	ND
ND	0.09	0.06	ND	0.02
0.07	0.46	0.04	ND	0.05
ND	ND	0.02	ND	0.03

Freons, ug/L

Freon 113 Value	Q	DF	Freon 12 Value	Q	DF	Freon 123A Value	Q	DF
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1		1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
7		1	1	U	1	1	U	1
3		1	1	U	1	1	U	1
3		1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1

VOC DATA, ug/L

Depth	1,1-Dichloroethane Value	Q	DF	1,1-Dichloroethene Value	Q	DF	1,1,1-Trichloroethane Value	Q	DF	1,1,1,2-Tetrachloroethane Value	Q	DF	Carbon Tetrachloride Value	Q	DF	Benzene Value	Q	DF	1,2-Dichloroethane Value	Q	DF	Toluene Value	Q	DF	Chlorobenzene Value	Q	DF	Ethylbenzene Value	Q	DF	m,p-Xylene Value	Q	DF	o-Xylene Value	Q	DF	1,3-Dichlorobenzene Value	Q	DF	1,4-Dichlorobenzene Value	Q	DF	1,2-Dichlorobenzene Value	Q	DF	%SS
75.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
85.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
93.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
105.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
112.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	113
147.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
155.1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
163.8	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
173.1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
184.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
195.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	118
205.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
215.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	98
224.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	99
235.0	1		1	1	U	1	1		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
245.0	1	U	1	1	U	1	1	U	1	1		1	6		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	112
253.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
267.8	1	U	1	1	U	1	1		1	1	U	1	1		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
291.3	1	U	1	1	U	1	1	U	1	1	U	1	2		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
313.9	1	U	1	1	U	1	1	U	1	1	U	1	7		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
320.0	3		1	1	U	1	2		1	1	U	1	12		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
330.0	1		1	1	U	1	1	U	1	1		1	10		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	113
340.0	2		1	1	U	1	1		1	1		1	11		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
348.7	1	U	1	1	U	1	1	U	1	4		1	3		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	113
377.4	1	U	1	1	U	1	1	U	1	2		1	2		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
385.0	1	U	1	1	U	1	1	U	1	2		1	2		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	113
394.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	113
400.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	115
411.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	112
419.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	113
427.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	116
441.1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	120
450.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	117
461.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	112
471.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
482.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	121
489.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	120

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb

%SS = Surrogate Recovery

U = Undetected below the specified reporting limit.

ND = Value below detection limit.

NA = Not Analyzed.

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 5/16 - 5/25/05
Date Analyzed: 5/16 - 5/25/05
Report Date: 5/31/2005

HOLE ID =P107

	VOC DATA, ug/L															
	Vinyl Chloride			1-Dichloroethene			c-Dichloroethene			Trichloroethene			Tetrachloroethene			% SS
Depth	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	
74.30	1	U	1	1	U	1	1	U	1	1	U	1	2		1	95
84.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
94.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	95
104.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
114.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	99
124.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
134.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	94
144.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	98
154.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
164.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
174.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	116
184.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
194.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
204.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	120
214.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
224.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
234.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	116
244.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
254.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
264.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
274.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
285.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
294.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
304.20	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	107
316.40	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	91
324.05	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
334.05	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
350.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
359.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
371.60	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
378.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
391.50	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103

INORGANIC DATA, mg/L				
Fe^{++}	Fe, Total	Ammonia	Chloride	Chlorine, Total
ND	0.03	0.04	118	0.03
0.06	0.11	0.08	88	0.04
0.16	0.40	0.14	92	0.17
0.16	0.31	0.10	53	0.17
0.07	0.15	0.10	239	0.12
0.05	0.08	0.09	104	0.09
0.05	0.10	0.09	90	0.07
0.05	0.06	0.04	93	0.04
0.04	0.07	0.04	117	0.02
0.04	0.10	0.04	301	0.03
0.04	0.05	0.02	374	0.04
0.04	0.09	0.08	398	0.04
0.09	0.13	0.05	389	0.09
0.03	0.03	0.04	424	0.04
0.03	0.08	0.06	507	0.06
0.04	0.16	0.10	481	0.00
0.03	0.07	0.04	523	0.00
ND	0.05	0.05	526	ND
0.10	0.59	0.26	437	0.09
0.03	0.04	ND	14	ND
0.03	0.38	0.49	8	ND
ND	0.06	0.17	11	ND
0.07	0.07	ND	11	ND
0.20	5.90	0.3	43	0.00
0.05	0.17	0.31	105	0.07
0.15	0.29	0.26	18	0.13
0.14	0.51	0.37	8	0
0.05	0.15	0.03	6	ND
0.04	0.08	0.15	7	ND
0.14	0.35	0.28	7	0.04
0.03	0.10	0.07	6	ND
0.04	0.18	0.03	6	ND

COELUTING COMPOUNDS Freon 113 / Freon 123A		
	Q	DF
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1

VOC DATA, ug/L

	1,1-Dichloroethene			Freon 123			1,1-Dichloroethane			1,1,1-Trichloroethane			Benzene			1,2-Dichloroethane			Toluene		
Depth	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF
74.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
84.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
94.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
104.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
114.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
124.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
134.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
144.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
154.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
164.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
174.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
184.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
194.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
204.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
214.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
224.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
234.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
244.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
254.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
264.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
274.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
285.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
294.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
304.20	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1
316.40	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1
324.05	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
334.05	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
350.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
359.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
371.60	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
378.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
391.50	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1

	Chlorobenzene			Ethylbenzene			m,p-Xylene			o-Xylene			1,3-Dichlorobenzene			1,4-Dichlorobenzene			1,2-Dichlorobenzene			%SS
Depth	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	
74.30	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	95
84.30	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
94.30	1	U	1	1 *	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	95
104.30	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
114.30	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	99
124.30	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
134.30	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	94
144.30	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	98
154.30	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
164.30	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
174.30	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	116
184.30	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
194.30	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
204.20	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	120
214.20	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
224.20	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
234.20	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	116
244.20	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
254.20	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
264.20	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
274.20	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
285.80	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
294.20	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
304.20	1	UJ	1	1	UJ	1	2	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	107
316.40	1	UJ	1	1	UJ	1	2	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	1	UJ	1	91
324.05	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
334.05	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
350.20	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
359.30	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
371.60	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
378.20	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
391.50	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
J = Estimated value.
UJ = The analyte was not detected above the specified reporting limit. However, the reporting limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
DF =Laboratory Dilution Factor

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client:	GTEOSI
Location:	Hicksville, NY
Project ID:	Groundwater Profiling
SEI #:	03-1402
Date Sampled:	5/02 - 5/02/05
Date Analyzed:	5/02 - 5/02/05
Report Date:	5/19/2005

HOLE ID =P108

	VOC DATA, ug/L															
	Vinyl Chloride			t-Dichloroethene			c-Dichloroethene			Trichloroethene			Tetrachloroethene			% SS
Depth	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	
74.15	20	U	1	20	U	1	**360**		1	**670**		4	**32000**		240	107
84.15	20	U	1	20	U	1	**69**		1	**250**		1	**20000**		192	106
94.15	20	U	1	20	U	1	20	U	1	20	U	1	**6100**		24	93
104.15	1	U	1	1	U	1	**1**		1	**5**		1	**160**		1	96
114.15	1	U	1	1	U	1	1	U	1	1	U	1	**29**		1	77
124.15	1	U	1	1	U	1	1	U	1	**1**		1	**23**		3	78
134.15	1	U	1	1	U	1	1	U	1	1	U	1	**15**		1	110
144.15	1	U	1	1	U	1	1	U	1	1	U	1	**28**		1	111
154.15	1	U	1	1	U	1	1	U	1	1	U	1	**18**		1	110
164.15	1	U	1	1	U	1	1	U	1	1	U	1	**14**		1	107
174.15	1	U	1	1	U	1	1	U	1	1	U	1	**17**		1	91
184.15	1	U	1	1	U	1	1	U	1	1	U	1	**8**		1	91
192.80	1	U	1	1	U	1	1	U	1	1	U	1	**8**		1	103
204.60	1	U	1	1	U	1	1	U	1	1	U	1	**1**		1	100
214.60	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
224.60	1	U	1	1	U	1	1	U	1	1	U	1	**7**		1	119
234.60	1	U	1	1	U	1	1	U	1	1	U	1	**1**		1	99
244.60	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
254.60	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
264.60	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
293.40	1	U	1	1	U	1	1	U	1	1	U	1	**1**		1	119
324.35	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	116
334.35	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
347.65	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
359.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
384.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	117
394.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108

INORGANIC DATA, mg/L				
Fe^{++}	Fe Total	Ammonia	Chloride	Chlorine Total
0.04	0.07	0.07	21.5	0.05
0.07	0.16	0.09	26.6	nd
nd	0.07	0.14	16.3	0.10
0.06	0.21	0.47	26.6	0.06
0.32	0.87	0.69	94.0	0.33
0.07	0.15	0.16	183	0.03
nd	0.03	nd	43.1	nd
0.05	0.08	0.07	37.5	0.03
0.19	0.82	0.57	123	0.23
0.06	0.14	0.16	275	0.05
nd	0.07	0.03	118	nd
nd	0.03	nd	94.2	0.03
nd	0.03	nd	101	nd
0.09	0.19	0.07	85.3	0.05
0.05	0.08	0.06	160	nd
0.12	0.23	0.05	201	0.04
nd	0.04	0.05	370	0.03
0.03	0.04	0.05	304	nd
0.03	0.05	0.06	327	nd
0.05	0.19	0.16	391	0.04
nd	nd	nd	489	nd
0.07	0.30	0.21	119	0.03
0.18	1.60	1.36	108	0.08
22.00	126.00	11	8.95	nd
8.20	313.00	0.11	9.41	0.51
0.08	0.17	0.06	7.19	0.03
0.26	0.68	0.49	5	0.12

COELUTING COMPOUNDS Freon 113 / Freon 123A		
	Q	DF
20	U	1
20	U	1
20	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1
1	U	1

VOC DATA, ug/L

	1,1-Dichloroethene			Freon 123			1,1-Dichloroethane			1,1,1-Trichloroethane			Benzene			1,2-Dichloroethane			Toluene		
Depth	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF
74.15	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1
84.15	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1
94.15	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1	20	U	1
104.15	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
114.15	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
124.15	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
134.15	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
144.15	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
154.15	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
164.15	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
174.15	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
184.15	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
192.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
204.60	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
214.60	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
224.60	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
234.60	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
244.60	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
254.60	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
264.60	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
293.40	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
324.35	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
334.35	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
347.65	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
359.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
384.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
394.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1

	Chlorobenzene			Ethylbenzene			m,p-Xylene			o-Xylene			1,3-Dichlorobenzene			1,4-Dichlorobenzene			1,2-Dichlorobenzene			%SS
Depth	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	
74.15	20	U	1	20	U	1	40	U	1	20	U	1	20	U	1	20	U	1	20	U	1	107
84.15	20	U	1	20	U	1	40	U	1	20	U	1	20	U	1	20	U	1	20	U	1	106
94.15	20	U	1	20	U	1	40	U	1	20	U	1	20	U	1	20	U	1	1	U	1	93
104.15	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	96
114.15	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	77
124.15	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	78
134.15	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
144.15	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
154.15	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
164.15	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
174.15	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	91
184.15	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	91
192.80	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
204.60	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
214.60	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
224.60	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	119
234.60	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	99
244.60	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
254.60	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
264.60	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
293.40	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	119
324.35	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	116
334.35	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
347.65	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
359.30	1	U	1	1	U	1	2	U	1	1	U	1	**1**		1	1	U	1	1	U	1	103
384.30	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	117
394.30	1	U	1	1	U	1	2	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
DF =Laboratory Dilution Factor

STONE ENVIRONMENTAL INC DRAFT

Mobile Laboratory Results Sheet

Client:	GTEOSI
Location:	Hicksville, NY
Project ID:	Groundwater Profiling
SEI #:	071857-R
Date Sampled:	8/14/2007-7/03/2007
Date Analyzed:	6/14/2007-7/03/2007
Report Date:	7/10/2007

HOLE ID = P-110

VOC DATA, ug/L

Depth	Vinyl Chloride Value	Q	DF	t-Dichloroethene Value	Q	DF	c-Dichloroethene Value	Q	DF	Trichloroethene Value	Q	DF	Tetrachloroethene Value	Q	DF	% SS
71.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
80.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
91.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
99.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
108.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
119.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	112
142.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
150.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
160.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
170.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
180.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
190.2	1	U	1	1	U	1	1		1	1	U	1	2		1	108
199.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
209.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
221.8	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
229.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
239.8	1	U	1	1	U	1	1	U	1	1		1	1	U	1	109
249.2	1	U	1	1	U	1	1	U	1	2		1	1	U	1	111
260.2	1	U	1	1	U	1	1	U	1	4		1	1	U	1	119
269.8	1	U	1	1	U	1	1	U	1	13		1	1		1	111
281.7	1	U	1	1	U	1	1	U	1	24		1	1		1	103
290.2	1	U	1	1	U	1	1	U	1	20		1	1		1	103
311.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
320.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
329.2	1	U	1	1	U	1	1	U	1	12		1	2		1	107
338.8	1	U	1	1	U	1	4		1	120		10	6		1	109
350.2	1	U	1	1	U	1	19		1	400		100	26		1	111
359.4	1	U	1	1	U	1	6		1	150		1	22		1	107
391.1	1	U	1	1	U	1	1	U	1	80		1	51		1	103
400.0	1	U	1	1	U	1	3		1	220		1	62		1	100
408.5	1	U	1	1	U	1	1	U	1	100		1	80		1	103
421.2	1	U	1	1	U	1	3		1	13		1	350		1	106
429.4	1	U	1	1	U	1	4		1	21		1	480		24	99
439.3	1	U	1	1	U	1	13		1	28		1	2100		48	101
452.2	1	U	1	1	U	1	3		1	10		1	120		1	102
460.2	1	U	1	1	U	1	2		1	12		1	57		1	107
470.1	1	U	1	1	U	1	1		1	15		1	36		1	100
481.7	1	U	1	1	U	1	1	U	1	3		1	26		1	105
489.5	1	U	1	1	U	1	1	U	1	2		1	5		1	101
499.5	1	U	1	1	U	1	1	U	1	2		1	3		1	105
513.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105

INORGANIC DATA, mg/L

Fe^{2+}	Fe, Total	Ammonia	Chloride	Chlorine, Total
0.22	0.48	0.13	26	0.05
0.24	0.34	0.09	24	ND
0.09	0.29	0.02	37	ND
0.07	0.30	0.02	36	ND
0.21	0.33	0.90	19	ND
0.41	0.94	1.30	33	0.05
0.43	0.54	0.11	29	0.10
0.40	0.42	0.08	35	ND
0.24	0.26	0.12	35	ND
0.13	0.81	0.12	24	0.04
0.24	0.64	0.19	28	0.28
0.32	0.56	0.28	28	0.06
0.30	0.71	0.20	40	0.07
0.62	1.20	0.40	42	0.19
0.51	1.25	ND	39	1.14
0.71	2.12	0.60	40	0.03
0.29	0.45	0.12	36	ND
0.43	0.81	0.21	36	0.03
0.55	0.82	0.22	22	0.07
0.27	0.54	0.17	20	0.04
0.26	0.39	0.15	20	ND
0.15	0.34	0.07	21	ND
0.28	0.63	0.22	20	0.04
0.43	0.74	0.31	27	0.11
0.32	0.45	0.32	18	0.08
0.19	0.43	0.20	18	0.12
0.15	0.21	0.15	17	0.03
0.14	0.35	0.21	20	0.05
0.04	0.04	0.07	13	ND
0.05	0.48	0.08	17	ND
ND	0.04	0.07	18	ND
0.03	0.08	0.03	23	ND
ND	0.04	0.03	16	ND
0.05	0.12	0.08	18	ND
ND	0.06	0.04	11	0.02
0.23	0.51	0.19	ND	0.32
ND	0.05	0.02	ND	ND
0.19	0.40	0.30	14	0.14
0.19	0.77	0.09	29	0.04
0.32	0.62	0.40	13	0.09
0.15	0.36	0.08	ND	0.20

Freons

Freon 113 Value	Q	DF	Freon 123 Value	Q	DF	Freon 123A Value	Q	DF
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
2		1	1	U	1	1	U	1
8		1	1	U	1	1	U	1
3		1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
4		1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1

VOC DATA, ug/L

Depth	1,1-Dichloroethene Value	Q	DF	1,1-Dichloroethane Value	Q	DF	1,1,1-Trichloroethane Value	Q	DF	1,1,1,2-Tetrachloroethane Value	Q	DF	Carbon Tetrachloride Value	Q	DF	Benzene Value	Q	DF	1,2-Dichloroethane Value	Q	DF
71.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
80.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
91.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
99.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
108.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
119.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
142.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
150.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
160.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
170.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
180.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
190.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
199.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
209.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
221.8	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
229.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
239.8	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
249.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
260.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
269.8	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
281.7	1		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
290.2	1		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
311.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
320.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
329.2	1	U	1	1	U	1	1	U	1	1	U	1	2		1	1	U	1	1	U	1
338.8	4		1	1	U	1	3		1	1	U	1	4		1	1	U	1	1	U	1
350.2	11		1	2		1	7		1	1	U	1	8		1	1	U	1	1	U	1
359.4	7		1	1	U	1	8		1	1	U	1	9		1	1	U	1	1	U	1
391.1	17		1	1	U	1	11		1	1	U	1	18		1	1	U	1	1	U	1
400.0	16		1	1	U	1	10		1	1	U	1	14		1	1	U	1	1	U	1
408.5	32		1	1	U	1	24		1	1	U	1	31		1	1	U	1	1	U	1
421.2	1	U	1	1	U	1	1	U	1	1	U	1	2		1	1	U	1	1	U	1
429.4	1	U	1	1	U	1	1	U	1	1	U	1	4		1	1	U	1	1	U	1
439.3	1	U	1	1	U	1	1	U	1	2		1	5		1	1	U	1	1	U	1
452.2	1	U	1	1	U	1	1	U	1	1	U	1	2		1	1	U	1	1	U	1
460.2	1	U	1	1	U	1	1	U	1	1	U	1	2		1	1	U	1	1	U	1
470.1	1	U	1	1	U	1	1	U	1	1	U	1	2		1	1	U	1	1	U	1
481.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
489.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
499.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
513.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1

Depth	Toluene Value	Q	DF	Chlorobenzene Value	Q	DF	Ethylbenzene Value	Q	DF	m,p-Xylene Value	Q	DF	o-Xylene Value	Q	DF	1,3-Dichlorobenzene Value	Q	DF	1,4-Dichlorobenzene Value	Q	DF	1,2-Dichlorobenzene Value	Q	DF	%SS
71.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
80.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
91.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U		109
99.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
108.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
119.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	112
142.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
150.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
160.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
170.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
180.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
190.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
199.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
209.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
221.8	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
229.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
239.8	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
249.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
260.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	119
269.8	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
281.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
290.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
311.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
320.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
329.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
338.8	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
350.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
359.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
391.1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
400.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
408.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
421.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
429.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	99
439.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
452.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
460.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
470.1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
481.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
489.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
499.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
513.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb

%SS = Surrogate Recovery

U = Undetected below the specified reporting limit.

ND = Value below detection limit.

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 071867-R
Date Sampled: 05/07/2007-05/20/2007
Date Analyzed: 05/07/2007-05/20/2007
Report Date: 5/25/2007

HOLE ID = P-112

VOC DATA, ug/L

Depth	Vinyl Chloride Value	Q	DF	1,1-Dichloroethene Value	Q	DF	c-Dichloroethene Value	Q	DF	Trichloroethene Value	Q	DF	Tetrachloroethene Value	Q	DF	%SS
75.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
85.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
95.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	98
105.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
115.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	99
125.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
135.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	99
142.8	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
151.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	94
161.6	1	U	1	1	U	1	1	U	1	**6**		1	**7**		1	97
170.2	1	U	1	1	U	1	1	U	1	**7**		1	**6**		1	100
179.6	1	U	1	1	U	1	1	U	1	**14**		1	**4**		1	100
190.2	1	U	1	1	U	1	1	U	1	**8**		1	**6**		1	100
232.2	1	U	1	1	U	1	1	U	1	**17**		1	**86**		1	101
240.2	1	U	1	1	U	1	**6**		1	**33**		1	**120**		1	105
250.2	1	U	1	1	U	1	1	U	1	**4**		1	**20**		1	102
258.4	1	U	1	1	U	1	1	U	1	**2**		1	**2**		1	100
300.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	98
305.1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	96
314.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	98
324.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	94
336.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
344.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
353.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
364.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
374.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
391.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
399.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
409.8	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
426.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
427.1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	95
434.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	99

INORGANIC DATA, mg/L

Depth	Fe2+	Fe, Total	Ammonia	Chloride	Chloride, Total
75.2	NA	NA	NA	NA	NA
85.2	0.08	0.42	0.11	52	0.05
95.2	ND	0.37	ND	40	0.02
105.2	ND	0.28	ND	37	ND
115.2	0.03	0.17	ND	51	0.13
125.2	0.17	0.61	0.18	50	0.09
135.2	0.07	0.31	0.20	37	0.07
142.8	0.03	0.32	0.03	29	0.03
151.3	0.08	0.41	0.12	25	0.04
161.6	0.33	0.44	ND	150	0.04
170.2	0.71	1.47	0.20	103	0.37
179.6	0.34	0.60	0.16	64	0.09
190.2	0.23	0.35	ND	66	ND
232.2	0.05	0.18	0.07	23	0.05
240.2	0.04	0.11	ND	20	0.04
250.2	0.04	0.18	ND	44	ND
258.4	ND	0.21	0.04	42	ND
300.3	NA	NA	NA	NA	NA
305.1	ND	0.11	0.06	ND	ND
314.2	0.10	0.23	0.13	97	ND
324.9	0.05	0.20	0.11	173	0.09
336.7	0.05	0.14	0.05	171	ND
344.6	0.06	0.22	0.08	238	0.07
353.9	ND	0.16	0.03	212	0.03
364.3	0.16	0.26	0.22	227	0.08
374.2	NA	NA	NA	NA	NA
391.0	0.04	0.12	ND	361	ND
399.5	0.10	0.24	0.10	317	0.04
409.8	0.29	0.63	0.52	254	ND
426.0	NA	NA	NA	NA	NA
427.1	NA	NA	NA	NA	NA
434.3	0.24	0.56	0.05	137	ND

Freons, ug/L

Depth	Freon 113 Value	Q	DF	Freon 123 Value	Q	DF	Freon 134A Value	Q	DF
75.2	1	U	1	1	U	1	1	U	1
85.2	1	U	1	1	U	1	1	U	1
95.2	1	U	1	1	U	1	1	U	1
105.2	1	U	1	1	U	1	1	U	1
115.2	1	U	1	1	U	1	1	U	1
125.2	1	U	1	1	U	1	1	U	1
135.2	1	U	1	1	U	1	1	U	1
142.8	1	U	1	1	U	1	1	U	1
151.3	1	U	1	1	U	1	1	U	1
161.6	1	U	1	1	U	1	1	U	1
170.2	1	U	1	1	U	1	1	U	1
179.6	1	U	1	1	U	1	1	U	1
190.2	1	U	1	1	U	1	1	U	1
232.2	1	U	1	1	U	1	1	U	1
240.2	1	U	1	1	U	1	1	U	1
250.2	1	U	1	1	U	1	1	U	1
258.4	1	U	1	1	U	1	1	U	1
300.3	1	U	1	1	U	1	1	U	1
305.1	1	U	1	1	U	1	1	U	1
314.2	1	U	1	1	U	1	1	U	1
324.9	1	U	1	1	U	1	1	U	1
336.7	1	U	1	1	U	1	1	U	1
344.6	1	U	1	1	U	1	1	U	1
353.9	1	U	1	1	U	1	1	U	1
364.3	1	U	1	1	U	1	1	U	1
374.2	1	U	1	1	U	1	1	U	1
391.0	1	U	1	1	U	1	1	U	1
399.5	1	U	1	1	U	1	1	U	1
409.8	1	U	1	1	U	1	1	U	1
426.0	1	U	1	1	U	1	1	U	1
427.1	1	U	1	1	U	1	1	U	1
434.3	1	U	1	1	U	1	1	U	1

VOC DATA, ug/L

Depth	1,1-Dichloroethene Value	Q	DF	1,1-Dichloroethane Value	Q	DF	1,1,1-Trichloroethane Value	Q	DF	1,1,1,2-Tetrachloroethane Value	Q	DF	Carbon Tetrachloride Value	Q	DF	Benzene Value	Q	DF	1,2-Dichloroethane Value	Q	DF	Toluene Value	Q	DF	Chlorobenzene Value	Q	DF	Ethylbenzene Value	Q	DF	m,p-Xylene Value	Q	DF	o-Xylene Value	Q	DF	1,3-Dichlorobenzene Value	Q	DF	1,4-Dichlorobenzene Value	Q	DF	1,2-Dichlorobenzene Value	Q	DF	%SS
75.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
85.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
95.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	98
105.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
115.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	99
125.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
135.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	99
142.8	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
151.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	94
161.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	97
170.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
179.6	1	U	1	1	U	1	1		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
190.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
232.2	2		1	1	U	1	2		1	1	U	1	2		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
240.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
250.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
258.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
300.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	98
305.1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	96
314.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	98
324.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	94
336.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
344.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
353.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
364.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
374.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
391.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
399.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
409.8	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
426.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
427.1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	95
434.3	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	99

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb

%SS = Surrogate Recovery

U = Undetected below the specified reporting limit.

ND = Value below detection limit.

NA = Not Analyzed.

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 071867-R
Date Sampled: 05/29/2007-06/07/2007
Date Analyzed: 05/29/2007-06/07/2007
Report Date: 7/11/2007

HOLE ID = P-113

VOC DATA, ug/L

Depth	Vinyl Chloride			1-Dichloroethane			c-Dichloroethene			Trichloroethene			Tetrachloroethene			%SS
	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	
74.6	1	U	1	1	U	1	1	U	1	1	U	1	6		1	100
84.9	1	U	1	1	U	1	1	U	1	1	U	1	2		1	82
94.7	1	U	1	1	U	1	1	U	1	1	U	1	2		1	101
104.6	1	U	1	1	U	1	1	U	1	2		1	2		1	97
121.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
129.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
139.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
149.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	99
159.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
168.4	1	U	1	1	U	1	2		1	12		1	2		1	101
179.5	1	U	1	1	U	1	14		1	180		10	10		1	105
187.9	1	U	1	1	U	1	1	U	1	6		1	1	U	1	99
199.2	1	U	1	1	U	1	1	U	1	6		1	1	U	1	99
209.3	1	U	1	1	U	1	1	U	1	4		1	1	U	1	100
219.9	1	U	1	1	U	1	1	U	1	6		1	1	U	1	100
229.9	1	U	1	1	U	1	1	U	1	6		1	1	U	1	95
239.4	1	U	1	1	U	1	1	U	1	2		1	1	U	1	108
249.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
261.4	1	U	1	1	U	1	1	U	1	1		1	1	U	1	104
269.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
281.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
339.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
349.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
366.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
379.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	95

INORGANIC DATA, mg/L

Fe''	Fe, Total	Ammonia	Chloride	Chlorine, Total
NA	NA	NA	NA	NA
0.33	1.96	0.57	ND	0.17
0.32	0.51	0.42	ND	0.12
0.17	1.23	0.36	12	0.06
0.11	0.23	0.14	11	ND
0.34	0.55	0.12	22	ND
0.36	0.44	0.20	30	ND
0.29	0.37	0.14	29	0.02
0.29	0.34	0.09	35	ND
0.61	2.12	0.21	36	0.23
0.35	0.47	0.12	40	ND
0.14	0.90	0.26	67	0.07
0.22	0.46	0.24	48	0.02
ND	0.19	0.07	60	ND
0.49	0.81	0.35	31	0.04
0.09	0.23	0.08	28	ND
ND	0.15	0.03	95	0.03
0.25	0.30	0.05	231	ND
0.04	0.17	0.06	35	0.04
0.05	0.23	0.07	18	0.02
0.03	0.10	0.04	11	ND
ND	0.42	0.06	75	0.04
0.15	2.71	0.53	269	0.11
0.05	0.12	0.06	208	ND
ND	0.18	0.05	285	0.12

Freons

Freon 113			Freon 123			Freon 123A		
Value	Q	DF	Value	Q	DF	Value	Q	DF
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1

VOC DATA, ug/L

Depth	1,1-Dichloroethene			1,1-Dichloroethane			1,1,1-Trichloroethane			1,1,1,2-Tetrachloroethane			Carbon Tetrachloride			Benzene			1,2-Dichloroethane			Toluene			Chlorobenzene			Ethylbenzene			o-p-Xylene			o-Xylene			1,3-Dichlorobenzene			1,4-Dichlorobenzene			1,2-Dichlorobenzene			%SS
	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	
74.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
84.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	82
94.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
104.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	97
121.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
129.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
139.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	2		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
149.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	99
159.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
168.4	1	U	1	3		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
179.5	4		1	2		1	1		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
187.9	1	U	1	4		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	99
199.2	1	U	1	6		1	1		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	99
209.3	1	U	1	5		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
219.9	1	U	1	13		1	1		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
229.9	2		1	21		1	2		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	95
239.4	2		1	1		1	2		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
249.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
261.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
269.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
281.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
339.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
349.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
366.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
379.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	95

Samples with >100 ppb total VOC's cannot be run on a carbuxen fiber and will have detection limits of 20 ppb

%SS = Surrogate Recovery

U = Undetected below the specified reporting limit.

ND = Value below detection limit.

NA = Not Analyzed.

DRAFT

STONE ENVIRONMENTAL INC

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 071867-R
Date Sampled: 7/11/2007-7/28/2007
Date Analyzed: 7/11/2007-7/28/2007
Report Date: 8/9/2007

HOLE ID = P-114

VOC DATA, ug/L

Depth	Vinyl Chloride			t-Dichloroethene			c-Dichloroethene			Trichloroethene			Tetrachloroethene			% SS
	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	
74.10	1	U	1	1	U	1	2		1	10		1	1	U	1	107
84.75	1	U	1	1	U	1	1	U	1	2		1	1	U	1	109
94.75	1	U	1	1	U	1	1	U	1	3		1	1	U	1	114
104.75	1	U	1	1	U	1	1	U	1	6		1	1	U	1	106
114.55	1	U	1	1	U	1	9		1	32		1	12		1	104
124.75	1	U	1	1	U	1	17		1	110		1	15		1	103
134.75	1	U	1	1	U	1	78		1	380		1	35		1	112
143.80	1	U	1	1	U	1	78		1	400		1	26		1	119
161.50	5		1	1	U	1	140		1	970		5	22		1	100
169.70	9		1	1	U	1	110		5	630		5	18		1	109
179.10	10		1	1	U	1	240		1	850		5	14		1	105
193.80	14		1	1	U	1	220		4	690		4	6		1	105
203.85	7		1	1	U	1	110		24	710		24	24		1	99
213.80	1	U	1	1	U	1	29		1	400		1	16		1	104
222.80	1	U	1	1	U	1	20		1	310		1	21		1	100
234.00	1	U	1	1	U	1	13		1	230		1	13		1	101
244.40	1	U	1	1	U	1	11		1	84		1	7		1	103
271.90	1	U	1	1	U	1	19		1	150		1	8		1	105
280.00	1	U	1	1	U	1	21		1	140		1	10		1	108
289.80	1	U	1	1	U	1	22		1	77		1	4		1	107
298.25	1	U	1	1	U	1	22		1	98		1	4		1	108
309.80	1	U	1	1	U	1	5		1	25		1	2		1	111
319.80	1	U	1	1	U	1	1	U	1	4		1	1	U	1	98
329.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
340.15	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	96
348.15	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
359.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
368.10	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
456.38	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
464.90	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
473.41	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
484.10	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
494.40	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	96
504.90	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
513.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
523.90	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104

INORGANIC DATA, mg/L

Fe^{2+}	Fe, Total	Ammonia	Chloride	Chlorine, Total
0.44	0.56	0.06	94	ND
0.22	0.38	0.13	79	0.07
0.13	0.18	0.04	57	ND
0.18	0.33	0.05	45	ND
0.36	0.45	0.24	36	ND
0.27	0.36	0.08	38	ND
0.43	0.45	0.14	46	ND
0.78	0.78	0.05	45	ND
0.68	0.81	0.13	58	0.02
0.40	0.49	0.08	44	ND
0.41	0.52	0.42	53	ND
0.61	0.72	0.12	52	ND
0.33	1.30	0.25	52	0.04
0.64	0.66	0.05	49	ND
0.20	0.27	0.08	52	0.15
0.35	0.38	0.04	50	ND
0.42	0.47	0.06	60	ND
0.51	0.53	0.02	46	0.04
0.51	0.67	ND	40	ND
0.52	0.62	0.05	38	ND
0.58	0.60	ND	41	ND
0.39	0.34	ND	32	0.05
0.22	0.29	0.08	11	0.03
ND	0.03	ND	ND	ND
NA	NA	NA	NA	NA
0.16	0.32	0.06	40	0.02
0.34	2.60	0.36	58	0.25
0.24	0.36	0.10	33	ND
0.14	0.16	0.03	316	ND
0.04	0.15	0.06	349	ND
0.06	0.17	0.07	233	0.02
0.04	0.08	0.05	35	0.05
0.03	0.09	0.07	37	0.04
0.11	0.21	0.13	29	0.08
0.20	1.98	0.31	13	0.20
0.05	0.06	0.04	ND	0.02

Freons

Freon 113			Freon 123			Freon 123A		
Value	Q	DF	Value	Q	DF	Value	Q	DF
2		1	1	U	1	1	U	1
1		1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
10		1	1	U	1	1	U	1
2		1	1	U	1	1	U	1
4		1	1	U	1	1	U	1
4		1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1		1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1

VOC DATA, ug/L

Depth	1,1-Dichloroethene			1,1-Dichloroethane			1,1,1-Trichloroethane			1,1,1,2 Tetrachloroethane			Carbon Tetrachloride			Benzene			1,2-Dichloroethane			Toluene		
	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF
74.10	1	U	1	1	U	1	9		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
84.75	1	U	1	1	U	1	6		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
94.75	1	U	1	1	U	1	3		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
104.75	1	U	1	1	U	1	3		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
114.55	2		1	3		1	2		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
124.75	1		1	3		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
134.75	3		1	3		1	1		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
143.80	3		1	4		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
161.50	3		1	4		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
169.70	3		1	6		1	1		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
179.10	3		1	5		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
193.80	4		1	11		1	1		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
203.85	3		1	7		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
213.80	2		1	7		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
222.80	3		1	3		1	1	U	1	1	U	1	1	U	1	1		1	1	U	1	1	U	1
234.00	2		1	2		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
244.40	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
271.90	3		1	17		1	2		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
280.00	10		1	20		1	8		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
289.80	9		1	24		1	7		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
298.25	10		1	25		1	8		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
309.80	1	U	1	3		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
319.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
329.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
340.15	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
348.15	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
359.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
368.10	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
456.38	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
464.90	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
473.41	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
484.10	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
494.40	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
504.90	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
513.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
523.90	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1

Depth	Chlorobenzene			Ethylbenzene			m,p-Xylene			o-Xylene			1,3-Dichlorobenzene			1,4-Dichlorobenzene			1,2-Dichlorobenzene			%SS
	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	
74.10	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
84.75	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
94.75	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
104.75	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
114.55	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
124.75	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
134.75	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	112
143.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	119
161.50	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
169.70	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
179.10	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
193.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
203.85	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	99
213.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
222.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
234.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
244.40	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
271.90	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
280.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
289.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
298.25	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
309.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
319.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	98
329.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
340.15	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	96
348.15	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
359.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
368.10	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
456.38	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
464.90	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
473.41	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
484.10	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
494.40	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	96
504.90	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
513.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
523.90	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb

%SS = Surrogate Recovery

U = Undetected below the specified reporting limit.

ND = Value below detection limit.

NA = Not Analyzed.

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Date Sampled: 10/16/2007-11/16/2007
Date Analyzed: 10/16/2007-11/16/2007

HOLE ID = P-118

	VOC DATA, ug/L														
	Vinyl Chloride			t-Dichloroethene			c-Dichloroethene			Trichloroethene			Tetrachloroethene			% SS
Depth	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	
75.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
85.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	123
98.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	122
105.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	116
114.85	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	125
125.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	129
135.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	113
157.85	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	115
165.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
175.00	1	U	1	1	U	1	2		1	42		1	1		1	108
185.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
195.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	115
204.15	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	121
215.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	115
223.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
233.38	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	113
241.50	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	115
252.15	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
259.60	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	120
286.50	1	U	1	1	U	1	1	U	1	1	U	1	7		1	113
294.35	1	U	1	1	U	1	1	U	1	4		1	2		1	111
322.45	1	U	1	1	U	1	1	U	1	1	U	1	1		1	112
331.10	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
340.00	1	U	1	1	U	1	1	U	1	1	U	1	1		1	118
350.00	1	U	1	1	U	1	1	U	1	1	U	1	1		1	109
361.55	1	U	1	1	U	1	1		1	1	U	1	5		1	109
370.00	1	U	1	1	U	1	1	U	1	3		1	4		1	102
380.00	1	U	1	1	U	1	1	U	1	2		1	1		1	110
389.85	1	U	1	1	U	1	1	U	1	21		1	4		1	116
401.50	1	U	1	1	U	1	1	U	1	22		1	4		1	101
409.55	1	U	1	1	U	1	1	U	1	36		1	7		1	107
418.70	1	U	1	1	U	1	1	U	1	49		1	13		1	105
426.40	1	U	1	1	U	1	2		1	150		1	59		1	106
441.70	1	U	1	1	U	1	1		1	120		1	48		1	110
450.00	1	U	1	1	U	1	10		1	620		24	130		1	104
458.70	1	U	1	1	U	1	1		1	180		1	99		1	104
491.60	1	U	1	1	U	1	1	U	1	160		1	120		1	105
501.00	1	U	1	1	U	1	1		1	220		1	170		1	111
511.50	1	U	1	1	U	1	1		1	220		1	280		1	112
519.10	1	U	1	1	U	1	3		1	370		1	310		1	113
531.50	1	U	1	1	U	1	2		1	230		1	280		1	109
537.40	1	U	1	1	U	1	1	U	1	57		1	64		1	112
550.10	1	U	1	1	U	1	1	U	1	100		10	140		10	112
570.85	1	U	1	1	U	1	1	U	1	92		1	110		1	110
580.70	1	U	1	1	U	1	1	U	1	29		1	41		1	125

INORGANIC DATA, mg/L				
Fe ˆ	Fe, Total	Ammonia	Chloride	Chlorine Total
0.26	0.56	0.15	56	0.08
0.21	0.61	0.17	44	ND
0.34	0.52	0.15	50	0.04
0.39	0.55	0.11	58	0.06
0.14	0.20	0.04	43	0.02
0.17	0.23	0.08	36	0.08
0.24	0.43	0.06	60	0.08
0.09	0.18	0.05	46	ND
0.21	0.58	0.15	42	0.13
0.17	0.36	0.07	31	ND
0.11	0.16	0.06	28	ND
0.45	0.54	0.11	29	ND
1.15	9.40	1.20	33	0.57
0.18	0.67	0.26	40	0.60
0.33	0.43	0.09	52	0.04
0.36	0.38	0.12	57	0.04
0.15	0.33	0.11	64	0.04
0.51	0.76	0.23	60	0.15
0.74	0.78	0.08	52	ND
0.15	0.22	0.07	39	0.05
2.00	2.07	0.14	32	ND
0.83	1.98	0.37	37	0.04
0.25	0.29	0.04	38	ND
0.35	0.35	0.02	45	ND
0.54	0.58	0.04	33	ND
0.14	0.16	0.09	45	ND
0.29	0.32	0.13	55	ND
0.23	0.25	0.15	50	ND
0.16	0.16	0.12	56	0.07
0.66	0.39	0.18	41	0.12
0.33	0.54	0.21	33	0.14
0.59	0.93	0.58	25	0.12
0.78	0.81	0.08	29	ND
ND	0.04	0.04	34	ND
0.20	0.23	2.00	80	ND
0.61	0.61	0.12	69	0.11
0.12	0.18	0.08	43	0.02
0.42	0.48	0.13	62	ND
0.04	0.05	0.04	49	ND
0.32	0.37	0.09	42	ND
0.06	0.10	0.09	47	0.05
0.09	0.31	0.17	25	ND
0.36	0.54	0.14	23	ND
0.67	2.03	0.21	20	0.15
0.04	0.23	0.07	16	- 0.15

Freons								
Freon 113			Freon 123			Freon 123A		
Value	Q	DF	Value	Q	DF	Value	Q	DF
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
3		1	1	U	1	1	U	1
1		1	1	U	1	1	U	1
11		1	1	U	1	1	U	1
1		1	1	U	1	1	U	1
1		1	1	U	1	1	U	1
2		1	1	U	1	1	U	1
1		1	1	U	1	1	U	1
5		1	1	U	1	1	U	1
2		1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1		1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1

VOC DATA, ug/L

	1,1-Dichloroethene			1,1-Dichloroethane			1,1,1-Trichloroethane			1,1,2-Tetrachloroethan			Carbon Tetrachloride			Benzene			1,2-Dichlorothane		
Depth	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF
75.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
85.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
98.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
105.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
114.9	1	U	1	1	U	1	1		1	1	U	1	1	U	1	1	U	1	1	U	1
125.0	1	U	1	1	U	1	1		1	1	U	1	1	U	1	1	U	1	1	U	1
135.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
157.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
165.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
175.0	1	U	1	2		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
185.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
195.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
204.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
215.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
223.8	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
233.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
241.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
252.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
259.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
286.5	1	U	1	1		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
294.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
322.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
331.1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
340.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
350.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
361.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
370.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
380.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
389.9	1	U	1	1	U	1	1		1	1	U	1	2		1	1	U	1	1	U	1
401.5	3		1	1	U	1	2		1	1	U	1	5		1	1	U	1	1	U	1
409.6	3		1	1	U	1	2		1	1	U	1	5		1	1	U	1	1	U	1
418.7	3		1	1	U	1	3		1	1	U	1	6		1	1	U	1	1	U	1
426.4	26		1	1	U	1	17		1	1	U	1	36		1	1	U	1	1	U	1
441.7	17		1	1	U	1	14		1	1	U	1	27		1	1	U	1	1	U	1
450.0	40		1	1	U	1	27		1	1	U	1	92		24	1	U	1	1	U	1
458.7	33		1	1	U	1	20		1	1	U	1	69		1	1	U	1	1	U	1
491.6	35		1	1	U	1	23		1	1	U	1	38		1	1	U	1	1	U	1
501.0	28		1	1	U	1	22		1	1	U	1	35		1	1	U	1	1	U	1
511.5	42		1	1	U	1	32		1	1	U	1	40		1	1	U	1	1	U	1
519.1	22		1	1	U	1	18		1	1	U	1	32		1	1	U	1	1	U	1
531.5	37		1	1	U	1	24		1	1	U	1	38		1	1	U	1	1	U	1
537.4	9		1	1	U	1	7		1	1	U	1	9		1	1	U	1	1	U	1
550.1	10		1	1	U	1	7		1	1	U	1	11		1	1	U	1	1	U	1
570.9	10		1	1	U	1	7		1	1	U	1	10		1	1	U	1	1	U	1
580.7	4		1	1	U	1	3		1	1	U	1	4		1	1	U	1	1	U	1

	Toluene			Chlorobenzene			Ethylbenzene			m,p-Xylene			o-Xylene			1,3-Dichlorobenzene			1,4-Dichlorobenzene			1,2-Dichlorobenzene			%SS
Depth	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	
75.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
85.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	123
98.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	122
105.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	116
114.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	125
125.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	129
135.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	113
157.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	115
165.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
175.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
185.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
195.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	115
204.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	121
215.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	115
223.8	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
233.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	113
241.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	115
252.2	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
259.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	120
286.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	113
294.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
322.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	112
331.1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	114
340.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	118
350.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
361.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
370.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
380.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
389.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	116
401.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
409.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
418.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
426.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
441.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
450.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
458.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
491.6	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
501.0	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
511.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	112
519.1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	113
531.5	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	109
537.4	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	112
550.1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	112
570.9	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
580.7	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	125

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetr... the specified reporting limit
J = Estim...
ND = Va... on limit
NS = Not ...

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client:	GTEOSI
Location:	Hicksville, NY
Project ID:	Groundwater Profiling
SEI #:	071867-R
Date Sampled:	3/31/2009-4/16/2009
Date Analyzed:	3/31/2009-4/16/2009
Report Date:	5/22/2009

HOLE ID = P-119

VOC DATA, ug/L

Depth	Vinyl Chloride			1-Dichloroethene			c-Dichloroethene			Trichloroethene			Tetrachloroethene			%SS
	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	
64.95	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	89
72.85	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	89
84.95	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	87
94.95	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	97
104.95	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	85
114.45	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	93
124.85	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	93
133.45	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	83
144.95	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84
154.95	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	98
164.95	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	95
174.95	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	89
184.95	1	U	1	1	U	1	1	U	1	1	U	1	3		1	89
194.95	1	U	1	1	U	1	1	U	1	1	U	1	5		1	86
204.50	1	U	1	1	U	1	1	U	1	1	U	1	20		1	88
217.80	1	U	1	1	U	1	1	U	1	25		1	200		1	95
224.80	1	U	1	1	U	1	1	U	1	34		1	1300		10	91
234.80	1	U	1	1	U	1	1	U	1	1	U	1	13		1	80
244.25	1	U	1	1	U	1	1	U	1	1	U	1	18		1	86
254.30	1	U	1	1	U	1	1	U	1	1	U	1	33		1	91
263.00	1	U	1	1	U	1	1	U	1	2		1	66		1	88
285.00	1	U	1	1	U	1	1	U	1	1		1	16		1	101
294.70	1	U	1	1	U	1	1	U	1	1	U	1	18		1	99
304.25	1	U	1	1	U	1	1	U	1	1	U	1	3		1	97
324.80	1	U	1	1	U	1	1	U	1	1	U	1	2		1	101
347.00	1	U	1	1	U	1	1	U	1	1	U	1	2		1	94
354.95	1	U	1	1	U	1	1	U	1	1	U	1	1		1	92
364.95	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	89
373.90	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	97
386.80	1	U	1	1	U	1	1	U	1	1	U	1	4	U	1	95
388.15	1	U	1	1	U	1	1	U	1	1	U	1	3		1	104
397.10	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
408.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	94

INORGANIC DATA, mg/L

Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total
NA	NA	NA	NA	NA
NA	NA	NA	NA	NA
0.53	1.04	0.27	141	0.41
0.29	0.57	0.70	22	0.03
0.24	0.97	0.58	125	0.04
0.62	1.21	0.24	102	0.05
0.53	0.59	2.4	143	0.05
0.14	0.30	0.04	97	0.02
0.30	0.36	0.80	163	ND
0.59	0.82	8.0	81	0.02
1.05	1.96	0.14	20	0.03
0.44	1.41	0.06	17	0.05
NA	NA	NA	NA	NA
NA	NA	0.22	NA	NA
0.16	0.16	0.13	42	0.03
NA	NA	0.08	NA	NA
0.33	1.00	0.23	15	ND
0.45	1.13	ND	17	0.03
0.38	0.66	0.14	17	0.17
ND	ND	0.04	16	ND
0.93	0.99	0.05	19	ND
0.16	0.24	0.02	22	ND
0.22	0.38	0.19	17	ND
0.11	0.15	0.02	27	ND
0.09	0.48	0.28	127	0.03
0.15	0.21	0.10	156	0.04
0.18	0.28	0.03	117	ND
0.16	0.32	0.28	67	0.10
0.16	0.17	0.03	12	ND
0.26	0.64	0.13	26	0.02
0.20	0.47	0.07	22	0.02
0.11	0.19	0.09	18	0.03
0.14	0.34	0.12	19	0.04

Freons

Freon 112			Freon 123			Freon 123A		
Value	Q	DF	Value	Q	DF	Value	Q	DF
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1

VOC DATA, ug/L

Depth	1,1-Dichloroethane			1,1-Dichloroethane			1,1,1-Trichloroethane			1,1,1,2-Tetrachloroethane			Carbon Tetrachloride			Benzene			1,2-Dichloroethane			Toluene			Chlorobenzene			Ethylbenzene			m,p-Xylene			o-Xylene			1,3-Dichlorobenzene			1,4-Dichlorobenzene			1,2-Dichlorobenzene			%SS
	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	
64.95	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	89
72.85	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	89
84.95	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	87
94.95	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	97
104.95	3		1	4		1	6		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	85
114.45	1	U	1	1	U	1	1		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	93
124.85	4		1	6		1	10		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	93
133.45	1		1	3		1	3		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	93
144.95	4		1	6		1	9		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	83
154.95	2		1	1	U	1	3		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	84
164.95	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	98
174.95	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	95
184.95	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	89
194.95	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	89
204.50	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	86
217.80	1	U	1	1	U	1	1	U	1	1	U	1	1		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	88
224.80	1	U	1	1	U	1	1	U	1	1	U	1	2		1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	95
234.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	91
244.25	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	80
254.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	86
263.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	91
285.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	88
294.70	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
304.25	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	99
324.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	97
347.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
354.95	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	94
364.95	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	92
373.90	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	89
386.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	97
388.15	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	95
397.10	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
408.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	100
																																														94

Samples with >100 ppb total VOC's cannot be run on a carbosen fiber and will have detection limits of 20 ppb

%SS = Surrogate Recovery

U = Undetected below the specified reporting limit.

J = Estimated value.

ND = Value below detection limit.

NS = Not Sampled

NS = Not Analyzed due to inefficient Sample Volume

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 071867-R
Date Sampled: 4/17/2009-5/13/2009
Date Analyzed: 4/18/2009-5/13/2009
Report Date: 5/22/2009

HOLE ID = P-120	VOC DATA, ug/L														
	Vinyl Chloride			t-Dichloroethene			c-Dichloroethene			Trichloroethene			Tetrachloroethene			%SS
Depth	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	
74.90	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
84.85	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
94.75	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
103.50	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
114.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	118
125.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	118
143.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
154.70	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	96
165.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
172.35	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
192.10	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
200.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
210.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
220.00	1	U	1	1	U	1	1	U	1	2		1	10		1	105
230.00	1	U	1	1	U	1	1	U	1	3		1	77		1	103
239.30	1	U	1	1	U	1	1	U	1	12		1	93		1	101
253.05	1	U	1	1	U	1	5		1	30		1	44		1	103
263.50	1	U	1	1	U	1	7		1	30		1	55		1	102
326.65	1	U	1	1	U	1	8		1	590		10	270		10	115
335.00	1	U	1	1	U	1	12		1	890		10	320		10	111
345.00	1	U	1	1	U	1	8		1	590		10	1120		10	108
361.50	1	U	1	1	U	1	14		1	240		10	2400		10	104
369.00	1	U	1	1	U	1	21		1	280		10	830		10	108
381.70	1	U	1	1	U	1	36		1	150		10	1500		10	110
389.20	1	U	1	1	U	1	24		1	91		1	820		10	111
404.05	1	U	1	1	U	1	3		1	6		1	960		10	107
417.35	1	U	1	1	U	1	1	U	1	1		1	140		1	119
424.80	1	U	1	1	U	1	1	U	1	1	U	1	23		1	105
434.50	1	U	1	1	U	1	1	U	1	1	U	1	20		1	106
444.80	1	U	1	1	U	1	1	U	1	1	U	1	95		1	102
463.40	1	U	1	1	U	1	1	U	1	1	U	1	43		1	101
471.95	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	99
481.25	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106

INORGANIC DATA, mg/L				
Fe^{++}	Fe, Total	Ammonia	Chloride	Chlorine, Total
0.28	0.71	0.13	57	0.02
0.63	0.84	0.40	51	0.20
0.57	0.73	0.36	47	0.07
0.37	0.44	0.31	54	0.09
0.31	0.61	0.26	44	0.04
0.41	2.87	0.90	47	0.27
0.34	0.85	0.17	109	0.06
0.38	0.62	0.26	117	0.12
0.22	0.45	0.22	67	0.05
0.15	0.35	0.24	55	0.04
0.10	0.10	0.09	135	ND
0.15	0.20	0.04	54	ND
0.07	0.15	0.15	39	0.03
0.34	0.39	0.06	72	ND
0.32	0.63	0.16	63	0.03
0.46	0.94	0.39	35	0.14
0.24	0.27	0.14	29	0.02
0.21	0.43	0.12	21	0.02
0.25	0.71	0.14	27	0.04
0.70	0.92	0.23	30	0.15
0.41	0.44	0.18	23	ND
0.14	0.17	0.05	22	0.03
0.12	0.15	0.06	21	ND
0.12	0.12	0.09	23	ND
0.17	0.17	0.05	15	ND
0.07	0.23	0.11	58	0.02
0.65	12.50	0.28	43	0.29
0.10	0.14	0.04	40	ND
0.17	0.19	0.07	41	0.06
0.30	0.30	0.15	17	0.08
0.11	0.20	0.06	14	ND
0.31	0.38	0.23	46	0.07
NA	NA	NA	NA	NA

Freons								
Freon 113			Freon 123			Freon 123A		
Value	Q	DF	Value	Q	DF	Value	Q	DF
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
7		1	1	U	1	1	U	1
12		1	1	U	1	1	U	1
8		1	1	U	1	1	U	1
2		1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1
1	U	1	1	U	1	1	U	1

VOC DATA, ug/L

	1,1 Dichloroethene			1,1 Dichloroethane			1,1,1-Trichloroethane			1,1,1,2-Tetrachloroethane			Carbon Tetrachloride		
Depth	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF
74.90	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
84.85	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
94.75	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
103.50	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
114.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
125.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
143.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
154.70	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
165.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
172.35	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
192.10	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
200.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
210.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
220.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
230.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
239.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
253.05	1	U	1	1	U	1	1	U	1	1	U	1	7		1
263.50	1	U	1	1	U	1	1	U	1	1	U	1	6		1
326.65	2		1	1	U	1	1	U	1	1	U	1	8		1
335.00	3		1	1	U	1	2		1	1	U	1	10		1
345.00	1		1	1	U	1	1	U	1	1		1	10		1
361.50	1		1	1	U	1	1	U	1	2		1	6		1
369.00	1	U	1	1	U	1	1	U	1	1	U	1	4		1
381.70	1	U	1	1	U	1	1	U	1	1		1	3		1
389.20	1	U	1	1	U	1	1	U	1	1	U	1	4		1
404.05	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
417.35	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
424.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
434.50	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
444.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
463.40	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
471.95	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1
481.25	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1

	Benzene			1,2-Dichloroethane			Toluene			Chlorobenzene			Ethylbenzene			m,p-Xylene			o-Xylene			1,3-Dichlorobenzene			1,4-Dichlorobenzene			1,2-Dichlorobenzene			%SS
Depth	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	Value	Q	DF	
74.90	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
84.85	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
94.75	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
103.50	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
114.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	118
125.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	118
143.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
154.70	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	96
165.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
172.35	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
192.10	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
200.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
210.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
220.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
230.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
239.30	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
253.05	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	103
263.50	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
326.65	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	115
335.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
345.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
361.50	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	104
369.00	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	108
381.70	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	110
389.20	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	111
404.05	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	107
417.35	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	119
424.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	105
434.50	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106
444.80	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	102
463.40	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	101
471.95	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	99
481.25	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	1	U	1	106

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Analyzed due to insufficient Sample Volume

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client:	GTEOSI
Location:	Hicksville, NY
Project ID:	Groundwater Profiling
SEI #:	03-1402
Date Sampled:	6/9 - 6/18/03
Date Analyzed:	6/9 - 6/18/03
Report Date:	6/18/03

HOLE ID = PC	VOC DATA, ug/L												INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS		Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,3-DCA / Benzene
79.6	4	U	4	U	4	U	4	U	**340**		89		0.05	0.08	0.03	48	ND	4 U	4 U
89.6	20	U	20	U	20	U	20	U	**1200**		91		0.05	0.10	0.05	64	0.03	20 U	20 U
99.6	1	U	1	U	1	U	1	U	**85**		92		0.31	1.28	0.55	49	0.26	1 U	1 U
109.6	1	U	1	U	1	U	1	U	**8**		112		0.12	0.27	0.15	78	0.03	1 U	1 U
119.6	1	U	1	U	1	U	1	U	1	U	107		0.05	0.09	0.04	41	ND	1 U	1 U
129.6	1	U	1	U	1	U	1	U	**1**		90		0.17	1.92	1.05	67	0.39	1 U	1 U
139.6	1	U	1	U	1	U	1	U	**2**		109		0.05	0.30	0.12	95	0.04	1 U	1 U
149.6	1	U	1	U	1	U	**2**		**3**		106		0.10	8.9	7.1	103	0.66	1 U	1 U
159.6	1	U	1	U	1	U	**23**		**4**		92		ND	0.13	0.08	77	0.03	**Detect**	1 U
169.6	1	U	1	U	1	U	**8**		**4**		102		0.09	0.59	0.34	111	0.06	**Detect**	1 U
179.6	1	U	1	U	1	U	**30**		**2**		100		ND	0.05	0.08	68	0.04	1 U	1 U
185.3	1	U	1	U	**3**		**41**		1	U	91		0.04	0.15	0.16	63	0.05	1 U	1 U
195.3	1	U	1	U	**7**		**94**		**3**		95		ND	0.04	0.04	53	ND	1 U	1 U
205.3	2	U	2	U	**12**		**160**		**9**		98		0.03	0.17	0.14	46	0.04	2 U	2 U
215.3	6	U	6	U	**39**		**390**		**23**		89		0.07	0.41	0.38	60	0.04	6 U	6 U
225.3	2	U	2	U	**9**		**130**		**9**		88		ND	0.05	0.07	75	0.02	2 U	2 U
235.3	3	U	3	U	**18**		**210**		**13**		90		0.03	0.03	0.03	70	0.02	3 U	3 U
245.3	1	U	1	U	1	U	**1**		1	U	89		ND	ND	0.02	110	0.02	1 U	1 U
265.3	1	U	1	U	1	U	1	U	**2**		90		ND	0.12	0.06	320	ND	1 U	1 U
275.3	1	U	1	U	1	U	1	U	**1**		104		0.09	0.24	0.29	188	0.07	1 U	1 U
320.3	1	U	1	U	1	U	1	U	**9**		104		0.05	0.13	0.16	607	0.05	1 U	1 U
330.3	1	U	1	U	1	U	**6**		**2**		96		ND	0.11	0.17	350	0.02	1 U	1 U
337.6	1	U	1	U	**3**		**48**		**4**		104		0.30	1.34	0.34	79	0.24	1 U	1 U
347.7	1	U	1	U	1	U	**3**		1	U	98		0.08	0.25	0.14	178	0.03	1 U	1 U
364.6	1	U	1	U	1	U	**17**		**3**		100		0.42	0.78	0.31	163	0.30	1 U	1 U
374.5	1	U	1	U	1	U	**2**		1	U	98		ND	0.03	0.04	41	0.03	1 U	1 U
384.5	1	U	1	U	1	U	1	U	1	U	100		0.12	0.21	0.20	43	0.07	1 U	1 U
394.5	1	U	1	U	1	U	1	U	1	U	95		ND	0.04	ND	29	ND	1 U	1 U

	VOC DATA, ug/L																													
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
79.6	4	U	4	U	4	U	4	U	4	U	4	U	4	U	8	U	4	U	4	U	4	U	4	U	89
89.6	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	91
99.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92
109.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	112
119.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	107
129.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	90
139.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109
149.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	106
159.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92
169.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
179.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
185.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	91
195.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95
205.3	2	U	2	U	2	U	2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U	2	U	98
215.3	6	U	6	U	6	U	6	U	6	U	6	U	6	U	12	U	6	U	6	U	6	U	6	U	89
225.3	2	U	2	U	2	U	2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U	2	U	88
235.3	3	U	3	U	3	U	3	U	3	U	3	U	3	U	6	U	3	U	3	U	3	U	3	U	90
245.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	89
265.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	90
275.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
320.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
330.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
337.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
347.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98
364.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
374.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98
384.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
394.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 5/27 - 6/4/03
Date Analyzed: 5/27 - 6/4/03
Report Date: 6/4/2003

HOLE ID = PD	VOC DATA, ug/L													INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113	1,2-DCA / Benzene
77.1	1	U	1	U	1	U	9	J	250		94	0.03	0.26	0.14	124	ND	1 U	1 U
87.1	1	U	1	U	1	U	1	U	41	J	100	ND	0.12	0.15	49	0.04	1 U	1 U
97.1	1	U	1	U	1	U	1	U	74	J	115	0.03	0.10	0.12	40	0.03	1 U	Detect
107.1	1	U	1	U	1	U	1	U	12		87	0.08	0.22	0.22	38	0.05	1 U	1 U
117.1	1	U	1	U	1	U	1	U	3		90	0.04	0.05	0.08	25	0.02	Detect	1 U
127.1	1	U	1	U	1	U	1	U	1		81	0.06	0.10	0.08	12	ND	Detect	1 U
137.1	1	U	1	U	1	U	1	U	4		97	10.80	10.10	0.38	50	0.04	1 U	1 U
147.1	1	U	1	U	1	U	4		2		82	0.11	0.17	0.10	81	0.03	1 U	1 U
157.1	1	U	1	U	1	U	5		1		88	ND	0.11	0.13	85	0.04	1 U	1 U
167.1	1	U	1	U	20		200		14		107	0.41	1.05	0.19	68	0.16	1 U	1 U
177.1	1	U	1	U	1	U	2		2		80	ND	0.07	0.40	125	ND	1 U	1 U
187.1	1	U	1	U	4		40		3		111	0.06	0.23	0.22	111	0.06	1 U	1 U
197.1	1	U	1	U	1	U	8		1	U	76	0.17	1.55	1.15	87	0.37	1 U	1 U
207.1	1	U	1	U	1	U	6		1	U	79	0.21	2.13	1.00	83	0.27	1 U	1 U
217.1	1	U	1	U	1	U	1	U	1	U	80	ND	0.13	0.12	84	0.03	1 U	1 U
227.1	1	U	1	U	1	U	1	U	1	U	84	0.11	0.63	0.47	76	0.11	1 U	1 U
237.1	1	U	1	U	1	U	1	U	1	U	77	ND	0.17	0.20	70	0.03	1 U	1 U
247.1	1	U	1	U	1	U	1	U	1	U	88	ND	0.16	0.13	96	0.03	1 U	1 U
257.1	1	U	1	U	1	U	3		8		109	0.31	0.52	4.00	187	0.14	1 U	1 U
290.1	1	U	1	U	1	U	8		31		109	0.40	0.09	0.09	702	0.03	1 U	1 U
317.0	1	U	1	U	1	U	3		17		96	0.25	0.40	0.45	667	0.07	1 U	1 U
322.0	1	U	1	U	1	U	3		16		92	0.20	0.44	0.21	777	0.03	1 U	1 U
332.0	1	U	1	U	1	U	1	U	4		94	0.02	0.09	0.09	350	ND	1 U	1 U
342.0	1	U	1	U	1	U	1	U	1	U	96	ND	ND	ND	91	ND	1 U	1 U
352.0	1	U	1	U	1	U	1	U	1	U	93	0.05	0.29	0.16	28.5	ND	1 U	1 U

	VOC DATA, ug/L																													
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
77.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	94
87.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	100
97.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	115
107.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	87
117.1	1	U	1	U	1	U	2		1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	90
127.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	81
137.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
147.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	82
157.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	88
167.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	107
177.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	80
187.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	111
197.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	76
207.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	79
217.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	80
227.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	84
237.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	77
247.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	88
257.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109
290.1	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109
317.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
322.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	92
332.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
342.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	96
352.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	93

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client:	GTEOSI
Location:	Hicksville, NY
Project ID:	Groundwater Profiling
SEI #:	03-1402
Date Sampled:	5/15 - 5/23/03
Date Analyzed:	5/15 - 5/23/03
Report Date:	5/23/03

HOLE ID = PE

Depth	VOC DATA, ug/L: Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	INORGANIC DATA, mg/L: Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	COELUTING COMPOUNDS: 1,1-DCE / Freon 113	1,2-DCA / Benzene
78.6	1	U	1	U	1	U	1	U	**1**		106	ND	0.06	0.15	23	ND	1 U	1 U
88.6	1	U	1	U	**2**		**1**		**5**		112	7.7	9.3	0.10	15	ND	1 U	1 U
98.6	1	U	1	U	1	U	1	U	**55**		105	13.9	14.3	0.24	14	0.03	1 U	1 U
108.6	1	UJ	1	U	1	U	1	U	**70**		102	11.60	12.20	0.12	13	0.12	1 U	1 U
118.6	1	UJ	1	U	1	U	1	U	**58**		99	ND	0.08	0.62	18	ND	1 U	1 U
128.6	20	U	20	U	20	U	20	U	**1800**		108	0.10	0.27	0.14	33	ND	20 U	20 U
138.6	20	U	20	U	20	U	20	U	**1700**	J	111	0.36	0.43	0.24	23	ND	20 U	20 U
148.6	1	U	1	U	1	U	1	U	**13**		123	0.06	0.21	0.27	104	ND	1 U	**Detect**
158.6	1	U	1	U	1	U	1	U	**2**		116	ND	0.30	0.22	142	ND	1 U	**Detect**
168.6	1	U	1	U	1	U	1	U	**1**		121	0.03	0.67	0.10	121	ND	1 U	1 U
178.6	1	U	1	U	1	U	1	U	**16**		119	ND	ND	ND	230	ND	1 U	1 U
198.6	1	U	1	U	1	U	1	U	**1**		117	ND	0.11	0.14	308	ND	1 U	1 U
208.6	1	U	1	U	1	U	1	U	1	U	109	0.06	0.32	0.21	395	ND	1 U	1 U
218.6	1	U	1	U	1	U	1	U	1	U	113	0.14	0.48	0.52	385	0.07	1 U	1 U
228.6	1	U	1	U	1	U	1	U	1	U	113	0.35	1.48	0.53	438	0.21	1 U	1 U
238.6	1	U	1	U	1	U	1	U	**2**		114	0.36	5.0	1.1	518	0.37	1 U	1 U
268.6	1	U	1	U	1	U	1	U	**45**		112	0.34	1.29	0.47	608	0.11	1 U	1 U
292.3	1	U	1	U	1	U	**1**		**42**		114	ND	0.07	0.09	895	ND	1 U	1 U
301.3	2	UJ	2	U	2	U	**7**		**170**		113	0.09	0.09	0.12	820	0.03	2 U	2 U
317.2	4	UJ	4	U	4	U	**6**		**310**		121	0.16	0.35	0.18	193	0.04	4 U	4 U
327.2	1	UJ	1	U	1	U	**4**		**30**		120	0.16	0.20	0.34	843	0.11	1 U	1 U
332.9	1	UJ	1	U	1	U	**2**		**16**		116	0.14	0.32	0.25	718	0.10	1 U	1 U

Depth	VOC DATA, ug/L: Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
78.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	106
88.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	112
98.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	105
108.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	102
118.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99
128.6	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	108
138.6	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	111
148.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	123
158.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	116
168.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	121
178.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	119
198.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	117
208.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	109
218.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	113
228.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	113
238.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	114
268.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	112
292.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	114
301.3	2	U	2	U	2	U	2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U	2	U	113
317.2	4	U	4	U	4	U	4	U	4	U	4	U	4	U	8	U	4	U	4	U	4	U	4	U	121
327.2	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	120
332.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	116

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client: GTEOSI
Location: Hicksville, NY
Project ID: Groundwater Profiling
SEI #: 03-1402
Date Sampled: 4/28 - 5/2/03
Date Analyzed: 4/28 - 5/9/03
Report Date: 5/9/03

HOLE ID = PF	VOC DATA, ug/L																INORGANIC DATA, mg/L					COELUTING COMPOUNDS	
Depth	Vinyl Chloride	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	Fe^{+2}	Fe, Total	Ammonia	Chloride	Chlorine, Total	113	1,2-DCA / Benzene
76.5	20	U	20	U	**120**		**120**		**8200**		104	0.45	1.16	0.49	40	0.11	20 U	20 U
86.5	20	U	20	U	20	U	20	U	**450**		97	0.03	0.29	0.18	17	ND	20 U	20 U
96.5	1	U	1	U	1	U	1	U	**4**		90	0.08	0.26	0.20	76	ND	NA	NA
106.5	1	U	1	U	1	U	1	U	**3**		105	0.02	0.27	0.32	88	ND	1 U	1 U
116.5	1	U	1	U	1	U	1	U	**2**		99	0.00	0.00	0.05	72	ND	1 U	1 U
126.4	1	U	1	U	1	U	1	U	**2**		103	0.07	0.61	0.57	80	0.08	1 U	1 U
136.5	1	U	1	U	1	U	1	U	**2**		95	0.04	0.22	0.30	116	0.05	1 U	1 U
146.3	1	U	1	U	1	U	1	U	**2**		101	0.03	0.12	0.22	108	0.02	1 U	1 U
156.5	1	U	1	U	1	U	1	U	**4**		99	0.07	0.51	0.57	75	0.07	1 U	1 U
166.5	1	U	1	U	1	U	1	U	**2**		97	0.03	0.69	0.92	72	ND	1 U	1 U

	VOC DATA, ug/L																										
Depth	Freon 123A	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
76.5	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	104
86.5	20	U	20	U	20	U	20	U	20	U	20	U	20	U	40	U	20	U	20	U	20	U	20	U	97
96.5	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		90
106.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	105
116.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99
126.4	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	103
136.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95
146.3	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	101
156.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99
166.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled
NA = Not Analyzed for this analyte.

STONE ENVIRONMENTAL INC

DRAFT

Mobile Laboratory Results Sheet

Client:	GTEOSI
Location:	Hicksville, NY
Project ID:	Groundwater Profiling
SEI #:	03-1402
Date Sampled:	7/21 - 7/27/03
Date Analyzed:	7/21 - 7/27/03
Report Date:	7/27/03

HOLE ID = PH

Depth	Vinyl Chloride (VOC DATA, ug/L)	Q	t-Dichloroethene	Q	c-Dichloroethene	Q	Trichloroethene	Q	Tetrachloroethene	Q	% SS	Fe^{+2} (INORGANIC DATA, mg/L)	Fe, Total	Ammonia	Chloride	Chlorine, Total	1,1-DCE / Freon 113 (COELUTING COMPOUNDS)	1,2-DCA / Benzene
76.8	1	U	1	U	1	U	1	U	**8**		87	0.09	0.33	0.19	33	0.06	1 U	1 U
86.8	1	U	1	U	1	U	1	U	**11**		95	0.08	0.18	0.11	21	0.02	1 U	1 U
96.8	12	U	12	U	12	U	12	U	**1500**		115	0.06	0.13	0.04	44	ND	12 U	12 U
106.8	2	U	2	U	2	U	**4**		**240**		110	0.06	0.16	0.07	48	0.02	**Detect**	2 U
116.8	1	U	1	U	1	U	1	U	**10**		95	0.10	0.23	0.20	28	0.05	**Detect**	1 U
126.8	1	U	1	U	1	U	1	U	**10**		99	0.09	0.20	0.19	50	0.05	1 U	1 U
136.8	1	U	1	U	1	U	1	U	**4**		104	0.11	0.29	0.28	60	0.08	**Detect**	1U
146.8	1	U	1	U	1	U	1	U	**3**		98	0.22	0.87	0.72	71	0.16	**Detect**	1 U
156.8	1	U	1	U	1	U	**12**		**7**		106	0.11	1.26	0.85	68	0.05	**Detect**	1 U
166.8	1	U	1	U	1	U	**24**		**6**		104	0.12	0.32	0.28	64	0.08	1 U	1 U
176.8	1	U	1	U	**3**		**42**		**22**		108	0.15	0.34	0.36	92	0.06	1 U	1 U
186.8	1	U	1	U	1	U	**2**		**2**		97	0.03	0.09	0.11	107	0.03	1 U	1 U
196.8	1	U	1	U	1	U	**7**		**2**		105	0.43	0.86	0.50	109	0.28	1 U	1 U
206.6	1	U	1	U	1	U	1	U	**3**		105	ND	0.05	0.05	140	ND	1 U	1 U
216.6	1	U	1	U	1	U	1	U	1	U	105	0.03	0.06	0.08	78	ND	1 U	1 U
226.6	1	U	1	U	1	U	1	U	1	U	108	ND	0.03	0.02	75	0.03	1 U	1 U
236.6	1	U	1	U	1	U	1	U	1	U	90	0.15	0.23	0.20	80	ND	1 U	1 U
328.5	1	U	1	U	1	U	**3**		**12**		108	0.03	0.07	0.10	447	0.02	1 U	1 U
335.0	1	U	1	U	1	U	**10**		**6**		117	ND	0.10	0.09	288	0.02	1 U	1 U
351.7	1	U	1	U	1	U	1	U	**2**		123	0.11	0.18	0.11	231	0.02	1 U	1 U
376.9	1	U	1	U	1	U	**5**		1	U	99	0.11	0.32	0.04	96	0.05	1 U	1 U
386.5	1	U	1	U	1	U	1	U	1	U	112	0.15	0.29	0.21	40	0.09	1 U	1 U
396.5	1	U	1	U	1	U	1	U	1	U	122	0.04	0.43	0.13	28	0.03	1 U	1 U

Depth	Freon 123A (VOC DATA, ug/L)	Q	Freon 123	Q	1,1-Dichloroethane	Q	1,1,1-Trichloroethane	Q	Toluene	Q	Chlorobenzene	Q	Ethylbenzene	Q	m,p-Xylene	Q	o-Xylene	Q	1,3-Dichlorobenzene	Q	1,4-Dichlorobenzene	Q	1,2-Dichlorobenzene	Q	%SS
76.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	87
86.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95
96.8	12	U	12	U	12	U	12	U	12	U	12	U	12	U	24	U	12	U	12	U	12	U	12	U	115
106.8	2	U	2	U	2	U	2	U	2	U	2	U	2	U	4	U	2	U	2	U	2	U	2	U	110
116.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	95
126.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99
136.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
146.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	98
156.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	106
166.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	104
176.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108
186.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	97
196.8	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	105
206.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	105
216.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	105
226.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108
236.6	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	90
328.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	108
335.0	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	117
351.7	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	123
376.9	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	99
386.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	112
396.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	2	U	1	U	1	U	1	U	1	U	122

Samples with >100 ppb total VOC's cannot be run on a carboxen fiber and will have detection limits of 20 ppb
%SS = Surrogate Recovery
U = Undetected below the specified reporting limit.
J = Estimated value.
ND = Value below detection limit.
NS = Not Sampled

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

J

APPENDIX

Appendix J

Data Usability Summary Reports

2002 Groundwater Sampling

REPORT

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Executive Summary

This report addresses data quality for groundwater samples collected at the former Sylvania Electric Products Incorporated facility in Hicksville, New York. Sample collection activities were conducted by URS Corporation (URS) from October 13, 2002 through December 11, 2002.

The environmental samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri for Volatile Organic Compound (VOC) analyses using United States Environmental Protection Agency (USEPA) guidance methods. The analytical data generated for this investigation were evaluated by URS using the quality assurance/quality control (QA/QC) criteria established in the methods as guidance. Non-conformances from the QA/QC criteria were qualified based on guidance provided in the following references:

- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* (SW846) USEPA, Final Update IIIA, April 1998;
- *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review*, EPA 540-R-99-008, October 1999;
- *Analytical Services Protocol (ASP), New York State Department of Environmental Conservation* (NYSDEC). Guidance documents including Exhibits A, B, C, D, E, F, G, H, and I. (June 2000), and
- *United States Environmental Protection Agency Region II Contract Laboratory Program (CLP) Organics Data Review*, SOP No. HW-6, Revision #11 (USEPA 1996a)

Professional judgement was used to qualify results as estimated (J or UJ) in some cases where the overall quality of data was suspected due to commonly accepted or standardized practices employed by the laboratory. Since the guidance documents used as a source of reference for the validation somewhat differ in the type of qualification applied to data, URS applied qualifiers generally as a conservative approach. Method non-conformances included exceedances of the relative percent standard deviation for the initial calibrations, the percent differences of the continuing calibrations, the percent recoveries of the system monitoring compounds, the internal standard values, and matrix spike/matrix spike duplicate percent recoveries. Affected data, however, were not rejected if other supporting quality control data indicated acceptable quality control results.

Additionally, most laboratory method blanks contained low level contamination from common laboratory contaminants such as acetone and methylene chloride. The presence of these contaminants affected many project samples and qualification of associated results was performed to show the relationship between the laboratory contamination and the uncertainty of the actual project sample result. Similarly, the project trip blanks and field blanks contained low-levels of some of the same contaminants as were seen in the laboratory method blanks. Again, URS qualified the affected data to show the potential impact on the final sample results.

Other quality issues requiring data validation qualification included removal of results from the database that exceeded the laboratory calibration range (i.e., qualified with a "E" by the laboratory), and qualification of all tentatively identified compounds. Results from these data sets are qualitative only, and not considered usable for quantitative assessments, in particular risk screening evaluations.

None of the exceedances of method non-conformances were significant enough to jeopardize the usability of the data. Most_analytical results summarized in Appendix A (with the exception of TIC results) are usable based on the findings listed in this Data Usability Summary Report (DUSR).

Overall, 100 percent of the VOC data retained in the database as final data, were determined to be usable for qualitative and quantitative purposes. Those sample results qualified as estimated (J and UJ) due to data validation QA/QC exceedances should be considered conditionally usable. Therefore, the completeness objective of 90 percent, as stated in the quality assurance project plan (QAPP), was met.

1. Introduction

1.1. Sample Identification

This report addresses the results of a data quality evaluation for groundwater samples collected at the former Sylvania Electric Products Incorporated facility in Hicksville, New York (the Site). Sample collection activities were conducted by URS Corporation (URS) from October 13, 2002 through December 11, 2002.

The SDG (laboratory package number), field identification, and laboratory identification of the samples that were submitted for data validation are presented in Table 1-1.

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Client ID***	***Laboratory ID***	***Analysis Requested***
F2J160194	DUP *Field Duplicate of MW-8*	F2J160194007	VOCs
	EB-101302 *Equipment Blank*	F2J160194014	VOCs
	MW-1	F2J160194010	VOCs
	MW-10	F2J160194005	VOCs
	MW-11	F2J160194011	VOCs
	MW-12	F2J160194006	VOCs
	MW-2	F2J160194008	VOCs
	MW-3	F2J160194001	VOCs
	MW-4	F2J160194002	VOCs
	MW-5	F2J160194012	VOCs
	MW-6	F2J160194009	VOCs
	MW-7	F2J160194013	VOCs
	MW-8	F2J160194003	VOCs
	MW-9	F2J160194004	VOCs
	TRIP BLANK *10-13-02*	F2J160194015	VOCs
F2J180121	P-1 (78.7)	F2J180121006	VOCs
	P-1 (98.7)	F2J180121008	VOCs
	P-2 (78.5)	F2J180121001	VOCs
	P-2 (98.8)	F2J180121009	VOCs
	P-2-DUP-01 *Field Duplicate of P-2 (78.5)*	F2J180121003	VOCs
	TRIP BLANK *10-16-02*	F2J180121011	VOCs

Table 1-1: *Sample Cross-Reference List*			
Package Identification	***Client ID***	***Laboratory ID***	***Analysis Requested***
F2J220241	P-1 (299.14)	F2J220241033	VOCs
	TRIP BLANK *10-19-02*	F2J220241001	VOCs
F2J250192	P-1(301.16)	F2J250192012	VOCs
	TRIP BLANK *10-23-02*	F2J250192015	VOCs
	P-4 (106.8)	F2J300166005	VOCs
F2J300166	P-4 (77.5)	F2J300166003	VOCs
	P-4 (97.2)	F2J300166004	VOCs
	P-5 (107.5)	F2J300166006	VOCs
	P-5 (77.5)	F2J300166001	VOCs
	P-5 (97.5)	F2J300166002	VOCs
F2K010208	P-4 (197.65)	F2K010208036	VOCs
	P-5 (207.4)	F2K010208035	VOCs
	TRIP BLANK *10-30-02*	F2K010208011	VOCs
F2K050144	P-10 (198.15)	F2K050144003	VOCs
	P-10 (97.9)	F2K050144002	VOCs
	P-11 (107.4)	F2K050144001	VOCs
F2K060153	P-10 (107.95)	F2K060153007	VOCs
	P-10 (77.6)	F2K060153005	VOCs
	P-11 (167.4)	F2K060153008	VOCs
	P-11 (87)	F2K060153003	VOCs
	P-5 (292.4)	F2K060153001	VOCs
	P-5 (299.02)	F2K060153002	VOCs
	TRIP BLANK *11-03-02*	F2K060153009	VOCs
F2K080105	P-10 (264.5)	F2K080105003	VOCs
	P-11 (247.4)	F2K080105001	VOCs
	P-11 (281.13)	F2K080105004	VOCs
	TRIP BLANK *11-05-02*	F2K080105002	VOCs
F2K150247	P-12 (108)	F2K150247012	VOCs
	P-12 (78.85)	F2K150247011	VOCs
	P-12 (87.89)	F2K150247009	VOCs

Table 1-1: *Sample Cross-Reference List*

Package Identification	Client ID	Laboratory ID	Analysis Requested
F2K150247	P-12 (97.92)	F2K150247005	VOCs
	P-6 (102.8)	F2K150247002	VOCs
	P-6 (122.8)	F2K150247013	VOCs
	P-6 (82.8)	F2K150247001	VOCs
	P-9 (102.61)	F2K150247015	VOCs
	P-9 (162.61)	F2K150247010	VOCs
	P-9 (82.61)	F2K150247008	VOCs
	TRIP BLANK *11-13-02*	F2K150247014	VOCs
F2K180219	P-9 (232.61)	F2K180219001	VOCs
	TRIP BLANK *11-15-02*	F2K180219003	VOCs
F2K190242	P-3 (107.40)	F2K190242004REA	VOCs*
	P-3 (87.40)	F2K190242001REA	VOCs*
	P-6 (252.4)	F2K190242007REA	VOCs*
	P-6 (291.5)	F2K190242008REA	VOCs*
	TRIP BLANK *11-18-02*	F2K190242009REA	VOCs*
F2K220291	P-12 (207.43)	F2K220291006	VOCs
	P-12 (287.42)	F2K220291009	VOCs
	P-12 (297.41)	F2K220291007	VOCs
	P-3 (167.40)	F2K220291005	VOCs
	P-3 (227.40)	F2K220291004	VOCs
	P-7 (102.4) -UNFILTERED	F2K220291010	VOCs
	P-7 (82.4)	F2K220291002	VOCs
	TRIP BLANK *11-19-02*	F2K220291008	VOCs
F2K230165	P-2 (258.14)	F2K230165002	VOCs
	P-3 (304.40)	F2K230165003	VOCs
	P-7 (242.4)	F2K230165001	VOCs
	TRIP BLANK *11-21-02*	F2K230165004	VOCs
F2L060132	P-7 (301)	F2L060132003	VOCs
	P-8 (77.55)	F2L060132001	VOCs
	P-8 (97.55)	F2L060132002	VOCs

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Client ID***	***Laboratory ID***	***Analysis Requested***
F2L060132	TRIP BLANK *12-04-02*	F2L060132004	VOCs
F2L070156	P-13 (76.6)	F2L070156006	VOCs
	P-13 (86.6)	F2L070156007	VOCs
	P-13 (96.6)	F2L070156008	VOCs
	P-14 (77.82)	F2L070156009	VOCs
	P-14 (85.82)	F2L070156010	VOCs
	P-14 (95.17)	F2L070156011	VOCs
	P-2 (302.05)	F2L070156003	VOCs
	P-8 (167.55)	F2L070156004	VOCs
	P-8 (247.55)	F2L070156005	VOCs
	TRIP BLANK *12-06-02*	F2L070156013	VOCs
F2L120248	P-13 (237.30)	F2L120248002	VOCs
	P-16 (181.00)	F2L120248003	VOCs
	P-16 (231.00)	F2L120248004	VOCs
	P-16 (251.00)	F2L120248005	VOCs
	TRIP Blank *12-10-02*	F2L120248001	VOCs
F2L120270	P-13 (116.6)	F2L120270006	VOCs
	P-13 (176.6)	F2L120270007	VOCs
	P-14 (115.14)	F2L120270003	VOCs
	P-14 (204.7)	F2L120270009	VOCs
	P-16 (101)	F2L120270024	VOCs
	P-16 (121)	F2L120270025	VOCs
	P-16 (81)	F2L120270021	VOCs
	P-16 (91)	F2L120270023	VOCs
	P-8 (297.55)	F2L120270004	VOCs
	P-8 (302.55)	F2L120270005	VOCs
	TRIP BLANK *12-07-02*	F2L120270008	VOCs

Table Notes:
*The laboratory inadvertently performed SW846 Method 1311 (i.e., Toxicity Characteristic Leaching Procedure) on these samples. The actual results are reported using laboratory reporting limits that are above required practical quantitation limits specified in the QAPP. Re-sampling and re-analysis for these locations was not performed.

1.2. General Considerations

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Although the term is frequently used in discussing methodologies, it applies to all aspects of the analytical system and especially to samples, their measurements, and the actual data output. Accordingly, for the samples and analyses addressed herein, this report summarizes the findings of the review and outlines any deviations from the applicable QC criteria outlined in the following documents:

- GTE Operations Support Incorporated. (GTEOSI). 2002. *Soil Remediation Program Work Plan (QAPP: Appendix H), Former Sylvania Electric Products Facility, Hicksville, New York, Site Number V 00089-1*, Revision 2, October 2002.

- O'Brien & Gere Engineers, Inc. 2000. *Supplement to the Approved Work Plan (QAPP – Appendix C), Former Sylvania Electric Products Incorporated Facility, Cantiague Rock Road, Hicksville, New York.* Syracuse, New York.

- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* (SW846) USEPA, Final Update IIIA, April 1998.

- *Analytical Services Protocol (ASP), New York State Department of Environmental Conservation* (NYSDEC). Guidance documents including Exhibits A, B, C, D, E, F, G, H, and I. (June 2000)

- *United States Environmental Protection Agency Region II Contract Laboratory Program (CLP) Organics Data Review*, SOP No. HW-6, Revision #11 (USEPA 1996a); and

- *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review*, EPA 540-R-99-008, October 1999.

1.3. Analytical Methods

The environmental samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri for volatile organic compound (VOC) analyses. The laboratory used the following USEPA guidance methods for the analyses:

- SW846 Method 5030B Purge/Trap Analysis
- SW846 Method 8260B Gas Chromatography/Mass Spectrometry plus Tentatively Identified Compounds (TICs)

The laboratory assigned a sample delivery group (SDG) number to a group of samples during the sample log-in process. The SDG number is the means by which the laboratory tracks samples and controls QC analyses. A total of 18 SDGs contained one or more groundwater samples submitted for analysis. The SDG, field identification and laboratory identification for each sample are summarized in Table 1-1.

The following sections of this document address distinct aspects of the validation process. Section 2 lists the data QA/QC protocols used to validate the sample data. A summary of the findings associated with the validation and the specific QA/QC deviations and qualifications performed on the sample data are discussed in Section 3. Data completeness and usability are discussed in Section 4. Section 5 presents the Data Usability Summary Report (DUSR) Summary Information. A copy of the validated electronic deliverable data (EDD) is presented in Attachment A.

2. Data Validation Protocols

2.1. Sample Analysis Parameters

The validation of analyses for this project used guidance presented in the QAPP (GTEOSI, 2002), the analytical methodology, and the data validation guidelines referenced in Section 1.

URS performed a data review of all analytical results to assess data quality. A data review includes an assessment of sample handling protocols, supporting laboratory quality control (QC) parameters, and field QC. The following is a list of specific analytical information evaluated during the validation:

- Data package completeness review – per the NYSDEC ASP Category B or USEPA CLP deliverables requirements;
- Analytical methods performed and test method references;
- Sample condition - review of log-in records for cooler temperature, presence of headspace, chemical preservation, etc.;
- Holding times (comparison of collection, preparation, and analysis dates);
- Analytical results (units, values, significant figures, reporting limits, analyst, percent moisture);
- Sample traceability and comparison to raw data;
- Instrument tuning;
- Initial calibration – comparison to laboratory criteria;
- Continuing calibration – comparison to laboratory criteria;
- Method blank results and laboratory contamination;
- Laboratory control sample (LCS) results and comparison to laboratory control limits;
- Matrix spike/matrix spike duplicate (MS/MSD) results and comparison to laboratory control limits;
- Field replicate/duplicate results and comparison to data review criteria;
- Surrogate recoveries (where applicable) and comparison to laboratory control limits;
- Internal Standards (where applicable) and comparison to lab criteria;
- Tentatively Identified Compounds (TICs);
- Field QC sample (e.g., trip blanks, equipment blanks, etc.);
- Reporting limits and Dilutions; and
- Electronic Data Deliverables (EDDs) – comparison to the hardcopy analytical report (a 20% check of the data to confirm that the results in the hardcopy report matched the results in the electronic file).

The analytical reports were reviewed for completeness and the accompanying QC data were reviewed for acceptable performance. In case documentation was incomplete, the laboratory was required to provide the missing information. When QC results indicated poor performance, URS applied data qualifiers to the results to inform the data user of the possible performance problem. These qualifiers are in addition to or a revision of the qualifiers provided by the laboratory. A summary of the data qualifiers used for this review is presented in Section 2.2.

2.2. Data Qualifiers

The following qualifiers have been used by the laboratory:

"U" Non-detect result at the established laboratory reporting limit (adjusted for percent moisture, if applicable).

"B" Associated with a result if the compound was identified in the corresponding method blank.

"J" Indicates an estimated value or a value below the established reporting limit but above the method detection limit.

"E" This flag identifies compounds whose concentrations exceed the calibration range of the instrument for the specific analysis; data qualified with an "E" are qualitative only and not useable for quantitative purposes. All results qualified with an "E" were required to be re-analyzed using an applicable dilution and re-reported.

Laboratory qualifiers defined above, are retained in the final database unless revised during the data validation process to one of the following qualifiers:

"U" The chemical was not detected. Value shown is the reporting limit.

"J" Estimated concentration because the result was below the sample reporting limit or quality control criteria were not met.

"UJ" The chemical was not detected at or above the sample reporting limit. However, the reporting limit is approximate and may or may not represent the actual limit of reporting necessary to accurately and precisely measure the chemical in the sample.

2.3. Data Usability Summary Report Questions

The DUSR determines whether or not the data meets site-specific criteria for data quality and use. It was developed by reviewing and evaluating the analytical data packages. During the course of this review the following questions were addressed (where applicable):

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

2. Have all holding times been met?

3. Do all the QC data: blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?

4. Have all of the data been generated using established and agreed upon analytical protocols?

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

6. Have the correct data qualifiers been used?

The answers to the questions presented by the DUSR are presented in the following sections of the report and in the DUSR Summary Information Section, Section 5.

3. Data Quality Evaluation

3.1. Summary

This section summarizes whether the QA/QC parameters specified in Section 2.1 met validation criteria. A summary of the individual components of the review are described in the following sections.

3.2. Review of Validation Criteria

3.2.1. Completeness Review

The laboratory provided the analytical report in the New York State Department of Environmental Conservation (NYSDEC) format. Nearly all necessary documents were included in the report package including a case narrative summarizing the QC issues associated with the project analyses. In just a few isolated cases, the laboratory was asked to provide missing documentation, which included a run-log and an initial calibration run. The laboratory provided all information requested by URS.

3.2.2. Test Methods

The laboratory performed the analyses for most analyses using the analytical test methods listed in Section 1.3. These included SW846 Method 5030B (aqueous sample purge/trap analysis) followed by Method 8260B (gas chromatography/mass spectrometry). Most samples were analyzed using a 25-mL purge volume which allows lower reporting limits for each compound.

For five project samples, however, the laboratory inadvertently performed SW846 Method 1311 (i.e., Toxicity Characteristic Leaching Procedure). The analysis was performed using a dilution (20x) which caused reporting limits to be raised above the practical quantitation limits specified in the QAPP (GTEOSI, 2002). Re-analysis was not performed since sample holding times had expired before the error was noticed. Re-sampling and re-analysis for these locations was not performed due to the identification of some target compounds within the matrix at levels above the PQLs. No qualification of the results was performed since batch QC analyses were acceptable. Qualification is also not required by the guidance methods for a result associated with a diluted analysis. The affected project samples include:

Table 3-1: Samples Analyzed by an Inappropriate Test Method

Package Identification	Client ID	Laboratory ID
F2K190242	P-3(107.40)	F2K190242004REA
	P-3(87.40)	F2K190242001REA
F2K190242	P-6(252.4)	F2K190242007REA
	P-6(291.5)	F2K190242008REA
	TRIP BLANK *11-18-02*	F2K190242009REA

REA – Indicates a laboratory reanalysis or an analysis performed with a diluted sample.

3.2.3. Sample Receipt

The laboratory received 103 aqueous samples for VOC analysis between October 13, 2002 and December 11, 2002. The sample temperatures at the time of receipt were within the recommended temperature range

of 4°C±2°C for all SDGs. Field and laboratory personnel completed the Chain-of-Custody (COC) documents correctly recording the signature, date, and time of custody transfer.

The laboratory recorded the condition of the samples at the time of receipt on a "Conditions Upon Receipt Form." This Form identifies whether the containers were received undamaged, within the proper temperature range, at the proper pH, in a container that is sealed with a custody seal on the exterior, and with a completed COC enclosed to identify all samples submitted to the laboratory. For most SDGs, this form was completed properly. For one SDG, F2K150247, the laboratory did not record sufficient information on the form to assess the proper sample condition upon receipt. (The laboratory only recorded the sample temperature and the presence of a custody seal on the container). No qualification of data was required for this error. However, the laboratory was informed that all log-in forms must be completed appropriately for all future investigations. The samples associated with this SDG are as follows: P-12 (108), P-12 (78.85), P-12 (78.85), P-12 (87.89), P-12 (87.89), P-12 (97.92), P-6 (102.8), P-6 (102.8), P-6 (122.8), P-6 (82.8), P-9 (102.61), P-9 (102.61), P-9 (162.61), P-9 (82.61), and TRIP BLANK (11-13-02). Additionally, the laboratory identified the presence of headspace in the VOC sample containers for one project sample. Headspace in a VOC container can negatively bias the VOC results due to the loss of VIC compounds within that headspace. The VIC results for P-12 (207.43) were qualified as estimated ("J" or "UJ") to indicate the potential bias.

Table 3-2. *Evaluation of Sample Headspace*

Package Identification	*Client ID*	*Laboratory ID*	*Action*
F2K220291	P-12 (207.43)	F2K220291006	UJ – all non-detect results J – all positive results above the laboratory reporting limit.

3.2.4. Holding Times

The laboratory performed most VOC analyses within EPA-recommended holding time of 14-days for acid preserved samples. The Trip Blank collected on November 5, 2002 contained acetone at a concentration that exceeded the laboratory's calibration range. The laboratory did not identify the exceedance until the hold time for the VOC analysis had passed. The VOC results associated with the reanalysis (F2K080105002REA) were qualified as estimated ("J" or "UJ") to indicate the potential bias. With the exception of the acetone result, the initial results for the November 5th Trip Blank were retained in the final data set.

Table 3-3. *Evaluation of Holding Times*

Package Identification	*Client ID*	*Laboratory ID*	*Action*
F2K080105	Trip Blank	F2K080105002REA	UJ – all non-detect results J – all positive results above the laboratory reporting limit

REA – Laboratory reanalysis of the sample.

3.2.5. Analytical Results

For each sample tested, the laboratory provided the analytical test information using the Contract Laboratory Program (CLP) format. This format requires the use of stylized forms to present critical information pertaining to the analyses performed. For all analytical results, the laboratory provided a Form I with the reported analytical results for the requested analyses. The Form I format shows the following information for organic analyses: the laboratory name; laboratory code; matrix; sample weight

per volume; the gas chromatography (GC) column identification; the sample identification; the laboratory file identification; the date the sample was received; the date the sample was analyzed; the dilution factor; the chemical abstract service (CAS) number; the units of measure; and the laboratory qualifier (if any). Additional CLP forms were provided (e.g., II, III, etc.) to report applicable QC information for the analyses performed. The laboratory provided all the appropriate forms for the VOC method.

3.2.6. Traceability to Raw Data

Traceability of the VOC analyses is established by Form V (Instrument Performance Check). These forms list the project samples analyzed per laboratory batch processed and the corresponding QC samples performed with the project samples. All project samples for all SDGs were included on the applicable forms.

3.2.7. Instrument Tuning

The GC/MS instrument performance [i.e., "tuning data," or a check of mass spectral ion intensities using bromofluorobenzene (BFB)] met method criteria. The instrument performance was checked prior to calibration and once every 12-hour shift for all analytical QC batches.

3.2.8. Initial Calibration

The initial calibrations (ICALs) met data validation criteria (i.e., relative response factors (RRFs) were greater than method criteria for the System Performance Check Compounds (SPCCs), and the relative percent standard deviations (%RSDs) were less than 15% for Calibration Check Compounds (CCCs)). Additionally, for all target compounds, method requirements recommend that RRFs be greater than 0.05 and that compounds be quantitated using the average relative response factor (avgRRF) only if the %RSD is less than 15%. The guidance method recommends that all compounds with a %RSD greater than 15% be quantitated with a calibration curve rather than the avgRRF. The laboratory does not prepare a calibration curve for compounds with a %RSD greater than 15% as recommended within the guidance method. Rather, the laboratory uses an alternate approach to the ICAL evaluation by evaluating the avgRRF (for all compounds calibrated). If their avgRRF is less than 15% (across all compounds) then the laboratory considers this to mean that they have met method criteria for the ICAL. Since this evaluation approach is not widely used, a conservative approach was used for the validation process and all results were qualified as estimated ("J" or "UJ") that were associated with the laboratory ICALs that had a %RSD greater than 15%. Table 3-4 shows the samples and results qualified as estimated.

Table 3-4. *Evaluation of Initial Calibration Results*

Package Identification	Sample ID	Compounds*	Action
F2J160194	DUP DUP (rea) EB-101302 MW-1 MW-10 MW-10 (rea) MW-11 MW-12 MW-2 MW-3 MW-3 (rea) MW-4 MW-4 (rea) MW-5 MW-6 MW-7 MW-7 (rea) MW-8 MW-9 MW-9 (rea) TRIP BLANK 10-13-02	%RSD: 2-butanone, acetone, methylene chloride, bromomethane	%RSD >15% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2J180121	P-1 (78.7) P-1 (98.7) P-2 (78.5) P-2 (78.5) (rea) P-2 (98.8) P-2-DUP-01 P-2-DUP-01 (rea) TRIP BLANK 10-16-02	%RSD: acetone, methylene chloride, bromomethane, 4-methyl-2-pentanone	%RSD >15% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2J220241	P-1 (299.14) TRIP BLANK 10-19-02	%RSD: acetone, methylene chloride, bromomethane RRF: 2-butanone, acetone, bromomethane, methylene chloride	%RSD >15% UJ – all non-detect results J – all positive results above the laboratory reporting limit RRF < 0.05 UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2J250192	P-1(301.16) TRIP BLANK 10-23-02	%RSD: methylene chloride, bromomethane RRF: 2-butanone, acetone	%RSD >15% UJ – all non-detect results J – all positive results above the laboratory reporting limit RRF < 0.05 UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2J300166	P-4 (106.8) P-4 (77.5) P-4 (97.2) P-5 (107.5) P-5 (107.5) (rea) P-5 (77.5) P-5 (77.5) (rea) P-5 (97.5) P-5 (97.5) (rea)	%RSD: 2-butanone, acetone, methylene chloride	%RSD >15% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2K010208	P-4 (197.65) P-5 (207.4) TRIP BLANK 10-30-02	%RSD: 2-butanone, acetone, methylene chloride	%RSD >15% UJ – all non-detect results J – all positive results above the laboratory reporting limit

Table 3-4. *Evaluation of Initial Calibration Results*

Package Identification	*Sample ID*	*Compounds**	*Action*
F2K050144	P-10 (198.15) P-10 (198.15) (rea) P-10 (97.9) P-10 (97.9) (rea) P-11-107.4	%RSD: 2-butanone, acetone, methylene chloride, bromomethane RRF: 2-butanone, bromomethane, methylene chloride	%RSD >15% UJ – all non-detect results J – all positive results above the laboratory reporting limit RRF < 0.05 UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2K060153	P-10 (107.95) P-10 (107.95) (rea) P-10 (77.6) P-10 (77.6) (rea) P-11 (167.4) P-11 (87) P-5 (292.4) P-5 (299.02) P-5 (299.02) (rea) TRIP BLANK 11/03/02 TRIP BLANK 11/03/02 (rea)	%RSD: 2-butanone, acetone, methylene chloride, bromomethane	%RSD >15% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2K080105	P-10 (264.5) P-11 (247.4) P-11 (281.13) TRIP BLANK 11-05-02 TRIP BLANK 11-05-02 (rea)	%RSD: 2-butanone, acetone, methylene chloride, bromomethane	%RSD >15% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2K150247	P-12 (108) P-12 (78.85) P-12 (78.85) (rea) P-12 (87.89) P-12 (87.89) (rea) P-12 (97.92) P-6 (102.8) P-6 (102.8) (rea) P-6 (122.8) P-6 (82.8) P-9 (102.61) P-9 (102.61) (rea) P-9 (162.61) P-9 (82.61) TRIP BLANK 11-13-02	%RSD: 2-hexanone RRF: 2-butanone, acetone	%RSD >15% UJ – all non-detect results J – all positive results above the laboratory reporting limit RRF < 0.05 UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2K180219	P-9 (232.61) TRIP BLANK 11-15-02	%RSD: bromomethane, chloroethane, methylene chloride, tetrachloroethene	%RSD >15% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2K190242	P-3 (107.40) P-3 (87.40) P-6 (252.4) P-6 (291.5) TRIP BLANK 11-18-02	%RSD: acetone, bromomethane, methylene chloride, chloromethane	%RSD >15% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2K220291	P-12 (207.43) P-12 (287.42) P-12 (287.42) (rea) P-12 (297.41) P-3 (167.40) P-3 (227.40) P-7 (102.4) –Unfiltered P-7 (82.4) TRIP BLANK 11-19-02	%RSD: 2-butanone, acetone, methylene chloride, bromomethane	%RSD >15% UJ – all non-detect results J – all positive results above the laboratory reporting limit

Table 3-4. *Evaluation of Initial Calibration Results*

Package Identification	Sample ID	Compounds*	Action
F2K230165	P-2 (258.14) P-3 (304.40) P-7 (242.4) TRIP BLANK 11-21-02	%RSD: 2-butanone, acetone, methylene chloride, bromomethane	%RSD >15% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2L060132	P-7 (301) P-8 (77.55) P-8 (97.55) TRIP BLANK 12-04-02	%RSD: 2-butanone, acetone	%RSD >15% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2L070156	P-13 (76.6) P-13 (86.6) P-13 (96.6) P-14 (77.82) P-14 (77.82) (rea) P-14 (85.82) P-14 (85.82) (rea) P-14 (95.17) P-2 (302.05) P-8 (167.55) P-8 (247.55) TRIP BLANK 12-6-02	%RSD: 2-butanone, acetone, methylene chloride, bromomethane	%RSD >15% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2L120248	P-13 (237.30) P-13 (237.30) (rea) P-16 (181.00) P-16 (231.00) P-16 (251.00) Trip Blank 12-10-02	%RSD: 2-butanone, acetone, methylene chloride, bromomethane	%RSD >15% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2L120270	P-13 (116.6) P-13 (116.6) (rea) P-13 (176.6) P-14 (115.14) P-14 (204.7) P-16 (101) P-16 (101) (rea) P-16 (121) P-16 (81) P-16 (81) (rea) P-16 (91) P-16 (91) (rea) P-8 (297.55) P-8 (302.55) TRIP BLANK 12-07-02	%RSD: 2-butanone, acetone, methylene chloride, bromomethane RRF: 2-butanone, acetone	%RSD >15% UJ – all non-detect results J – all positive results above the laboratory reporting limit RRF < 0.05 UJ – all non-detect results J – all positive results above the laboratory reporting limit

Notes:
*Not all compounds listed are affected by exceedances of %RSD and avgRRF. The final EDD shows the final qualifiers for the project.
rea – Indicates a laboratory reanalysis.

3.2.9. Continuing Calibration

The continuing calibration (CCAL) verification analyses were performed with a mid-level standard immediately following the tuning check at the beginning of each 12-hour analytical sequence. The CCAL verification analyses met data validation criteria (i.e., RRFs were <0.05 for the SPCCs, and the percent differences (%Ds) from the avgRRF were < 20% for the CCCs) for all analytical QC batches. For the target compounds, the %Ds were greater than 20% for multiple compounds. Although method criteria were met, as a conservative approach the results associated with a CCAL that exceeded 20%D were qualified as estimated ("J" or "UJ"). Table 3-5 shows a summary of the samples and qualified parameters.

Table 3-5. *Evaluation of Continuing Calibration Results*

Package Identification	Sample ID	Compounds*	Action
F2J160194	DUP DUP (rea), EB-101302 MW-1 MW-10 MW-10 (rea) MW-11 MW-12 MW-2 MW-3 MW-3 (rea) MW-4 MW-4 (rea) MW-5 MW-6 MW-7 MW-7 (rea) MW-8 MW-9 MW-9 (rea) TRIP BLANK 10-13-02	2-butanone, 2-hexanone	%D > 20% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2J220241	P-1 (299.14) TRIP BLANK 10-19-02	Acetone, methylene chloride	%D > 20% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2J250192	P-1(301.16) TRIP BLANK 10-23-02	2-hexanone, acetone, bromomethane, methylene chloride	%D > 20% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2J300166	P-4(106.8) P-4(77.5) P-4(97.2) P-5(107.5) P-5(107.5) (rea) P-5(77.5) P-5(77.5) (rea) P-5(97.5) P-5(97.5) (rea)	2-hexanone, methylene chloride, chloromethane, 4-methyl-2-pentanone, bromomethane	%D > 20% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2K050144	P-10 (198.15), P-10 (198.15) (rea) P-10 (97.9) P-10 (97.9) (rea) P-11-107.4	2-hexanone, methylene chloride, chloromethane, bromomethane	%D > 20% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2K060153	P-5 292.4	2-hexanone, methylene chloride, bromoform, 4-methyl-2-pentanone, bromomethane, chloroform	%D > 20% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2K080105	P-10 (264.5) P-11 (247.4) P-11 (281.13) TRIP BLANK 11-05-02 TRIP BLANK 11-05-02 (rea)	2-hexanone, methylene chloride, 4-methyl-2-pentanone, bromomethane, chloroform	%D > 20% UJ – all non-detect results J – all positive results above the laboratory reporting limit

Table 3-5. *Evaluation of Continuing Calibration Results*

Package Identification	***Sample ID***	***Compounds****	***Action***
F2K150247	P-12 (108) P-12 (78.85) P-12 (78.85) (rea) P-12 (87.89) P-12 (87.89) (rea) P-12 (97.92) P-6 (102.8) P-6 (102.8) (rea) P-6 (122.8) P-6 (82.8) P-9 (102.61) P-9 (102.61) (rea) P-9 (162.61) P-9 (82.61) TRIP BLANK 11-13-02	Acetone, 2-hexanone, bromomethane	%D > 20% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2K180219	P-9 (232.61') TRIP BLK 11-15-02	2-butanone, acetone, bromoform, chloromethane,	%D > 20% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2K190242	P-3 (107.40) P-3 (87.40) P-6 (252.4) P-6 (291.5) TRIP BLANK 11-18-02	acetone, chloromethane,	%D > 20% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2K220291	P-12 (207.43) P-12 (287.42) P-12 (287.42) P-12 (297.41) P-3 (167.40) P-3 (227.40) P-7 (102.4) –UNFILTERED P-7 (82.4) TRIP BLANK 11-19-02	2-hexanone, 4-methyl-2-pentanone, bromomethane, chloromethane, trans-1,3-dichloropropene	%D > 20% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2K230165	P-2 (258.14) P-3 (304.40) P-7 (242.4) TRIP BLANK 11-21-02	2-hexanone, 4-methyl-2-pentanone, chloromethane, trans-1,3-dichloropropene	%D > 20% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2L060132	P-7 (301) P-8 (77.55) P-8 (97.55) TRIP BLANK 12-04-02	2-hexanone, 4-methyl-2-pentanone, bromomethane	%D > 20% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2L070156	P-13 (76.6) P-13 (86.6) P-13 (96.6) P-14 (77.82) P-14 (77.82) P-14 (85.82) P-14 (85.82) P-14 (95.17) P-2 (302.05) P-8 (167.55) P-8 (247.55) TRIP BLANK 12-6-02	2-hexanone, methylene chloride, 4-methyl-2-pentanone, bromomethane	%D > 20% UJ – all non-detect results J – all positive results above the laboratory reporting limit

Table 3-5. *Evaluation of Continuing Calibration Results*

Package Identification	Sample ID	Compounds*	Action
F2L120248	P-13 (237.30) P-13 (237.30) P-16 (181.00) P-16 (231.00) P-16 (251.00) Trip Blank 12-10-02	Carbon tetrachloride, acetone, bromomethane, methylene chloride	%D > 20% UJ – all non-detect results J – all positive results above the laboratory reporting limit
F2L120270	P-13 (116.6) P-13 (116.6) P-13 (176.6) P-14 (115.14) P-14 (204.7) P-16 (101) P-16 (101) P-16 (121) P-16 (81) P-16 (81) P-16 (91) P-16 (91) P-8 (297.55) P-8 (302.55) TRIP BLANK 12-07-02	2-hexanone, acetone, carbon tetrachloride, 1,1-dichloroethane, 4-methyl-2-pentanone	%D > 20% UJ – all non-detect results J – all positive results above the laboratory reporting limit

*Not all compounds listed in column 3 affect all project samples shown. The attached EDD shows the final qualifiers assigned to the project sample results based on the validation criteria for all QC sample analyses.

3.2.10. Laboratory Method Blanks

In general, nearly all laboratory method blanks contained trace levels of one of more of laboratory contaminants including: acetone, methylene chloride, toluene, and chloromethane. The corresponding project sample results for the identified contaminants were revised to non-detect results if the associated sample results were less than 5 times the method blank results for laboratory contaminants in accordance with the QAPP (GTEOSI, 2002). Nearly all samples were affected by this qualification practice. A summary of the samples and compounds that were revised for the VOCs is presented in Table 3-6.

Table 3-6. *Evaluation of Laboratory Method Blank Results*

Package Identification	Client ID	Laboratory ID	Action
F2J160194	MW-4 (rea)	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	MW-7	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
F2J300166	P-4 (106.8) P-4 (77.5) P-4 (97.2) P-5 (77.5) P-5 (107.5) (rea) P-5 (97.5) (rea)	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-5 (107.5)	Acetone, methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-5 (77.5)	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
F2K060153	P-10 (77.6)	Toluene	Revise "B" qualifier to "U" to indicate non-detect result
F2K050144	P-10 (97.9) (rea) P-10 (198.15) P-10 (198.15) (rea)	Acetone, methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result

Table 3-6. *Evaluation of Laboratory Method Blank Results*

Package Identification	Client ID	Laboratory ID	Action
F2K150247	P-12 (87.89) P-12 (87.89) (rea) P-9 (82.61)	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
F2K190242	P-3 (87.40) P-3 (107.4) P-6 (252.4) P-6 (291.5)	Carbon disulfide, methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
F2L060132	P-7 (301) P-8 (77.55) P-8 (97.55)	Acetone, Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
F2L120248	P-13 (237.00) P-13 (237.00) (rea) P-16 (181.00) P-16 (231.00) P-16 (251.00)	Acetone	Revise "B" qualifier to "U" to indicate non-detect result

(rea) – Indicates a laboratory reanalysis of the sample.

3.2.11. Laboratory Control Sample Results

The laboratory analyzed a laboratory control sample (LCS) for all QC batches. The percent recoveries were within laboratory control limits for almost all QC batches. Where recoveries exceeded laboratory control limits, the associated data were qualified as estimated ("J" or "UJ") using the following validation guidance: 1) if the percent recovery was greater than the upper control limit, positive results were qualified as estimated; non-detects were not qualified; 2) if the percent recovery was below the lower control limit, both positive and non-detect results were qualified ("J" or "UJ"). Table 3-7 shows the samples that were qualified as estimated due to LCS percent recoveries exceeding laboratory control limits. All results associated with LCS recoveries above the laboratory control limits were non-detect, and therefore, did not require qualification. Consequently, these samples are not listed in Table 3-7.

Table 3-7. *Evaluation of Laboratory Control Sample Results*

Package Identification	Client ID	Compound	Action
F2K010208	P-4 (197.65) P-5 (207.4) TRIP BLANK 10-30-02	Bromomethane	"UJ" (low %R)
F2K080105	P-11 (247.4)	Methylene chloride	"UJ" (low %R)

3.2.12. Matrix Spike/Matrix Spike Duplicate Analyses

Multiple project samples were submitted for MS/MSD analyses. Where recoveries exceeded laboratory control limits, the associated data were qualified as estimated ("J" or "UJ") using the following validation guidance: 1) if the percent recovery was greater than the upper control limit, positive results were qualified as estimated; 2) if the percent recovery was below the lower control limit, both positive and non-detect results were qualified ("J" or "UJ"). No qualification of data is required when percent recoveries are above the upper control limit and the VOC results are non-detect. Table 3-8 shows the samples that were qualified as estimated due to MS/MSD percent recoveries exceeding criteria. Table 3-8 does not list cases where the MS/MSD percent recoveries were greater than the upper control limit and the results were non-detect.

Table 3-8. *Evaluation of Matrix Spike/Matrix Spike Duplicate Sample Results*

Package Identification	Client ID	Compound	Action
F2J180121	P-2 (78.5)	Tetrachloroethene	"J" (high %R)
F2K050144	P-10 (198.15)	Carbon disulfide	"J" (high %R)
F2K060153	P-10 (77.6)	Methylene chloride Trans-1,3-dichloropropene Trichloroethene Tetrachloroethene	"UJ" (low %R)
F2L120248	P-16 (181.00)	Chloroform	"J" (low %R)

3.2.13. Field Duplicate Analyses

Two project samples were submitted as field duplicates. An evaluation of the precision of the field sampling procedure (as well as the laboratory analysis procedure) was made based on the relative percent difference (RPD) calculated for the original and duplicate sample results. RPD calculations were made only when both results were above the laboratory reporting limits. The RPD values for all compounds were less than 30% (aqueous data evaluation criteria).

It should be noted that QAPP requirements (GTEOSI, 2002) specified that a field duplicate sample be collected at a rate of one sample for every ten samples (collection rate of 10%). Nine field duplicates were required to be collected for the project since a total of 87 project samples were submitted for analysis. Although the precision objective for the two field duplicates submitted was achieved, an appropriate number of field duplicate samples were not collected to adequately assess precision. Therefore, precision is considered unknown because of the limited number of field duplicate samples collected.

3.2.14. Trip Blanks and Equipment Blanks

Multiple trip blanks and one equipment blank were submitted for the groundwater sampling project. Two sample delivery groups were submitted to the laboratory without a trip blank (F2J300166 and F2K050144). The reason for the oversight was not identified by field personnel. No assessment of the affect of sample cross-contamination during the shipping process could be made for these SDGs. Many of the trip blanks that were submitted contained common contaminants, including acetone, methylene chloride, and toluene. The equipment blank also contained acetone, methylene chloride, and chloromethane. Revisions to the affected target compounds were based on trip blank and equipment blank contamination, in accordance with practices described in the validation guidance documents listed in Sections 1.2 and 3.2.10 (method blank contamination). It should be noted that the results for the trip blanks and the equipment blank were not revised but the original result and laboratory qualifiers were retained to show data users the presence and concentrations of contamination that was used to qualify the project sample results. The contamination in the trip blanks and equipment blank, like the project samples, is potentially attributable to contamination from laboratory processing of samples, cross-contamination from samples during shipment, or contamination during the preparation of these QC samples (at the laboratory). Table 3-9 shows the samples and compounds that were qualified as non-detect ("U") or as estimated ("J") due to QC sample contamination.

Table 3-9. *Evaluation of Trip Blank and Equipment Blank Results*

Package Identification	Sample ID	Compound	Action
F2J160194	DUP (rea) MW-1 MW-10 MW-12 MW-3	Acetone, methylene chloride	Revised result to "U" (non-detect)
	MW-10 (rea) MW-11 MW-2 MW-3 (rea) MW-5 MW-7 (rea)	Methylene chloride	Revised result to "U" (non-detect)
	MW-4 MW-6 MW-7	Acetone	Revised result to "U" (non-detect)
	MW-4 (rea) MW-9	Acetone, chloromethane, methylene chloride	Revised result to "U" (non-detect)
	MW-8	Acetone, chloromethane	Revised result to "U" (non-detect)
F2J220241	P-1 (299.14)	Acetone	Revised result to "U" (non-detect)
F2J250192	P-1 (301.16)	Acetone	Revised result to "U" (non-detect)
F2K180219	P-9 (232.61)	Toluene	Revised result to "U" (non-detect)
F2J180121	P-2 (78.5)	Methylene chloride	Revised result to "U" (non-detect)

rea – indicates a laboratory re-analysis

3.2.15. System Monitoring Compounds

The percent recoveries for the VOC surrogates were within laboratory control limits for most project samples. Several project samples had one of a total of three surrogate recoveries outside laboratory control limits. When one of three surrogate recoveries is either above or below laboratory control limits, qualification of VOC results is not required per USEPA guidance documents. For this dataset, no qualification was required based on exceedances of the surrogate percent recoveries.

3.2.16. Internal Standards

The responses of most internal standards associated with target compounds were within the range of 50-200% of the associated calibration verification for all project samples. All internal standard retention times were within ± 30 seconds from that of the most recent calibration for all analyses. Table 3-10 shows the samples and compounds that were qualified as estimated due to internal standard value exceedances.

Table 3-10. *Evaluation of Internal Standard Values*

Package Identification	Sample ID	Compound	Action
F2J160194	DUP	1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene	"UJ" – non-detects
	DUP (rea)	1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, 2-hexanone, bromoform, chlorobenzene, ethylbenzene, styrene, tetrachloroethene, toluene, trans-1,3-dichloropropene, total xylenes	"J" – positive results "UJ" – non-detects

rea – indicates a laboratory re-analysis

3.2.17. Compound Identification and Quantitation of Results

The laboratory's evaluations of the gas chromatographs and mass spectra for the identified compounds were acceptable for most project samples with one exception. The laboratory identified carbon tetrachloride in sample P-7 (102.4)-Unfiltered, but the result was revised to non-detect by the laboratory after a secondary QA review. The validation found that the retention time for the peak identified as carbon tetrachloride was not within the daily retention time window established by the CCAL. A revised analytical report for this compound was issued by the laboratory. However, rather than reissue the EDD, URS agreed to revise the electronic database to show carbon tetrachloride as a non-detect result (qualified "U" at the laboratory reporting limit) in accordance with the laboratory's revised report.

Additionally, the laboratory performed analysis on several samples (including MW-2, MW-5, MW-12, P-6 (82.8), P-9 (102.61), P-11 (167.4), P-13 (76.6), P-13 (86.6), P-13 (96.6), and P-14 (95.14)) using a dilution. There were no undiluted analyses reported for these results. All reporting limits for the target compounds are elevated due to the dilutions. The laboratory narrated this information, as required by the guidance documents, but was also informed that for future investigations, samples should be analyzed without a dilution (or with a small dilution, whenever possible) to provide the lowest reporting limits for the compounds of concern.

Additionally, many project samples contained elevated concentrations of some target compounds that exceeded the calibration range for the VOC analysis. The laboratory reported and qualified these results with an "E" qualifier. As part of the laboratory's corrective action, the affected samples were reanalyzed at a dilution to obtain usable results within the established calibration curve range. In two cases, however, the re-analyses resulted in non-detect results for two parameters which were originally detected in the undiluted sample. The samples are P-16 (81) and P-15 (91) and the affected compounds are cis-1,2-dichloroethene and trichloroethene. Since "E" qualified data are not used for quantitative purposes, the re-analysis results were required to be reported ("U"-qualified results). The "U" qualified results had elevated reporting limits due to the diluted analysis. The data user should be aware of the presence of these two chemicals in the subject samples. A list of the re-analyzed samples and the affected parameters are listed in Table 3-11.

Table 3-11: *Summary of Laboratory Re-Analyses*

Package Identification	***Client ID***	***Laboratory ID***	***Compound Reported From Re-Analysis***
F2J160194	MW-10	F2J160194005REA	Tetrachlorethene
	MW-3	F2J160194001REA	Tetrachlorethene
	MW-4	F2J160194002REA	Tetrachlorethene
	MW-7	F2J160194013REA	Tetrachlorethene
F2J160194	MW-9	F2J160194004REA	Tetrachlorethene
F2J180121	P-2 (78.5)	F2J180121001REA	Tetrachlorethene
	P-2-DUP-01	F2J180121003REA	Tetrachlorethene
F2J300166	P-5 (107.5)	F2J300166006REA	Tetrachlorethene
	P-5 (77.5)	F2J300166001REA	Tetrachlorethene
	P-5 (97.5)	F2J300166002REA	Tetrachlorethene

Table 3-11: Summary of Laboratory Re-Analyses

Package Identification	Client ID	Laboratory ID	Compound Reported From Re-Analysis
F2K050144	P-10 (97.9)	F2K050144002REA	Tetrachlorethene
F2K060153	P-10 (107.95)	F2K060153007REA	Tetrachlorethene
	P-10 (77.6)	F2K060153005REA	Tetrachlorethene
F2K080105	TRIP BLANK 11-05-02	F2K080105002REA	Acetone
F2K150247	P-12 (78.85)	F2K150247011REA	Tetrachlorethene Trichloroethene
	P-12 (87.89)	F2K150247009REA	Tetrachlorethene
	P-6 (102.8)	F2K150247002REA	Tetrachlorethene
F2K150247	P-9 (102.61)	F2K150247015REA	Tetrachlorethene
F2L070156	P-14 (85.82)	F2L070156010REA	Tetrachlorethene
F2L120248	P-13 (237.30)	F2L120248002REA	Trichlorethene
F2L120270	P-13 (116.6)	F2L120270006REA	Tetrachlorethene
	P-16 (101)	F2L120270024REA	Tetrachlorethene
	P-16 (81)	F2L120270021REA	Tetrachlorethene Cis-1,3-dichloroethene* Trichloroethene*
	P-16 (91)	F2L120270023REA	Tetrachlorethene Cis-1,3-dichloroethene* Trichloroethene*

*Results detected in an undiluted analysis but qualified with an "E" by the laboratory due to exceedances of the calibration curve range. Because of the large dilution performed to obtain results for another target compound (tetrachloroethene), these two compounds were reported as non-detect ("U"- qualified) at an elevated reporting limit. The compounds are present in the sample; however, an accurate quantity was not reported by the laboratory.

3.2.18. Tentatively Identified Compounds (TICs)

The laboratory was required to perform a library search for Tentatively Identified Compounds (TICs) present in the sample and QC matrices for the VOC analyses. TICs were identified most frequently in the laboratory method blanks and only in a few project samples. Since the TIC evaluation provides only the identity of a possible compound in the matrix and not the actual concentration of a compound, all TIC data should be considered qualitative (i.e., not usable for quantitative purposes). The "J" qualifier was added to all TIC results to indicate to the data user that the data are estimated. The TICs identified in the project and laboratory QC samples are shown in Attachment A.

4. Summary and Data Usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. Overall, 100 percent of the VOC data were determined to be usable for qualitative and quantitative purposes. Those sample results qualified as estimated ("J" and "UJ") due to data validation QA/QC exceedances should be considered conditionally usable. TICs, qualified as "J," are not usable as there is only presumptive evidence of the compounds presence in the project sample.

The samples collected from the Site in Hicksville, New York were evaluated based on QA/QC criteria established by methods as listed in Section 1.3, by the data validation guidelines listed in Section 1.2, and by the QAPP (GTEOSI, 2002) established for this project. Major deficiencies in the data generation process would have resulted in data being rejected, indicating that the data are considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process resulted in some sample data being characterized as approximate or estimated. Identification of a data point as approximate indicates uncertainty in the reported concentration or detection limit of the chemical, but not its assigned identity.

The following paragraphs present the adherence of the data to the precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS) parameters.

Precision is measured through the evaluation of field duplicate samples and laboratory duplicate samples. For the VOC analyses, none of the data were rejected due to precision non-conformances.

LCS recoveries indicate the accuracy of the data. For the VOC analyses, none of the data were rejected due to accuracy non-conformances.

Holding times, sample preservation, blank analysis, and analyte identification and quantification are indicators of the representativeness of the analytical data. None of the VOC data were rejected due to representativeness non-conformances.

Comparability is not compromised, provided that the analytical methods do not change over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures were consistently used by the laboratory, the comparability criteria for the analytical data were met.

Sensitivity is established by reported detection limits that represent measurable concentrations of analytes that can be determined with a designated level of confidence. Sensitivity requirements were not met for several project samples due to the necessity of analyzing samples using significant dilutions. However, none of the VOC data were rejected due to sensitivity non-conformances.

5. Data Usability Summary Report Summary Information

The DUSR was performed to determine whether or not the data meets site-specific criteria for data quality and use. The DUSR is developed by reviewing and evaluating the analytical data package. The following questions were addressed:

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

The QAPP required that USEPA Level III deliverables be provided by the laboratory for each data package. This requirement was met as it applies to the methods used by the laboratory for sample analysis. The evaluation of the sample data was completed using the information provided in the data packages provided by the laboratory.

2. Have all holding times been met?

The holding times were met for the majority of VOC analyses. See Section 3.2.4 for sample and parameters qualified due to hold time exceedances.

3. Do all the QC data: blanks, standards, spike recoveries, replicate analyses, and sample data fall within the protocol-required limits and specifications?

The laboratory used the laboratory control limits during the analyses performed for this sampling event. QA/QC deviations and qualifications performed on the sample data are discussed in Chapter 3. Major non-conformances were not detected for the VOC data.

4. Have all of the data been generated using established and agreed upon analytical protocols?

The QAPP required that USEPA guidance methods be used in the analysis of samples collected for this sampling event. The laboratory used the required method protocols (with some minor modifications) for the analyses performed for this sampling event, which met data user and client needs.

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

The evaluation of selected raw data confirmed most information provided in the data packages. In one instance, however, the laboratory result was revised to a non-detect result due to mis-identification during the evaluation of the chromatographic retention time.

6. Have the correct data qualifiers been used?

The laboratory applied the correct qualifiers to the sample data. The validation qualifiers were applied as required by validation guidelines listed in Section 1.

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Attachment A Validated Data

Executive Summary

This report addresses data quality for groundwater samples collected at the former Sylvania Electric Products facility in Hicksville, New York (the Site). Sample collection activities were conducted by URS Corporation (URS) from October 13 through December 10, 2002.

The environmental samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri for radiochemistry analyses including gamma spectrometry and alpha spectrometry for isotopic thorium and isotopic uranium using United States Department of Energy (USDOE) Methods and laboratory standard operating procedures (SOP). The analytical data generated for this investigation were evaluated by URS using the quality assurance/quality control (QA/QC) criteria established in the methods as guidance. Non-conformances from the QA/QC criteria were qualified based on guidance provided in the Science Applications International Corporation (SAIC) *Laboratory Data Validation Guidelines For Evaluating Radionuclide Analyses*, 143-ARCS-00.08, Revision 06, June 2000 and USDOE *Guidance For Radiochemical Data Validation*, Draft RD4, October 4, 1995.

The non-detect gamma spectrometry results for several samples were qualified as estimated (UJ) because the net negative results have uncertainties less than their absolute values. This may be an indication of improper blank subtraction, per the data validation guidelines, but the laboratory believes this is due to negative slopes in the regions of interest. The associated method blanks exhibited similar results. There were no target gamma radionuclide peaks detected in the groundwater samples, except for lead-214 in sample P-14 (77.82'). Since the groundwater samples are not expected to exhibit gamma radionuclide contamination, and the algorithms used to calculate the sample results are different from the algorithms used to calculate the detection limits or minimum detected concentrations (MDC), this non-conformance does not adversely affect the usabilty of the data. Therefore, the affected data were not rejected, instead, the affected sample results were qualified as estimated (UJ) using professional judgement.

Other method non-conformances requiring data validation qualification (J and UJ) include radionuclide identication and quantitation, blank contamination, and insufficient sample size. None of these non-conformances were significant enough to jeopardize the usability of the data.

Overall, 100 percent of the radiochemistry data were determined to be usable for qualitative and quantitative purposes. Those sample results qualified as estimated (J and UJ) due to data validation QA/QC exceedances should be considered conditionally usable. Therefore, the completeness objective of 90 percent, as stated in the quality assurance project plan (QAPP), was met.

1. Introduction

1.1. Sample Identification

This report addresses the results of a data quality evaluation for groundwater samples collected at the former Sylvania Electric Products facility in Hicksville, New York (the Site). Sample collection activities were conducted by URS Corporation (URS) from October 13, 2002 through December 10, 2002.

The quantity and types of samples that were submitted for data validation are presented in Table 1-1.

Table 1-1. *Sample Cross-Reference List*

Package Identification	Date Collected	Client ID	Laboratory ID	Analysis Requested
F2J160194	10/13/02	MW-3	F2J160194001	Gamma
	10/13/02	MW-4	F2J160194002	Gamma
	10/13/02	MW-8	F2J160194003	Gamma
	10/13/02	MW-9	F2J160194004	Gamma
	10/13/02	MW-10	F2J160194005	Gamma
	10/13/02	MW-12	F2J160194006	Gamma
	10/13/02	MW-8-DUP*	F2J160194007	Gamma
	10/13/02	MW-2	F2J160194008	Gamma
	10/13/02	MW-6	F2J160194009	Gamma
	10/13/02	MW-1	F2J1601940010	Gamma
	10/13/02	MW-11	F2J1601940011	Gamma
	10/13/02	MW-5	F2J1601940012	Gamma
	10/13/02	MW-7, MS/MSD	F2J1601940013	Gamma
	10/13/02	EB-101302	F2J1601940014	Gamma
F2J180121	10/15/02	P-2 (78.5')	F2J180121001	Gamma, Alpha
	10/15/02	P-2 (78.5') Dissolved	F2J180121002	Gamma, Alpha
	10/15/02	P-1 (78.7')	F2J180121004	Gamma
F2J180121	10/15/02	P-1 (78.7') Dissolved	F2J180121005	Gamma
	10/16/02	P-1 (98.7')	F2J180121008	Gamma
	10/16/02	P-2 (98.8')	F2J180121009	Gamma, Alpha
	10/16/02	P-2 (98.8') Dissolved	F2J180121010	Gamma, Alpha
F2J300166	10/28/02	P-5 (77.5')	F2J300166001	Gamma

Table 1-1. *Sample Cross-Reference List*

Package Identification	Date Collected	Client ID	Laboratory ID	Analysis Requested
	10/28/02	P-5 (97.5')	F2J300166002	Gamma
	10/28/02	P-4 (77.5')	F2J300166003	Gamma
	10/28/02	P-4 (97.2')	F2J300166004	Gamma
F2K060153	11/03/02	P-11 (87')	F2K060153003	Gamma, Alpha
	11/03/02	P-11 (107.4')	F2K060153004	Gamma, Alpha
	11/03/02	P-10 (77.6')	F2K060153005	Gamma
	11/03/02	P-10 (97.9')	F2K060153006	Gamma
F2K150247	11/13/02	P-6 (82.8')	F2K150247001	Gamma, Alpha
	11/14/02	P-6 (102.8)-DUP*	F2K150247003	Gamma, Alpha
	11/13/02	P-12 (78.85')	F2K150247004	Gamma
	11/13/02	P-12 (97.92')	F2K150247005	Gamma
	11/14/02	P-6 (102.8')	F2K150247006	Gamma, Alpha
	11/13/02	P-9 (82.61')	F2K150247008	Gamma
	11/14/02	P-9 (162.61')	F2K150247010	Gamma
F2K190242	11/18/02	P-3 (87.4')	F2K190242002	Gamma
	11/18/02	P-3 (107.4')	F2K190242005	Gamma
	11/18/02	P-3 (107.4') Dissolved	F2K190242006	Gamma
F2K220291	11/19/02	P-7 (82.4')	F2K220291001	Gamma, Alpha
	11/19/02	P-7 (102.4') Dissolved	F2K220291002	Gamma, Alpha
	11/19/02	P-7 (102.4')	F2K220291010	Gamma, Alpha
F2L060132	12/03/02	P-8 (77.55')	F2L060132001	Gamma
	12/04/02	P-8 (97.55')	F2L060132002	Gamma
F2L070156	12/06/02	P-13 (96.6') Dissolved	F2L070156001	Gamma
	12/06/02	P-14 (77.82') Dissolved	F2L070156002	Gamma
	12/06/02	P-13 (76.6')	F2L070156006	Gamma
F2L070156	12/06/02	P-13 (96.6')	F2L070156008	Gamma
	12/06/02	P-14 (77.82')	F2L070156012	Gamma
F2L120270	12/07/02	P-14 (95.17')	F2L120270001	Gamma
	12/07/02	P-14 (95.17') Dissolved	F2L120270002	Gamma
	12/08/02	P-16 (81')	F2L120270021	Gamma

Table 1-1. *Sample Cross-Reference List*

Package Identification	Date Collected	Client ID	Laboratory ID	Analysis Requested
	12/08/02	P-16 (81') Dissolved	F2L120270022	Gamma
	12/09/02	P-16 (101')	F2L120270024	Gamma

Notes:
Gamma indicates Gamma Spectrometry.
Alpha indicates Alpha Spectrometry of thorium (isotopic) and uranium (isotopic).
DUP indicates field duplicate.
MS/MSD indicates Matrix Spike/Matrix Spike Duplicate.
* Indicates that field sampler identified blind field duplicate sample.

1.2. General Considerations

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Although the term is frequently used in discussing methodologies, it applies to all aspects of the analytical system and especially to samples, their measurements, and the actual data output. Accordingly, for the samples and analyses addressed herein, this report outlines deviations from the applicable QC criteria outlined in the following documents:

- GTE Operations Support Incorporated. (GTEOSI). *Soil Remediation Program Work Plan (QAPP: Appendix H), Former Sylvania Electric Products Facility, Hicksville, New York, Site Number V 00089-1*, Revision 2, October 2002.

- United States Department of Energy (USDOE). 1997. *Environmental Measurements Laboratory (EML) Procedures Manual, 28th Edition, Volume 1*. New York, New York.

Deviations from the QA/QC criteria were qualified based on guidance provided in the following documents:

- Science Applications International Corporation (SAIC). 2000. *Laboratory Data Validation Guidelines for Evaluating Radionuclide Analyzes*, 143-ARCS-00.08, Revision 06. Oak Ridge, Tennessee.

- USDOE. 1995. *Guidance for Radiochemical Data Validation*, Draft RD4. Gaithersburg, Maryland.

1.3. Analytical Methods

The environmental samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri for radiochemistry analyses including gamma spectrometry (actinium-228, cesium-137, lead-212, lead-214, and potassium-40), and alpha spectrometry (thorium-228, thorium-230, thorium-232, uranium-234, uranium-235, and uranium-238) using USDOE Methods and laboratory standard operating procedures (SOP). The methods used in this investigation are presented in Table 1-2.

Table 1-2. *Analytical Method References*

Parameter	***Method***	***Reference***
Gamma Spectrometry (Actinium-228, Cesium-137, Lead-212, Lead-214, Potassium-40)	Ga-01-R Modified	1
Alpha Spectrometry (Thorium-228, -230, -232 and Uranium-234, -235, -238)	RP-725 and Laboratory SOPs STL-RD-0201, STL-RD-0203, and STL-RC-0240	2, 3, 4, 5

Notes:

1. United States Department of Energy (USDOE). 1997. *Environmental Measurements Laboratory (EML) Procedures Manual (HASL-300),* 28th Edition, Volume 1. New York, New York.
2. USDOE. 1994. *Group Actinide Screening Using Extraction Chromatography (Eichrom)*, Draft RP725, Pacific Northwest Laboratory, Richland, Washington.
3. STL. 2002. *Daily Operations of an Alpha Spectroscopy System.* STL-RD-0201, Revision No. 3.
4. STL. 2001. *Calibration and Maintenance of an Alpha Spectroscopy System.* STL-RD-0203, Revision No. 1.
5. STL. 2002. *Isotopic Americium, Curium, Plutonium, Thorium and Uranium in Various Matrices by EiChromM® Separation Resins.* STL-RC-0240, Revision No. 2.

The following sections of this document address distinct aspects of the validation process. Section 2 lists the data QA/QC protocols used to validate the sample data. Specific QA/QC deviations and qualifications performed on the sample data are discussed in Section 3. Data completeness and usability are discussed in Section 4. Section 5 presents the Data Usability Summary Report (DUSR) Summary Information. A copy of the validated electronic deliverable data are summarized in Attachment A.

2. Data Validation Protocols

2.1. Sample Analysis Parameters

The validation of analyses for this project used guidance presented in the QAPP (GTEOSI, 2002), the analytical methodology, and the data validation guidelines referenced in Section 1 herein.

The following QA/QC parameters were evaluated for the radiochemistry (gamma spectrometry, alpha spectrometry) analyses (where applicable):

- Holding times and sample preservation;
- Calibration;
- Blank analysis
- Tracer recovery (alpha spectrometry);
- Laboratory Control Sample (LCS);
- Duplicate analysis;
- Field duplicate analysis;
- Radionuclide quantitation and detection evaluation;
- Chemical separation specificity (alpha spectrometry);
- Target radionuclide list identification (gamma spectrometry);
- System performance; and
- Documentation completeness.

2.2. Data Validation Qualifiers

The following guidelines are used regarding the assignment of qualifiers and the use of qualified data:

- QA/QC exceedances which do not result in the qualification of an analyte, or which result in additional qualification of the analyte with the same qualifier, are not discussed.

- The use of estimated analytical data for quantitative uses is consistent with the guidance presented in the *USEPA Risk Assessment Guidance for Superfund* (USEPA 1992).

The following qualifiers have been used in this data validation.

"J" The associated numerical value in an estimated quantity, due to a QC or statistical exceedance.

"UJ" The associated non-detect value in an estimated quantity, due to a QC or statistical exceedance.

2.3. Data Usability Summary Report Questions

The DUSR determines whether or not the data meets site-specific criteria for data quality and use. It was developed by reviewing and evaluating the analytical data packages. During the course of this review the following questions were addressed (where applicable):

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

2. Have all holding times been met?

3. Do all the QC data: blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?

4. Have all of the data been generated using established and agreed upon analytical protocols?

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

6. Have the correct data qualifiers been used?

The answers to the questions presented by the DUSR are presented in the following sections of the report and in the DUSR Summary Information Section, Section 5.

3. Data Quality Evaluation

3.1. Summary

This section summarizes which QA/QC parameters specified in Section 2.1 met validation criteria, and which QA/QC parameters did not meet validation criteria. Samples requiring qualification are described in the following sections, and are identified by the description documented on the sample chain-of-custody records.

3.2. Gamma Spectrometry Analyses

3.2.1. Criteria

The QA/QC parameters presented in Section 2.1 were applied to the environmental samples listed in Table 1-1. The following QA/QC parameters were found to meet validation criteria:

- Holding times and sample preservation;
- Calibration;
- Blank analysis;
- Laboratory Control Sample (LCS);
- Duplicate analysis;
- Field duplicate analysis;
- System performance; and
- Documentation completeness.

Only those QA/QC parameters not meeting validation criteria are discussed in subsequent sections.

3.2.2. Radionuclide Quantitation and Detection Limits

The net negative results for several samples have uncertainties less than their absolute values. This may be an indication of improper blank subtraction, per SAIC data validation guidelines, but the laboratory believes this is due to negative slopes in the regions of interest. The associated method blanks exhibited the same results. There were no target gamma radionuclide peaks detected in the groundwater samples. Since the algorithms used to calculate the sample results are different from the algorithms used to calculate the detection limits, this non-conformance does not compromise minimum detected concentrations (MDC). Therefore, the affected data was not rejected. Instead, using professional judgement the affected sample results were qualified as estimated (UJ) at the MDC, as summarized in Table 3-1.

Table 3-1. *Evaluation of Negative Results versus Uncertainties for Gamma Spectrometry Analyses*

Sample ID	Affected Radionuclide Results	Action
MW-3, MW-8, MW-10, MW-5, P-1 (98.7'), P-5 (97.5'), P-12 (97.92'), P-14 (77.82') Dissolved, P-14 (77.82')	Cesium-137, Lead-212	UJ
MW-4	Actinium-228, Cesium-137, Lead-212, Lead-214, Potassium-40	UJ
MW-9, MW-2, P-1 (78.7') Dissolved, P-2 (98.8'), P-5 (77.5'), P-9 (102.61'), P-7 (82.4'), P-8 (77.55')	Cesium-137, Lead-212, Lead-214	UJ
MW-12, MW-8-DUP, MW-7, P-2 (98.8') Dissolved, P-11 (107.4'), P-6 (102.8')-DUP, P-9 (82.61'), P-7 (102.4') Dissolved, P-14 (95.17'), P-14 (95.17') Dissolved, P-16 (101')	Lead-212, Lead-214	UJ
MW-6, P-2 (78.5') Dissolved, P-10 (77.6'), P-6 (82.8')	Cesium-137, Lead-212, Lead-214, Potassium-40	UJ
MW-1	Lead-214, Potassium-40	UJ
MW-11	Lead-212, Potassium-40	UJ
P-2 (78.5'), P-1 (78.7'), P-4 (77.5'), P-4 (97.2'), P-3 (87.40'), P-3 (107.40'), P-13 (76.6'), P-13 (96.6'), P-16 (81') Dissolved	Lead-212	UJ
P-11 (87'), P-8 (97.55')	Lead-212, Lead-214, Potassium-40	UJ
P-10 (97.9'), P-16 (81')	Actinium-228, Lead-212, Lead-214	UJ
P-12 (78.85'), P-3 (107.40') Dissolved, P-7 (102.4')	Actinium-228, Lead-212	UJ
P-6 (102.8')	Actinium-228, Potassium-40	UJ

3.2.3. Target Radionuclide List Identification

For sample P-6 (82.8') and matrix duplicate, the laboratory identified the non-target radionuclide lead-210. The energy line for lead-210 is 46.5 keV. However, the laboratory does not routinely calibrate the instrument detectors down to 46.6 keV, instead, the calibration range is 59.5 keV (americium-241) to 1,836 keV (yittrium-88). It should be noted that "Certificate of Calibration" indicates that lead-210 is included in the calibration standards. Therefore, the lead-210 result for sample P-6 (82.8') and matrix duplicate should be considered estimated and have been qualified "J".

3.2.4. Tentatively Identified Radionuclides

Gamma spectrometry peaks in radionuclide analyses that are not isotopes are potentially identified radionuclides. These radionuclides are qualitatively identified by a radionuclide spectrometry library computer search and the identifications assessed by the data reviewer. Potentially identified radionuclides were not required in this investigation.

3.3. Alpha Spectrometry Analyses

3.3.1. Criteria

The QA/QC parameters presented in Section 2.1 for radiochemistry were applied to the environmental samples listed in Table 1-1. The following QA/QC parameters were found to meet validation criteria:

- Holding times and sample preservation;
- Calibration;
- Tracer recovery;
- Laboratory Control Sample;
- Duplicate analysis;
- Chemical separation specificity;
- System performance; and
- Documentation completeness.

Only those QA/QC parameters not meeting validation criteria are discussed in subsequent sections.

3.3.2. Blank Analysis

The blank results were evaluated using the following statistical approach: if the sample result ± uncertainty was less than ten times the associated blank result ± uncertainty, the qualifier "J" was applied to the associated sample result. The statistical evaluation of the blank results are summarized in Table 3-2. The QAPP requires method blanks to be less than 5 times the minimum detected concentrations (MDC) and the lowest sample activity. The method blanks were not always less than the lowest sample activity. The QAPP requires the laboratory to reanalyze the affected batch. This was not done by the laboratory.

Table 3-2. *Blank Evaluation for Thorium/Uranium Analyses.*

Blank ID	*Radionuclide*	*Blank Concentration ± Uncertainty (pCi/L)*	*Affected Samples*	*Action*
F2J210000-280B	Thorium-230	0.80 ± 0.31	P-2 (78.5'), P-2 (78.5') Dissolved, P-2 (98.8')	J
F2K250000-134B	Thorium-230	0.21 ± 0.16	P-11 (87'), P-11 (107.4')	J
F2K250000-136B	Uranium-238	0.10 ± 0.12	P-11 (107.4')	J
F2L100000-150B	Thorium-230	0.37 ± 0.22	P-6 (82.8'), P-6 (102.8')-DUP, P-6 (102.8'), P-7 (82.4'), P-7 (102.4') Dissolved, P-7 (102.4')	J

Note:
pCi indicates picocurries
Uncertainty indicates total propagated uncertainty, which includes counting error and non-counting error.

3.3.3. Radionuclide Quantitation and Detection Evaluation

The net positive uranium-235 results for samples P-6 (82.8') and P-6 (102.8')-DUP were less than their uncertainties. This indicates that the sample counts were less than the critical values or less than 95% confidence of positive detection. The sample results were qualified as estimated (J), as summarized in Table 3-3.

Table 3-3. *Evaluation of Positive Results versus Uncertainties for Alpha Spectrometry Analyses*

Sample ID	Affected Radionuclide Results	Sample Concentration ± Uncertainty (pCi/L)	Action
P-6 (82.8')	Uranium-235	0.14 ± 0.16	J
P-6 (102.8')-DUP	Uranium-235	0.14 ± 0.16	J

Although the minimum sample size used to provide representative subsampling for alpha spectrometry is 0.5 liter for aqueous samples, the laboratory used slightly less than 0.5 liter for sample P-7 (82.4') due to insufficient sample volume available for thorium analysis. As a result of the smaller sample size, the results reported for sample P-7 (82.4') were qualified as estimated (J and UJ) as summarized in Table 3-4.

Table 3-4. *Sample Size Evaluation for Thorium Analyses.*

Sample ID	Affected Radionuclide Results	Sample Size	Action
P-7 (82.4')	Thorium-228 Thorium-230 Thorium-232	Less than 0.5 liter	UJ J UJ

4. Summary and Data Usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. Overall, 100 percent of the radiochemistry data were determined to be usable for qualitative and quantitative purposes. Those sample results qualified as estimated (J and UJ) due to data validation QA/QC exceedances should be considered conditionally usable.

The samples collected from the Site in Hicksville, New York were evaluated based on QA/QC criteria established by methods as listed in Section 1.3, by the data validation guidelines listed in Section 1.2, and by the QAPP (GTEOSI, 2002) established for this project. Major deficiencies in the data generation process would have resulted in data being rejected, indicating that the data are considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process resulted in some sample data being characterized as approximate or estimated. Identification of a data point as approximate indicates uncertainty in the reported concentration of the chemical, but not its assigned identity.

The following paragraphs present the adherence of the data to the precision, accuracy, representativeness, comparability, completeness, and sensitivity (PSARCC) parameters.

Precision is measured through the evaluation of field duplicate samples and laboratory duplicate samples. For the radiochemistry analyses, none of the data were rejected due to precision non-conformances.

LCS recoveries indicate the accuracy of the data. For the radiochemistry analyses, none of the data were rejected due to accuracy non-conformances.

Holding times, sample preservation, blank analysis, and analyte identification and quantification are indicators of the representativeness of the analytical data. None of the radiochemistry data were rejected due to representativeness non-conformances.

Comparability is not compromised, provided that the analytical methods do not change over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures were consistently used by the laboratory, the comparability criteria for the analytical data were met.

Sensitivity is established by reported detection limits that represent measurable concentrations of analytes that can be determined with a designated level of confidence. Sensitivity requirements were met for the sample data in this project, except for the following instances. The actinium-228 and potassium-40 sample MDCs for all samples were greater than the QAPP requirement (i.e., 20 pCi/L). The lead-214 MDC for samples MW-8, P-5 (97.5'), P-1 (78.7'), P-1 (98.7'), P-11 (87'), P-6 (102.8')-DUP, P-12 (78.85'), P-12 (97.92'), P-6 (102.8'), P-3 (87.40'), and P-3 (107.4') were slightly above 20 pCi/L. These gamma radionuclides typically have higher MDCs, but the laboratory modified the method (i.e., increased the sample count time to 2 hours) in order to achieve the reported MDCs. None of the radiochemistry data were rejected due to the sensitivity non-conformances.

5. Data Usability Summary Report Summary Information

The DUSR was performed to determine whether or not the data meets site-specific criteria for data quality and use. The DUSR is developed by reviewing and evaluating the analytical data package. The following questions were addressed:

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

The QAPP required that USEPA Level III deliverables be provided by the laboratory for each data package. This requirement was met as it applies to the methods used by the laboratory for sample analysis. The evaluation of the sample data was completed using the information provided in the data packages provided by the laboratory.

2. Have all holding times been met?

The holding times were met for the radiochemistry analyses.

3. Do all the QC data: blanks, standards, spike recoveries, replicate analyses, and sample data fall within the protocol-required limits and specifications?

The laboratory used the laboratory control limits during the analyses performed for this sampling event. QA/QC deviations and qualifications performed on the sample data are discussed in Chapter 3. Major non-conformances were not detected for the radiochemistry data.

4. Have all of the data been generated using established and agreed upon analytical protocols?

The QAPP required that USDOE methods are used in the analysis of samples collected for this sampling event. The laboratory used the required method protocols (with some minor modifications) for the analyses performed for this sampling event, which met data user and client needs.

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

The evaluation of selected raw data confirmed information provided in the data packages.

6. Have the correct data qualifiers been used?

The laboratory applied the correct qualifiers to the sample data. The validation qualifiers were applied as required by validation guidelines as listed in Section 1

References

GTE Operations Support Incorporated. (GTEOSI). 2002. *Soil Remediation Program Work Plan (QAPP: Appendix H), Former Sylvania Electric Products Facility, Hicksville, New York, Site Number V 00089-1*, Revision 2, October 2002.

O'Brien & Gere Engineers, Inc. 2000. *Supplement to the Approved Work Plan (QAPP – Appendix C), Former Sylvania Electric Products Incorporated Facility Cantiague Rock Road, Hicksville, New York.* Syracuse, New York.

Science Applications International Corporation (SAIC). 1992. *Laboratory Data Validation Guidelines for Evaluating Radionuclide Analyzes*, 143-ARCS-00.08, Revision 06. Oak Ridge, Tennessee.

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United States Environmental Protection Agency (USEPA). 1992. *USEPA Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A),* 540/1-891002. Washington D.C.

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Attachment A Validated Data

Executive Summary

This report addresses data quality for groundwater samples collected at the former Sylvania Electric Products Facility in Hicksville, New York (the Site). Sample collection activities were conducted by URS Corporation (URS) from October 13, 2002 through December 11, 2002.

The environmental samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri for metals analyses using United States Environmental Protection Agency (USEPA) guidance methods. The analytical data generated for this investigation were evaluated by URS using the quality assurance/quality control (QA/QC) criteria established in the methods as guidance. Non-conformances from the QA/QC criteria were qualified based on guidance provided in the following references:

- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* (SW846) USEPA, Final Update IIIA, April 1998;
- *CLP National Functional Guidelines for Inorganic Data Review*, EPA 540-R-01-008, July 2002;
- *United States Environmental Protection Agency Region II Evaluation of Metals Data for the CLP 3/90*, USEPA 1992, and
- *Analytical Services Protocol (ASP), New York State Department of Environmental Conservation* (NYSDEC). Guidance documents including Exhibits A, B, C, D, E, F, G, H, and I. (June 2000).

Professional judgement was used to qualify results as estimated (UJ) in some cases where the overall quality of data was suspected due to commonly accepted or standardized practices employed by the laboratory. Since the guidance documents used as a source of reference for the validation somewhat differ in the type of qualification applied to data, URS applied qualifiers generally as a conservative approach. Affected data, however, were not rejected since other supporting quality control data indicated acceptable quality control results. Specifically, method non-conformances included only exceedances of the matrix spike/matrix spike duplicate percent recoveries or field duplicate relative percent difference values. All other QC analyses, including laboratory control samples, matrix spike analyses, serial dilution analysis, and interference check sample analyses, were acceptable for the samples.

A few laboratory method blanks (i.e., preparation blanks) and continuing calibration blanks (CCBs) contained low concentrations of the target elements. The presence of these elements in specific method blanks affected many project samples. Qualification of associated results was performed to show the relationship between the laboratory contamination and the uncertainty of the actual project sample results.

A review was also made of the "total metal" results versus the "dissolved metal" results to assess the accuracy of analytical tests for the groundwater matrix, as well as any impact the field filtration step may have had on the analysis. In several cases, the dissolved results were greater than the total results. Both sets of results were qualified as estimated due to highlight the uncertainty of the laboratory analysis, and/or the impact of the filtration step on the results.

The relative percent difference between field duplicate results were assessed, also. Several results were found to differ by more than 30% (validation criteria). None of the differences were significant enough to

reject data. Results were qualified as estimated to indicate the possibility of a non-homogenous sample matrix, laboratory imprecision during testing, and/or field imprecision during sampling.

None of the exceedances of method non-conformances were significant enough to jeopardize the usability of the data. All analytical results summarized in Appendix A are usable based on the findings listed in this Data Usability Summary Report (DUSR).

Overall, 100 percent of the metals data were determined to be usable for qualitative and quantitative purposes. Those sample results qualified as estimated ("J" and "UJ") due to QC exceedances should be considered conditionally usable. Therefore, the completeness objective of 90 percent, as stated in the quality assurance project plan (QAPP), was met for the metals database.

1. Introduction

1.1. Sample Identification

This report addresses the results of a data quality evaluation for groundwater samples collected at the former Sylvania Electric Products Incorporated facility (the Site) in Hicksville, New York. Sample collection activities were conducted by URS Corporation (URS) from October 13, 2002 through December 11, 2002.

The quantity and types of samples that were submitted for data validation are presented in Table 1-1.

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Client ID***	***Laboratory ID***	***Analysis Requested***
F2J160194	DUP *Field Duplicate of MW-8*	F2J160194007	Total Be, Cr, Cu, Ni, and Tl
	EB-101302 *Equipment Blank*	F2J160194014	Total Be, Cr, Cu, Ni, and Tl
	MW-1	F2J160194010	Total Be, Cr, Cu, Ni, and Tl
	MW-10	F2J160194005	Total Be, Cr, Cu, Ni, and Tl
	MW-11	F2J160194011	Total Be, Cr, Cu, Ni, and Tl
	MW-12	F2J160194006	Total Be, Cr, Cu, Ni, and Tl
	MW-2	F2J160194008	Total Be, Cr, Cu, Ni, and Tl
	MW-3	F2J160194001	Total Be, Cr, Cu, Ni, and Tl
	MW-4	F2J160194002	Total Be, Cr, Cu, Ni, and Tl
	MW-5	F2J160194012	Total Be, Cr, Cu, Ni, and Tl
	MW-6	F2J160194009	Total Be, Cr, Cu, Ni, and Tl
	MW-7	F2J160194013	Total Be, Cr, Cu, Ni, and Tl
	MW-8	F2J160194003	Total Be, Cr, Cu, Ni, and Tl
	MW-9	F2J160194004	Total Be, Cr, Cu, Ni, and Tl
F2J180121	P-1 (78.7)	F2J180121004	Total Be, Cr, Cu, Ni, and Tl
	P-1 (78.7) - Dissolved	F2J180121007	Dissolved Be, Cr, Cu, Ni, and Tl
	P-1 (98.7)	F2J180121008	Total Be, Cr, Cu, Ni, and Tl
	P-2 (78.5)	F2J180121001	Total Be, Cr, Cu, Ni, and Tl
	P-2 (78.5) - Dissolved	F2J180121002	Dissolved Be, Cr, Cu, Ni, and Tl
	P-2 (98.8)	F2J180121009	Total Be, Cr, Cu, Ni, and Tl
	P-2 (98.8) - Dissolved	F2J180121010	Dissolved Be, Cr, Cu, Ni, and Tl

Table 1-1: *Sample Cross-Reference List*

Package Identification	Client ID	Laboratory ID	Analysis Requested
F2J300166	P-4 (77.5)	F2J300166003	Total Be, Cr, Cu, Ni, and Tl
	P-4 (97.2)	F2J300166004	Total Be, Cr, Cu, Ni, and Tl
	P-5 (77.5)	F2J300166001	Total Be, Cr, Cu, Ni, and Tl
	P-5 (97.5)	F2J300166002	Total Be, Cr, Cu, Ni, and Tl
F2K060153	P-10 (97.9)	F2K060153006	Total Be, Cr, Cu, Ni, and Tl
	P-10 (77.6)	F2K060153005	Total Be, Cr, Cu, Ni, and Tl
	P-11 (107.4)	F2K060153004	Total Be, Cr, Cu, Ni, and Tl
	P-11 (87)	F2K060153003	Total Be, Cr, Cu, Ni, and Tl
F2K150247	P-12 (78.85)	F2K150247004	Total Be, Cr, Cu, Ni, and Tl
	P-12 (78.85) DUP	F2K150247007	Total Be, Cr, Cu, Ni, and Tl
	P-12 (97.92)	F2K150247005	Total Be, Cr, Cu, Ni, and Tl
	P-6 (102.8)	F2K150247006	Total Be, Cr, Cu, Ni, and Tl
	P-6 (82.8)	F2K150247001	Total Be, Cr, Cu, Ni, and Tl
	P-9 (102.61)	F2K150247015	Total Be, Cr, Cu, Ni, and Tl
	P-9 (82.61)	F2K150247008	Total Be, Cr, Cu, Ni, and Tl
F2K190242	P-3 (107.40) – Dissolved	F2K190242006	Dissolved Be, Cr, Cu, Ni, and Tl
	P-3 (87.40) – Dissolved	F2K190242003	Dissolved Be, Cr, Cu, Ni, and Tl
	P-3 (107.40)	F2K190242005	Total Be, Cr, Cu, Ni, and Tl
	P-3 (87.40)	F2K190242002	Total Be, Cr, Cu, Ni, and Tl
F2K220291	P-7 (82.4)	F2K220291002	Total Be, Cr, Cu, Ni, and Tl
	P-7 (102.4) – Filtered	F2K220291003	Dissolved Be, Cr, Cu, Ni, and Tl
	P-7 (102.4) – Unfiltered	F2K220291010	Total Be, Cr, Cu, Ni, and Tl
F2L060132	P-8 (77.55)	F2L060132001	Total Be, Cr, Cu, Ni, and Tl
	P-8 (97.55)	F2L060132002	Total Be, Cr, Cu, Ni, and Tl
	P-8 (97.55) – Dup	F2L060132005	Total Be, Cr, Cu, Ni, and Tl
F2L070156	P-13 (76.6)	F2L070156006	Total Be, Cr, Cu, Ni, and Tl
	P-13 (96.6)	F2L070156008	Total Be, Cr, Cu, Ni, and Tl
	P-13 (96.6) – Dissolved	F2L070156001	Dissolved Be, Cr, Cu, Ni, and Tl
F2L070156	P-14 (77.82)	F2L070156012	Total Be, Cr, Cu, Ni, and Tl
	P-14 (77.82) - Dissolved	F2L070156002	Dissolved Be, Cr, Cu, Ni, and Tl

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Client ID***	***Laboratory ID***	***Analysis Requested***
F2L120270	P-14 (95.17)	F2L120270001	Total Be, Cr, Cu, Ni, and Tl
	P-14 (95.17) - Filtered	F2L120270002	Dissolved Be, Cr, Cu, Ni, and Tl
	P-16 (101)	F2L120270024	Total Be, Cr, Cu, Ni, and Tl
	P-16 (81)	F2L120270021	Total Be, Cr, Cu, Ni, and Tl
	P-16 (81) - Filtered	F2L120270022	Dissolved Be, Cr, Cu, Ni, and Tl

1.2. General Considerations

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Although the term is frequently used in discussing methodologies, it applies to all aspects of the analytical system and especially to samples, their measurements, and the actual data output. Accordingly, for the samples and analyses addressed herein, this report summarizes the findings of the review and outlines any deviations from the applicable QC criteria outlined in the following documents:

- GTE Operations Support Incorporated. (GTEOSI). *Soil Remediation Program Work Plan (QAPP: Appendix H), Former Sylvania Electric Products Facility, Hicksville, New York, Site Number V 00089-1*, Revision 2, October 2002.

- O'Brien & Gere Engineers, Inc. *Supplement to the Approved Work Plan (QAPP – Appendix C), Former Sylvania Electric Products Incorporated Facility, Cantiague Rock Road, Hicksville, New York.* Syracuse, New York, 2000.

- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* (SW846) USEPA, Final Update IIIA, April 1998;

- *United States Environmental Protection Agency Region II Evaluation of Metals Data for the CLP 3/90*, USEPA 1992,

- *Analytical Services Protocol (ASP), New York State Department of Environmental Conservation* (NYSDEC). Guidance documents including Exhibits A, B, C, D, E, F, G, H, and I. (June 2000); and

- *CLP National Functional Guidelines for Inorganic Data Review*, EPA 540-R-01-008, July 2002.

1.3. Analytical Methods

The environmental samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri for metals analyses. The laboratory used the following USEPA guidance methods for the analyses:

- SW846 Method 3010 Acid Digestion Preparation
- SW846 Method 6010B Inductively Coupled Plasma (ICP) Spectrometry by "Trace" Instrumentation

The laboratory assigned a sample delivery group (SDG) number to a group of samples during the sample log-in process. The SDG number is the means by which the laboratory tracks samples and controls QC analyses. A total of 10 SDGs composed the groundwater samples. The SDG, field identification and laboratory identification for each sample are summarized in Table 1-1.

The following sections of this document address distinct aspects of the validation process. Section 2 lists the data QA/QC protocols used to validate the sample data. A summary of the findings associated with the validation and the specific QA/QC deviations and qualifications performed on the sample data are discussed in Section 3. Data completeness and usability are discussed in Section 4. Section 5 presents the Data Usability Summary Report (DUSR) Summary Information. A copy of the validated electronic deliverable data (EDD) is presented in Attachment A.

2. Data Validation Protocols

2.1. Sample Analysis Parameters

The validation of analyses for this project used guidance presented in the QAPP (GTEOSI, 2002), the analytical methodology, and the data validation guidelines referenced in Section 1.

URS performed a data review of all analytical results to assess data quality. A data review includes an assessment of sample handling protocols, supporting laboratory quality control (QC) parameters, and field QC. The following is a list of specific analytical information evaluated during the validation:

- Data package completeness review – per the NYSDEC ASP Category B or USEPA CLP deliverables requirements
- Analytical methods performed and test method references
- Sample condition - review of log-in records for cooler temperature, presence of headspace, chemical preservation, etc.
- Holding times (comparison of collection, preparation, and analysis dates)
- Analytical results (units, values, significant figures, reporting limits, analyst, percent moisture)
- Sample traceability and comparison to raw data
- Initial calibration – comparison to laboratory criteria
- Continuing calibration – comparison to laboratory criteria
- Method blank results and laboratory contamination
- Laboratory control sample (LCS) results and comparison to laboratory control limits
- Matrix spike/matrix spike duplicate (MS/MSD) results and comparison to laboratory control limits
- Interference Check Samples
- Field replicate/duplicate results and comparison to data review criteria
- Field QC sample (e.g., equipment blanks)
- Reporting limits and Dilutions
- Electronic Data Deliverables (EDDs) – comparison to the hardcopy analytical report (a 20% check of the data to confirm that the results in the hardcopy report matched the results in the electronic file).

The analytical reports were reviewed for completeness and the accompanying QC data were reviewed for acceptable performance. In case documentation was incomplete, the laboratory was required to provide the missing information. When QC results indicated poor performance, URS applied data qualifiers to the results to inform the data user of the possible performance problem. These qualifiers are in addition to or a revision of the qualifiers provided by the laboratory. A summary of the data qualifiers used for this review is presented in Section 2.2.

2.2. Data Validation Qualifiers

The following qualifiers have been used by the laboratory for the metals analyses:

"U" Non-detect result at the established laboratory reporting limit (adjusted for percent moisture, if applicable).

"B" Indicates an estimated value or a value below the established reporting limit but above the method detection limit. Note: All "B" qualifiers for the metals analyses were revised to "J" to provide consistency between the organics and inorganics databases.

Laboratory qualifiers defined above, are retained in the final database unless revised during the data validation process to one of the following qualifiers:

"U" The chemical was not detected. Value shown is the reporting limit.

"J" Estimated concentration because the result was below the sample reporting limit or quality control criteria were not met.

"UJ" The chemical was not detected at or above the sample reporting limit. However, the reporting limit is approximate and may or may not represent the actual limit of reporting necessary to accurately and precisely measure the chemical in the sample.

The laboratory qualifiers were revised by URS during the data review process to simplify the presentation of data in the final report per the USEPA Region 2 Guidance (USEPA, 2001). Generally, all codes used by the laboratory to indicate results associated with quality control/performance problems were replaced in the electronic database with a "J" qualifier. Per the NYSDEC guidance, the "J" qualifier indicates estimated data. In addition, results associated with laboratory QC analyses that were beyond established control limits were evaluated on a case-by-case basis.

2.3. Data Usability Summary Report Questions

The DUSR determines whether or not the data meets site-specific criteria for data quality and use. It was developed by reviewing and evaluating the analytical data packages. During the course of this review the following questions were addressed (where applicable):

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

2. Have all holding times been met?

3. Do all the QC data: blanks, calibration standards, calibration verifications, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?

4. Have all of the data been generated using established and agreed upon analytical protocols?

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

6. Have the correct data qualifiers been used?

The answers to the questions presented by the DUSR are presented in the following sections of the report and in the DUSR Summary Information Section, Section 5.

3. Data Quality Evaluation

3.1. Summary

This section summarizes which QA/QC parameters specified in Section 2.1 met validation criteria, and which QA/QC parameters did not meet validation criteria. A summary of the individual components of the review are described in the following sections.

3.2. Review of Validation Criteria

3.2.1. Completeness Review

The laboratory provided the analytical report in the New York State Department of Environmental Conservation (NYSDEC) format. Nearly all necessary documents were included in the report package including a case narrative summarizing the QC issues associated with the project analyses. In just a few isolated cases (e.g., log-in form for SDG 2FK150247), the laboratory was asked to provide missing documentation. The laboratory provided all information that was requested by URS.

3.2.2. Test Methods

The laboratory performed the analyses for most analyses using the analytical test methods listed in Section 1.3. These included SW846 Method 3010B (digestion of aqueous samples) followed by Method 6010B (ICP). No method anomalies were noted.

3.2.3. Sample Receipt

The laboratory received 57 aqueous samples for metals analysis between October 13, 2002 and December 11, 2002. The sample temperatures at the time of receipt were within the recommended temperature range of 4°C±2°C for all SDGs. Field and laboratory personnel completed the COC correctly recording the signature, date, and time of custody transfer.

The laboratory recorded the condition of the samples at the time of receipt on a "Conditions Upon Receipt Form." This Form identifies whether the containers were received undamaged, within the proper temperature range, at the proper pH, in a container that is sealed with a custody seal on the exterior, and with a completed COC enclosed to identify all samples submitted to the laboratory. For most SDGs, this form was completed properly. For one SDG, F2K150247, the laboratory did not record sufficient information on the form to assess the proper sample condition upon receipt. (The laboratory only recorded the sample temperature and the presence of a custody seal on the container). When requested, the laboratory provided an updated form denoting the sample condition for this SDG. No anomalies were identified.

3.2.4. Holding Times

The laboratory performed all metals analyses within EPA-recommended holding time of 180-days for acid preserved samples.

3.2.5. Analytical Results

For each sample tested, the laboratory provided the analytical test information using a laboratory standard format which shows critical information pertaining to the analyses performed. The information provided includes the following: the laboratory name; the project name; the analysis type (total versus dissolved);

the laboratory sample ID; matrix; date sampled; date received; preparation batch ID; the result; the reporting limit; the method detection limit (MDL); the units of measure; the laboratory method; dilution factor; analysis time; preparation date; analysis date; work order number, and laboratory qualifiers (if any). The laboratory provided all the appropriate forms for the requested methods.

3.2.6. Traceability to Raw Data

Traceability of the metals analyses is established by the digestion logs. These forms list the project samples analyzed per laboratory batch processed and the corresponding QC samples (e.g., preparation blank and laboratory control sample) performed with the project samples. All project samples for all SDGs were included on the applicable forms.

3.2.7. Initial Calibration

The laboratory prepared an initial calibration (ICAL) curve for each element in accordance with method criteria. Initial calibration verifications (ICVs) were analyzed immediately after each ICAL, with recoveries within ±10% of the true values for all elements.

3.2.8. Continuing Calibration Verification

The continuing calibration verification (CCV) standards were analyzed after the ICALs and after every 10 project samples as required by the reference test method. The percent recoveries were within ± 10% of the true values for all elements.

3.2.9. Initial and Continuing Calibration Blanks

The initial calibration blank (ICB) and continuing calibration blanks (CCB) were analyzed after the ICALs and after every 10 project samples as required by the reference test method. In general, all initial and continuing calibration blank results were less than the laboratory reporting limit, but in a few cases were greater than the laboratory MDL. If an element was detected above the MDL but less than the laboratory reporting limit, the validation process qualified the result to indicate the potential contamination associated with the analysis system. A summary of the samples and elements that were revised due to laboratory contamination are presented in Table 3-1.

Table 3-1. *Evaluation of Laboratory Initial and Continuing Calibration Blanks*

Package Identification	***Client ID***	***Element***	***Action***
F2J160194	DUP *Field Duplicate of MW-8*	Chromium	Revise to "U" non-detect
	MW-1	Chromium	Revise to "U" non-detect
	MW-10	Chromium	Revise to "U" non-detect
	MW-11	Chromium	Revise to "U" non-detect
	MW-12	Chromium, thallium	Revise to "U" non-detect
	MW-2	Chromium	Revise to "U" non-detect
	MW-3	Chromium	Revise to "U" non-detect
	MW-4	Chromium	Revise to "U" non-detect
	MW-6	Chromium, thallium	Revise to "U" non-detect
	MW-7	Chromium	Revise to "U" non-detect

Table 3-1. *Evaluation of Laboratory Initial and Continuing Calibration Blanks*

Package Identification	Client ID	Element	Action
	MW-8	Chromium	Revise to "U" non-detect
	MW-9	Chromium	Revise to "U" non-detect
F2J180121	P-2 (78.5)	Beryllium	Revise to "U" non-detect
F2K060153	P-10 (97.9)	Beryllium	Revise to "U" non-detect
	P-11 (107.4)	Chromium	Revise to "U" non-detect
	P-11 (87)	Chromium	Revise to "U" non-detect
F2J300166	P-4 (97.2)	Chromium	Revise to "U" non-detect
F2K220291	P-7 (82.4)	Beryllium	Revise to "U" non-detect
	P-7 (102.4) – Filtered	Beryllium	Revise to "U" non-detect
	P-7 (102.4) – Unfiltered	Beryllium	Revise to "U" non-detect
F2L120270	P-14 (95.17)	Beryllium	Revise to "U" non-detect
	P-14 (95.17) – Filtered	Chromium, beryllium	Revise to "U" non-detect
	P-16 (101)	Chromium, beryllium	Revise to "U" non-detect
	P-16 (81)	Beryllium	Revise to "U" non-detect
	P-16 (81) – Filtered	Beryllium	Revise to "U" non-detect

3.2.10. Laboratory Method Blanks (Preparation Blanks)

In general, most preparation blanks did not contain contamination from laboratory systems. Only in a few cases were the elements of concern, in particular, beryllium, identified in the preparation blanks. When this occurred, the corresponding project sample results for the identified contaminants were revised to non-detect results if the associated sample results were less than 5 times the method blank results in accordance with the QAPP (GTEOSI, 2002). Additionally, in a few cases, the laboratory reported a negative value for an element (thallium) which could indicate a bias for both positive and non-detect results. If a negative value was identified (i.e., greater than the negative MDL), the affected result was qualified as "J" or "UJ." A summary of the samples and elements that were revised due to laboratory contamination are presented in Table 3-2.

Table 3-2. *Evaluation of Laboratory Method Blanks*

Package identification	Client ID	Element	Action
F2J180121	P-2 (78.5)	Beryllium	Revise result to "U" non-detect
F2L070156	P-13 (76.6)	Beryllium	Revise result to "U" non-detect
	P-13 (96.6)	Beryllium	Revise result to "U" non-detect
	P-13 (96.6) – Dissolved	Beryllium	Revise result to "U" non-detect
	P-14 (77.82)	Beryllium	Revise result to "U" non-detect

Table 3-2. *Evaluation of Laboratory Method Blanks*

Package Identification	Client ID	Element	Action
	P-14 (77.82) - Dissolved	Beryllium	Revise result to "U" non-detect
F2L060132	P-8 (77.55)	Beryllium	Revise result to "U" non-detect
	P-8 (97.55) – Dup	Beryllium, thallium	Revise result to "U" non-detect
F2K220291	P-7 (82.4)	Thallium	Revise result to "U" non-detect
	P-7 (102.4) – Filtered	Thallium	Revise result to "U" non-detect
	P-7 (102.4) – Unfiltered	Thallium	Revise result to "U" non-detect
F2J300166	P-5 (77.5)	Beryllium	Revise result to "U" non-detect

3.2.11. Laboratory Control Sample Results

The laboratory analyzed a laboratory control sample (LCS) for all QC batches. The percent recoveries were within laboratory control limits for all QC batches.

3.2.12. Matrix Spike/Matrix Spike Duplicate Analyses

Multiple project samples were submitted for MS/MSD analyses. No qualification of data was required based on percent recoveries exceedances. The laboratory also performed interference check sample analyses for each SDG for the groundwater project. The percent recoveries for the results were within method criteria for all analyses.

3.2.13. Field Duplicate Analyses

Three project samples were submitted as field duplicates. An evaluation of the precision of the field sampling procedure (as well as the laboratory analysis procedure) was made based on the relative percent difference (RPD) calculated for the original and duplicate sample results. Calculations were made only when both results were above the laboratory reporting limits. The RPD values for most elements were less than 30% (aqueous data evaluation criteria).

It should be noted that QAPP requirements (GTEOSI, 2002) specified that a field duplicate sample be collected at a rate of one sample for every ten samples (collection rate of 10%). Six field duplicates were required to be collected for the project since a total of 57 project samples were submitted for analysis. Since an adequate number of field duplicate samples were not collected, the precision objective for the project (which was acceptable at 100% for the three field duplicates submitted), is potentially inaccurate because of the limited number of field duplicate samples collected.

Table 3-3. *Evaluation of Field Duplicate Samples*

Package Identification	Client ID	Qualified Compounds	Action
F2K150247	P-12 (78.85)	Chromium, copper, nickel	"J" (RPD>30%)
	P-12 (78.85) Dup	Chromium, copper, nickel	"J" (RPD>30%)
F2L060132	P-8 (97.55)	Chromium, copper	"J" (RPD>30%)
	P-8 (97.55) – Dup	Chromium, copper	"J" (RPD>30%)

3.2.14. Equipment Blanks

One equipment blank was submitted for the groundwater sampling project. The equipment blank did not contain any of the elements of concern for the project

3.2.15. Quantitation of Results

The laboratory reporting limits for the metals were in accordance with the NYSDEC requirements (i.e., reporting at the Practical Quantitation Limits specified in the QAPP). The laboratory reported estimated data below the laboratory reporting limit but above the laboratory MDL, and qualified the estimated data with a "B" qualifier. In the EDD, URS revised the "B" qualifier to a "J" qualifier to provide consistency in review of the database.

3.2.16. Total Versus Dissolved Results

An evaluation of the total versus dissolved results was made to assess whether field filtration and/or laboratory analysis was

Table 3-4. *Total Metal Results Versus Dissolved Metal Results*

Package Identification	*Client ID*	*Compound*	*Action*
F2J180121	P-1 (78.7)	Nickel	"J"
	P-1 (78.7) – Dissolved	Nickel	"J"
	P-2 (78.5)	Chromium, copper, nickel	"J"
	P-2 (78.5) – Dissolved	Chromium, copper, nickel	"J"

3.2.17. Electronic Data Deliverables

The results in electronic database matched results listed on the hardcopy analytical report including laboratory qualifiers. The qualifiers and results were revised based on quality control issues, and changes are listed in previous comments made in this data usability summary report.

4. Summary and Data Usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. Overall, 100 percent of the metals data were determined to be usable for qualitative and quantitative purposes. Those sample results qualified as estimated ("J" and "UJ") due to data validation QA/QC exceedances should be considered conditionally usable.

The samples collected from the Site in Hicksville, New York were evaluated based on QA/QC criteria established by methods as listed in Section 1.3, by the data validation guidelines listed in Section 1.2, and by the QAPP (GTEOSI, 2002) established for this project. Major deficiencies in the data generation process would have resulted in data being rejected, indicating that the data are considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process resulted in some sample data being characterized as approximate or estimated. Identification of a data point as approximate indicates uncertainty in the reported concentration of the chemical, but not its assigned identity.

The following paragraphs present the adherence of the data to the precision, accuracy, representativeness, comparability, completeness, and sensitivity (PSARCC) parameters.

Precision is measured through the evaluation of field duplicate samples and laboratory duplicate samples. For the metals analyses, none of the data were rejected due to precision non-conformances.

LCS recoveries indicate the accuracy of the data. For the metals analyses, none of the data were rejected due to accuracy non-conformances.

Holding times, sample preservation, blank analysis, and analyte quantification are indicators of the representativeness of the analytical data. None of the metals data were rejected due to representativeness non-conformances.

Comparability is not compromised, provided that the analytical methods do not change over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures were consistently used by the laboratory, the comparability criteria for the analytical data were met.

Sensitivity is established by reported detection limits that represent measurable concentrations of elements that can be determined with a designated level of confidence. None of the metals data were rejected due to sensitivity non-conformances.

5. Data Usability Summary Report Summary Information

The DUSR was performed to determine whether or not the data meets site-specific criteria for data quality and use. The DUSR is developed by reviewing and evaluating the analytical data package. The following questions were addressed:

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

The QAPP required that USEPA Level III deliverables be provided by the laboratory for each data package. This requirement was met as it applies to the methods used by the laboratory for sample analysis. The evaluation of the sample data was completed using the information provided in the data packages provided by the laboratory.

2. Have all holding times been met?

The holding times were met for all the metal analyses were met.

3. Do all the QC data: blanks, standards, spike recoveries, replicate analyses, and sample data fall within the protocol-required limits and specifications?

The laboratory used the laboratory control limits during the analyses performed for this sampling event. QA/QC deviations and qualifications performed on the sample data are discussed in Chapter 3. Major non-conformances were not detected for the metals data.

4. Have all of the data been generated using established and agreed upon analytical protocols?

The QAPP required that USEPA guidance methods be used in the analysis of samples collected for this sampling event. The laboratory used the required method protocols for the analyses performed for this sampling event, which met data user and client needs.

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

The evaluation of selected raw data confirmed all information provided in the data packages.

6. Have the correct data qualifiers been used?

The laboratory applied the correct qualifiers to the sample data. The laboratory qualifiers were revised and/or applied as required by validation guidelines listed in Section 1.

References

GTE Operations Support Incorporated. (GTEOSI). *Soil Remediation Program Work Plan (QAPP: Appendix H), Former Sylvania Electric Products Facility, Hicksville, New York, Site Number V 00089-1*, Revision 2, October 2002

O'Brien & Gere Engineers, Inc. 2000. *Supplement to the Approved Work Plan (QAPP – Appendix C), Former Sylvania Electric Products Incorporated Facility Cantiague Rock Road, Hicksville, New York.* Syracuse, New York.

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Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, (SW846) USEPA, Final Update IIIA, April 1998.

CLP National Functional Guidelines for Inorganic Data Review, EPA 540-R-01-008, July 2002

United States Environmental Protection Agency Region II Evaluation of Metals Data for the CLP [Contract Laboratory Program] 3/90, USEPA 1992.

Analytical Services Protocol (ASP), New York State Department of Environmental Conservation (NYSDEC). Guidance documents including Exhibits A, B, C, D, E, F, G, H, and I. (June 2000).

2003 - 2004 Groundwater Sampling

REPORT

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Executive Summary

This report addresses data quality for groundwater samples collected at the former Sylvania Electric Products Incorporated facility in Hicksville, New York. This report is concerned with volatile samples collected by Malcolm Pirnie, Inc. (MPI) from March 15, 2003 through February 19, 2004.

The environmental samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri, for Volatile Organic Compound (VOC) analysis using United States Environmental Protection Agency (USEPA) guidance methods. A total of 403 samples[1] were submitted, which resulted in 14,939 VOC results[2]. Of this number, 11,529 of them are actual sample results[3] and the remainders are field quality assurance/quality control (QA/QC) indicators[4] of the samples. The analytical data generated for this investigation were evaluated by MPI using the QA/QC criteria established in the methods and USEPA guidelines. Non-conformances from the QA/QC criteria were qualified based on guidance provided in the following references:

- New York State Department of Environmental Conservation. *Analytical Services Protocol.* Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.
- United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.
- United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Organic Data Review.* EPA 540-R-99-008. October 1999.
- United States Environmental Protection Agency, Region 2. *Contract Laboratory Program* Organics *Data Review.* SOP No. HW-6, Revision #12. March 2001.
- United States Environmental Protection Agency, Region 2. *Standard Operating Procedure for the Validation of Organic Data Acquired Using SW-846 Method 8260B.* SOP No. HW-24, Revision #1. June 1999.

In circumstances where the quality of the data or the accuracy of the results is suspect, the project's Quality Assurance Project Plan (QAPP) and professional judgment[5] were also used to determine if results should be qualified as estimated ("J" or "UJ"). Since the individual guidance documents used (as a source of reference for the validation) may differ slightly in the type of qualification applied to data, MPI applied qualifiers generally with an err to caution (conservstive). Method non-conformances included exceedances of the relative percent standard deviation for the initial calibrations, the percent differences of the continuing calibrations, the excessively low response factors in both the initial and continuing calibrations, and the percent recoveries of the laboratory control samples. Results rejected were due to initial and continuing calibration response factor non-conformances, VOA vial headspace, and high sample storage temperature.

[1] Total number of samples includes field samples, field duplicates, trip blanks, field blanks, and equipment blanks.
[2] Total number of results includes 14,911 results for targeted compounds and 28 results for tentatively identified compounds. This number includes some results, which were rejected.
[3] This is the total number of results minus trip blank, field blank, and equipment blank results.
[4] These indicators do not include Matrix Spike/Matrix Spike Duplicate or other internal laboratory QA/QC indicators.
[5] Professional judgment is performed by a USEPA certified data validator with over a decade of environmental laboratory experience.

Additionally, most laboratory method blanks contained low level contamination from common laboratory contaminants, including acetone and methylene chloride. The presence of these contaminants affected many project samples. Qualification of associated results was performed to show the relationship between the laboratory contamination and the uncertainty of the final sample result. Similarly, the project trip blanks, field blanks, and equipment blanks contained low-levels of the same contaminants as were seen in the laboratory method blanks, in addition to other contaminants due to cross-contamination during field sampling activities. Again, MPI qualified the affected data to show the potential impact on the final sample results.

Other quality issues requiring data validation qualification included replacement of results which exceeded the laboratory calibration range (i.e., qualified with an "E" by the laboratory) with re-analysis results, and qualification of all tentatively identified compounds (TIC). TIC results are qualitative only, and not considered usable for quantitative assessments, in particular risk screening evaluations.

Overall, 92.0 percent[6] of the VOC results retained in the database as final data were determined to be usable for qualitative and quantitative purposes. The other 8.0 percent were qualified as unusable, "R," – the presence or absence of the compounds cannot be verified. Sample results qualified as estimated, "J" and "UJ," due to quality control (QC) exceedances should be considered conditionally usable. Therefore, the completeness objective of 90 percent, as stated in the QAPP, was met for the volatiles in groundwater database.

[6] Value = (14,911 total target compound list data points – 1,192 rejected TCL data points) / 14,911 X 100

1. Introduction

1.1. Sample Identification

This report addresses the results of a data quality evaluation for groundwater samples collected at the former Sylvania Electric Products Incorporated facility in Hicksville, New York (the Site). This report pertains to volatile samples collected by Malcolm Pirnie, Inc. (MPI) from March 15, 2003 through February 19, 2004.

The sample delivery group (SDG) number (laboratory package identification number), field identification, and laboratory identification of the samples that were submitted for data validation are presented in Table 1-1.

Table 1-1. *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3C190235	TB-A	F3C190235001	VOCs
	TB-B	F3C190235002	VOCs
	MW-7	F3C190235003	VOCs
	MW-2	F3C190235004	VOCs
	MW-1	F3C190235005	VOCs
	MW-11	F3C190235006	VOCs
	MW-12	F3C190235007	VOCs
	MW-5	F3C190235008	VOCs
	MW-10 (also MS/MSD)	F3C190235009	VOCs
	MW-9	F3C190235010	VOCs
	MW-6 (also MS/MSD)	F3C190235011	VOCs
	MW-3	F3C190235012	VOCs
	MW-4	F3C190235013	VOCs
	MW-8	F3C190235014	VOCs
	FB	F3C190235015	VOCs
	MW-DUP (MW-3)	F3C190235016	VOCs
F3D290160	P-17-73.25	F3D290160001	VOCs
	P-17-92.25	F3D290160003	VOCs
	P-17-223.1	F3D290160005	VOCs
	P-FB-1	F3D290160006	VOCs
	P-F-86.48	F3D290160007	VOCs

Table 1-1. *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3D290160 Cont'd	TB-1	F3D290160008	VOCs
	P-F-76.46	F3D290160009	VOCs
F3E060217	P-27-89.75	F3E060217001	VOCs
	P-27-DUP (P-27-99.75)	F3E060217002	VOCs
	P-27-99.75	F3E060217003	VOCs
	P-27-139.75	F3E060217004	VOCs
	P-27-199.75 (also MS/MSD)	F3E060217005	VOCs
	P-28-87.02	F3E060217006	VOCs
	P-28-97.02	F3E060217007	VOCs
	P-28-147.02	F3E060217008	VOCs
	P-28-207.02	F3E060217009	VOCs
	TB-2	F3E060217010	VOCs
F3E160130	P-26-231.25 (also MS/MSD)	F3E160130009	VOCs
	P-26-241.25	F3E160130010	VOCs
	P-E-78.57	F3E160130011	VOCs
	P-E-88.57	F3E160130012	VOCs
	P-E-98.57	F3E160130013	VOCs
	TRIP BLANK	F3E160130014	VOCs
F3E200165	P-26-257.2	F3E200165001	VOCs
	P-26-267.2	F3E200165002	VOCs
	P-26A-276.53	F3E200165003	VOCs
	P-26A-286.5	F3E200165004	VOCs
	P-26A-295.85	F3E200165005	VOCs
	TRIP BLANK	F3E200165006	VOCs
	P-E-128.57	F3E200165010	VOCs
	P-E-138.57	F3E200165011	VOCs
	P-E-148.57	F3E200165012	VOCs
	P-E-158.57	F3E200165013	VOCs
F3E230179	P-E-292.28	F3E230179003	VOCs
	P-E-301.23	F3E230179004	VOCs

Table 1-1. *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3E230179 Cont'd	P-E-332.85	F3E230179006	VOCs
	P-E-327.15	F3E230179007	VOCs
	TB-051903B	F3E230179008	VOCs
F3E290170	P-D-87.05	F3E290170002	VOCs
	1EB-5/27	F3E290170003	VOCs
	P-D-97.05	F3E290170004	VOCs
	P-D-107.05 (also MS/MSD)	F3E290170005	VOCs
	TB-05-28-03	F3E290170010	VOCs
	P-15-79.65	F3E290170011	VOCs
	P-15-89.65	F3E290170012	VOCs
	P-15-99.65	F3E290170013	VOCs
	P-15-109.65	F3E290170014	VOCs
	P-15-119.65	F3E290170015	VOCs
F3F030298	P-15-179.65	F3F030298006	VOCs
	P-D-257.	F3F030298022	VOCs
	P-D-290.1	F3F030298023	VOCs
	P-D-77.05	F3F030298024	VOCs
	P-D-117.05	F3F030298025	VOCs
	P-D-127.05	F3F030298026	VOCs
	P-D-137.05	F3F030298027	VOCs
	P-D-147.05	F3F030298028	VOCs
	TB-06-02-03	F3F030298037	VOCs
F3F120220	P-C-89.6	F3F120220002	VOCs
	P-C-99.6	F3F120220003	VOCs
	P-C-DUP-1 (P-C-99.6)	F3F120220012	VOCs
	TRIP BLANK	F3F120220013	VOCs
F3F170126	P-C-320.3	F3F170126003	VOCs
	P-C-330.3	F3F170126004	VOCs
	P-C-337.5	F3F170126005	VOCs
	P-24-87.35	F3F170126006	VOCs
	P-24-77.35	F3F170126007	VOCs

Table 1-1. *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3F170126 Cont'd	TB-612-616	F3F170126008	VOCs
	P-C-FB	F3F170126009	VOCs
	P-C-159.6	F3F170126010	VOCs
	P-C-169.6 (also MS/MSD)	F3F170126011	VOCs
F3F180192	TB-617	F3F180192001	VOCs
	P-24-127.3	F3F180192005	VOCs
	P-24-137.3	F3F180192006	VOCs
	P-C-347.7 (also MS/MSD)	F3F180192008	VOCs
F3F200145	P-24-157.3	F3F200145001	VOCs
	P-24-167.3	F3F200145002	VOCs
	P-24-177.3	F3F200145003	VOCs
	P-24-187.3	F3F200145004	VOCs
	P-24-197.3	F3F200145005	VOCs
	P-24-207.3	F3F200145006	VOCs
	P-24-217.3	F3F200145007	VOCs
	P-24-DUP-1 (P-24-167.3) (also MS/MSD)	F3F200145008	VOCs
	P-24-227.3	F3F200145009	VOCs
	P-24-237.3	F3F200145010	VOCs
	P-24-247.3	F3F200145011	VOCs
	P-24-257.3	F3F200145012	VOCs
	TB-619	F3F200145013	VOCs
	P-24-147.3	F3F200145014	VOCs
	P-24-267.3 (also MS/MSD)	F3F200145015	VOCs
	P-24-277.3	F3F200145016	VOCs
	P-24-287.3	F3F200145017	VOCs
	P-24-DUP-2 (P-24-287.3)	F3F200145018	VOCs
	P-C-364.5	F3F200145019	VOCs
	P-C-374.5	F3F200145020	VOCs
	P-C-394.5	F3F200145021	VOCs
	P-C-384.5	F3F200145022	VOCs
F3F260187	P-24-297.3	F3F260187001	VOCs
	P-23-FB-1	F3F260187002	VOCs
	P-23-180.1	F3F260187013	VOCs
	P-23-DUP-1 (P-23-180.1)	F3F260187014	VOCs

Table 1-1. *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3F260187 Cont'd	TB-619625	F3F260187015	VOCs
F3F270132	TB-625626	F3F270132001	VOCs
	P-23-150.1	F3F270132007	VOCs
	P-23-160.1	F3F270132008	VOCs
F3G010309	P-23-239.8	F3G010309001	VOCs
	P-23-252.0	F3G010309002	VOCs
	P-23-262.0	F3G010309003	VOCs
	P-23A-286.96	F3G010309004	VOCs
	P-23A-293.50	F3G010309005	VOCs
	TB-627630	F3G010309006	VOCs
F3G030162	TB-701702	F3G030162001	VOCs
	P-23A-DUP-1 (P-23A-347.6)	F3G030162004	VOCs
	P-23A-347.6	F3G030162005	VOCs
F3G110205	P-25-EB-1	F3G110205001	VOCs
	P-25-169.7	F3G110205011	VOCs
	P-25-179.7	F3G110205012	VOCs
	P-25-DUP-1 (P-25-179.7)	F3G110205017	VOCs
	P-35-EB-1	F3G110205018	VOCs
	P-35-117.2	F3G110205023	VOCs
	P-35-177.2	F3G110205029	VOCs
	P-35-DUP-1 (P-35-177.2)	F3G110205030	VOCs
	TB-708710	F3G110205031	VOCs
F3G150156	P-25-275.8	F3G150156006	VOCs
	P-25-DUP-2 (P-25-275.8)	F3G150156007	VOCs
	P-25-349.4	F3G150156014	VOCs
	P-35-EB-2	F3G150156027	VOCs
	P-35-332.2	F3G150156030	VOCs
	P-35-DUP-2 (P-35-332.2)	F3G150156031	VOCs
	TB-710714	F3G150156032	VOCs
F3G230216	P-H-EB-1	F3G230216001	VOCs
	P-H-116.8	F3G230216006	VOCs
	TB721722	F3G230216007	VOCs
	P-42-EB-1	F3G230216008	VOCs
F3G250374	P-H-106.8	F3G250374001	VOCs

Table 1-1. *Sample Cross-Reference List*

Package Identification	*Sample ID*	*Laboratory ID*	*Analysis Performed*
F3G250374	P-H-136.8	F3G250374004	VOCs
	P-H-146.8	F3G250374005	VOCs
	P-H-156.8	F3G250374006	VOCs
	P-H-EB-2	F3G250374011	VOCs
	P-H-206.55	F3G250374012	VOCs
	P-42-202.7	F3G250374016	VOCs
	P-42-DUP-1 (P-42-202.7)	F3G250374017	VOCs
	P-H-DUP-2 (P-H-206.55)	F3G250374019	VOCs
	TB-722724	F3G250374020	VOCs
F3G290207	P-H-351.65	F3G290207006	VOCs
	P-42-217.2	F3G290207011	VOCs
	P-42-276.4	F3G290207014	VOCs
	P-42-329.8	F3G290207019	VOCs
	P-42-DUP-2 (P-42-329.8)	F3G290207020	VOCs
	P-42-354.6	F3G290207022	VOCs
	TB-724728	F3G290207023	VOCs
F3H060192	P-20-149.60	F3H060192008	VOCs
	P-20-159.60	F3H060192009	VOCs
	P-20-EB-1	F3H060192010	VOCs
	P-45-81.25	F3H060192011	VOCs
	TB-804805	F3H060192013	VOCs
	P-45-131.25	F3H060192017	VOCs
	P-45-DUP-1 (P-45-81.25)	F3H060192018	VOCs
F3H080219	P-20-220.76	F3H080219006	VOCs
	P-20-229.70	F3H080219007	VOCs
	TB-805807	F3H080219008	VOCs
	P-45-151.25	F3H080219010	VOCs
	P-45-207.25	F3H080219015	VOCs
F3H130195	P-45-281.65	F3H130195001	VOCs
	P-20-309.60	F3H130195010	VOCs
	P-20-319.60	F3H130195011	VOCs
	P-20-FB	F3H130195019	VOCs
	TB-8-12	F3H130195020	VOCs
	P-20-427.99	F3H130195021	VOCs

Table 1-1. *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3H130195 Cont'd	P-20-DUP-2 (P-20-427.99)	F3H130195022	VOCs
F3H180106	P-45-366.39	F3H180106001	VOCs
	P-45-DUP-2 (P-45-366.39)	F3H180106002	VOCs
	P-20-476.68	F3H180106005	VOCs
	TB-0813	F3H180106006	VOCs
F3H210288	P-36-EB-1	F3H210288001	VOCs
	P-37-119.95	F3H210288019	VOCs
	P-37-DUP-1 (P-37-119.95)	F3H210288023	VOCs
	TB-819820	F3H210288024	VOCs
F3H220246	P-36-156.7	F3H220246002	VOCs
	P-36-DUP-1 (P-36-156.7)	F3H220246003	VOCs
	P-46-139.60	F3H220246011	VOCs
	P-46-DUP-1 (P-46-139.60) (also MS/MSD)	F3H220246012	VOCs
	P-37-EB-1	F3H220246023	VOCs
	TB-820821	F3H220246024	VOCs
F3H270230	P-46-275.42	F3H270230003	VOCs
	P-46-DUP-2 (P-46-275.42)	F3H270230004	VOCs
	P-36A-282.0	F3H270230010	VOCs
	P-36-136.7	F3H270230016	VOCs
	P-37-284.4	F3H270230020	VOCs
	P-37-304.8	F3H270230021	VOCs
	P-37-DUP-2 (P-37-304.8)	F3H270230022	VOCs
	TB-821-824	F3H270230024	VOCs
F3I040177	EB-1-44	F3I040177001	VOCs
	EB-2-P-44	F3I040177002	VOCs
	P-44-99.3	F3I040177004	VOCs
	P-44-DUP-1 (P-44-99.3)	F3I040177005	VOCs
	TB-90203	F3I040177009	VOCs
F3I050189	P-44-149.8	F3I050189003	VOCs
	TB-903904	F3I050189016	VOCs
F3I090305	P-44-215.5	F3I090305007	VOCs
	P-44-229.2	F3I090305008	VOCs
	P-44-239.85	F3I090305009	VOCs
	P-44-249.85	F3I090305010	VOCs

Table 1-1. *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3I090305 Cont'd	P-44-257.1	F3I090305011	VOCs
	P-44-EB-3	F3I090305015	VOCs
	P-47-DUP-1 (P-47-147.1)	F3I090305025	VOCs
	P-47-147.1	F3I090305026	VOCs
	P-47-177.0 (also MS/MSD)	F3I090305030	VOCs
	P-47-205.7	F3I090305034	VOCs
	TB-904908	F3I090305039	VOCs
F3I120107	P-43-EB-1	F3I120107001	VOCs
	P-43-119.88	F3I120107006	VOCs
	P-43-DUP-1 (P-43-119.88)	F3I120107007	VOCs
	P-44-339.8	F3I120107016	VOCs
	TB-908910	F3I120107017	VOCs
F3I150101	P-43-129.88	F3I150101004	VOCs
	P-47-197.0	F3I150101005	VOCs
	TB-906911	F3I150101006	VOCs
F3I180259	P-29-109.5	F3I180259005	VOCs
	P-29-DUP-1 (P-29-109.5)	F3I180259006	VOCs
	TB-916917	F3I180259012	VOCs
	P-38-FB-1	F3I180259020	VOCs
	P-38-116.7	F3I180259027	VOCs
	P-38-DUP-1 (P-38-116.7)	F3I180259028	VOCs
	P-38-146.7	F3I180259031	VOCs
F3I230231	P-29-EB-1	F3I230231003	VOCs
	P-29-310.2	F3I230231014	VOCs
	P-29-329.85	F3I230231016	VOCs
	P-29-DUP-2 (P-29-329.85)	F3I230231017	VOCs
	P-29-EB-2	F3I230231019	VOCs
	P-29-360.0	F3I230231020	VOCs
	P-38-186.3	F3I230231024	VOCs
	P-38-207.5	F3I230231025	VOCs
	P-38-216.3	F3I230231026	VOCs
	P-38-260.7	F3I230231028	VOCs
	P-43-246.68	F3I230231035	VOCs
	P-43-DUP-2 (P-43-246.68)	F3I230231036	VOCs

Table 1-1. *Sample Cross-Reference List*

Package Identification	*Sample ID*	*Laboratory ID*	*Analysis Performed*
F3I230231 Cont'd	P-43-294.85	F3I230231041	VOCs
	TB-917922	F3I230231043	VOCs
	P-29-390.0	F3I230231044	VOCs
F3I250196	P-38-FB-2	F3I250196004	VOCs
	P-38-DUP-3 (P-38-381.3)	F3I250196005	VOCs
	TB-923924	F3I250196007	VOCs
F3J030259	P-30-89.50	F3J030259002	VOCs
	P-30-99.50	F3J030259003	VOCs
	P-30-204.55	F3J030259011	VOCs
	P-30-DUP-1 (P-30-204.55)	F3J030259013	VOCs
	TB1-930102	F3J030259015	VOCs
F3J070236	P-30A-298.6	F3J070236029	VOCs
	P-30A-DUP-2 (P-30A-298.6)	F3J070236030	VOCs
	P-18-EB-1	F3J070236033	VOCs
	P-18-156.65	F3J070236040	VOCs
	P-18-DUP-1 (P-18-156.65)	F3J070236041	VOCs
	TB-102106	F3J070236043	VOCs
F3J110172	P-30A-406.55	F3J110172020	VOCs
	P-30A-DUP-3 (P-30A-406.55)	F3J110172021	VOCs
	P-18-217.65	F3J110172023	VOCs
	P-18-247.65	F3J110172026	VOCs
	P-18-DUP-2 (P-18-247.65)	F3J110172027	VOCs
	P-18-257.65	F3J110172028	VOCs
	P-18-267.65	F3J110172029	VOCs
	P-18-277.65	F3J110172030	VOCs
	P-18-287.65	F3J110172031	VOCs
	P-18-302.66	F3J110172032	VOCs
	TB-106109	F3J110172033	VOCs
	P-18-335.80	F3J110172034	VOCs
F3J240204	P-50-109.90	F3J240204006	VOCs
	P-50-119.90	F3J240204007	VOCs
	P-50-129.90	F3J240204008	VOCs
	P-50-DUP-1 (P-50-129.90)	F3J240204009	VOCs
	P-50-139.90	F3J240204010	VOCs

Table 1-1. *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F2J240204 Cont'd	P-50-149.90	F3J240204011	VOCs
	P-49-114.3 (also MS/MSD)	F3J240204020	VOCs
	P-49-124.3	F3J240204021	VOCs
	P-49-167.3	F3J240204024	VOCs
	P-49-DUP-1 (P-49-167.3)	F3J240204025	VOCs
	TB10211023	F3J240204027	VOCs
	P-51-117.78	F3J240204034	VOCs
	P-51-127.78	F3J240204035	VOCs
	P-49-EB-1	F3J240204040	VOCs
F3J290103	P-50-249.90	F3J290103003	VOCs
	P-50-267.44	F3J290103005	VOCs
	P-50-309.90	F3J290103009	VOCs
	P-50-EB-2	F3J290103012	VOCs
	P-50-342.60	F3J290103013	VOCs
	P-50-DUP-2 (P-50-342.60)	F3J290103014	VOCs
	TB-10231027	F3J290103019	VOCs
	P-49-269.3	F3J290103026	VOCs
	P-49-284.3	F3J290103027	VOCs
	P-49-340.8	F3J290103031	VOCs
	P-49-DUP-2 (P-49-340.8)	F3J290103032	VOCs
	P-51-187.78	F3J290103033	VOCs
	P-51-DUP-2 (P-51-246.75)	F3J290103037	VOCs
	P-51-246.75	F3J290103038	VOCs
F3J310287	P-51-301.12	F3J310287008	VOCs
	P-51-321.00	F3J310287009	VOCs
	P-51-327.85	F3J310287010	VOCs
	TB-10271030	F3J310287016	VOCs
F3K080109	P-54-107.55	F3K080109004	VOCs
	P-52-EB-1	F3K080109014	VOCs
	P-52-170.0	F3K080109024	VOCs
	P-52-DUP-1 (P-52-170.0)	F3K080109025	VOCs
	P-58-EB-1	F3K080109027	VOCs
	P-58-159.65	F3K080109036	VOCs
	P-58-DUP-1 (P-58-159.65)	F3K080109037	VOCs

Table 1-1. *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3K080109 Cont'd	TB-114116	F3K080109044	VOCs
F3K110173	P-58-274.65	F3K110173001	VOCs
	P-58-DUP-2 (P-58-274.65)	F3K110173002	VOCs
	P-54-267.95	F3K110173017	VOCs
	P-54-DUP-2 (P-54-267.95)	F3K110173018	VOCs
	P-54-276.4	F3K110173019	VOCs
	TB-1171110	F3K110173031	VOCs
F3K140242	P-54-351.25	F3K140242005	VOCs
	P-54-DUP-3 (P-54-351.25)	F3K140242006	VOCs
	TB-11101113	F3K140242009	VOCs
F3K210372	P-52-EB-2	F3K210372005	VOCs
	TB-11171120	F3K210372006	VOCs
	EB-P-54-11-17	F3K210372007	VOCs
	P-53-EB-11-20	F3K210372012	VOCs
F3K280120	P-53-146.40	F3K280120006	VOCs
	P-53-DUP-1 (P-53-146.40)	F3K280120007	VOCs
	P-53-266.35 (also MS/MSD)	F3K280120018	VOCs
	P-53-DUP-2 (P-53-266.35)	F3K280120019	VOCs
	P-34-EB-1	F3K280120025	VOCs
	P-34-139.55	F3K280120032	VOCs
	P-34-DUP-1 (P-34-139.55)	F3K280120033	VOCs
	P-34-224.55	F3K280120041	VOCs
	P-34-234.55	F3K280120042	VOCs
	P-34-244.55	F3K280120043	VOCs
	P-34-DUP-2 (P-34-244.55)	F3K280120044	VOCs
	P-34-254.55	F3K280120045	VOCs
	P-34-264.55	F3K280120046	VOCs
	P-34-284.55	F3K280120047	VOCs
	P-34-294.55	F3K280120048	VOCs
	P-34-304.50 (also MS/MSD)	F3K280120049	VOCs
	TB-11201125	F3K280120050	VOCs
	P-53-331.10	F3K280120051	VOCs
	P-53-340.05	F3K280120052	VOCs
F3L050365	P-34-324.50	F3L050365001	VOCs

Table 1-1. *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3L050365 Cont'd	P-34-334.50	F3L050365002	VOCs
	TB-121124	F3L050365007	VOCs
F3L090146	P-33-EB-1	F3L090146001	VOCs
	P-33-159.6	F3L090146010	VOCs
	P-33-169.6	F3L090146011	VOCs
	P-33-179.6	F3L090146012	VOCs
	P-33-DUP-1 (P-33-169.6)	F3L090146013	VOCs
	P-33-189.6	F3L090146014	VOCs
	P-33-198.1	F3L090146015	VOCs
	P-33-214.6	F3L090146016	VOCs
	P-33-224.6	F3L090146017	VOCs
	P-53-426.75	F3L090146018	VOCs
	P-53-480.90	F3L090146019	VOCs
	TB-125128	F3L090146020	VOCs
F4A130259	P-31-EB-1	F4A130259001	VOCs
	P-31-190.40	F4A130259011	VOCs
	P-31-DUP-1 (P-31-190.40)	F4A130259012	VOCs
	P-55-EB-1	F4A130259019	VOCs
	P-55-DUP-1 (P-55-154.55)	F4A130259025	VOCs
	P-55-154.55	F4A130259029	VOCs
	TB-0105/0112	F4A130259030	VOCs
F4A150320	P-31-344.25	F4A150320004	VOCs
	P-31-351.55	F4A150320005	VOCs
	P-31-DUP-2 (P-31-351.55)	F4A150320006	VOCs
	P-55-164.55	F4A150320007	VOCs
	P-55-174.55	F4A150320008	VOCs
	P-55-186.15	F4A150320009	VOCs
	P-55-EB-2	F4A150320010	VOCs
	P-55-264.40	F4A150320013	VOCs
	P-55-271.00	F4A150320014	VOCs
	TB-01120114	F4A150320015	VOCs
F4A300327	P-55-311.95	F4A300327004	VOCs
	P-55-DUP-2 (P-55-311.95)	F4A300327005	VOCs
	TB-01220129	F4A300327009	VOCs

Table 1-1. *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F4A300327 Cont'd	P-56-DUP-2 (P-56-126.55)	F4A300327023	VOCs
F4B130279	P-32-174.35	F4B130279001	VOCs
	P-32-DUP-1 (P-32-174.35)	F4B130279002	VOCs
	P-32-224.35	F4B130279005	VOCs
	P-32-234.35	F4B130279006	VOCs
	P-32-241.01	F4B130279007	VOCs
	P-32-251.77	F4B130279008	VOCs
	P-32-259.35	F4B130279009	VOCs
	P-32-269.35	F4B130279010	VOCs
	TB-02110212	F4B130279012	VOCs
F4B170134	P-32-279.35	F4B170134001	VOCs
	TB-020916	F4B170134011	VOCs
F4B200226	P-32-488.9	F4B200226006	VOCs
	P-32-DUP-3 (P-32-488.9)	F4B200226007	VOCs
	TB-02090219	F4B200226008	VOCs

1.2. General Considerations

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Although the term is frequently used in discussing methodologies, it applies to all aspects of the analytical system and especially to samples, their measurements, and the actual data output. Accordingly, for the samples and analyses addressed herein, this report summarizes the findings of the review and outlines any deviations from the applicable quality control (QC) criteria referenced in the following documents:

- New York State Department of Environmental Conservation. *Analytical Services Protocol.* Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.
- United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Organic Data Review.* EPA 540-R-99-008. October 1999.
- United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.
- United States Environmental Protection Agency, Region 2. *Contract Laboratory Program* Organics *Data Review.* SOP No. HW-6, Revision #12. March 2001.
- United States Environmental Protection Agency, Region 2. *Standard Operating Procedure for the Validation of Organic Data Acquired Using SW-846 Method 8260B.* SOP No. HW-24, Revision #1. June 1999.
- URS Corporation. *GTE Operations Support Incorporated - Groundwater Investigation Work Plan, Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* QAPP: Appendix C. September 2002.

1.3. Analytical Methods

The environmental samples presented in this report were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri, for volatile organic compound (VOC) analyses. The laboratory used the following USEPA guidance methods for the analyses:

- SW846 Method 5030B: Purge-and-Trap for Aqueous Samples
- SW846 Method 8260B: Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

The laboratory assigned an SDG number to a group of samples during the sample log-in process. The SDG number is the means by which the laboratory tracks samples and QC analyses. A total of 403 samples in a total of 55 SDGs are included in this data validation report. The SDG, field identification, and laboratory identification for each sample are summarized in Table 1-1.

The following sections of this document address distinct aspects of the validation process. Section 2 lists the data QA/QC protocols used to validate the sample data. Section 3 presents a summary of the findings associated with the validation and a discussion of the specific QA/QC deviations and qualifications performed on the sample data. Section 4 presents a discussion of data completeness and usability. Section 5 presents the Data Usability Summary Report (DUSR) summary information.

2. Data Validation Protocols

2.1. Sample Analysis Parameters

The validation of analyses for this project used guidances presented in the QAPP (GTEOSI, 2002), the analytical methodologies, the data validation guidelines referenced in Section 1, and professional judgment[7]. MPI performed a data review of all analytical results to assess data quality. A data review includes an assessment of sample handling protocols and supporting laboratory and field QC parameters. The following is a list of specific analytical information evaluated during the validation:

- Data package completeness review – per the NYSDEC ASP Category B or USEPA CLP deliverables requirements
- Analytical methods performed and test method references
- Sample condition - review of log-in records for cooler temperature, presence of headspace, chemical preservation, etc.
- Holding times - comparison of collection, preparation, and analysis dates
- Analytical results - units, values, significant figures
- Sample traceability to raw data
- Instrument tuning
- Initial calibration – comparison to technical guideline criteria
- Continuing calibration – comparison to technical guideline criteria
- Method blank results and laboratory contamination
- Laboratory control sample (LCS) results and comparison to laboratory control limits
- Matrix spike/matrix spike duplicate (MS/MSD) results and comparison to laboratory control limits
- Field replicate/duplicate results and comparison to technical guideline criteria
- Field QC sample (i.e., trip blanks, field blanks, equipment blanks)
- Surrogate recoveries (where applicable) and comparison to laboratory control limits
- Internal Standards (where applicable) and comparison to technical guideline criteria
- Compound identifications, quantitations, dilutions, and reporting limits
- Tentatively Identified Compounds (TICs)

[7] Professional judgment is performed by a USEPA certified data validator with over a decade of environmental laboratory experience.

- Electronic Data Deliverables (EDDs) – comparison to the hardcopy analytical

The analytical reports were reviewed for completeness and the accompanying QC data were reviewed for acceptable performance. When QC results indicated poor performance, MPI applied data qualifiers to the results to inform the data user of the possible performance problem. These qualifiers are in addition to or a revision of the qualifiers provided by the laboratory. A summary of the data qualifiers used for this review is presented in Section 2.2.

2.2. Data Qualifiers

The following qualifiers have been used by the laboratory for organic analyses:

"U" Non-detect result at the laboratory established reporting limit.

"B" Associated with a result if the compound was also identified in the corresponding method blank.

"J" Indicates an estimated value or a value below the laboratory established reporting limit but above the method detection limit.

"E" This flag identifies compounds whose concentrations exceed the calibration range of the instrument for the specific analysis; data qualified with an "E" are qualitative only and not useable for quantitative purposes. All results qualified with an "E" were required to be re-analyzed using an applicable dilution and re-reported.

Laboratory qualifiers defined above, are retained in the final database unless revised during the data validation process to one of the following qualifiers:

"U" The compound was analyzed for, but was not detected above the reported quantitation limit.

"J" The compound was positively identified; the associated numerical value is the approximate concentration of the compound in the sample.

"N" The analysis indicates the presence of a compound for which there is presumptive evidence to make a "tentative identification".

"NJ" The analysis indicates the presence of a compound that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

"UJ" The compound was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the compound in the sample.

"R" The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the compound cannot be verified.

2.3. Data Usability Summary Report Questions

The DUSR determines whether or not the data meets Site-specific criteria for data quality and use. It was developed to review and evaluate the analytical data packages. During the course of this review the following questions were addressed (where applicable):

1. *Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?*

2. *Have all holding times been met?*

3. *Do all the QC data: blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?*

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

6. *Have the correct data qualifiers been used?*

The answers to the questions presented by the DUSR are presented in the following sections of the report and in the DUSR Summary Information Section, Section 5.

3. Data Quality Evaluation

3.1. Summary

This section summarizes whether the QA/QC parameters reported, which were specified in Section 2.1, met validation criteria. Summaries of the individual components of the review are described in the following sections.

3.2. Review of Validation Criteria

3.2.1. Completeness Review

The laboratory provided the analytical results using Contract Laboratory Program (CLP) –like format. Most documents were included in the report packages including a case narrative summarizing the QC issues associated with the project analyses. Documents missing from the report packages are detailed in Section 3.2.5.

3.2.2. Test Methods

The laboratory performed the analyses using the analytical test methods listed in Section 1.3. They included USEPA SW-846 Method 5030B (purge and trap sample introduction) followed by Method 8260B (gas chromatography/mass spectrometry sample analysis). All samples were analyzed using a 25 mL (typical volume is 5 mL) purge volume, which offered lower reporting limits for each compound.

3.2.3. Sample Receipt

The laboratory received 403 water samples for VOC analysis between March 18, 2003 and February 20, 2004. The temperatures within most VOC sample shipment coolers at the time of laboratory receipt were within the recommended temperature range of 4°C ± 2°C. The exception was with SDG F3H180106 –see details below. Field and laboratory personnel completed the Chain-of-Custody (COC) documents recording the signature, date, and time of custody transfer. The laboratory recorded the condition of the samples at the time of receipt on a "Conditions Upon Receipt Form." This form identifies whether the containers were received undamaged, within the proper temperature range, at the proper pH, in a container that is sealed with a custody seal on the exterior, and with a completed COC enclosed to identify all samples submitted to the laboratory.

The following problems with sample receipt were found:

- SDG F3F030298: sample P-15-189.65 was not submitted but was on the COC; sample TB-06-02-03 was not written on the COC but was submitted – the lab made corrections after contacting MPI. Sample P-D-77.05 pH was not less than 2; however, the sample was analyzed on the 7th day from date of sample collection – no qualification actions are necessary.

- SDG F3F120220: samples P-C-159.6 and P-C-169.6 were not submitted but were on the COC; sample TRIP BLANK was submitted but was not on the COC. In addition, sample P-C-99.6 had headspace; however, the laboratory did not indicate if both or only one of the bottles were affected – with the assumption that only one of the bottles were affected, no qualification was performed.

- SDG F3F180192: sample P-24-97.35 was not submitted but was on the COC.

- SDG F3F260187: sample FB-6-24 was relabeled on the COC as P-23-FB1, but was not relabeled on one of the sample bottles.

- SDG F3G110256: samples P-35-DUP-1 and TB-708710 were mistakenly documented as P-35-DUP-2 and P-35-708710, respectively, during the laboratory's sample log-in process, resulting in the wrong sample IDs reported; IDs were manually corrected during the validation process. Also, one sample container for sample P-35-DUP-1 has headspace; however, no qualification is performed since the laboratory would have used the second vial. Both sample containers for sample P-35-117.2 have headspace; therefore, all detects are qualified as estimated, "J," biased low; and all non-detects are qualified as rejected, "R."

- SDG F3G150156: two samples were received at the laboratory with no sample ID: they were identified based on sampling time.

- SDG F3H060192: sample P-45-81.25 was received but was not listed on the COC. The laboratory added it onto the COC.

- SDG F3H180108: the sample cooler arrived at the laboratory with an internal temperature of 29 °C. All the ice had melted, as Federal Express delivered it after four days in transit. All detects for all field samples were qualified as estimated, "J," biased low; and all non-detects were qualified as rejected, "R."

- SDG F3H270230: sample P-37-304.8 was received but was not listed on the COC. The laboratory added it onto the COC.

- SDG F3I090305: sample P-47-147.1 was received but was not listed on the COC. The laboratory included it for analysis within the SDG.

- SDG F3J030259: samples P-30-89.50 and P-30-99.50 were mistakenly documented as P-30-89.55 and P-30-99.55, respectively, during the laboratory's sample log-in process, resulting in the wrong sample ID reported – the ID was manually corrected during the validation process.

- SDG F3J070236: samples P-30A-298.6, P-30A-DUP-2, P-18-EB-1, P-18-156.65, and P-18-DUP-1 were presumed to be preserved to a pH < 2 during sample receipt by the laboratory. Due to the potential loss of volatile constituents, the sample vials were not checked for pH preservation until the time of analysis. Sample pH was not less than 2. The samples were analyzed outside the 7-day un-preserved technical holding time. Therefore, all aromatic compound results for these samples were qualified as estimated, "J" or "UJ."

- SDG F3J290103: sample P-51-DUP-2 was received but was not listed on the COC. The laboratory included it for analysis within the SDG.

- SDG F3K080109: sample TB-114116 was received but was not listed on the COC. The laboratory added it onto the COC.

- SDG F3K110173: sample P-54-267.95 was mistakenly documented as P-54-268.95 during the laboratory's sample log-in process, resulting in the wrong sample ID reported; the ID is manually corrected during the validation process. Samples P-54-267.95 and P-54-DUP-2 were noted to have headspace. Therefore, all detects for these two samples were qualified as estimated, "J," biased low; and all non-detects were qualified as rejected, "R."

- SDG F4A130259: the laboratory documented that sample container for sample P-55-84.10 has headspace; however, this review assumes that only one of the two containers has headspace. No qualification was performed since the laboratory would have used the second vial.

- SDG F4A150320: the laboratory documented that there was headspace in one container in each of the following samples: P-31-351.55, P-55-186.15, and P-55-EB-2. No qualification was performed since the laboratory would have used the second vial.

- SDG F4A300327: the laboratory documented that there was headspace with samples P-55-DUP-2 and P-55-311.95; however, this review assumes that only one of the two containers for each sample has headspace. No qualification was performed since the laboratory would have used the second vial. Sample P-56-DUP-2 was submitted as a blind duplicate of sample P-56-126.55. However, sample P-56-126.55 was never submitter. Therefore, the duplicate sample will be considered as the original sample, and duplicate recovery criteria will not be evaluated with this sample.

- SDG F4B130279: two VOA vials were received by the laboratory for sample P-32-EB-1, which were not listed on the COC. There is no indication that the laboratory informed MPI, and the sample was not analyzed.

There were no custody seals attached to individual sample bottles. No qualification was necessary because the exterior of the shipment coolers had intact custody seals. However, some cooler exteriors were noted to have no custody seals: SDGs F3F120220, F3F170126, F3F260187, F3G150156, F3I150101, F3K110173, F3L090146, and F4B200226. Based on professional judgment, no qualification was performed because the custodies during shipment were maintained by Federal Express, and the coolers were shipped over-night with early morning arrival at the laboratory.

There were occasions where a VOC sample bottles broke during shipment; however, there was always a second aliquot sample bottle, which arrived at the laboratory intact.

3.2.4. Holding Times

The laboratory performed almost all VOC analyses within the technical holding time of 14 days from date of sample collection. Most samples were correctly preserved with acid to a pH of ≤ 2. The following were problems observed:

- SDG F3L090146: the reanalysis of sample P-53-480.90 was performed on the 18th day from the date of sample collection. The initial analysis was performed within holding time; however, one of the compounds was detected slightly above the calibration range. Based on professional judgment, the data from the initial analysis was reported, and the reanalysis is to be disregarded. The compound concentration, which exceeded the calibration range, is qualified as estimated, "J."

- SDG F4A150320: the following samples were re-analyzed outside holding time: P-31-351.55 RE, P-31-DUP-2 RE, P-55-164.55 DL, P-55-174.55 DL, P-55-186.15 DL, P-55-EB-2 RE, P-55-264.40 DL, and P-55-271.00 DL. They were re-analyzed due to QC deficiencies associated with the initial analysis or the need for additional dilutions. All results for the re-analyzed samples were qualified as estimated, "J," biased low. As part of this validation, specific compound results from the re-analysis were combined with the initial analysis results to form the final validated results. A list of the affected compounds is located in Table 3-7 of Section 3.2.17.

- SDG F4A300327: the following samples were analyzed outside holding time: P-55-311.95 RE and P-55-DUP-2. Sample P-55-311.95 RE was a re-analysis. All results for the re-analyzed sample were qualified as estimated, "J," biased low. As part of this validation, specific compound results from the re-analysis are combined with the initial analysis results to form the final validated results. A list of the affected compounds is located in Table 3-7 of Section 3.2.17. Sample P-55-DUP-2 was analyzed 11 minutes passed the holding time. No qualifications were necessary based on professional judgment.

3.2.5. Analytical Results

For each sample tested, the laboratory provided the analytical test information using the CLP -like format. This format requires the use of stylized forms to present critical information pertaining to the analyses performed. For all analytical results, the laboratory provided a "Form I" with the reported analytical results for the requested analyses. The Form I format presents the following information for organic analyses: the laboratory name; the laboratory code; the matrix; the sample volume to final purge volume; the sample identification; the laboratory file identification; the date the sample was received; the date the sample was analyzed; the dilution factor; the chemical abstract service (CAS) number; the units of measure; and the laboratory qualifier (if any). The laboratory did not always provide all CLP forms (or CLP-like forms); however, all information from the missing forms can be obtained within the raw data submitted.

The specific forms, which were not submitted, or not summarized in the CLP format, were associated with the following SDGs:

SDG F3C190235:

- Form IIA – Water Volatile System Monitoring Compound Recovery
- Form IV – Volatile Method Blank Summary
- Form V – Volatile Organic Instrument Performance Check

SDGs F3I040177, F3I120107, and F3K080109:

- Form IIA – Water Volatile System Monitoring Compound Recovery

SDG F3K280120:

- Form V – Volatile Organic Instrument Performance Check – not tabulated for seven samples
- Form VIII – Volatile Internal Standard Area and RT Summary - not tabulated for seven samples

SDG F4A130259:

- All QC summary forms were missing in the data package. However, they were submitted by the laboratory after requested.

For many of the later SDGs, the surrogate limits specified on Form II (Surrogate Recovery) were not consistent with the laboratory's report forms for results. The limits on the report forms for results (Form I) were used for this validation.

3.2.6. Traceability to Raw Data

Traceability of the VOC analyses is established by Form V (Instrument Performance Check). These forms list the project samples analyzed per laboratory batch processed and the corresponding QC samples performed with the project samples. Although Form V was not submitted in SDG F3C190235, the information was obtained within the raw data submitted.

3.2.7. Instrument Tuning

The GC/MS instrument performance (i.e., "tuning data," or a check of mass spectral ion intensities using bromofluorobenzene [BFB]) met method criteria. The instrument performance was checked prior to calibration and once every 12-hour shift for all analytical QC batches. The following deficiencies are noted:

- For SDG F3E230179, sample TB-051903B was analyzed 7 minutes pass the 12–hour instrument tune time. There was no additional sample aliquot to perform the analysis again since the second VOC bottle was broken during shipment to the laboratory. Based of professional judgment, no data qualifications are necessary for analyzing the sample slightly past the 12-hour tune time.

- SDG F3K280120: tabulations were not performed for seven samples on Form V. Information from the raw data was used to perform these checks during the data validation process. No data qualifications are necessary.

3.2.8. Initial Calibration

Initial Calibrations (ICALs) were performed at six levels with most compound concentrations from 1 ug/L to 40 ug/L. Some compounds in the ICALs did not meet data validation criteria [i.e., relative response factors (RRFs) technical criteria of ≥ 0.05, and the percent relative standard deviations (%RSDs) technical criteria of $\leq 15\%$]. Additionally, for all target compounds, method requirements recommended compounds to be quantitated using the average relative response factor (avgRRF) only, if the %RSD is less than 15%. The method recommended all compounds with a %RSD greater than 15% to be quantitated with a calibration curve rather than the avgRRF. The laboratory does not prepare calibration curves for compounds with %RSDs greater than 15% as recommended within the method. Rather, the laboratory uses an alternate approach to the ICAL evaluation by evaluating the average RRF (for all compounds calibrated). If their average RRF is less than 15% (across all compounds) then the laboratory considers this to mean that they have met method criteria for the ICAL. Since this evaluation approach is not widely used, a conservative approach was used for the validation process and all results were qualified as estimated ("J" or "UJ") that were associated with the laboratory ICALs that had a %RSD greater than 15%. Table 3-1 shows a summary of the samples and compounds qualified as estimated, "J," or not usable, "R," due to ICAL deficiencies.

Table 3-1. *Evaluation of Initial Calibration Results*

Package Identification	***Initial Calibration Date***	***Sample ID***	***Compounds***	***Action***
F3C190235	01/15/03, 14:31	TB-A TB-B MW-7 MW-7 DL MW-2 MW-2 DL MW-1 MW-1 DL MW-11 MW-12 MW-12 DL MW-5 MW-5 DL MW-10 MW-10 DL MW-9 MW-6 MW-3 MW-3 DL MW-4 MW-4 DL MW-8 FB MW-DUP MW-DUP DL	%RSD: Bromomethane Methylene Chloride Acetone m,p-Xylene RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3D290160	04/15/03, 15:32	P-17-73.25 P-17-92.25 P-17-223.1 P-FB-1 P-F-86.48 TB-1 P-F-76.46	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3E060217	04/15/03, 15:32	P-27-89.75 P-27-DUP P-27-99.75 P-27-139.75 P-27-199.75 P-28-87.02 P-28-97.02 P-28-147.02 P-28-207.02 TB-2	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3E160130	05/16/03, 15:51	P-26-231.25 P-26-241.25 P-E-78.57 P-E-88.57 P-E-98.57 TRIP BLANK	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-1. *Evaluation of Initial Calibration Results*

Package Identification	*Initial Calibration Date*	*Sample ID*	*Compounds*	*Action*
F3E200165	05/16/03, 15:51	P-26-257.2 P-26-267.2 P-26A-276.53 P-26A-286.5 P-26A-295.85 TRIP BLANK P-E-128.57 P-E-138.57 P-E-148.57 P-E-158.57	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3E230175	05/16/03, 15:51	P-E-292.28 P-E-292.28 DL P-E-301.23 P-E-301.23 DL P-E-332.85 P-E-327.15 TB-051903B	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3E290170	05/16/03, 15:51	P-D-87.05 1EB-5/27 P-D-97.05 P-D-107.05 TB-05-28-03 TB-05-28-03 RE P-15-79.65 P-15-79.65 RE P-15-89.65 P-15-99.65 P-15-109.65 P-15-119.65	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3F030298	05/16/03, 15:51	P-15-179.65 P-D-257. P-D-290.1 P-D-77.05 P-D-117.05 P-D-127.05 P-D-137.05 P-D-147.05 TB-06-02-03	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3F120220	06/06/03, 01:01	P-C-89.6 P-C-99.6 P-C-DUP-1 TRIP BLANK	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3F170126	06/06/03, 01:01	P-C-320.3 P-C-330.3 P-C-337.5 P-C-337.5 DL P-24-87.35 P-24-77.35 TB-612-616 P-C-FB P-C-159.6 P-C-169.6	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-1. *Evaluation of Initial Calibration Results*

Package Identification	*Initial Calibration Date*	*Sample ID*	*Compounds*	*Action*
F3F180192	06/06/03, 01:01	TB-617 P-24-127.3 P-24-137.3 P-24-137.3 RE P-C-347.7	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3F200145	06/06/03, 01:01	P-24-157.3 P-24-167.3 P-24-177.3 P-24-187.3 P-24-197.3 P-24-207.3 P-24-207.3 DL P-24-217.3 P-24-DUP-1 P-24-227.3 P-24-237.3 P-24-247.3 P-24-257.3 TB-619 P-24-147.3 P-24-267.3 P-24-277.3 P-24-287.3 P-24-DUP-2 P-C-364.5 P-C-374.5 P-C-394.5 P-C-384.5	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3F260187	06/06/03, 01:01	P-24-297.3 P-23-FB-1 P-23-180.1 P-23-DUP-1 P-23-DUP-1 DL TB-619625	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3F270132	06/06/03, 01:01	TB-625626 P-23-150.1 P-23-160.1	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3G010309	06/06/03, 01:01	P-23-239.8 P-23-252.0 P-23-262.0 P-23A-286.96 P-23A-293.50 TB-627630	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-1. *Evaluation of Initial Calibration Results*

Package Identification	*Initial Calibration Date*	*Sample ID*	*Compounds*	*Action*
F3G030162	06/06/03, 01:01	TB-701702 P-23A-DUP-1 P-23A-347.6	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3G110256	06/06/03, 01:01	P-25-EB-1 P-25-169.7 P-25-179.7 P-25-DUP-1 P-35-EB-1 P-35-117.2 P-35-177.2 P-35-DUP-1 TB-708710	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3G150156	06/06/03, 01:01	P-25-275.8 P-25-DUP-2 P-25-349.4 P-25-349.4 RE P-35-EB-2 P-35-332.2 P-35-DUP-2 TB-710714	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3G230216	06/06/03, 01:01	P-H-EB-1 P-H-EB-1 RE P-H-116.8 TB721722 P-42-EB-1	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3G250374	06/06/03, 01:01	P-H-106.8 P-H-136.8 P-H-146.8 P-H-156.8 P-H-EB-2 P-H-206.55 P-42-202.7 P-42-DUP-1 P-42-DUP-1 DL P-42-DUP-1 DL RE P-42-DUP-1 DL RE RE P-H-DUP-2 TB-722724	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-1. *Evaluation of Initial Calibration Results*

Package Identification	*Initial Calibration Date*	*Sample ID*	*Compounds*	*Action*
F3G290207	06/06/03, 01:01	P-H-351.65 P-42-217.2 P-42-276.4 P-42-329.8 P-42-DUP-2 P-42-354.6 TB-724728	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3H060192	08/11/03, 15:34	P-20-149.60 P-20-159.60 P-20-EB-1 P-45-81.25 TB-804805 P-45-131.25 P-45-DUP-1 P-45-DUP-1 RE	%RSD: Bromomethane Methylene Chloride Acetone 2-Hexanone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3H080219	08/11/03, 15:34	P-20-220.76 P-20-229.70 TB-805807 P-45-151.25 P-45-207.25	%RSD: Bromomethane Methylene Chloride Acetone 2-Hexanone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3H080219	08/11/03, 15:34	P-45-281.65 P-20-309.60 P-20-319.60 P-20-FB TB-8-12 P-20-427.99 P-20-DUP-2	%RSD: Bromomethane Methylene Chloride Acetone 2-Hexanone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3H080219	08/11/03, 15:34	P-45-366.39 P-45-DUP-2 P-20-476.68 TB-0813 TB-0813 RE	%RSD: Bromomethane Methylene Chloride Acetone 2-Hexanone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3H080219	08/11/03, 15:34	P-36-EB-1 P-37-119.95 P-37-DUP-1 TB-819820	%RSD: Bromomethane Methylene Chloride Acetone 2-Hexanone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-1. *Evaluation of Initial Calibration Results*

Package Identification	***Initial Calibration Date***	***Sample ID***	***Compounds***	***Action***
F3H220246	08/27/03, 22:31	P-36-156.7 P-36-DUP-1 P-46-139.60 P-46-DUP-1 P-37-EB-1 TB-820821	%RSD: Bromomethane Chloroethane Methylene Chloride Acetone Bromoform RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3H270230	08/27/03, 22:31	P-46-275.42 P-46-DUP-2 P-36A-282.0 P-36-136.7 P-37-284.4 P-37-304.8 P-37-DUP-2 TB-821-824	%RSD: Bromomethane Chloroethane Methylene Chloride Acetone Bromoform RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3I040177	08/27/03, 22:31	EB-1-44 EB-2-P-44 P-44-99.3 P-44-DUP-1 TB-90203	%RSD: Bromomethane Chloroethane Methylene Chloride Acetone Bromoform RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3I050189	08/27/03, 22:31	P-44-149.8 TB-903904	%RSD: Bromomethane Chloroethane Methylene Chloride Acetone Bromoform RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	09/08/03, 16:37	P-44-149.8 DL	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-1. *Evaluation of Initial Calibration Results*

Package Identification	***Initial Calibration Date***	***Sample ID***	***Compounds***	***Action***
F3I090305	09/08/03, 16:37	P-44-215.5 P-44-215.5 DL P-44-229.2 P-44-229.2 DL P-44-239.85 P-44-239.5 DL P-44-249.85 P-44-249.8 DL P-44-257.1 P-44-EB-3 P-47-DUP-1 P-47-147.1 P-47-177.0 P-47-205.7 TB-904908	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3I120107	09/08/03, 16:37	P-43-EB-1 P-43-119.88 P-43-DUP-1 P-44-339.8 TB-908910	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3I150101	09/17/03, 14:56	P-43-129.88 P-47-197.0 TB-906911	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3I180259	09/17/03, 14:56	P-29-109.5 P-29-DUP-1 TB-916917 P-38-FB-1 P-38-116.7 P-38-DUP-1 P-38-146.7	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-1. *Evaluation of Initial Calibration Results*

Package Identification	*Initial Calibration Date*	*Sample ID*	*Compounds*	*Action*
F3I230231	09/17/03, 14:56	P-29-EB-1 P-29-310.2 P-29-329.85 P-29-DUP-2 P-29-EB-2 P-29-360.0 P-38-186.3 P-38-207.5 P-38-216.3 P-38-260.7 P-38-260.7 RE P-43-246.68 P-43-246.68 RE P-43-DUP-2 P-43-DUP-2 RE P-43-294.85 P-43-294.85 RE TB-917922 P-29-390.0	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3I250196	09/17/03, 14:56	P-38-FB-2 P-38-DUP-3 (P-38-381.3) TB-923924	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3J030259	09/17/03, 14:56	P-30-89.50 P-30-99.50 P-30-204.55 P-30-DUP-1 TB1-930102	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3J070236	09/17/03, 14:56	P-30A-298.6 P-30A-DUP-2 P-18-EB-1 P-18-156.65 P-18-DUP-1 TB-102106	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3J110172	09/17/03, 14:56	P-30A-406.55 P-30A-DUP-3 P-18-217.65 P-18-247.65 P-18-DUP-2 P-18-257.65 P-18-267.65 P-18-277.65 P-18-287.65 P-18-302.66 TB-106109 P-18-335.80	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-1. *Evaluation of Initial Calibration Results*

Package Identification	***Initial Calibration Date***	***Sample ID***	***Compounds***	***Action***
F3J240204	09/17/03, 14:56	P-50-109.90 P-50-109.90 DL P-50-119.90 P-50-129.90 P-50-DUP-1 P-50-139.90 P-50-149.90 P-49-114.3 P-49-124.3 P-49-167.3 P-49-DUP-1 TB10211023 P-51-117.78 P-51-127.78 P-49-EB-1	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3J290103	09/17/03, 14:56	P-50-249.90 P-50-267.44 P-50-309.90 P-50-EB-2 P-50-342.60 P-50-DUP-2 P-50-DUP-2 RE TB-10231027 P-49-269.3 P-49-269.3 RE P-49-284.3 P-49-284.3 RE P-49-340.8 P-49-DUP-2 P-49-DUP-2 DL P-51-187.78 P-51-DUP-2 P-51-246.75	%RSD: Bromomethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3J310287	11/06/03, 23:17	P-51-301.12 P-51-321.00 P-51-327.85 TB-10271030	%RSD: Bromomethane Chloroethane Methylene Chloride Acetone Bromoform RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3K080109	11/06/03, 23:17	P-54-107.55 P-54-107.55 DL P-52-EB-1 P-52-170.0 P-52-DUP-1 P-52-DUP-1 RE P-58-EB-1 P-58-159.65 P-58-DUP-1 TB-114116	%RSD: Bromomethane Chloroethane Methylene Chloride Acetone Bromoform RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-1. *Evaluation of Initial Calibration Results*

Package Identification	*Initial Calibration Date*	*Sample ID*	*Compounds*	*Action*
F3K110173	11/06/03, 23:17	P-58-274.65 P-58-DUP-2 P-58-DUP-2 RE P-54-267.95 P-54-267.95 RE P-54-DUP-2 P-54-DUP-2 RE P-54-276.4 TB-1171110	%RSD: Bromomethane Chloroethane Methylene Chloride Acetone Bromoform RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3K140242	11/19/03, 1622	P-54-351.25 P-54-351.25 DL P-54-DUP-3 P-54-DUP-3 DL TB-11101113	%RSD: Bromomethane Methylene Chloride Acetone Bromoform RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3K210372	11/19/03, 1622	P-52-EB-2 TB-11171120 EB-P-54-11-17 P-53-EB-11-20	%RSD: Bromomethane Methylene Chloride Acetone Bromoform RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3K280120	11/19/03, 1622	P-53-146.40 P-53-DUP-1 P-53-266.35 P-53-DUP-2 P-34-EB-1 P-34-139.55 P-34-DUP-1 P-34-224.55 P-34-234.55 P-34-244.55 P-34-DUP-2 P-34-254.55 P-34-264.55 P-34-284.55 P-34-294.55 P-34-304.50 TB-11201125 P-53-331.10 P-53-340.05 P-53-340.05 RE	%RSD: Bromomethane Methylene Chloride Acetone Bromoform RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-1. *Evaluation of Initial Calibration Results*

Package Identification	***Initial Calibration Date***	***Sample ID***	***Compounds***	***Action***
F3K280120	11/19/03, 1622	P-34-324.50 P-34-334.50 TB-121124	%RSD: Bromomethane Methylene Chloride Acetone Bromoform RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3K280120	11/19/03, 1622	P-33-EB-1 P-33-159.6 P-33-169.6 P-33-179.6 P-33-DUP-1 P-33-189.6 P-33-198.1 P-33-214.6 P-33-224.6 P-53-426.75 P-53-480.90 TB-125128	%RSD: Bromomethane Methylene Chloride Acetone Bromoform RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F4A130259	01/14/04, 1456	P-31-EB-1 P-31-EB-1 RE	%RSD: Bromomethane Carbon Disulfide Methylene Chloride Acetone 2-Butanone Bromoform RRF: Bromomethane Acetone 2-Butanone 4-Methyl-2-pentanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	01/19/04, 1421	P-55-EB-1 P-55-EB-1 DL TB-01050112 P-31-190.40 P-31-190.40 RE P-31-DUP-1 P-31-DUP-1 RE P-55-DUP-1 P-55-DUP-1 RE P-55-154.55 P-55-154.55 RE	%RSD: Chloromethane Bromomethane Chloroethane Methylene Chloride 2-Butanone Dibromochloro-methane Bromoform RRF: Bromomethane Acetone 2-Butanone 4-Methyl-2-pentanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-1. *Evaluation of Initial Calibration Results*

Package Identification	***Initial Calibration Date***	***Sample ID***	***Compounds***	***Action***
F4A150320	01/19/04, 1421	P-55-164.55 P-55-174.55 P-55-186.15 P-55-EB-2 TB-01120114	%RSD: Chloromethane Bromomethane Chloroethane Methylene Chloride 2-Butanone Dibromochloro-methane Bromoform RRF: Bromomethane Acetone 2-Butanone 4-Methyl-2-pentanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	01/28/04, 1225	P-31-344.25 P-31-351.55 P-31-DUP-2 P-31-344.25 RE P-55-264.40 P-55-271.00 TB-01120114 RE	%RSD: Chloromethane Vinyl chloride Bromomethane Chloroethane Methylene Chloride Acetone 2-Butanone Dibromochloro-methane 2-Hexanone Bromoform RRF: Acetone 2-Butanone 4-Methyl-2-pentanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	02/02/04, 1153	P-31-351.55 RE P-31-DUP-2 RE P-55-264.40 DL	%RSD: Bromomethane Methylene Chloride Acetone Bromoform RRF: Bromomethane Acetone 2-Butanone 4-Methyl-2-pentanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	02/02/04, 1636	P-55-EB-2 RE	%RSD: Bromomethane Chloroethane Acetone Methylene Chloride RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-1. *Evaluation of Initial Calibration Results*

Package Identification	*Initial Calibration Date*	*Sample ID*	*Compounds*	*Action*
F4A150320 Cont'd	02/03/04, 0420	P-55-271.00 DL P-55-164.55 DL P-55-174.55 DL P-55-186.15 DL	%RSD: Bromomethane Methylene Chloride Acetone RRF: Acetone 2-Butanone 4-Methyl-2-pentanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F4A300327	02/02/04, 1636	TB-01220129 P-56-126.55 P-55-311.95 P-55-311.95 RE	%RSD: Bromomethane Chloroethane Acetone Methylene Chloride RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	02/09/04, 1410	P-55-DUP-2	%RSD: Vinyl chloride Acetone Methylene Chloride 2-Butanone RRF: Acetone 2-Butanone 4-Methyl-2-pentanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F4B130279	02/02/04, 1636	P-32-174.35 P-32-DUP-1 P-32-224.35 P-32-234.35 P-32-241.01 P-32-251.77 P-32-259.35 P-32-269.35 TB-02110212	%RSD: Bromomethane Chloroethane Acetone Methylene Chloride RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F4B170134	02/02/04, 1636	P-32-279.35 TB-020916	%RSD: Bromomethane Chloroethane Acetone Methylene Chloride RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-1. *Evaluation of Initial Calibration Results*

Package Identification	***Initial Calibration Date***	***Sample ID***	***Compounds***	***Action***
F4B200226	02/02/04, 1636	P-32-488.9	%RSD: Bromomethane Chloroethane Acetone Methylene Chloride RRF: Bromomethane Acetone 2-Butanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	02/27/04, 1327	P-32-DUP-3 TB-02090219	%RSD: Bromomethane Chloroethane 1,1-Dichloroethene Acetone Carbon disulfide 1,1,1-Trichloroethane Carbon Tetrachloride Tetrachloroethene Bromoform Xylenes (total) RRF: Bromomethane Chloroethane Acetone 2-Butanone 4-Methyl-2-pentanone	% RSD > 15% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Notes:
DL Suffix – Indicates a secondary diluted sample reanalysis
RE Suffix – Indicates a reanalysis at the same dilution

3.2.9. Continuing Calibration

The continuing calibration (CCAL) verification analyses were performed with a mid-level standard immediately following the tuning check at the beginning of each 12-hour analytical sequence. Some compounds in the CCAL verification analyses did not meet data validation criteria (i.e., RRFs technical criteria of ≥ 0.05, and the percent differences (%Ds) from the average RRF technical criteria of $\leq 20\%$. Table 3-2 shows a summary of the samples and compounds qualified as estimated, "J," or not usable, "R," due to CCAL deficiencies.

Table 3-2. *Evaluation of Continuing Calibration Results*

Package Identification	*CCAL Date*	*Sample ID*	*Compounds*	*Action*
F3C190235	03/20/03, 15:15	TB-A TB-B MW-7 MW-2 MW-1 MW-11 MW-12 MW-5 MW-10 MW-3 MW-8	% D: Bromomethane Acetone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	03/21/03, 15:32	MW-2 (rea) MW-1 (rea) MW-12 (rea) MW-5 (rea) MW-10 (rea) MW-9 MW-6 MW-3 (rea) MW-4 FB MW-DUP	% D: Acetone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	03/25/03, 09:12	MW-7 (rea) MW-4 (rea) MW-DUP (rea)	% D: Bromomethane Acetone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3D290160	05/05/03, 08:01	P-17-73.25 P-17-92.25 P-17-223.1 P-FB-1 P-F-86.48 TB-1 P-F-76.46	% D: Chloromethane Bromomethane RRF: Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3E060217	05/07/03, 08:58	P-27-89.75 P-27-DUP P-27-99.75 P-27-139.75 P-27-199.75 P-28-87.02 P-28-97.02 P-28-147.02 P-28-207.02 TB-2	% D: Bromomethane Acetone RRF: Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-2. *Evaluation of Continuing Calibration Results*

Package Identification	*CCAL Date*	*Sample ID*	*Compounds*	*Action*
F3E160130	05/21/03, 08:56	P-26-231.25 P-26-241.25 P-E-78.57 P-E-88.57 P-E-98.57 TRIP BLANK	% D: Acetone Methylene Chloride RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3E200165	05/21/03, 08:56	P-26-257.2 P-26-267.2 P-26A-276.53 P-26A-286.5 P-26A-295.85 TRIP BLANK	% D: Acetone Methylene Chloride RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	05/22/03, 09:42	P-E-128.57 P-E-138.57 P-E-148.57 P-E-158.57	% D: Chloromethane Acetone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3E230179	05/27/03, 09:23	P-E-292.28 P-E-301.23 P-E-332.85 P-E-327.15 TB-051903B	% D: Acetone trans-1,3- Dichloropropene RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	05/28/03, 08:42	P-E-292.28 DL P-E-301.23 DL	% D: Chloromethane Methylene Chloride Acetone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3E290170	06/02/03, 15:51	P-D-87.05 1EB-5/27 P-D-97.05 P-D-107.05 TB-05-28-03 TB-05-28-03 RE P-15-79.65 P-15-89.65 P-15-99.65 P-15-109.65 P-15-119.65	% D: Methylene Chloride Acetone RRF: Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-2. *Evaluation of Continuing Calibration Results*

Package Identification	***CCAL Date***	***Sample ID***	***Compounds***	***Action***
F3E290170 Cont'd	06/03/03, 09:19	P-15-79.65 RE	% D: Acetone 1,1,2,2-Tetrachloroethane RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3F030298	06/04/03, 09:53	P-15-179.65 P-D-257. P-D-290.1 P-D-77.05 P-D-117.05 P-D-127.05 P-D-137.05 P-D-147.05 TB-06-02-03	% D: Acetone 2-Butanone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3F120220	06/13/03, 18:08	P-C-89.6 P-C-99.6 P-C-DUP-1 TRIP BLANK	% D: Chloromethane Bromomethane Methylene chloride Acetone RRF: Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3F170126	06/19/03, 12:25	P-C-320.3 P-C-330.3 P-C-337.5 P-24-87.35 P-24-77.35 TB-612-616 P-C-FB P-C-159.6 P-C-169.6	% D: Vinyl chloride Bromomethane Carbon disulfide Methylene chloride Acetone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	06/20/03, 11:05	P-C-337.5 DL	% D: Bromomethane Carbon disulfide Methylene chloride 2-Hexanone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3F180192	06/20/03, 11:05	TB-617 P-24-127.3 P-24-137.3 P-C-347.7	% D: Bromomethane Carbon disulfide Methylene chloride 2-Hexanone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-2. *Evaluation of Continuing Calibration Results*

Package Identification	*CCAL Date*	*Sample ID*	*Compounds*	*Action*
F3F180192 Cont'd	06/23/03, 09:48	P-24-137.3 RE	% D: Chloroethane Bromomethane Carbon disulfide Methylene chloride 2-Butanone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3F200145	06/23/03, 09:48	P-24-157.3 P-24-167.3 P-24-177.3 P-24-187.3 P-24-197.3 P-24-207.3 P-24-217.3 P-24-DUP-1 P-24-227.3 P-24-237.3 P-24-247.3 P-24-257.3	% D: Chloroethane Bromomethane Carbon disulfide Methylene chloride 2-Butanone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	06/24/03, 18:19	P-24-207.3 DL TB-619 P-24-147.3 P-24-267.3 P-24-277.3 P-24-287.3 P-24-DUP-2 P-C-364.5 P-C-374.5 P-C-394.5 P-C-384.5	% D: Bromomethane RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3F260187	06/30/03, 09:32	P-24-297.3 P-23-FB-1 P-23-180.1 P-23-DUP-1 P-23-DUP-1 DL TB-619625	% D: Bromomethane Acetone 2-Butanone 4-Methyl-2-pentanone 2-Hexanone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3F270132	07/02/03, 08:33	TB-625626 P-23-150.1 P-23-160.1	% D: Bromomethane Methylene chloride 2-Butanone 4-Methyl-2-pentanone 2-Hexanone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-2. *Evaluation of Continuing Calibration Results*

Package Identification	*CCAL Date*	*Sample ID*	*Compounds*	*Action*
F3G010309	07/03/03, 09:32	P-23-239.8 P-23-252.0 P-23-262.0 P-23A-286.96 P-23A-293.50 TB-627630	% D: Chloromethane Bromomethane Acetone 2-Butanone 4-Methyl-2-pentanone 2-Hexanone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3G030162	07/07/03, 15:37	TB-701702 P-23A-DUP-1 P-23A-347.6	% D: Bromomethane 2-Butanone 4-Methyl-2-pentanone 2-Hexanone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3G110256	07/14/03, 12:40	P-25-EB-1 P-25-169.7 P-25-179.7 TB-708710	% D: Bromomethane 2-Butanone 2-Hexanone RRF: Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	07/15/03, 08:57	P-25-EB-1 DL P-25-DUP-1 P-35-EB-1 P-35-117.2 P-35-177.2 P-35-DUP-1	% D: Bromomethane Methylene chloride Bromoform RRF: Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3G150156	07/15/03, 22:09	P-25-275.8 P-25-DUP-2 P-25-349.4 P-25-349.4 RE P-35-EB-2 P-35-332.2 P-35-DUP-2 TB-710714	% D: Bromomethane RRF: Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3G230216	07/25/03, 08:39	P-H-EB-1 P-H-EB-1 RE P-H-116.8 TB721722 P-42-EB-1	% D: Bromomethane Bromoform RRF: Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-2. *Evaluation of Continuing Calibration Results*

Package Identification	*CCAL Date*	*Sample ID*	*Compounds*	*Action*
F3G250374	07/29/03, 08:52	P-H-106.8 P-H-136.8 P-H-146.8 P-H-156.8 P-H-EB-2 P-H-206.55 P-42-202.7 P-42-DUP-1 DL RE P-H-DUP-2 TB-722724	% D: Bromomethane 2-Butanone 2-Hexanone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	07/30/03, 09:26	P-42-DUP-1 P-42-DUP-1 DL P-42-DUP-1 DL RE RE	% D: Bromomethane Methylene chloride 2-Butanone 4-Methyl-2-pentanone 2-Hexanone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3G290207	07/31/03, 08:37	P-H-351.65 P-42-217.2 P-42-276.4 P-42-329.8 P-42-DUP-2 P-42-354.6 TB-724728	% D: Bromomethane Acetone 1,1-Dichloroethane 2-Butanone 4-Methyl-2-pentanone 2-Hexanone RRF: Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3H060192	08/11/03, 16:57	P-20-149.60 P-20-159.60 P-20-EB-1 P-45-81.25 TB-804805	% D: Chloromethane Bromomethane 2-Hexanone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	08/12/03, 09:13	P-45-131.25 P-45-DUP-1 P-45-DUP-1 RE	% D: Bromomethane RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3H080219	08/11/03, 16:57	P-20-220.76 P-20-229.70 TB-805807 P-45-151.25 P-45-207.25	% D: Chloromethane Bromomethane 2-Hexanone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-2. *Evaluation of Continuing Calibration Results*

Package Identification	*CCAL Date*	*Sample ID*	*Compounds*	*Action*
F3H130195	08/14/03, 08:41	P-45-281.65 P-20-309.60 P-20-319.60 P-20-FB TB-8-12 P-20-427.99 P-20-DUP-2	% D: Bromomethane Methylene chloride 2-Butanone 4-Methyl-2-pentanone 2-Hexanone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3H180106	08/18/03, 14:08	P-45-366.39 P-45-DUP-2 P-20-476.68 TB-0813 TB-0813 RE	% D: Bromomethane Chloroethane Methylene chloride 4-Methyl-2-pentanone 2-Hexanone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3H210288	08/24/03, 09:06	P-36-EB-1 P-37-119.95 P-37-DUP-1 TB-819820	% D: Bromomethane Chloroethane Methylene chloride 2-Butanone 2-Hexanone Bromoform RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3H220246	08/28/03, 09:07	P-36-156.7 P-36-DUP-1	% D: Acetone 2-Butanone 4-Methyl-2-pentanone 2-Hexanone RRF: Bromomethane Acetone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3H270230	08/28/03, 09:07	P-46-275.42 P-46-DUP-2 P-36A-282.0 P-36-136.7 P-37-284.4 P-37-304.8 P-37-DUP-2 TB-821-824	% D: Acetone 2-Butanone 4-Methyl-2-pentanone 2-Hexanone RRF: Bromomethane Acetone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-2. *Evaluation of Continuing Calibration Results*

Package Identification	*CCAL Date*	*Sample ID*	*Compounds*	*Action*
F3I040177	09/04/03, 12:05	EB-1-44 EB-2-P-44 P-44-99.3 P-44-DUP-1 TB-90203	% D: Bromomethane Acetone 2-Butanone 4-Methyl-2-pentanone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3I050189	09/05/03, 08:45	P-44-149.8 TB-903904	% D: Bromomethane Acetone 2-Butanone 4-Methyl-2-pentanone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	09/09/03, 09:47	P-44-149.8 DL	% D: Methylene chloride RRF: Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3I090305	09/11/03, 08:34	P-44-215.5 P-44-229.2 P-44-229.2 DL P-44-239.85 P-44-249.85 P-44-257.1 P-44-EB-3 P-47-DUP-1 P-47-147.1 P-47-177.0 P-47-205.7 TB-904908	% D: Acetone Bromoform RRF: Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	09/12/03, 08:47	P-44-215.5 DL P-44-239.5 DL P-44-249.8 DL	% D: Bromoform RRF: Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3I120107	09/13/03, 13:57	P-43-EB-1 P-43-119.88 P-43-DUP-1 P-44-339.8 TB-908910	% D: Bromoform RRF: Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-2. *Evaluation of Continuing Calibration Results*

Package Identification	***CCAL Date***	***Sample ID***	***Compounds***	***Action***
F3I150101	09/18/03, 09:06	P-43-129.88 P-47-197.0 TB-906911	% D: Chloroethane Methylene chloride Acetone 2-Butanone Bromoform RRF: 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3I180259	09/21/03, 11:30	P-29-109.5 P-29-DUP-1 TB-916917 P-38-FB-1 P-38-116.7 P-38-DUP-1 P-38-146.7	% D: Bromomethane Acetone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3I230231	09/29/03, 09:48	P-29-EB-1 P-29-310.2 P-29-329.85 P-29-DUP-2 P-29-EB-2 P-29-360.0 TB-917922	% D: Bromomethane Chloroethane Methylene chloride trans-1,3-Dichloropropene RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	09/30/03, 08:33	P-38-186.3 P-38-207.5 P-38-216.3 P-38-260.7 P-38-260.7 RE P-43-246.68 P-43-246.68 RE P-43-DUP-2 P-43-DUP-2 RE P-43-294.85 P-43-294.85 RE P-29-390.0	% D: Bromomethane RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3I250196	10/01/03, 09:13	P-38-FB-2 P-38-DUP-3 (P-38-381.3) TB-923924	% D: Bromomethane Methylene chloride RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3J030259	10/06/03, 09:34	P-30-89.50 P-30-99.50 P-30-204.55 P-30-DUP-1 TB1-930102	% D: Bromomethane 2-Butanone 4-Methyl-2-pentanone 2-Hexznone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-2. *Evaluation of Continuing Calibration Results*

Package Identification	***CCAL Date***	***Sample ID***	***Compounds***	***Action***
F3J070236	10/14/03, 09:22	P-30A-298.6 P-30A-DUP-2 P-18-EB-1 P-18-156.65 P-18-DUP-1 TB-102106	% D: 2-Butanone Cis-1,3-dichloropropene 4-Methyl-2-pentanone 1,1,2,2-Tetrachloroethane RRF: Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3J110172	10/16/03, 08:49	P-30A-406.55 P-30A-DUP-3 P-18-217.65 P-18-247.65 P-18-DUP-2	% D: Bromomethane Chloroethane Acetone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	10/16/03, 21:27	P-18-257.65 P-18-267.65 P-18-277.65 P-18-287.65 P-18-302.66 TB-106109 P-18-335.80	% D: Chloromethane Methylene chloride Acetone 4-Methyl-2-pentanone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3J240204	10/30/03, 19:11	P-50-109.90 P-50-119.90 P-50-129.90 P-50-DUP-1 P-50-139.90 P-50-149.90 P-49-114.3 P-49-124.3 P-49-167.3 P-49-DUP-1 TB10211023 P-51-117.78 P-51-127.78 P-49-EB-1	% D: Chloromethane Bromomethane 2-Butanone 4-Methyl-2-pentanone trans-1,3-Dichloropropene 1,1,2-Trichloroethane RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	11/04/03, 08:51	P-50-109.90 DL	Reviewed for Vinyl chloride only	None
F3J290103	11/04/03, 08:51	P-50-249.90 P-50-267.44 P-50-309.90 P-50-EB-2 TB-10231027	% D: Methylene chloride Acetone RRF: Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-2. *Evaluation of Continuing Calibration Results*

Package Identification	*CCAL Date*	*Sample ID*	*Compounds*	*Action*
F3J290103 Cont'd	11/04/03, 20:12	P-50-342.60 P-50-DUP-2 P-49-269.3 P-49-284.3 P-49-340.8 P-49-DUP-2 P-51-187.78 P-51-DUP-2 P-51-246.75 P-49-DUP-2 DL P-50-DUP-2 RE	% D: Bromomethane 2-Butanone 4-Methyl-2-pentanone trans-1,3-Dichloropropene 1,1,2-Trichloroethane 1,1,2,2-Tetrachloroethane RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	11/05/03, 10:17	P-49-269.3 RE P-49-284.3 RE	% D: Bromomethane 1,1-Dichloroethane 2-Butanone 4-Methyl-2-pentanone trans-1,3-Dichloropropene 1,1,2-Trichloroethane RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3K080109	11/14/03, 10:21	P-54-107.55 P-54-107.55 DL P-52-EB-1 P-52-170.0 P-52-DUP-1 P-58-EB-1 P-58-159.65 P-58-DUP-1 TB-114116	% D: Bromomethane Methylene chloride Acetone Carbon tetrachloride 2-Butanone Trichloroethene 4-Methyl-2-pentanone Tetrachloroethene 2-Hexanone 1,1,2,2-Tetrachloroethane RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	11/18/03, 09:33	P-52-DUP-1 RE	% D: Acetone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-2. *Evaluation of Continuing Calibration Results*

Package Identification	***CCAL Date***	***Sample ID***	***Compounds***	***Action***
F3K110173	11/14/03, 10:21	P-58-274.65 P-58-DUP-2 P-54-267.95 P-54-DUP-2 TB-1171110	% D: Bromomethane Methylene chloride Acetone Carbon tetrachloride 2-Butanone Trichloroethene 4-Methyl-2-pentanone Tetrachloroethene 1,1,2,2-Tetrachloroethane RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	11/18/03, 09:20	P-58-DUP-2 RE P-54-267.95 RE P-54-DUP-2 RE P-54-276.4	% D: Acetone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3K140242	11/20/03, 19:28	P-54-351.25 P-54-DUP-3 TB-11101113	% D: Bromomethane Methylene chloride Acetone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	11/21/03, 09:28	P-54-351.25 DL P-54-DUP-3 DL	RRF: Bromomethane Acetone 2-Butanone	RRF < 0.05 R – all non-detect results J – all positive results
F3K210372	11/28/03, 19:01	P-52-EB-2 TB-11171120 EB-P-54-11-17 P-53-EB-11-20	% D: Bromomethane RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3K280120	12/03/03, 21:35	P-53-146.40 P-53-DUP-1 P-53-266.35 P-53-DUP-2 P-34-EB-1	% D: Bromomethane Methylene chloride RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-2. *Evaluation of Continuing Calibration Results*

Package Identification	***CCAL Date***	***Sample ID***	***Compounds***	***Action***
F3K280120 Cont'd	12/06/03, 14:00	P-34-139.55 P-34-DUP-1 P-34-224.55 P-34-234.55 P-34-244.55 P-34-DUP-2 P-34-254.55 P-34-264.55 P-34-284.55 P-34-294.55 P-34-304.50 TB-11201125	% D: Bromomethane Methylene chloride 2-Butanone 4-Methyl-2-pentanone 2-Hexanone RRF: Bromomethane Acetone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	12/08/03, 10:15	P-53-331.10 P-53-340.05 P-53-340.05 RE	% D: Bromomethane Methylene chloride Acetone 2-Butanone 2-Hexanone RRF: Bromomethane Acetone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3L050365	12/08/03, 10:15	P-34-324.50 P-34-334.50 TB-121124	% D: Bromomethane Methylene chloride Acetone 2-Butanone 2-Hexanone RRF: Bromomethane Acetone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F3L090146	12/15/03, 09:08	P-33-EB-1 P-33-159.6 TB-125128	% D: Methylene chloride 4-Methyl-2-pentanone 2-Hexanone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	12/19/03, 19:33	P-33-169.6 P-33-179.6 P-33-DUP-1 P-33-189.6 P-33-198.1 P-33-214.6 P-33-224.6 P-53-426.75 P-53-480.90	% D: Methylene chloride RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	12/23/03, 16:38	P-53-480.90 RE		Not evaluated. See Section 3.2.4

Table 3-2. *Evaluation of Continuing Calibration Results*

Package Identification	*CCAL Date*	*Sample ID*	*Compounds*	*Action*
F4A130259	01/20/04, 07:48	P-55-EB-1 P-55-EB-1 DL TB-01050112 P-31-190.40 P-31-190.40 RE P-31-DUP-1 P-31-DUP-1 RE P-55-DUP-1 P-55-154.55	% D: Methylene chloride Acetone 2-Butanone RRF: Acetone 2-Butanone 4-Methyl-2-pentanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	01/21/04, 11:36	P-55-DUP-1 RE P-55-154.55 RE	% D: Bromomethane Chloroethane Carbon tetrachloride 1,1,1-Trichloroethane RRF: Acetone 2-Butanone 4-Methyl-2-pentanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F4A150320	01/21/04, 11:36	P-55-164.55 P-55-174.55 P-55-186.15	% D: Bromomethane Chloroethane Carbon tetrachloride 1,1,1-Trichloroethane RRF: Acetone 2-Butanone 4-Methyl-2-pentanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	01/22/04, 09:51	P-55-EB-2 TB-01120114	% D: 1,1,1-Trichloroethane 2-Butanone 4-Methyl-2-pentanone 2-Hexanone RRF: Acetone 2-Butanone 4-Methyl-2-pentanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	02/05/04, 11:12	P-55-EB-2 RE	% D: Chloromethane Acetone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-2. *Evaluation of Continuing Calibration Results*

Package Identification	***CCAL Date***	***Sample ID***	***Compounds***	***Action***
F4A300327	02/05/04, 11:12	TB-01220129 P-56-126.55 P-55-311.95	% D: Chloromethane Acetone RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	02/09/04, 19:16	P-55-DUP-2	% D: Methylene chloride Acetone trans-1,3-Dichloropropene RRF: Acetone 2-Butanone 4-Methyl-2-pentanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	02/14/04, 19:25	P-55-311.95 RE	% D: Acetone Carbon tetrachloride 1,1,1-Trichloroethane 2-Butanone 4-Methyl-2-pentanone 2-Hexanone RRF: Bromomethane Acetone 2-Butanone 4-Methyl-2-pentanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F4B130279	02/18/04, 08:20	P-32-174.35 P-32-DUP-1 P-32-224.35 P-32-234.35 P-32-241.01 P-32-251.77 P-32-259.35 P-32-269.35 TB-02110212	% D: Chloromethane Bromomethane Chloroethane Acetone Carbon tetrachloride 1,1,1-Trichloroethane 2-Butanone 4-Methyl-2-pentanone Xylenes 2-Hexanone RRF: Acetone 2-Butanone 4-Methyl-2-pentanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-2. *Evaluation of Continuing Calibration Results*

Package Identification	***CCAL Date***	***Sample ID***	***Compounds***	***Action***
F4B130279 Cont'd	02/19/04, 09:18	P-32-269.35	% D: Bromomethane Dibromochloro-methane Bromoform RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F4B170134	02/18/04, 08:20	TB-020916	% D: Chloromethane Bromomethane Chloroethane Acetone Carbon tetrachloride 1,1,1-Trichloroethane 2-Butanone 4-Methyl-2-pentanone Xylenes 2-Hexanone RRF: Acetone 2-Butanone 4-Methyl-2-pentanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
	02/19/04, 09:18	P-32-279.35	% D: Bromomethane Dibromochloro-methane Bromoform RRF: Bromomethane Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results
F4B200226	02/26/04, 10:37	P-32-488.9	% D: Bromomethane Acetone Dibromochloro-methane Bromoform RRF: Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Table 3-2. *Evaluation of Continuing Calibration Results*

Package Identification	*CCAL Date*	*Sample ID*	*Compounds*	*Action*
F4B200226 Cont'd	O3.01/04, 09:19	P-32-DUP-3 TB-02090219	% D: Acetone 2-Butanone 4-Methyl-2-pentanone Xylenes (total) 2-Hexanone RRF: Acetone 2-Butanone 4-Methyl-2-pentanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results J – all positive results

Note:
DL Suffix – Indicates a secondary diluted sample reanalysis
RE Suffix – Indicates a reanalysis at the same dilution

3.2.10. Laboratory Method Blanks

In general, most laboratory method blanks contained trace levels of one or more common laboratory contaminants including acetone or methylene chloride. The corresponding sample results for the identified contaminants were revised to non-detect results if these results were "less than five times" (< 5 X) the method blank results for laboratory contaminants in accordance with the QAPP (GTEOSI, 2002). However, per National Functional Guidelines, common laboratory contaminants (methylene chloride, acetone, 2-butanone, and cyclohexane) criterion is "less than 10 times" (< 10 X) the method blank results. Most samples were affected by these qualification guidelines. A summary of the samples and compounds that were revised due to laboratory contamination are presented in Table 3-3.

Table 3-3. *Evaluation of Laboratory Method Blank Results*

Package identification	*Sample ID*	*Compounds*	*Action*
F3C190235	TB-A	Acetone Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
	TB-B	Acetone Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
	MW-7	Acetone Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	MW-2	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	MW-11	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	MW-10	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	MW-9	Acetone	Revised result to "U" (non-detect)
	MW-6	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
	MW-4	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
	MW-8	Acetone	Revised result to "U" (non-detect)
	MW-DUP	Acetone	Revised result to "U" (non-detect)

Table 3-3. *Evaluation of Laboratory Method Blank Results*

Package Identification	*Sample ID*	*Compounds*	*Action*
F3D290160	P-17-73.25	Acetone Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-17-92.25	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
	P-17-223.1	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
	P-FB-1	Acetone	Removed "B" qualifier. No need to qualify FB with MB
	P-F-86.48	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	TB-1	Acetone Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
	P-F-76.46	Acetone Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
F3E060217	P-27-89.75	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-27-DUP	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-27-99.75	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-27-139.75	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-28-87.02	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-28-97.02	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-28-147.02	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-28-207.02	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	TB-2	Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
F3E160130			None
F3E200165			None
F3E230179	P-E-292.28 DL	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-E-292.28 DL	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
F3E290170	P-D-97.05	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-15-79.65	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-15-79.65 RE	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-15-89.65	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-15-99.65	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-15-109.65	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-15-119.65	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
F3F030298	P-D-77.05	Methylene chloride	Revise "B" qualifier to "U" to indicate non

Table 3-3. *Evaluation of Laboratory Method Blank Results*

Package Identification	*Sample ID*	*Compounds*	*Action*
F3F120220	P-C-89.6	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-C-99.6	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-C-DUP-1	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
F3F170126	P-C-320.3	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-C-330.3	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-C-337.5	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-C-337.5 DL	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-24-87.35	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-24-77.35	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	TB-612-616	Chloromethane Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
	P-C-FB	Methylene chloride	Removed "B" qualifier. No need to qualify FB with MB
	P-C-159.6	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-C-169.6	Methylene chloride	Revised result to "U" (non-detect)
F3F180192	TB-617	Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
	P-24-127.3	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-24-137.3	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-C-347.7	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
F3F200145	P-24-207.3 DL	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	TB-619	Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
	P-24-267.3	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
F3F260187	P-24-297.3	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-23-FB-1	Methylene chloride	Removed "B" qualifier. No need to qualify FB with MB
	P-23-180.1	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-23-DUP-1	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-23-DUP-1 DL	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	TB-619625	Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
F3G010309	P-23-239.8	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-23-252.0	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-23-262.0	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result

Table 3-3. *Evaluation of Laboratory Method Blank Results*

Package Identification	***Sample ID***	***Compounds***	***Action***
F3G010309 Cont'd	P-23A-286.96	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-23A-293.50	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	TB-627630	Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
F3G030162	TB-701702	Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
	P-23A-DUP-1	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-23A-347.6	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
F3G110205	P-25-EB-1 DL	Methylene chloride	Removed "B" qualifier. No need to qualify EB with MB
	P-25-DUP-1	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-35-EB-1	Methylene chloride	Removed "B" qualifier. No need to qualify EB with MB
	P-35-117.2	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-35-177.2	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-35-DUP-1	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	TB-708710	Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
F3G150156			None
F3G230216	P-H-EB-1	Methylene chloride	Removed "B" qualifier. No need to qualify EB with MB
	P-H-EB-1 RE	Methylene chloride	Removed "B" qualifier. No need to qualify EB with MB
	TB721722	Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
F3G250374	P-H-106.8	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-42-202.7	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-42-DUP-1 DL	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-42-DUP-1 DL RE	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-42-DUP-1 DL RE RE	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
F3G290207	P-H-351.65	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-42-217.2	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-42-276.4	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-42-329.8	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-42-DUP-2	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-42-354.6	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	TB-724728	Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB

Table 3-3. *Evaluation of Laboratory Method Blank Results*

Package Identification	*Sample ID*	*Compounds*	*Action*
F3H060192	P-45-131.25	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-45-DUP-1	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
F3H080219	TB-805807	Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
F3H130195	P-45-281.65	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-20-309.60	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-20-319.60	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-20-FB	Methylene chloride	Removed "B" qualifier. No need to qualify FB with MB
	TB-8-12	Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
	P-20-427.99	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-20-DUP-2	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
F3H180106	P-45-366.39	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
	P-20-476.68	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
	TB-0813	Acetone	Removed "B" qualifier. No need to qualify TB with MB
	TB-0813 RE	Acetone	Removed "B" qualifier. No need to qualify TB with MB
F3H210288			None
F3H220246	P-36-156.7	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-36-DUP-1	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-46-139.60	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
F3H270230	P-46-275.42	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-46-DUP-2	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-36A-282.0	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-36-136.7	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-37-284.4	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-37-304.8	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-37-DUP-2	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	TB-821-824	Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
F3I040177	P-44-99.3	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-44-DUP-1	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
F3I050189	P-44-149.8	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result

Table 3-3. *Evaluation of Laboratory Method Blank Results*

Package Identification	*Sample ID*	*Compounds*	*Action*
F3I050189 Cont'd	TB-903904	Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
F3I090305	P-44-215.5	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-44-215.5 DL	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-44-229.2	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-44-229.2 DL	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-44-239.85	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-44-239.85 DL	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-44-249.85 DL	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-47-DUP-1	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-47-147.1	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
F3I120107	P-44-339.8	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
F3I150101			None
F3I180259			None
F3I230231	P-29-310.2	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-29-329.85	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-29-360.0	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-38-207.5	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-38-260.7 RE	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-43-246.68	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-43-246.68 RE	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-43-DUP-2	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-43-DUP-2 RE	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-43-294.85	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-43-294.85 RE	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-29-390.0	Carbon disulfide	Revise "B" qualifier to "U" to indicate non-detect result
F3I250196			None
F3J030259	P-30-89.50	Acetone Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-30-99.50	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-30-204.55	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result

Table 3-3. *Evaluation of Laboratory Method Blank Results*

Package Identification	*Sample ID*	*Compounds*	*Action*
F3J030259 Cont'd	P-30-DUP-1	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	TB1-930102	Acetone Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
F3J070236			None
F3J110172			None
F3J240204	P-50-109.90	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-50-119.90	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-50-129.90	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-50-DUP-1	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-50-139.90	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-50-149.90	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-49-114.3	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
	P-49-124.3	Acetone Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-49-167.3	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
	P-49-DUP-1	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
	TB10211023	Acetone	Removed "B" qualifier. No need to qualify TB with MB
	P-51-117.78	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-51-127.78	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-49-EB-1	Acetone	Removed "B" qualifier. No need to qualify EB with MB
F3J290103	P-50-249.90	Acetone Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-50-267.44	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-50-309.90	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-50-EB-2	Acetone Methylene chloride	Removed "B" qualifier. No need to qualify EB with MB
	P-50-342.60	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-50-DUP-2	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	TB-10231027	Acetone Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
	P-49-269.3	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-49-269.3 RE	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-49-340.8	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-49-DUP-2	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result

Table 3-3. *Evaluation of Laboratory Method Blank Results*

Package Identification	*Sample ID*	*Compounds*	*Action*
F3J290103 Cont'd	P-51-DUP-2	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-51-246.75	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
F3J310287	P-51-301.12	Acetone Methylene chloride 1,4-Dichlorobenzene	Revise "B" qualifier to "U" to indicate non-detect result
	P-51-321.00	Acetone Methylene chloride 1,2-Dichlorobenzene	Revise "B" qualifier to "U" to indicate non-detect result
	P-51-327.85	Acetone Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	TB-10271030	Acetone Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
F3K080109	P-54-107.55	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-54-107.55 DL	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-52-EB-1	Methylene chloride	Removed "B" qualifier. No need to qualify EB with MB
	P-52-170.0	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-52-DUP-1 RE	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-58-EB-1	Methylene chloride	Removed "B" qualifier. No need to qualify EB with MB
	P-58-159.65	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-58-DUP-1	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	TB-114116	Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
F3K110173	P-58-274.65	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-58-DUP-2	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-58-DUP-2 RE	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-54-267.95	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-54-267.95 RE	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-54-DUP-2	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-54-DUP-2 RE	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-54-276.4	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	TB-1171110	Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
F3K140242			None
F3K210372	P-52-EB-2	Acetone	Removed "B" qualifier. No need to qualify EB with MB
	TB-11171120	Acetone	Removed "B" qualifier. No need to qualify TB with MB
F3K280120	P-34-139.55	Acetone	Revise "B" qualifier to "U" to indicate non-detect result

Table 3-3. *Evaluation of Laboratory Method Blank Results*

Package Identification	*Sample ID*	*Compounds*	*Action*
F3K280120 Cont'd	P-34-DUP-1	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
	P-34-224.55	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
	P-34-234.55	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
	P-34-244.55	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
	P-34-DUP-2	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
	P-34-254.55	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
	P-34-264.55	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
	P-34-284.55	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
	P-34-294.55	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
	P-34-304.50	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
	TB-11201125	Acetone	Removed "B" qualifier. No need to qualify TB with MB
F3L050365			None
F3L090146	P-33-EB-1	Chloromethane	Removed "B" qualifier. No need to qualify EB with MB
	P-33-159.6	Chloromethane	Revise "B" qualifier to "U" to indicate non-detect result
	TB-125128	Chloromethane	Removed "B" qualifier. No need to qualify TB with MB
F4A130259	P-55-DUP-1 RE	Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
	P-55-154.55 RE	Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
F4A150320	P-55-164.55	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-55-174.55	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-55-186.15	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-55-264.40 DL	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-55-271.00 DL	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-55-164.55 DL	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-55-174.55 DL	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-55-186.15 DL	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
F4A300327	P-55-311.95	Acetone Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	TB-01220129	Acetone Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
	P-56-126.55	Acetone Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
	P-55-311.95 RE	Bromomethane	Revise "B" qualifier to "U" to indicate non-detect result

Table 3-3. *Evaluation of Laboratory Method Blank Results*

Package Identification	*Sample ID*	*Compounds*	*Action*
F4B130279	P-32-269.35	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
F4B170134	P-32-279.35	Acetone	Revise "B" qualifier to "U" to indicate non-detect result
F4B200226			None

Note:
DL Suffix – Indicates a secondary diluted sample reanalysis
RE Suffix – Indicates a reanalysis at the same dilution

3.2.11. Laboratory Control Sample Results

The laboratory analyzed a laboratory control sample (LCS) for each day of sample analysis. Most LCS percent recoveries were within the laboratory control limits for each of the batches. Generally, for recoveries substantially exceeding laboratory control limits, the associated data would be qualified as estimated ("J" or "UJ") using the following validation guidance: 1) if the percent recovery was greater than the upper control limit, positive results are qualified as estimated; non-detects are not qualified; 2) if the percent recovery was below the lower control limit, both positive and non-detect results are qualified as estimated. For compounds that were slightly out, but were within the method default range of 70% to 130%, they were not qualified based on professional judgment. Table 3-4 shows the evaluation of LCS samples.

Table 3-4. *Evaluation of Laboratory Control Sample Results*

Package Identification	*LCS Date and Time*	*Sample ID*	*Compound(s) Out*	*Action*
F3C190235	03/21/03, 16:56	N/A	Chloroform	None
	03/25/03, 11:00	N/A	1,2-Dichloroethane	None
F3D290160	05/05/03, 10:46	N/A	None	None
F3E060217	05/07/03, 10:29	N/A	1,2-Dichloroethane	None
		P-27-89.75 P-27-DUP P-27-99.75 P-27-139.75 P-28-87.02 P-28-97.02 P-28-147.02 P-28-207.02 TB-2	Methylene chloride	"J" (high %R) (result is biased high)
F3E160130 F3E200165	05/21/03, 10:37	N/A	None	None
F3E200165	05/22/03, 11:10	N/A	None	None
F3E230179	05/27/03, 11:04	N/A	None	None
	05/28/03, 10:12	N/A	None	None
F3E290170	06/02/03, 12:38	N/A	None	None
	06/03/03, 10:54	N/A	None	None

Table 3-4. *Evaluation of Laboratory Control Sample Results*

Package Identification	*LCS Date and Time*	*Sample ID*	*Compound(s) Out*	*Action*
F3F030298	06/60/03, 11:18	N/A	None	None
F3F120220	06/14/03, 01:13	P-C-89.6 P-C-99.6 P-C-DUP-1 TRIP BLANK	Toluene Tetrachloroethene	None
F3F170126	06/19/03, 13:54	N/A	None	None
	06/20/03, 12:24	P-C-337.5 DL	Chloromethane	None
F3F180192	06/20/03, 12:24	TB-617 P-24-127.3 P-24-137.3 P-C-347.7	Chloromethane	None
	06/23/03, 11:11	N/A	None	None
F3F200145	06/23/03, 11:11	N/A	None	None
	06/24/03, 19:57	N/A	None	None
F3F260187	06/30/03, 10:53	P-24-297.3 P-23-180.1 P-23-DUP-1	Acetone 1,2-Dichloroethane 1,1,2-Trichloroethane 1,1,2,2-Tetrachloroethane	None
		P-23-FB-1 P-23-DUP-1DL	Acetone 1,2-Dichloroethane 1,1,2-Trichloroethane 1,1,2,2-Tetrachloroethane	Acetone was detected, and therefore, is qualified as estimated, "J", with a high bias
		TB-619625	Acetone 1,2-Dichloroethane 1,1,2-Trichloroethane 1,1,2,2-Tetrachloroethane	Acetone and 1,2-Dichloroethane were detected, and therefore, are qualified as estimated, "J", with a high bias
F3F270132	07/02/03, 09:56	N/A	None	None
F3G010309	07/03/03, 11:15	P-23-239.8 P-23-252.0 P-23-262.0 P-23A-286.96 P-23A-293.50 TB-627630	Acetone trans-1,3-Dichloropropene Toluene	%R was above the recovery range. Acetone already qualified, where detected, and is biased high. Trans-1,3-Dichloropropene not detected, and not qualified. Toluene %R is high and is < 130, not qualified.
F3G030162	07/07/03, 17:22	N/A	None	None
F3G110256	07/14/03, 14:20	N/A	None	None
	07/15/03, 10:19	N/A	None	None
F3G150156	07/15/03, 23:30	N/A	None	None
F3G230216	07/21/03, 13:45	N/A	None	None
F3G250074	07/29/03, 10:14	N/A	None	None
	07/30/03, 11:55	N/A	None	None
F3G290207	07/31/03, 09:47	N/A	None	None

Table 3-4. *Evaluation of Laboratory Control Sample Results*

Package Identification	*LCS Date and Time*	*Sample ID*	*Compound(s) Out*	*Action*
F3H060192	08/11/03, 19:18	N/A	None	None
	08/12/03, 10:25	N/A	None	None
F3H080219	08/11/03, 19:18	N/A	None	None
F3H130195	08/14/03, 13:27	N/A	None	None
F3H180106	08/18/03, 15:29	N/A	None	None
F3H210288	08/24/03, 14:59	N/A	None	None
F3H220246	08/28/03, 00:15	N/A	None	None
	08/28/03, 10:36	N/A	None	None
F3H270230	08/28/03, 10:36	N/A	None	None
F3I040177	09/04/03, 13:29	N/A	None	None
	09/04/03, 20:22	N/A	None	None
F3I050189	09/05/03, 10:09	N/A	None	None
	09/09/03, 11:25	N/A	None	None
F3I090305	09/11/03, 10:02	N/A	None	None
	09/12/03, 10:23	N/A	None	None
F3I120107	09/13/03, 17:30	N/A	None	None
F3I150101	09/18/03, 10:40	N/A	None	None
	09/18/03, 19:27	N/A	None	None
F3I180259	09/21/03, 13:06	N/A	None	None
F3I230231	09/29/03, 11:42	P-29-EB-1 P-29-310.2 P-29-329.85 P-29-DUP-2 P-29-EB-2 P-29-360.0 TB-917922	Chloroethane 2-Butanone	"J" (low %R) (data are biased low). Note that chloroethane and 2-butanone have already been qualified by the initial and continuing calibrations.
	09/30/03, 09:59	P-38-186.3 P-38-207.5 P-38-216.3 P-38-260.7 P-38-260.7 RE P-43-246.68 P-43-246.68 RE P-43-DUP-2 P-43-DUP-2 RE P-43-294.85 P-43-294.85 RE P-29-390.0	Chloroethane	"J" (low %R) (data are biased low)
F3I250196	10/01/03, 10:45	N/A	None	None
	10/01/03, 19:35	N/A	None	None
F3J030259	10/06/03, 11:07	N/A	None	None
F3J070236	10/14/03, 11:10	N/A	None	None

Table 3-4. *Evaluation of Laboratory Control Sample Results*

Package Identification	*LCS Date and Time*	*Sample ID*	*Compound(s) Out*	*Action*
F3J110172	10/16/03, 10:37	N/A	None	None
	10/16/03, 22:45	N/A	None	None
F3J240204	10/31/03, 0656	N/A	None	None
	11/04/03, 1748	N/A	None	None
F3J290103	11/04/03, 17:48	N/A	None	None
	11/05/03, 03:49	N/A	None	None
	11/05/03, 11:43	N/A	None	None
F3J310287	11/07/03, 00:10	N/A	None	None
F3K080109	11/14/03, 12:16	N/A	None	None
	11/18/03, 11:07	N/A	None	None
F3K110173	11/14/03, 12:16	N/A	None	None
	11/18/03, 11:07	N/A	None	None
F3K140242	11/20/03, 20:57	N/A	None	None
	11/21/03, 10:50	N/A	None	None
F3K210372	11/28/03, 21:06	N/A	None	None
F3K280120	12/03/03, 23:56	N/A	None	None
	12/06/03, 15:34	P-34-139.55 P-34-DUP-1 P-34-224.55 P-34-234.55 P-34-244.55 P-34-DUP-2 P-34-254.55 P-34-264.55 P-34-284.55 P-34-294.55 P-34-304.50 TB-11201125	Acetone	"J" (high %R) (result is biased high)
	12/08/03, 12:01	N/A	None	None
F3L050365	12/08/03, 12:01	N/A	None	None
F3L090146	12/15/03, 11:17	N/A	None	None
	12/19/03, 23:19	N/A	None	None
F4A130259	01/14/04, 17:19	N/A	None	None
	01/20/04, 09:17	N/A	None	None
	01/21/04, 13:21	N/A	None	None
F4A150320	01/21/04, 13:21	N/A	None	None
	01/22/04, 11:32	N/A	Vinyl chloride	None (high %R but not detected in samples)
	01/28/04, 16:04	TB-01120114 RE	Acetone	"J" (high %R) (result is biased high)
	02/02/04, 15:10	N/A	None	None

Table 3-4. *Evaluation of Laboratory Control Sample Results*

Package Identification	*LCS Date and Time*	*Sample ID*	*Compound(s) Out*	*Action*
F4A150320 Cont'd	02/03/04, 08:19	N/A	None	None
	02/05/04, 11:35	N/A	None	None
F4A300327	02/05/04, 11:35	N/A	None	None
	02/10/04, 03:14	N/A	Chloromethane Vinyl chloride Bromomethane	None (high %R but not detected in associated samples)
	02/14/04, 20:08	N/A	None	None
F4B130279	02/18/04, 09:33	N/A	None	None
	02/19/04, 11:55	N/A	None	None
F4B170134	02/18/04, 09:33	N/A	None	None
	02/19/04, 11:55	N/A	None	None
F4B200226	02/26/04, 11:21	N/A	None	None
	03/01/04, 10:40	N/A	None	None

N/A = not applicable

3.2.12. Matrix Spike/Matrix Spike Duplicate Analyses

The MS/MSD analyses are designed to provide information about the effect of sample matrix on the sample preparation procedures and the measurement methodology. Data precision from the field sampling and the analytical techniques are also assessed. The following samples were analyzed for MS/MSD:

- SDG F3C190235: samples MW-6 and MW-10
- SDG F3E060217: sample P-27-199.75
- SDG F3E160130: sample P-26-231.25
- SDG F3E290170: sample P-D-107.05
- SDG F3F170126: sample P-C-169.6
- SDG F3F180192: sample P-C-347.7
- SDG F3F200145: samples P-24-DUP-1 and P-24-267.3
- SDG F3H220246: sample P-46-DUP-1
- SDG F3I090305: sample P-47-177.0
- SDG F3J240204: sample P-49-114.3
- SDG F3K280120: samples P-53-266.35 and P-34-304.50

Only the associated non-spiked MS/MSD samples were evaluated for qualification (unless a trend can be determined for all other samples within the SDG). Where recoveries exceeded laboratory control limits, the associated data were qualified as estimated ("J" or "UJ") using the following validation guidance: 1) if the percent recovery was greater than the upper control limit, positive results were qualified as estimated; 2) if the percent recovery was below the lower control limit, both positive and non-detect results were qualified as estimated. No qualification of data is required when percent recoveries are above the upper control limit and the VOC results are non-detect. The following are non-conformances associated with MS/MSD analyses:

- There were no MS/MSD analyzed with SDGs F3D290160, F3E230179, F3F030298, F3F260187, F3F120220, F3F270132, F3G010309, F3G030162, F3G110256, F3G150156, F3G230216, F3G290207, F3H060192, F3H080219, F3H130195, F3H180106, F3H210288, F3H270230, F3G250374, F3I040177, F3I050189, F3I150101, F3I180259, F3I230231, F3I250196, F3J030259, F3J070236, F3J110172, F3J290103, F3J310287, F3K080109, F3K110173, F3L050365, F3L090146, F4A130259, F4A150320, F4B170134, and F4B200226; therefore, matrix effects on accuracy and precision of the samples could not be evaluated.

- SDG F3G110256: the MD/MSD was performed on laboratory water, as the LCS and LCS duplicate; they offer no information on matrix effects of the actual field samples. However, since the RPDs for acetone and methylene chloride were not within acceptance criteria, these compounds were qualified as estimated (J) for all associated samples.

- SDGs F3G250374, F3I150101, F3I250196, F3K080109, F3K110173, F4A130259, F4B130279, and F4B170134: the MD/MSDs were performed on laboratory waters, as the LCSs and LCS duplicates; they offer no information on matrix effects of the actual field samples.

- SDGs F3K140242, F3K210372, and F4A300327: the MS/MSDs were performed on samples from other clients of the laboratory. Matrix effect of the samples for accuracy and precision was not evaluated because those MS/MSDs offer no pertinent information on matrix effects of field samples from this project.

- SDG F4A150320: the MD/MSDs were performed on laboratory water, as LCSs and LCS duplicates; they offer no information on matrix effects of the actual field samples. However, since the RPDs for acetone, bromomethane, and carbon disulfide for some LCS pairs were not within acceptance criteria, these compounds were qualified as estimated (J) for all associated samples.

Table 3-5 shows the samples that were qualified as estimated due to MS/MSD percent recoveries exceeding criteria.

Table 3-5. *Evaluation of Matrix Spike/Matrix Spike Duplicate Sample Results*

Package Identification	***Sample ID***	***Compounds***	***Action***
F3C190235	MW-10	Trans-1,3-Dichloropropene	"UJ" (low % R) (result is estimated and biased low)
		Tetrachloroethene	None: sample concentration is much greater than spiking concentration
		Trichloroethene	"J" (high %R) (result is biased high)
F3C190235 Cont'd	MW-6	Chloroform	"J" (high %R) (result is biased high)
		Tetrachloroethene	None: sample concentration is much greater than spiking concentration
F3E060217	P-27-199.75	None	None
F3E160130 F3E200165	P-26-231.25	Bromomethane	None
F3E290170	P-D-107.05	Tetrachloroethene	"J" (low % R) (result is estimated and biased low)
F3F170126	P-C-169.6	Bromomethane	None, compound had been qualified "R" due to other QC criteria failure
F3F180192	P-C-347.7	None	None
F3F200145	P-24-DUP-1	None	None
	P-24-267.3	None	None
F3G110256	P-25-EB-1 DL	Methylene chloride	"J" (high RPD)
	P-35-EB-1	Methylene chloride	"J" (high RPD)
	TB-708710	Methylene chloride	"J" (high RPD)
F3H220246	P-46-DUP-1	None	None
F3I090305	P-47-177.0	Tetrachloroethene	"J" (high %R) (result is biased high)
F3J240204	P-49-114.3	None	None
F3K280120	P-53-266.35	None	None
	P-34-304.50	None	None
F4A150320	P-31-344.25 P-31-351.55 P-31-DUP-2 P-31-344.25 RE P-55-264.40 P-55-271.00 TB-01120114 RE	Bromomethane Acetone Carbon disulfide	"J" (high RPD)
	P-31-DUP-2 RE	Acetone	"J" (high RPD)

3.2.13. Field Duplicate Analyses

Blind field duplicate samples were collected and analyzed to assess the overall sampling and analytical technique's precision. By design, the laboratory was never made aware of which field samples the blind duplicates were associated with. The following samples were analyzed for field duplicates:

- SDG F3C190325: sample MW-DUP as a blind field duplicate of sample MW-3.
- SDG F3E060217: sample P-27-DUP as a blind field duplicate of sample P-27-99.75.
- SDG F3F120220: sample P-C-DUP-1 as a blind field duplicate of sample P-C-99.60.
- SDG F3F200145: sample P-24-DUP-1 as a blind field duplicate of sample P-24-167.3 and sample P-24-DUP-2 as a blind field duplicate of sample P-24-287.3.
- SDG F3F260187: sample P-23-DUP-1 as a blind field duplicate of sample P-23-180.1.
- SDG F3G030162: sample P-23A-DUP-1 as a blind field duplicate of sample P-23A-347.6.
- SDG F3G110256: sample P-25-DUP-1 as a blind field duplicate of sample P-25-179.7 and sample P-35-DUP-1 as a blind field duplicate of sample P-35-177.2.
- SDG F3G150156: sample P-25-DUP-2 as a blind field duplicate of sample P-25-275.8 and sample P-35-DUP-2 as a blind field duplicate of sample P-35-332.2.
- SDG F3G250374: sample P-H-DUP-2 as a blind field duplicate of sample P-H-206.55 and sample P-42-DUP-1 as a blind field duplicate of sample P-42-202.7.
- SDG F3G290207: sample P-42-DUP-2 as a blind field duplicate of sample P-42-329.8.
- SDG F3H060192: sample P-45-DUP-1 as a blink field duplicate of sample P-45-81.25.
- SDG F3H130195: sample P-20-DUP-2 is a blind field duplicate of sample P-20-427.99.
- SDG F3H180106: sample P-45-DUP-2 is a blind field duplicate of sample P-45-366.39.
- SDG F3H210288: sample P-37-DUP-1 is a blind field duplicate of sample P-37-119.95.
- SDG F3H220246: sample P-36-DUP-1 is a blind field duplicate of sample P-36-156.7 and sample P-46-DUP-1 is a blind field duplicate of sample P-46-139.60.
- SDG F3H270230: sample P-46-DUP-2 is a blind field duplicate of sample P-46-275.42 and sample P-37-DUP-2 is a blind field duplicate of sample P-37-304.8.
- SDG F3I040177: sample P-44-DUP-1 is a blind field duplicate of sample P-44-99.3.
- SDG F3I090305: sample P-47-DUP-1 is a blind field duplicate of sample P-47-147.1.
- SDG F3I120107: sample P-43-DUP-1 is a blind field duplicate of sample P-43-119.88.

- SDG F3I180259: sample P-29-DUP-1 is a blind field duplicate of sample P-29-109.5 and sample P-38-DUP-1 is a blind field duplicate of sample P-38-116.7.

- SDG F3I250196: sample P-38-DUP-3 is a blind field duplicate of sample P-38-381.3; however, the original sample P-38-381.3 was not collected for analysis. Therefore, the duplicate will be considered as the original sample, and the duplicate sample not collected.

- SDG F3I230231: sample P-29-DUP-2 is a blind field duplicate of sample P-29-329.85 and sample P-43-DUP-2 is a blind field duplicate of sample P-43-246.68.

- SDG F3J030259: sample P-30-DUP-1 is a blind field duplicate of sample P-30-204.55.

- SDG F3J070236: sample P-30A-DUP-2 is a blind field duplicate of sample P-30A-298.6 and sample P-18-DUP-1 is a blind field duplicate of sample P-18-156.65.

- SDG F3J110172: sample P-30A-DUP-3 is a blind field duplicate of sample P-30A-406.55 and sample P-18-DUP-2 is a blind field duplicate of sample P-18-247.65.

- SDG F3J240204: sample P-50-DUP-1 is a blind field duplicate of sample P-50-129.90 and P-49-DUP-1 is a blind field duplicate of sample P-49-167.3.

- SDG F3J290103: sample P-50-DUP-2 is a blind field duplicate of sample P-50-342.60; P-49-DUP-2 is a blind field duplicate of sample P-49-340.8; and P-51-DUP-2 is a blind field duplicate of sample P-51-246.75.

- SDG F3K080109: sample P-52-DUP-1 is a blind field duplicate of sample P-52-170.0 and P-58-DUP-1 is a blind field duplicate of sample P-58-159.65.

- SDG F3K110173: sample P-58-DUP-2 is a blind field duplicate of sample P-58-274.65 and P-54-DUP-2 is a blind field duplicate of sample P-54-267.95.

- SDG F3K140242: sample P-54-DUP-3 is a blind field duplicate of sample P-54-351.25.

- SDG F3K280120: sample P-53-DUP-1 is a blind field duplicate of sample P-53-146.40; P-53-DUP-2 is a blind field duplicate of sample P-53-266.35; P-34-DUP-1 is a blind field duplicate of sample P-34-139.55; and P-34-DUP-2 is a blind field duplicate of sample P-34-244.55.

- SDG F3L090146: sample P-33-DUP-1 is a blind field duplicate of sample P-33-169.6.

- SDG F4A130256: sample P-31-DUP-1 is a blind field duplicate of sample P-31-190.40; P-55-DUP-1 is a blind field duplicate of sample P-55-154.55.

- SDG F4A150320: sample P-31-DUP-2 is a blind field duplicate of sample P-31-351.55.

- SDG F4A300327: sample P-55-DUP-2 is a blind field duplicate of sample P-55-311.95.

- SDG F4B130279: sample P-32-DUP-1 is a blind field duplicate of sample P-32-174.35.

- SDG F4B200226: sample P-32-DUP-3 is a blind field duplicate of sample P-32-488.9.

An evaluation of the precision of the field sampling procedure (as well as the laboratory analysis procedure) was made based on the relative percent difference (RPD) calculated for the original and duplicate sample results. RPD calculations were made only when the results were above the laboratory reporting limits. The RPD values for all compounds were less than 30% (aqueous data evaluation criteria) with the following exception:

- SDG F3F260187: the RPD for trichloroethene is 35.6%. Therefore, trichloroethene is qualified as estimated, "J" or "UJ," for all field samples (excluding blanks) in this SDG.

- SDG F3G030162: the RPDs for tetrachloroethene and trichloroethene are 45.6% and 41.9%, respectively. Therefore, tetrachloroethene and trichloroethene are qualified as estimated, "J" or "UJ," for all field samples (excluding blanks) in this SDG.

- SDG F3G150156: acetone was detected in P-35-332.2 at the estimated concentration of 2.4 ug/L, but not in its duplicate, P-35-DUP-2. Therefore all acetone detections are qualified as estimated, "J."

- SDG F3G250374: sample P-42-DUP-1 was analyzed four separate times. It was discovered that the concentrations from the first and second analyses (different containers) was not similar. Both containers were re-analyzed again with the same conclusion. The concentrations from the second container appeared to have degraded substantially. The results from the first container (diluted and undiluted results hybridized) are used for the duplicate pair (duplicate with P-42-202.7) comparison. The RPD for tetrachloroethene is 41%. Therefore, tetrachloroethene is qualified as estimated, "J" or "UJ," for all field samples (excluding blanks) in this SDG.

- SDG F3G290207: the RPD for trichloroethene is 34.5%. Therefore, trichloroethene is qualified as estimated, "J" or "UJ," for all field samples (excluding blanks) in this SDG.

- SDG F3H060196: the RPD for acetone could not be calculated as it was not detected in the original sample (subsequently qualified as rejected) and detected in the duplicate sample at 3.3 ug/L (subsequently qualified as estimated). Therefore, acetone is qualified as estimated, "J" or "UJ," in the all field samples.

- SDG F3H180106: the RPDs for tetrachloroethene and trichloroethene are 66.7% and 67.9%, respectively. Therefore, tetrachloroethene and trichloroethene are both qualified as estimated, "J" or "UJ," in all field samples. However, due to sample receipt temperature at the laboratory, all detections were already qualified as estimated, "J," and all non-detects were already qualified as rejected, "R."

- SDG F3H210288: the RPDs for tetrachloroethene and trichloroethene are 83.6% and 66.7%, respectively. Therefore, tetrachloroethene and trichloroethene are both qualified as estimated, "J" or "UJ," in all field samples.

- SDG F3H270230: the RPDs for chloroform, tetrachloroethene, and trichloroethene are 36.4%, 32.9%, and 33.0%, respectively, for the P-46-DUP-2 duplicate pair. Other than the P-37 samples within this SDG, all other samples for this SDG are qualified as estimated, "J" or "UJ," for these three compounds. The P-37 samples within this SDG had an acceptable duplicate pair.

- SDG F3I040177: the RPDs for tetrachloroethene and trichloroethene are 76.0% and 76.0%, respectively. Therefore, tetrachloroethene and trichloroethene are both qualified as estimated, "J" or "UJ," in all field samples.

- SDG F3I090305: the RPD for tetrachloroethene is 48.3%. Therefore, tetrachloroethene is qualified as estimated, "J" or "UJ," in all field samples.

- SDG F3I230231: for samples P-29-DUP-2 and P-43-DUP-2, the RPDs for tetrachloroethene were 37.6% and 36.7%, respectively. Therefore, tetrachloroethene is qualified as estimated, "J" or "UJ," in all field samples. For sample P-43-DUP-2, the RPD for cis-1,2-dichloroethene and trichloroethene were 44.8% and 44.1%, respectively. Therefore, cis-1,2-dichloroethene and trichloroethene are qualified as estimated, "J" or "UJ," in all field samples.

- SDG F3J240204: the RPD for chloroform in sample P-49-167.3 is 58.1%. Therefore, chloroform is qualified as estimated, "J" or "UJ," in all field samples.

- SDG F3J290103: the RPD for tetrachloroethene and trichloroethene in sample P-49-DUP-2 is 83.0% and 82.2%, respectively. Therefore, tetrachloroethene and trichloroethene are qualified as estimated, "J" or "UJ," in all field samples, with the following exceptions. Tetrachloroethene for sample P-50-DUP-2 do not need to be qualified because its RPD is acceptable. Tetrachloroethene for sample P-50-DUP-2 do not need to be qualified because its RPD is acceptable. Tetrachloroethene and trichloroethene for sample P-51-DUP-2 do not need to be qualified because its RPDs are acceptable.

- SDG F3K080109: the RPD for chloroform in sample P-58-DUP-1 is 89.4%. Therefore, chloroform is qualified as estimated, "J" or "UJ," in all field samples, with the exception of sample P-52-DUP-1. The RPD for sample P-52-DUP-1 is acceptable.

- SDG F3K110173: the RPD for chloroform and tetrachloroethene in sample P-48-DUP-2 is 43.8% and 38.9%, respectively. Therefore, chloroform and tetrachloroethene are qualified as estimated, "J" or "UJ," in all field samples. The RPD for tetrachloroethene in sample P-54-DUP-2 was acceptable; however, tetrachloroethene was already qualified as estimated in this sample due to sample receipt problems.

- SDG F3K280120: the RPD for 1,1,1-trichloroethane in sample P-34-DUP-2 is 32.6%. Therefore, 1,1,1-trichloroethane is qualified as estimated, "J" or "UJ," in all field samples.

There were no field duplicates submitted with SDGs F3D290160, F3E160130, F3E200165, F3E230179, F3E290170, F3F030298, F3F170126, F3F180192, F3F270132, F3G010309, F3G230216, F3H080219, F3I050189, F3I150101, F3I250196, F3J310287, F3K210372, F3L050365, and F4B170134. It should be noted that QAPP requirements (GTEOSI, 2002) specified that a field duplicate sample be collected at a rate of one sample for every ten samples (collection rate of 10%). There were 55 field duplicates collected for the 256 field samples submitted (not including blank samples collected as QCs) for analysis. Therefore, the frequency is satisfied and field precision is considered to have been evaluated to the QAPP's requirements.

3.2.14. Trip Blanks, Field Blanks, and Equipment Blanks

Fifty-six trip blanks, 7 field blanks, and 29 equipment blanks were submitted for analysis. Many of the trip blanks that were submitted contained common contaminants, including acetone, methylene chloride, and toluene. Frequently, the field blanks and equipment blanks also contained acetone and other compounds. Revisions made on the affected target compound results were based on trip blank, field blank, and equipment blank contamination, in accordance with practices described in the validation guidance documents listed in Sections 1.2 and 3.2.10 (method blank contamination). It should be noted that the results for the trip blanks, field blanks, and equipment blanks were not revised with respect to the method blank's contamination; but the original result were retained to show data users the presence and concentrations of contamination that was used to qualify the project sample results. The laboratory's "B"

qualifiers in the trip blanks, field blanks, and equipment blanks were removed. The contamination in the trip blanks, field blanks, and equipment blanks, like the project samples, is potentially attributable to contamination from sample collection techniques in the field, cross-contamination from samples during shipment, or contamination during the preparation and analysis of these QC samples (at the laboratory).

There was no field blank collected with SDGs F3E060217, F3E160130, F3E200165, F3E230179, F3E290170, and F3F030298; therefore, the field blank from SDG F3D290160 was used. There was no field blank collected with SDGs F3F120220, F3F180192, F3F200145, F3F270132, F3G010309, F3G030162, F3G110256, F3G150156, F3G230216, F3G290207, F3H060192, and F3H080219; therefore, the field blank from SDG F3F170126 was used. There was no field blank collected with SDGs F3H180106, F3H220246, F3H270230, F3I050189, F3I090305, and F3I150101; therefore, the field blank from SDG F3H130195 was used. There was no field blank collected with SDGs F3I230231; therefore, the field blank from SDG F3I180259 was used. There was no field blank collected with SDGs F3J030259, F3J070236, F3J110172, F3J240204, F3K080109, F3K110173, F3K140242, F3K280120, F3L050365, F3L090146, F4A150320, F4A300327, F4B130279, F4B170134, and F4B200226; therefore, the field blank from SDG F3I250196 was used.

Table 3-6 shows the samples and compounds that were qualified as non-detect, "U."

Table 3-6. *Evaluation of Trip Blank, Field Blank, and Equipment Blank Results*

Package Identification	***Sample ID***	***Compound***	***Action***
F3C190235	MW-7	Acetone* Methylene Chloride*	Revised result to "U" (non-detect)
	MW-2	2-Butanone Methylene Chloride*	Revised result to "U" (non-detect)
	MW-11	2-Butanone Methylene Chloride* Toluene	Revised result to "U" (non-detect)
	MW-5	2-Butanone	Revised result to "U" (non-detect)
	MW-10	Methylene Chloride*	Revised result to "U" (non-detect)
	MW-9	Acetone*	Revised result to "U" (non-detect)
	MW-6	Acetone*	Revised result to "U" (non-detect)
	MW-4	Acetone*	Revised result to "U" (non-detect)
	MW-8	Acetone*	Revised result to "U" (non-detect)
	MW-DUP	Acetone*	Revised result to "U" (non-detect)
F3D290160	P-17-73.25	Acetone* 1,2-Dichloroethane Methylene chloride*	Revised result to "U" (non-detect)
	P-17-92.25	Acetone* Bromoform 1,2-Dichloroethane Toluene	Revised result to "U" (non-detect)
	P-17-233.1	Acetone* 1,2-Dichloroethane	Revised result to "U" (non-detect)
	P-F-86.48	Chloroform Methylene chloride*	Revised result to "U" (non-detect)
	P-F-76.46	Acetone* Methylene chloride*	Revised result to "U" (non-detect)

Table 3-6. *Evaluation of Trip Blank, Field Blank, and Equipment Blank Results*

Package Identification	***Sample ID***	***Compound***	***Action***
F3E060217	P-27-89.75	Acetone 1,2-Dichloroethane Toluene Methylene chloride*	Revised result to "U" (non-detect)
	P-27-DUP	Acetone 1,2-Dichloroethane Toluene Methylene chloride*	Revised result to "U" (non-detect)
	P-27-99.75	Acetone 1,2-Dichloroethane Methylene chloride*	Revised result to "U" (non-detect)
	P-27-139.75	Acetone Chloroform 1,2-Dichloroethane Methylene chloride*	Revised result to "U" (non-detect)
	P-27-199.75	Acetone Bromoform 1,2-Dichloroethane Toluene	Revised result to "U" (non-detect)
	P-28-87.02	Acetone 1,2-Dichloroethane Methylene chloride*	Revised result to "U" (non-detect)
	P-28-97.02	Methylene chloride*	Revised result to "U" (non-detect)
	P-28-147.02	Acetone Bromoform Methylene chloride*	Revised result to "U" (non-detect)
	P-28-207.02	Methylene chloride*	Revised result to "U" (non-detect)
F3E160130	P-26-231.25	Acetone Toluene Bromoform	Revised result to "U" (non-detect)
	P-26-241.25	Bromoform	Revised result to "U" (non-detect)
	P-E-98.57	Methylene chloride	Revised result to "U" (non-detect)
F3E200165	P-26-257.2	Bromoform Toluene	Revised result to "U" (non-detect)
	P-26-267.2	Acetone Toluene	Revised result to "U" (non-detect)
	P-26A-276.53	Chloromethane	Revised result to "U" (non-detect)
	P-E-128.57	Methylene chloride	Revised result to "U" (non-detect)
	P-E-138.57	Methylene chloride	Revised result to "U" (non-detect)
	P-E-148.57	Chloromethane	Revised result to "U" (non-detect)
	P-E-158.57	Chloromethane	Revised result to "U" (non-detect)
F3E230179	P-E-292.28	Chloroform Chloromethane	Revised result to "U" (non-detect)
	P-E-292.28 DL	Acetone Methylene chloride*	Revised result to "U" (non-detect)
	P-E-301.23	Chloroform	Revised result to "U" (non-detect)
	P-E-301.23 DL	Acetone Methylene chloride*	Revised result to "U" (non-detect)

Table 3-6. *Evaluation of Trip Blank, Field Blank, and Equipment Blank Results*

Package Identification	*Sample ID*	*Compound*	*Action*
F3E230179 Cont'd	P-E-332.85	Chloroform	Revised result to "U" (non-detect)
	P-E-327.15	Chloroform	Revised result to "U" (non-detect)
F3E290170	P-D-87.05	Toluene Bromoform Carbon disulfide	Revised result to "U" (non-detect)
	P-D-97.05	Methylene chloride*	Revised result to "U" (non-detect)
	P-D-107.05	Carbon disulfide	Revised result to "U" (non-detect)
	P-15-79.65	Methylene chloride*	Revised result to "U" (non-detect)
	P-15-79.65 RE	Acetone Methylene chloride*	Revised result to "U" (non-detect)
	P-15-89.65	Methylene chloride*	Revised result to "U" (non-detect)
	P-15-99.65	Methylene chloride*	Revised result to "U" (non-detect)
	P-15-109.65	Methylene chloride*	Revised result to "U" (non-detect)
	P-15-119.65	Methylene chloride*	Revised result to "U" (non-detect)
F3F030298	P-D-257.	Acetone 1,2-Dichlorobenzene	Revised result to "U" (non-detect)
	P-D-290.1	Acetone Chloroform 1,2-Dichlorobenzene	Revised result to "U" (non-detect)
	P-D-77.05	Methylene chloride*	Revised result to "U" (non-detect)
	P-D-117.05	Carbon disulfide	Revised result to "U" (non-detect)
	P-D-127.05	Bromoform Carbon disulfide	Revised result to "U" (non-detect)
	P-D-137.05	Acetone Toluene Carbon disulfide	Revised result to "U" (non-detect)
	P-D-147.05	Chloroform	Revised result to "U" (non-detect)
F3F120220	P-C-89.6	Methylene chloride*	Revised result to "U" (non-detect)
	P-C-99.6	Methylene chloride*	Revised result to "U" (non-detect)
	P-C-DUP-1	Methylene chloride*	Revised result to "U" (non-detect)
F3F170126	P-C-320.3	Methylene chloride*	Revised result to "U" (non-detect)
	P-C-330.3	Methylene chloride* Bromoform	Revised result to "U" (non-detect)
	P-C-337.5	Methylene chloride* Bromoform Carbon disulfide	Revised result to "U" (non-detect)
	P-C-337.5 DL	Methylene chloride*	Revised result to "U" (non-detect)
	P-24-87.35	Methylene chloride* Acetone	Revised result to "U" (non-detect)
	P-24-77.35	Methylene chloride* Carbon disulfide	Revised result to "U" (non-detect)

Table 3-6. *Evaluation of Trip Blank, Field Blank, and Equipment Blank Results*

Package Identification	***Sample ID***	***Compound***	***Action***
F3F170126 Cont'd	P-C-159.6	Methylene chloride* Chloroform Carbon disulfide	Revised result to "U" (non-detect)
	P-C-169.6	Methylene chloride* Chloroform Carbon disulfide	Revised result to "U" (non-detect)
F3F180192	P-24-127.3	Methylene chloride* Chloroform	Revised result to "U" (non-detect)
	P-24-137.3	Chloromethane Methylene chloride* Acetone	Revised result to "U" (non-detect)
	P-24-137.3 RE	Methylene chloride Acetone	Revised result to "U" (non-detect)
	P-C-347.7	Methylene chloride* Chloroform Tetrachloroethene	Revised result to "U" (non-detect)
F3F200145	P-24-157.3	Acetone Methylene chloride Tetrachloroethene	Revised result to "U" (non-detect)
	P-24-167.3	Acetone	Revised result to "U" (non-detect)
	P-24-177.3	Tetrachloroethene	Revised result to "U" (non-detect)
	P-24-187.3	Tetrachloroethene 1,2-Dichloroethane	Revised result to "U" (non-detect)
	P-24-197.3	Tetrachloroethene 1,2-Dichloroethane	Revised result to "U" (non-detect)
	P-24-207.3	Chloroform Tetrachloroethene 1,2-Dichloroethane	Revised result to "U" (non-detect)
	P-24-207.3 DL	Methylene chloride* Tetrachloroethene 1,2-Dichloroethane	Revised result to "U" (non-detect)
	P-24-217.3	Methylene chloride Tetrachloroethene	Revised result to "U" (non-detect)
	P-24-DUP-1	Methylene chloride	Revised result to "U" (non-detect)
	P-24-227.3	Methylene chloride 1,2-Dichloroethane	Revised result to "U" (non-detect)
	P-24-237.3	Tetrachloroethene	Revised result to "U" (non-detect)
	P-24-247.3	Methylene chloride Tetrachloroethene 1,2-Dichloroethane	Revised result to "U" (non-detect)
	P-24-257.3	Methylene chloride Tetrachloroethene 1,2-Dichloroethane	Revised result to "U" (non-detect)
	P-24-147.3	Tetrachloroethene	Revised result to "U" (non-detect)
	P-24-267.3	Methylene chloride* Tetrachloroethene	Revised result to "U" (non-detect)
	P-24-287.3	Tetrachloroethene	Revised result to "U" (non-detect)
	P-24-DUP-2	Tetrachloroethene	Revised result to "U" (non-detect)
	P-C-364.5	Chloroform	Revised result to "U" (non-detect)

Table 3-6. *Evaluation of Trip Blank, Field Blank, and Equipment Blank Results*

Package Identification	***Sample ID***	***Compound***	***Action***
F3F200145 Cont'd	P-C-374.5	Tetrachloroethene	Revised result to "U" (non-detect)
F3F260187	P-24-297.3	Methylene chloride* 1,1,1-Trichloroethane 4-Methyl-2-pentanone	Revised result to "U" (non-detect)
	P-23-180.1	Methylene chloride* Carbon disulfide	Revised result to "U" (non-detect)
	P-23-DUP-1	Methylene chloride*	Revised result to "U" (non-detect)
	P-23-DUP-1 DL	Methylene chloride* Acetone	Revised result to "U" (non-detect)
F3F270132	P-23-150.1	Methylene chloride Acetone Chloroform	Revised result to "U" (non-detect)
	P-23-160.1	Chloroform	Revised result to "U" (non-detect)
F3G010309	P-23-239.8	Carbon disulfide Methylene chloride* Tetrachloroethene Acetone	Revised result to "U" (non-detect)
	P-23-252.0	Bromoform Carbon disulfide Methylene chloride* Acetone	Revised result to "U" (non-detect)
	P-23-262.0	Carbon disulfide Methylene chloride*	Revised result to "U" (non-detect)
	P-23A-286.96	Carbon disulfide Methylene chloride* Chloroform	Revised result to "U" (non-detect)
	P-23A-293.50	Carbon disulfide Methylene chloride* Chloroform	Revised result to "U" (non-detect)
F3G030162	P-23A-DUP-1	Carbon disulfide Chloroform Methylene chloride*	Revised result to "U" (non-detect)
	P-23A-347.6	Chloroform Methylene chloride*	Revised result to "U" (non-detect)
F3G110256	P-25-169.7	Carbon disulfide Tetrachloroethene	Revised result to "U" (non-detect)
	P-25-179.7	Carbon disulfide Tetrachloroethene	Revised result to "U" (non-detect)
	P-25-DUP-1	Carbon disulfide Tetrachloroethene	Revised result to "U" (non-detect)
	P-35-117.2	Tetrachloroethene	Revised result to "U" (non-detect)
	P-35-177.2	Tetrachloroethene	Revised result to "U" (non-detect)
	P-35-DUP-1	Tetrachloroethene	Revised result to "U" (non-detect)
F3G150156	P-25-275.8	Trichloroethene	Revised result to "U" (non-detect)
	P-25-DUP-2	Carbon disulfide Trichloroethene	Revised result to "U" (non-detect)
	P-25-349.4	Tetrachloroethene	Revised result to "U" (non-detect)
	P-25-349.4 RE	Tetrachloroethene	Revised result to "U" (non-detect)

Table 3-6. *Evaluation of Trip Blank, Field Blank, and Equipment Blank Results*

Package Identification	***Sample ID***	***Compound***	***Action***
F3G150156 Cont'd	P-35-332.2	Tetrachloroethene	Revised result to "U" (non-detect)
	P-35-DUP-2	Tetrachloroethene	Revised result to "U" (non-detect)
F3G230216	P-H-116.8	Carbon disulfide	Revised result to "U" (non-detect)
F3G250374	P-H-106.8	Methylene chloride*	Revised result to "U" (non-detect)
	P-H-136.8	Carbon disulfide	Revised result to "U" (non-detect)
	P-H-156.8	Acetone	Revised result to "U" (non-detect)
	P-H-206.55	Carbon disulfide Chloromethane Tetrachloroethene	Revised result to "U" (non-detect)
	P-42-202.7	1,2-Dichlorobenzene Methylene chloride*	Revised result to "U" (non-detect)
	P-42-DUP-1	1,2-Dichlorobenzene	Revised result to "U" (non-detect)
	P-42-DUP-1	1,2-Dichlorobenzene Methylene chloride*	Revised result to "U" (non-detect)
	P-42-DUP-1	Methylene chloride*	Revised result to "U" (non-detect)
	P-42-DUP-1	Methylene chloride*	Revised result to "U" (non-detect)
	P-H-DUP-2	Carbon disulfide Chloromethane Tetrachloroethene	Revised result to "U" (non-detect)
F3G290207	P-H-351.65	Chloromethane Methylene chloride* Tetrachloroethene	Revised result to "U" (non-detect)
	P-42-217.2	Methylene chloride*	Revised result to "U" (non-detect)
	P-42-276.4	Methylene chloride*	Revised result to "U" (non-detect)
	P-42-329.8	Methylene chloride*	Revised result to "U" (non-detect)
	P-42-DUP-2	Methylene chloride*	Revised result to "U" (non-detect)
	P-42-354.6	Methylene chloride*	Revised result to "U" (non-detect)
F3H060192	P-20-149.60	Acetone	Revised result to "U" (non-detect)
	P-20-159.60	Acetone Tetrachloroethene	Revised result to "U" (non-detect)
	P-45-81.25	Carbon disulfide Tetrachloroethene	Revised result to "U" (non-detect)
	P-45-131.25	Carbon disulfide 1,2-Dichloroethane Methylene chloride*	Revised result to "U" (non-detect)
	P-45-DUP-1	Acetone Carbon disulfide Methylene chloride* Tetrachloroethene	Revised result to "U" (non-detect)
	P-45-DUP-1 RE	Acetone Carbon disulfide Tetrachloroethene	Revised result to "U" (non-detect)

Table 3-6. *Evaluation of Trip Blank, Field Blank, and Equipment Blank Results*

Package Identification	*Sample ID*	*Compound*	*Action*
F3H080219	P-20-229.70	Tetrachloroethene	Revised result to "U" (non-detect)
	P-45-151.25	Carbon disulfide 1,2-Dichlorobenzene	Revised result to "U" (non-detect)
	P-45-207.25	1,2-Dichlorobenzene	Revised result to "U" (non-detect)
F3H130195	P-45-281.65	Acetone Methylene chloride*	Revised result to "U" (non-detect)
	P-20-309.60	Methylene chloride*	Revised result to "U" (non-detect)
	P-20-319.60	Acetone 1,2-Dichloroethane Methylene chloride*	Revised result to "U" (non-detect)
	P-20-427.99	Acetone Carbon disulfide Methylene chloride*	Revised result to "U" (non-detect)
	P-20-DUP-2	Carbon disulfide Methylene chloride*	Revised result to "U" (non-detect)
F3H180106	P-45-366.39	Acetone*	Revised result to "U" (non-detect)
	P-20-476.68	Acetone* 1,2-Dichloroethane	Revised result to "U" (non-detect)
F3H210288	P-37-119.95	Carbon disulfide	Revised result to "U" (non-detect)
	P-37-DUP-1	Carbon disulfide	Revised result to "U" (non-detect)
F3H220246	P-36-156.7	Methylene chloride*	Revised result to "U" (non-detect)
	P-36-DUP-1	Methylene chloride*	Revised result to "U" (non-detect)
	P-46-139.60	Acetone Methylene chloride*	Revised result to "U" (non-detect)
	P-46-DUP-1	Acetone	Revised result to "U" (non-detect)
F3H270230	P-46-275.42	Methylene chloride*	Revised result to "U" (non-detect)
	P-46-DUP-2	Acetone Methylene chloride*	Revised result to "U" (non-detect)
	P-36A-282.0	Acetone Methylene chloride*	Revised result to "U" (non-detect)
	P-36-136.7	Carbon disulfide Methylene chloride*	Revised result to "U" (non-detect)
	P-37-284.4	Methylene chloride*	Revised result to "U" (non-detect)
	P-37-304.8	Acetone Methylene chloride*	Revised result to "U" (non-detect)
	P-37-DUP-2	Methylene chloride*	Revised result to "U" (non-detect)
F3I040177	P-44-99.3	Acetone 1,2-Dichloroethane Methylene chloride*	Revised result to "U" (non-detect)
	P-44-DUP-1	Methylene chloride*	Revised result to "U" (non-detect)
F3I050189	P-44-149.8	Acetone Methylene chloride*	Revised result to "U" (non-detect)
	P-44-149.8 DL	Acetone	Revised result to "U" (non-detect)

Table 3-6. *Evaluation of Trip Blank, Field Blank, and Equipment Blank Results*

Package Identification	*Sample ID*	*Compound*	*Action*
F3I090305	P-44-215.5	Carbon disulfide Methylene chloride*	Revised result to "U" (non-detect)
	P-44-215.5 DL	Acetone Methylene chloride*	Revised result to "U" (non-detect)
	P-44-229.2	Methylene chloride*	Revised result to "U" (non-detect)
	P-44-229.2 DL	Methylene chloride*	Revised result to "U" (non-detect)
	P-44-239.85	Methylene chloride*	Revised result to "U" (non-detect)
	P-44-239.85 DL	Methylene chloride*	Revised result to "U" (non-detect)
	P-44-249.85	Acetone Carbon disulfide 1,2-Dichloroethane	Revised result to "U" (non-detect)
	P-44-249.85 DL	Acetone Carbon disulfide Methylene chloride*	Revised result to "U" (non-detect)
	P-44-257.1	Acetone Carbon disulfide	Revised result to "U" (non-detect)
	P-47-DUP-1	Methylene chloride*	Revised result to "U" (non-detect)
	P-47-147.1	Methylene chloride*	Revised result to "U" (non-detect)
	P-47-177.0	Acetone 1,2-Dichlorobenzene cis-1,2-Dichloroethene Trichloroethene	Revised result to "U" (non-detect)
	P-47-205.7	Acetone 1,2-Dichlorobenzene cis-1,2-Dichloroethene	Revised result to "U" (non-detect)
F3I120107	P-43-119.88	Acetone Styrene	Revised result to "U" (non-detect)
	P-44-339.8	Methylene chloride*	Revised result to "U" (non-detect)
F3I150101	P-43-129.88	Methylene chloride	Revised result to "U" (non-detect)
	P-47-197.0	Acetone Methylene chloride	Revised result to "U" (non-detect)
F3I180259	P-29-109.5	Acetone	Revised result to "U" (non-detect)
	P-29-DUP-1	Acetone	Revised result to "U" (non-detect)
	P-38-146.7	Acetone	Revised result to "U" (non-detect)
F3I230231	P-38-216.3	Acetone	Revised result to "U" (non-detect)
F3I250196	P-38-DUP-3	Acetone cis-1,2-Dichloroethene Methylene chloride	Revised result to "U" (non-detect)
F3J030259	P-30-89.50	Acetone* Chloromethane Methylene chloride* Trichloroethene	Revised result to "U" (non-detect)
	P-30-99.50	Methylene chloride*	Revised result to "U" (non-detect)
	P-30-204.55	Methylene chloride*	Revised result to "U" (non-detect)

Table 3-6. *Evaluation of Trip Blank, Field Blank, and Equipment Blank Results*

Package Identification	***Sample ID***	***Compound***	***Action***
F3J030259 Cont'd	P-30-DUP-1	Methylene chloride*	Revised result to "U" (non-detect)
F3J070236	P-30A-298.6	Acetone 1,2-Dichloroethane	Revised result to "U" (non-detect)
	P-30A-DUP-2	1,2-Dichloroethane	Revised result to "U" (non-detect)
	P-18-156.65	Acetone Trichloroethene	Revised result to "U" (non-detect)
	P-18-DUP-1	Acetone Trichloroethene	Revised result to "U" (non-detect)
F3J110172	P-30A-406.55	Acetone 1,2-Dichlorobenzene 1,3-Dichlorobenzene Methylene chloride	Revised result to "U" (non-detect)
	P-30A-DUP-3	Methylene chloride	Revised result to "U" (non-detect)
	P-18-217.65	Acetone Methylene chloride	Revised result to "U" (non-detect)
	P-18-247.65	Acetone Methylene chloride	Revised result to "U" (non-detect)
	P-18-DUP-2	Methylene chloride	Revised result to "U" (non-detect)
	P-18-257.65	Acetone	Revised result to "U" (non-detect)
	P-18-267.65	Acetone Trichloroethene	Revised result to "U" (non-detect)
	P-18-277.65	Acetone Trichloroethene	Revised result to "U" (non-detect)
	P-18-287.65	Acetone Trichloroethene	Revised result to "U" (non-detect)
	P-18-302.66	Acetone cis-1,2-Dichloroethene Trichloroethene	Revised result to "U" (non-detect)
	P-18-335.80	Acetone	Revised result to "U" (non-detect)
F3J240204	P-50-109.90	1,2-Dichlorobenzene 1,2-Dichloroethane Trichloroethene Methylene chloride*	Revised result to "U" (non-detect)
	P-50-119.90	1,2-Dichloroethane Trichloroethene Methylene chloride*	Revised result to "U" (non-detect)
	P-50-129.90	1,2-Dichlorobenzene 1,2-Dichloroethane Trichloroethene Methylene chloride*	Revised result to "U" (non-detect)
	P-50-DUP-1	1,2-Dichloroethane Trichloroethene Methylene chloride*	Revised result to "U" (non-detect)
	P-50-139.90	1,2-Dichlorobenzene 1,2-Dichloroethane Trichloroethene Methylene chloride*	Revised result to "U" (non-detect)
	P-50-149.90	1,2-Dichloroethane Trichloroethene Methylene chloride*	Revised result to "U" (non-detect)

Table 3-6. *Evaluation of Trip Blank, Field Blank, and Equipment Blank Results*

Package Identification	*Sample ID*	*Compound*	*Action*
F3J240204 Cont'd	P-49-114.3	Acetone* 1,2-Dichlorobenzene 1,2-Dichloroethane cis-1,2-Dichloroethene Trichloroethene	Revised result to "U" (non-detect)
	P-49-124.3	Acetone* 1,2-Dichlorobenzene 1,2-Dichloroethane Trichloroethene Methylene chloride*	Revised result to "U" (non-detect)
	P-49-167.3	Acetone* 1,2-Dichlorobenzene 1,2-Dichloroethane	Revised result to "U" (non-detect)
	P-49-DUP-1	Acetone* 1,2-Dichlorobenzene 1,2-Dichloroethane Toluene	Revised result to "U" (non-detect)
	P-51-117.78	1,2-Dichlorobenzene 1,2-Dichloroethane Trichloroethene Methylene chloride*	Revised result to "U" (non-detect)
	P-51-127.78	Acetone* 1,2-Dichlorobenzene 1,2-Dichloroethane	Revised result to "U" (non-detect)
F3J290103	P-50-249.90	Acetone* Methylene chloride*	Revised result to "U" (non-detect)
	P-50-267.44	1,2-Dichloroethane Methylene chloride*	Revised result to "U" (non-detect)
	P-50-309.90	cis-1,2-Dichloroehene Methylene chloride	Revised result to "U" (non-detect)
	P-50-342.60	1,2-Dichloroethane cis-1,2-Dichloroethene Methylene chloride* Trichloroethene	Revised result to "U" (non-detect)
	P-50-DUP-2	Acetone cis-1,2-Dichloroethene Methylene chloride* Trichloroethene	Revised result to "U" (non-detect)
	P-50-DUP-2 RE	cis-1,2-Dichloroethene	Revised result to "U" (non-detect)
	P-49-269.3	Acetone 1,2-Dichloroethane cis-1,2-Dichloroethene Methylene chloride*	Revised result to "U" (non-detect)
	P-49-269.3 RE	Acetone cis-1,2-Dichloroethene Methylene chloride	Revised result to "U" (non-detect)
	P-49-284.3	Acetone	Revised result to "U" (non-detect)
	P-49-284.3 RE	Acetone	Revised result to "U" (non-detect)
	P-49-340.8	Methylene chloride*	Revised result to "U" (non-detect)
	P-49-DUP-2	Acetone 1,2-Dichloroethane Methylene chloride*	Revised result to "U" (non-detect)
	P-49-DUP-2 DL	Acetone cis-1,2-Dichloroethene	Revised result to "U" (non-detect)

Table 3-6. *Evaluation of Trip Blank, Field Blank, and Equipment Blank Results*

Package Identification	*Sample ID*	*Compound*	*Action*
F3J290103 Cont'd	P-51-187.78	Acetone 1,2-Dichloroethane	Revised result to "U" (non-detect)
	P-51-DUP-2	Acetone 1,2-Dichloroethane Methylene chloride*	Revised result to "U" (non-detect)
	P-51-246.75	1,2-Dichloroethane Methylene chloride*	Revised result to "U" (non-detect)
F3J310287	P-51-301.12	Acetone* 1,2-Dichloroethane Methylene chloride*	Revised result to "U" (non-detect)
	P-51-321.00	Acetone* cis-1,2-Dichloroethene Methylene chloride*	Revised result to "U" (non-detect)
	P-51-327.85	Acetone* cis-1,2-Dichloroethene Methylene chloride*	Revised result to "U" (non-detect)
F3K080109	P-54-107.55	Acetone 1,4-Dichlorobenzene Methylene chloride*	Revised result to "U" (non-detect)
	P-54-107.55 DL	Acetone 1,4-Dichlorobenzene Methylene chloride* Trichloroethene	Revised result to "U" (non-detect)
	P-52-170.0	1,2-Dichlorobenzene Methylene chloride*	Revised result to "U" (non-detect)
	P-52-DUP-1	Acetone	Revised result to "U" (non-detect)
	P-52-DUP-1 RE	Acetone Methylene chloride*	Revised result to "U" (non-detect)
	P-58-159.65	Methylene chloride*	Revised result to "U" (non-detect)
	P-58-DUP-1	Acetone Methylene chloride*	Revised result to "U" (non-detect)
F3K110173	P-58-274.65	1,2-Dichlorobenzene Methylene chloride* Trichloroethene	Revised result to "U" (non-detect)
	P-58-DUP-2	Acetone Methylene chloride* Trichloroethene	Revised result to "U" (non-detect)
	P-58-DUP-2 RE	Methylene chloride* Trichloroethene	Revised result to "U" (non-detect)
	P-54-267.95	Acetone 1,2-Dichlorobenzene Methylene chloride*	Revised result to "U" (non-detect)
	P-54-267.95 RE	Acetone 1,2-Dichlorobenzene Methylene chloride*	Revised result to "U" (non-detect)
	P-54-DUP-2	1,2-Dichlorobenzene Methylene chloride*	Revised result to "U" (non-detect)
	P-54-DUP-2 RE	Acetone 1,2-Dichlorobenzene Methylene chloride*	Revised result to "U" (non-detect)
	P-54-276.4	Acetone Chloroform 1,2-Dichlorobenzene Methylene chloride*	Revised result to "U" (non-detect)
F3K140242	P-54-351.25	Chloroform	Revised result to "U" (non-detect)

Table 3-6. *Evaluation of Trip Blank, Field Blank, and Equipment Blank Results*

Package Identification	***Sample ID***	***Compound***	***Action***
F3K140242 Cont'd	P-54-351.25 DL	cis-1,2-Dichloroethene Methylene chloride	Revised result to "U" (non-detect)
	P-54-DUP-3	Acetone Chloroform 1,2-Dichloroethane	Revised result to "U" (non-detect)
	P-54-DUP-3 DL	cis-1,2-Dichloroethene Methylene chloride	Revised result to "U" (non-detect)
F3K280120	P-53-146.40	Trichloroethene	Revised result to "U" (non-detect)
	P-53-DUP-1	Trichloroethene	Revised result to "U" (non-detect)
	P-53-266.35	cis-1,2-Dichloroethene Trichloroethene	Revised result to "U" (non-detect)
	P-53-DUP-2	1,2-Dichloroethane cis-1,2-Dichloroethene Trichloroethene	Revised result to "U" (non-detect)
	P-34-139.55	Acetone*	Revised result to "U" (non-detect)
	P-34-DUP-1	Acetone*	Revised result to "U" (non-detect)
	P-34-224.55	Acetone* Chloroform 1,2-Dichloroethane Trichloroethene	Revised result to "U" (non-detect)
	P-34-234.55	Acetone* Chloroform cis-1,2-Dichloroethene Trichloroethene	Revised result to "U" (non-detect)
	P-34-244.55	Acetone* Chloroform cis-1,2-Dichloroethene Trichloroethene	Revised result to "U" (non-detect)
	P-34-DUP-2	Acetone* Chloroform cis-1,2-Dichloroethene Trichloroethene	Revised result to "U" (non-detect)
	P-34-254.55	Acetone* Chloroform cis-1,2-Dichloroethene Trichloroethene	Revised result to "U" (non-detect)
	P-34-264.55	Acetone* Chloroform cis-1,2-Dichloroethene Trichloroethene	Revised result to "U" (non-detect)
	P-34-284.55	Acetone* Chloroform cis-1,2-Dichloroethene	Revised result to "U" (non-detect)
	P-34-294.55	Acetone* Chloroform cis-1,2-Dichloroethene	Revised result to "U" (non-detect)
	P-34-304.50	Acetone* Chloroform cis-1,2-Dichloroethene	Revised result to "U" (non-detect)
	P-53-331.10	cis-1,2-Dichloroethene	Revised result to "U" (non-detect)
	P-53-340.05	cis-1,2-Dichloroethene Trichloroethene	Revised result to "U" (non-detect)

Table 3-6. *Evaluation of Trip Blank, Field Blank, and Equipment Blank Results*

Package Identification	***Sample ID***	***Compound***	***Action***
F3K280120 Cont'd	P-53-340.05 RE	cis-1,2-Dichloroethene Trichloroethene	Revised result to "U" (non-detect)
F3L050365	P-34-324.50	Acetone cis-1,2-Dichloroethene	Revised result to "U" (non-detect)
	P-34-334.50	Acetone cis-1,2-Dichloroethene Trichloroethene	Revised result to "U" (non-detect)
F3L090146	P-33-159.6	Chloromethane* Trichloroethene	Revised result to "U" (non-detect)
	P-33-169.6	Acetone Chloromethane Trichloroethene	Revised result to "U" (non-detect)
	P-33-179.6	Acetone Chloromethane Trichloroethene	Revised result to "U" (non-detect)
	P-33-DUP-1	Chloromethane Trichloroethene	Revised result to "U" (non-detect)
	P-33-189.6	Chloromethane Trichloroethene	Revised result to "U" (non-detect)
	P-33-198.1	Acetone Chloromethane Trichloroethene	Revised result to "U" (non-detect)
	P-33-214.6	Chloromethane	Revised result to "U" (non-detect)
	P-33-224.6	Chloromethane Trichloroethene	Revised result to "U" (non-detect)
	P-53-426.75	Acetone	Revised result to "U" (non-detect)
	P-53-480.90	Acetone Trichloroethene	Revised result to "U" (non-detect)
F4A130259	P-31-190.40	Acetone Chloroform Methylene chloride	Revised result to "U" (non-detect)
	P-31-190.40 RE	Chloroform Methylene chloride	Revised result to "U" (non-detect)
	P-31-DUP-1	Chloroform Toluene	Revised result to "U" (non-detect)
	P-31-DUP-1 RE	Chloroform Methylene chloride	Revised result to "U" (non-detect)
	P-55-DUP-1	1,4 Dichlorobenzene Tetrachloroethene	Revised result to "U" (non-detect)
	P-55-DUP-1 RE	Trans-1,2-Dichloroethene Methylene chloride* Tetrachloroethene	Revised result to "U" (non-detect)
	P-55-154.55	Trans-1,2-Dichloroethene Tetrachloroethene	Revised result to "U" (non-detect)
	P-55-154.55 RE	Methylene chloride* Tetrachloroethene	Revised result to "U" (non-detect)
F4A150320	P-31-344.25	Methylene chloride Toluene	Revised result to "U" (non-detect)
	P-31-344.25 RE	Methylene chloride Toluene	Revised result to "U" (non-detect)
	P-31-DUP-2 RE	Acetone	Revised result to "U" (non-detect)
	P-55-164.55	Acetone Methylene chloride* Toluene	Revised result to "U" (non-detect)

Table 3-6. *Evaluation of Trip Blank, Field Blank, and Equipment Blank Results*

Package Identification	*Sample ID*	*Compound*	*Action*
F4A150320 Cont'd	P-55-164.55 DL	Acetone Methylene chloride*	Revised result to "U" (non-detect)
	P-55-174.55	Methylene chloride* Toluene	Revised result to "U" (non-detect)
	P-55-174.55 DL	Acetone Methylene chloride*	Revised result to "U" (non-detect)
	P-55-186.15	Methylene chloride* Toluene	Revised result to "U" (non-detect)
	P-55-186.15 DL	Acetone Methylene chloride*	Revised result to "U" (non-detect)
	P-55-264.40	Methylene chloride	Revised result to "U" (non-detect)
	P-55-264.40 DL	Methylene chloride*	Revised result to "U" (non-detect)
	P-55-271.00	Methylene chloride	Revised result to "U" (non-detect)
	P-55-271.00 DL	Acetone Methylene chloride*	Revised result to "U" (non-detect)
F4A300327	P-55-311.95	Acetone* Chloromethane cis-1,2-Dichloroethene Methylene chloride*	Revised result to "U" (non-detect)
	P-55-311.95 RE	Chloromethane cis-1,2-Dichloroethene	Revised result to "U" (non-detect)
	P-55-DUP-2	Acetone cis-1,2-Dichloroethene Methylene chloride*	Revised result to "U" (non-detect)
	P-56-126.55	Acetone* Chloroform Chloromethane Methylene chloride*	Revised result to "U" (non-detect)
F4B130279	P-32-174.35	Acetone 2-Butanone	Revised result to "U" (non-detect)
	P-32-DUP-1	Acetone 2-Butanone	Revised result to "U" (non-detect)
	P-32-224.35	Acetone 2-Butanone Chloroform	Revised result to "U" (non-detect)
	P-32-234.35	Acetone 2-Butanone Chloroform	Revised result to "U" (non-detect)
	P-32-241.01	Acetone 2-Butanone Chloroform Trichloroethene	Revised result to "U" (non-detect)
	P-32-251.77	Acetone 2-Butanone Chloroform Trichloroethene	Revised result to "U" (non-detect)
	P-32-259.35	Acetone 2-Butanone Chloroform Trichloroethene	Revised result to "U" (non-detect)
	P-32-269.35	Acetone* 2-Butanone Chloroform Trichloroethene	Revised result to "U" (non-detect)

Table 3-6. *Evaluation of Trip Blank, Field Blank, and Equipment Blank Results*

Package Identification	*Sample ID*	*Compound*	*Action*
F4B170134	P-32-279.35	2-Butanone Chloroform Trichloroethene	Revised result to "U" (non-detect)
F4B200226	P-32-488.9	Acetone 2-Butanone Chloromethane	Revised result to "U" (non-detect)
	P-32-DUP-3	Acetone Bromomethane 2-Butanone Chloromethane	Revised result to "U" (non-detect)

Note:
DL Suffix – Indicates a secondary diluted sample reanalysis
RE Suffix – Indicates a reanalysis at the same dilution
* - Also qualified due to method blank contamination

3.2.15. System Monitoring Compounds

All percent recoveries for the VOC surrogates were within laboratory control limits with the following exceptions:

- SDG F3C190235: the 1,2-dichloroethane-d4 recovery for the LCS analyzed on 03/25/03 was at 80%, which is slightly below the control limits of 83% to 119%. No qualifications are necessary based on professional judgment.

- SDG F3D290160: 1,2-Dichloroethane-d4 for sample P-17-92.25 was at 120%, which is slightly above the control limits of 83% to 119%. No qualifications are necessary based on professional judgment.

- SDG F3E290170: samples TB-05-28-03 and P-15-79.65 both have one surrogate outside of control limits. However, both samples were reanalyzed with acceptable recoveries. The laboratory had submitted both sets of data for these samples – the lab only needed to submit the analysis that was acceptable. The data from the initial analyses are to be ignored.

- SDG F3F180192: the toluene-d8 recovery for sample P-24-137.3 was above the control limits of 85% to 116%. The laboratory reanalyzed the sample on the next day. All surrogate recoveries were within the control limits in the reanalysis. Both analysis results were submitted. However, only the "good" analysis needed to be submitted. With this validation, the reanalysis will be considered the initial and only analysis reported. No qualifications are necessary.

- SDGs F3F260187, F3F260187, F3F270132, F3G010309, F3G030162, F3G150156, F3G250374, F3G290207, F3H060192, F3H080219, F3H130195, F3H180106, F3H210288, F3H270230, F3I050189, F3I150101, F3I180259, F3I230231, F3I250196, F3J070236, F3J110172, F3J290103, F3K110173, F3L050365, F3L090146, F4A130259, F4A150320, F4B130279, F4B170134, and F4B200226: the surrogate limits specified on Form II (Surrogate Recovery) are not consistent with other SDGs or the laboratory's report forms for results. The limits on the report forms for results Form I) are used for this validation.

- SDG F3G150156: surrogate 4-bromofluorobenzene recovery for sample P-25-349.4 was above the acceptance limit. However, the laboratory had reanalyzed the sample with acceptable recoveries. The laboratory reported both analyses; however, only the reanalysis is to be reported.

- SDG F3G230216: surrogate toluene-d8 recovery for sample P-H-EB-1 was above the acceptance limit. However, the laboratory had reanalyzed the sample with acceptable recoveries. The laboratory reported both analyses; however, only the reanalysis is to be reported.

- SDG F3G250374: surrogate toluene-d8 recovery for sample P-42-DUP-1 was above the acceptance limit. Therefore, all detected results in this sample, between the bracketing internal standards fluorobenzene and chlorobenzene-d5, are qualified as estimated (J) with a high bias. The compounds qualified are trichloroethene and tetrachloroethene.

- SDG F3H060192: surrogate toluene-d8 recovery for sample P-45-DUP-1 was above the acceptance limit. However, the laboratory had reanalyzed the sample with acceptable recoveries. The laboratory reported both analyses; however, only the reanalysis is to be reported.

- SDG F3H180106: surrogate 4-bromofluorobenzene recovery for sample TB-0813 was above the acceptance limit. However, the laboratory had reanalyzed the sample with acceptable recoveries. The laboratory reported both analyses; however, only the reanalysis is to be reported.

- SDG F3I040177: the surrogate recovery sheet (Form II) was not included in the data package. The surrogate recoveries for all samples were reviewed on the sample results form instead (Form I). All recoveries were acceptable.

- SDG F3I090305: the 4-bromofluorobenzene recovery for sample P-47-177.0 was at 79%, which is slightly below the control limits of 82% to 118%. No qualifications are necessary based on professional judgment.

- SDG F3I120107: the surrogate recovery sheet (Form II) was not included in the data package. The surrogate recoveries for all samples were reviewed on the sample results form instead (Form I). All recoveries were acceptable.

- SDG F3I230231: surrogate dibromofluoromethane recovery for the five samples P-38-260.7, P-43-246.68, P-43-DUP-2, P-43-294.85, and P-29-390.0 were slightly above the acceptance limit of 83 to 125 percent. The first four samples were reanalyzed with similar results. The fifth sample was not reanalyzed. Since the recoveries were above the limit and not below, and since they were only slightly above the limit, no qualification actions are performed based on professional judgment. The reanalyzed sample results are chosen as the more accurate results in this validation review since the recoveries were closer to the acceptance limit. The four initial analyses are not to be used.

- SDG F3J240204: surrogate dibromofluoromethane recovery for sample P-50-109.90 was at 129%, which is slightly above the acceptance limits of 83% to 125%. No qualifications are necessary based on professional judgment.

- SDG F3J290103: surrogate 1,2-dichloroethane-d4 recoveries for samples P-49-269.3 and P-49-284.3 were slightly above the acceptance limit. However, the laboratory had reanalyzed the sample with acceptable recoveries. The laboratory reported both analyses; however, only the reanalysis is to be reported.

  Surrogate 1,2-dichloroethane-d4 recovery for sample P-50-DUP-2 was at 124%, which is slightly above the acceptance limits of 81% to 122%. The sample was reanalyzed with a respective recovery of 128%. However, the associated duplicate sample recoveries were all within the acceptance limits. No qualifications are necessary based on professional judgment. The initial P-50-DUP-2 analysis is to be reported.

- SDG F3K080109: the surrogate recovery sheet (Form II) was not included in the data package. The surrogate recoveries for all samples were reviewed on the sample results form instead (Form I). Surrogate recovery for 4-bromofluorobenzene was slightly below the recovery limits for sample P-54-107.55 DL. Therefore, the only result hybridized onto the original analysis from this sample, 1,2-dichlorobenzene, is qualified as estimated (J), biased low. Sample P-52-DUP-1 was analyzed twice due to a low surrogate recovery. Surrogate recovery for 4-bromofluorobenzene was slightly low on the first analysis. Surrogate recovery for 1,2-dichloroethane-d4 was slightly low on the second analysis. Since the results for the two analyses and their respective duplicate sample (surrogate recoveries were acceptable) were all similar, no qualifications are deemed necessary.

- SDG F3K110173: three samples were analyzed twice due to surrogate recovery problems. They are samples P-58-DUP-2, P-54-267.95, and P-54-DUP-2. The reanalysis of samples P-58-DUP-2 and P-54-DUP-2 are to be the reported analyses because the surrogate recoveries were all acceptable in the reanalyzed samples. The original analysis of sample P-54-267.95 is to be the reported analysis because the recovery or the surrogate dibromofluoromethane is closer to the recovery range than that of the reanalysis. The dibromofluoromethane recovery for sample P-54-267.95 was at 129%, which is slightly above the control limits of 83% to 125%. No qualifications are necessary based on professional judgment.

- SDG F3K280120: surrogate toluene-d8 recovery for sample P-53-340.05 was slightly above the acceptance limit. Subsequently, the laboratory reanalyzed the sample resulting with acceptable recoveries. The laboratory reported both analyses; however, only the reanalysis is to be reported.

- SDG F4A130259: surrogate recovery for 1,2-dichloroethane-d4 for most samples were slightly above the acceptance limit. In addition, surrogate recovery for 4-bromofluorobenzene for samples P-31-190.40 RE and P-55-DUP-1 was slightly above the acceptance limit. Since these recoveries were above the acceptance limit, and not below, no qualifications are necessary based on professional judgment.

- SDG F4A150320: surrogate toluene-d8 recovery for sample P-31-344.25 was slightly above the acceptance limit. Surrogate 1,2-dichloroethane-d4 for the following samples were slightly above the acceptance limit: P-55-164.55, P-55-174.55, P-55-186.15, P-55-EB-2, P-55-271.00, TB-01120114, and TB-01120114 RE. Since these recoveries were above the acceptance limit, and not below, no qualifications are necessary based on professional judgment.

- SDG F4A300327: surrogate recovery for 1,2-dichloroethane-d4 for samples P-55-311.95 and P-55-311.95 were slightly above the acceptance limit. In addition, surrogate recovery for 4-bromofluorobenzene for sample P-55-311.95 was slightly above the acceptance limit. Since these recoveries were above the acceptance limit, and not below, no qualifications are necessary based on professional judgment.

3.2.16. Internal Standards

All internal standard retention times were within ± 0.5 minutes from that of the associated calibration for all analyses. The responses of all internal standards were within the range of 50-200% of the associated calibration verification for all samples, with the following exception:

- SDG F3I230231: sample P-43-DUP-2 internal standard area responses were all less than 50 percent of the associated calibration. However, the laboratory had reanalyzed the sample with acceptable responses. The laboratory reported both analyses; however, only the reanalysis is to be reported.

- SDG F3K280120: internal standard area and retention time tabulations were not performed for seven samples on Form VIII. Tabulations are always reviewed to determine if these quality criteria are within control limits. In this case, information from the raw data was used to perform these evaluations during the data validation process. No qualifications are necessary.

- SDG F4A130259: there were many samples analyzed on January 20, 2004, which had internal standard area deficiencies. The internal standard area responses for the following samples were less than 50 percent of the associated calibration for 1,4-dichlorobenzene-d4: P-55-EB-1, P-55-EB-1 DL, P-31-DUP-1, P-31-DUP-1 RE, P-31-190.40, and P-31-190.40 RE. Therefore, all compounds quantitated under 1,4-dichlorobenzene-d4 (1,3-dichlorobenzene, 1,4-dichlorobenzene, and 1,2-dichlorobenzene) for these samples are qualified as estimated (J). In addition, for sample P-55-EB-1 DL, the internal standard responses for fluorobenzene and chlorobenzene-d5 were also less than 50 percent of the associated calibration. Therefore, all compounds in sample P-55-EB-1 DL are qualified as estimated (J).

3.2.17. Compound Identification and Quantitation of Results / Dilutions

The laboratory's evaluations of the gas chromatographs and mass spectra for the identified compounds were acceptable. The identification of acetone was difficult in most cases; however, based on professional judgment, the identification is deferred to the laboratory analyst. The laboratory analyst is familiar with the behavior of the instrumentation that they work with.

The following deficiencies were found:

- SDG F3F260187: sample TB-619625, total xylene as m,p-xylene was detected with a positive spectral match. It was not reported and has been added to the reporting form through this validation.

- SDG F3F270132: sample TB-625625, total xylene as m,p-xylene was detected with a positive spectral match. It was not reported and has been added to the reporting form through this validation.

- SDG F3G290207: samples P-42-DUP-2 and P-42-329.8, total xylene as o-xylene was detected with a positive spectral match. It was not reported and has been added to the reporting form through this validation.

- SDG F3H210288: chlorobenzene was listed as detected in sample TB 819820 at 0.12 ug/L. However, there was no supporting evidence of it's detection in the raw data, and therefore, is qualified as non-detected (U).

- SDG F3I040177: sample TB-902903, total xylene as m,p-xylene was detected with a positive spectral match. It was not reported and has been added to the reporting form through this validation.

- SDG F3I120107: sample TB-908910, spectral search hardcopy for 1,3-dichlorobenzene was not included in the data deliverable package. This is assumed to be an oversight, and the compound is believed to be detected, as the laboratory had indicated.

- SDG F3I230231: sample P-43-DUP-2 RE, total xylene as o-xylene was detected with a positive spectral match. It was not reported and has been added to the reporting form through this validation.

- SDG F3J290103: samples P-49-284.3 and P-51-187.78, total xylene as o-xylene was detected with a positive spectral match. It was not reported and has been added to the reporting form through this validation.

- SDG F3K280120: sample P-53-331.10, total xylene as o-xylene was detected with a positive spectral match. It was not reported and has been added to the reporting form through this validation.

- SDG F4A150320: samples P-55-164.55 DL and P-55-186 DL, total xylene as o-xylene was detected with a positive spectral match. It was not reported and has been added to the reporting form through this validation.

- SDG F4B200226: there were no internal laboratory spectral searches submitted for the detected target compounds for sample P-32-DUP-3. However, it was not necessary to review them for this sample because all detected compounds were previously qualified as non-detects, "U," due to contamination.

Many samples contained elevated concentrations of some target compounds that exceeded the calibration range for the VOC analysis. The laboratory reported and qualified these results with an "E" qualifier. As part of the laboratory's corrective action, the affected samples were reanalyzed at a dilution to obtain usable results within the established calibration curve range. As part of this validation, specific compound results, which exceeded the calibration range in the original analysis, were replaced with the compound results from the secondary dilution analysis. In addition, due to calibration conditions, which may qualify compounds as rejected, "R," results from the secondary analysis are substituted, where appropriate. The sample results, in effect, are made whole when the initial and secondary analyses are "hybridized," into one. A list of the re-analyzed samples and the affected compounds are listed in Table 3-7.

Table 3-7. *Summary of Laboratory Re-Analyses*

Package Identification	***Sample ID***	***Compound Reported From Re-Analysis***
F3C190235	MW-7	Tetrachloroethene
	MW-2	Acetone Tetrachloroethene
	MW-1	Acetone Tetrachloroethene
	MW-12	Acetone Tetrachloroethene
	MW-5	Acetone Tetrachloroethene
	MW-10	Acetone Tetrachloroethene
	MW-3	Acetone Tetrachloroethene
	MW-4	Tetrachloroethene
	MW-DUP	Tetrachloroethene
F3E230179	P-E-292.28	Acetone Tetrachloroethene
	P-E-301.23	Acetone Tetrachloroethene

Table 3-7. *Summary of Laboratory Re-Analyses*

Package Identification	***Sample ID***	***Compound Reported From Re-Analysis***
F3F170126	P-C-337.5	Trichloroethene
F3F200145	P-24-207.3	1,1,1-Trichloroethane
F3F260187	P-23-DUP-1	Acetone Trichloroethene
F3G110256	P-25-EB-1	Carbon disulfide Methylene chloride
F3G250374	P-42-DUP-1	Tetrachloroethene
F3I050189	P-44-149.8	1,2-Dichlorobenzene cis-1,2-Dichloroethene Tetrachloroethene Trichloroethene
F3I090305	P-44-215.5	cis-1,2-Dichloroethene
	P-44-229.2	cis-1,2-Dichloroethene
	P-44-239.85	cis-1,2-Dichloroethene
	P-44-249.85	cis-1,2-Dichloroethene
F3J240204	P-50-109.90	Vinyl chloride
F3J290103	P-49-DUP-2	Tetrachloroethene Trichloroethene
F3K080109	P-54-107.55	1,2-Dichlorobenzene
F3K110173	P-58-DUP-2	Acetone
F3K140242	P-54-351.25	Tetrachloroethene
	P-54-DUP-3	Tetrachloroethene
F4A130259	P-31-EB-1	1,4-Dichlorobenzene 1,1-Dichloroethene
F4A150320	P-31-344.25	All compounds
	P-31-DUP-2	Acetone
	P-55-164.55	Bromomethane Chlorobenzene 1,2-Dichlorobenzene cis-1,2-Dichloroethene Trichloroethene Vinyl chloride
	P-55-174.55	Acetone Bromomethane Chlorobenzene 1,2-Dichlorobenzene cis-1,2-Dichloroethene Trichloroethene Vinyl chloride
	P-55-186.15	Acetone Bromomethane Chlorobenzene 1,2-Dichlorobenzene cis-1,2-Dichloroethene Tetrachloroethene Trichloroethene Vinyl chloride

Table 3-7. *Summary of Laboratory Re-Analyses*

Package Identification	***Sample ID***	***Compound Reported From Re-Analysis***
F4A150320 Cont'd	P-55-EB-2	2-Butanone Chloromethane cis-1,2-Dichloroethene 4-Methyl-2-Pentanone
	P-55-264.40	Tetrachloroethene Trichloroethene
	P-55-271.00	Acetone Tetrachloroethene Trichloroethene
	TB-01120114	Bromomethane 1,1,1-Trichloroethane

SDG: F3I090305: cis-1,2-dichloroethene in sample P-44-249.85 is also qualified as estimated ("J," biased low) because the secondary dilution value of 31 ug/L should not have required a dilution in the initial undiluted analysis. The initial calibration upper range for this compound is 40 ug/L.

The laboratory did not always perform initial analysis with no dilution. In many cases, the laboratory had diluted the samples without performing undiluted associated analysis. This has resulted in elevated detection limits for many samples. Table 3-8 lists the samples that were analyzed diluted without an undiluted analysis (X=times).

Table 3-8. *Summary of Samples Analyze Diluted Without an Undiluted Analysis*

Package Identification	***Sample ID***	***Initial Dilution***
F3D290160	P-F-86.48	20 X
	P-F-76.46	100 X
F3E060217	P-28-87.02	10 X
	P-28-97.02	5 X
F3E160130	P-E-98.57	2.5 X
F3E200165	P-E-128.57	100 X
	P-E-138.57	100 X
F3E290170	P-D-97.05	2 X
	P-15-79.65	10 X
	P-15-89.65	50 X
	P-15-99.65	500 X
	P-15-109.65	1000 X
	P-15-119.65	100 X
F3F030298	P-D-77.05	10 X
F3F120220	P-C-89.6	50 X
	P-C-99.6	5 X
	P-C-DUP-1	5 X

Table 3-8. *Summary of Samples Analyze Diluted Without an Undiluted Analysis*

Package Identification	***Sample ID***	***Initial Dilution***
F3F200145	P-24-217.3	5 X
	P-24-247.3	2.5 X
	P-24-257.3	2 X
F3F260187	P-23-180.1	2.5 X
	P-23-DUP-1	2 X
F3G110256	P-35-177.2	5 X
	P-35-DUP-1	2 X
F3G250374	P-H-106.8	10 X
	P-42-202.7	5 X
F3G290207	P-42-217.2	100 X
	P-42-276.4	20 X
	P-42-329.8	10 X
	P-42-DUP-2	5 X
	P-42-354.6	10 X
F3H060192	P-45-131.25	2 X
F3H130195	P-45-281.65	20 X
	P-20-309.60	50 X
	P-20-319.60	20 X
F3H220246	P-36-156.7	10 X
	P-36-DUP-1	10 X
F3H270230	P-46-275.42	2 X
	P-46-DUP-2	2 X
	P-36A-282.0	10 X
	P-37-284.4	50 X
	P-37-304.8	5 X
	P-37-DUP-2	5 X
F3I040177	P-44-99.3	20 X
	P-44-DUP-1	20 X
F3I050189	P-44-149.8	5 X
F3I090305	P-44-215.5	5 X
	P-44-229.2	10 X
	P-44-239.85	10 X
	P-47-DUP-1	5 X
	P-47-147.1	5 X
F3I120107	P-44-339.8	25 X
F3I150101	P-43-129.88	50 X

Table 3-8. *Summary of Samples Analyze Diluted Without an Undiluted Analysis*

Package Identification	***Sample ID***	***Initial Dilution***
F3I150101 Cont'd	P-47-197.0	5 X
F3I230231	P-29-310.2	2 X
	P-43-246.68	5 X
	P-43-DUP-2	5 X
	P-43-294.85	5 X
F3J030259	P-30-99.50	2.5 X
F3J240204	P-50-109.90	10 X
	P-50-119.90	100 X
	P-50-129.90	100 X
	P-50-DUP-1	100 X
	P-50-139.90	100 X
	P-50-149.90	100 X
	P-49-124.3	5 X
	P-51-117.78	5 X
	P-51-127.78	2.5 X
F3J290103	P-50-209.90	2.5 X
	P-50-342.60	10 X
	P-50-DUP-2	5 X
	P-49-269.3	2 X
	P-49-340.8	5 X
	P-49-DUP-2	2 X
	P-51-DUP-2	5 X
	P-51-246.75	10 X
F3J310287	P-51-321.00	10 X
	P-51-327.85	50 X
F3K080109	P-54-107.55	50 X
F3K110173	P-58-274.65	2.5 X
	P-58-DUP-2	2.5 X
	P-54-267.95	5 X
	P-54-DUP-2	5 X
	P-54-276.4	2.5 X
F3K280120	P-53-146.40	100 X
	P-53-DUP-1	100 X
	P-53-331.10	2 X

Table 3-8. *Summary of Samples Analyze Diluted Without an Undiluted Analysis*		
Package Identification	***Sample ID***	***Initial Dilution***
F3K280120 Cont'd	P-53-340.05	10 X
F3L090146	P-53-480.90	2 X
F4A150320	P-55-264.40	10 X
	P-55-271.00	10 X
F4A300327	P-55-311.95 P-55-DUP-2	10 X 10 X

3.2.18. Tentatively Identified Compounds (TICs)

The laboratory was required to perform library searches for TICs present in the samples and QC matrices for the VOC analyses. Since the TIC evaluation provides only the identity of a possible compound in the matrix and not the actual concentration of a compound, all TIC data should be considered tentatively qualitative (i.e., not usable for quantitative purposes). The "N" qualifier was added to all TIC results to indicate to the data user that the compound identifications are tentative. The "J" qualifier was added to all TIC results to indicate to the data user that the values are estimated.

- SDG F3F180192: sample P-24-127.3, MTBE was detected with the target compounds (calibrated), but is not part of this project's compound list. Therefore, MTBE will be considered part of the TIC list; however, the identification is definitive (not tentative).

- SDG F3F272132: sample TB-625626, 1,1,2-trichlorofluoroethane was detected with the target compounds (calibrated) but is not part of this project's compound list. Therefore, 1,1,2-trichlorofluoroethane will be considered part of the TIC list; however, the identification is definitive (not tentative).

- SDG F3I050189: sample P-44-149.8, isopropylbenzene was detected with the target compounds (calibrated) but is not part of this project's compound list. Therefore, isopropylbenzene will be considered part of the TIC list; however, the identification is definitive (not tentative).

- SDG F3J290103: samples P-49-DUP-2, P-49-284.3, P-49-340.8, and P-51-187.78, 1,1,2-trichlorofluoroethane was detected with the target compound (calibrated) but is not part of this project's compound list. Therefore, 1,1,2-trichlorofluoroethane will be considered part of the TIC list; however, the identification is definitive (not tentative).

- SDG F3F310287: sample P-51-327.85, 1,1,2-trichlorofluoroethane was detected with the target compounds (calibrated) but is not part of this project's compound list. Therefore, 1,1,2-trichlorofluoroethane will be considered part of the TIC list; however, the identification is definitive (not tentative).

- SDG F3K280120: sample P-53-DUP-2, 1,2,4-trichlorobenzene was detected with the target compounds (calibrated) but is not part of this project's compound list. Therefore, 1,2,4-trichlorobenzene will be considered part of the TIC list; however, the identification is definitive (not tentative).

- SDG F4A150320: sample P-55-EB-2 RE, methyl-tert-butyl-ether was detected with the target compounds (calibrated) but is not part of this project's compound list. Therefore, methyl-tert-

butyl-ether will be considered part of the TIC list; however, the identification is definitive (not tentative).

There were two isomers of ethyldimethylbenzene TIC detected in sample P-55-164.55. For tabulation, the two isomer values are combined and the compounds are listed once. There were two unknown benzene TICs detected in sample P-55-174.55. For tabulation, the two unknown benzene values are combined and the compounds are listed once. There were two isomers of ethylmethylbenzene TIC detected in sample P-55-186.15. For tabulation, the two isomer values are combined and the compounds are listed once.

- SDG F4A300327: sample P-53-311.95 RE, iodomethane was detected with the target compounds (calibrated) but is not part of this project's compound list. Therefore, iodomethane will be considered part of the TIC list; however, the identification is definitive (not tentative).

The TICs identified in the project and laboratory QC samples are tabulated for inclusion in tables in the associated Groundwater Investigation Report.

3.2.19. Electronic Data Deliverables

The results in electronic database, for most samples, matched results listed on the hardcopy analytical report including laboratory qualifiers. Since the electronic deliverables were received in Microsoft Access database formats and was subsequently transferred to Microsoft Excel spreadsheet tables for presentation, it was not determined where the error was. However, all discrepancies have been corrected for the data tables in the Groundwater Investigation Report and the Access database. The qualifiers and results were revised based on quality control issues, and foundation for changes are listed in previous sections of this DUSR. The qualifiers were also placed onto the reporting forms located near the beginning of each deliverable package (i.e., SDG package).

4. Summary and Data Usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. Overall, 92.0 percent[8] of the VOC data (individual compound results) were determined to be usable for qualitative and quantitative purposes. The other 8.0 percent were qualified as rejected – the presence or absence of the compounds cannot be verified. Those sample results qualified as estimated, "J" and "UJ," due to data validation QC exceedances should be considered conditionally usable. TIC identifications are only presumptive evidence of the compound's presence, and are qualified with "N."

The samples collected from the Site were evaluated based on QA/QC criteria established by methods as listed in Section 1.3, in the data validation guidelines listed in Section 1.2, in the QAPP (GTEOSI, 2002) established for this project, and by professional judgment[9]. Major deficiencies in the data generation process have resulted in some sample data being rejected, indicating that the data are considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process have resulted in some sample data being characterized as approximate or estimated. Identification of a data point as approximate, "J," indicates uncertainty in the reported concentration or detection limit of the chemical, but not its assigned identity.

The following paragraphs present the adherence of the data to the precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS) parameters. Completeness has been discussed above.

Precision is measured through the evaluation of field duplicate samples. For the VOC analyses, none of the data were rejected due to precision non-conformances. The frequency of duplicates analysis is at 21.5 percent[10], which is above the QAPP's minimum requirement of 10 percent.

LCS, MS, and MSD recoveries indicate the accuracy of the data. For the VOC analyses, none of the data were rejected due to accuracy non-conformances.

Holding times, sample preservation, blank analysis, and analyte identification and quantification are indicators of the representativeness of the analytical data. There were some VOC data rejected due to representativeness non-conformances. Details are summarized within Section 3.

Comparability is not compromised, provided that the analytical methods do not change over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures were consistently used by the laboratory, the comparability criteria for the analytical data were met.

Sensitivity is established by reported detection limits that represent measurable concentrations of analytes that can be determined with a designated level of confidence. Sensitivity requirements were not met for several project samples due to excessively poor compound responses in the initial and continuing calibrations performed. Most of the VOC data rejected were due to this sensitivity non-conformance.

[8] Value = (14,911 total target compound list data points – 1,192 rejected TCL data points) / 14,911 X 100
[9] Professional judgment is performed by a USEPA certified data validator with over a decade of environmental laboratory experience.
[10] Value = (55 duplicate samples / 256 non-QC samples) X 100

5. Data Usability Summary Report Summary Information

The DUSR was performed to determine whether or not the data meets Site-specific criteria for data quality and use. The DUSR is developed by reviewing and evaluating the analytical data packages. The following questions were addressed:

1. *Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?*

   The QAPP required that USEPA Level III deliverables be provided by the laboratory for each data package. This requirement was met as it applies to the methods used by the laboratory for sample analysis with the exception of some missing forms as discussed in Sections 3.2.1 and 3.2.5. The evaluation of the sample data was completed using the information provided in the data packages provided by the laboratory.

2. *Have all holding times been met?*

   The holding times were met for almost all VOC samples. For those samples which were analyzed passed the holding time, the exceedances were not excessive and the results were qualified as estimated values, biased low. Holding time exceedances are discussed in Section 3.2.4.

3. *Do all the QC data: blanks, standards, spike recoveries, replicate analyses, and sample data fall within the protocol-required limits and specifications?*

   The laboratory used laboratory control limits. QC deviations and qualifications performed on the sample data are discussed in Section 3. Major non-conformances were observed with initial and continuing calibrations and with sample conditions upon receipt – 8.0 percent of all data were qualified as not usable.

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

   The QAPP required that USEPA guidance methods be used in the analysis of the samples. The laboratory used the required method. Some samples were diluted without first having performed undiluted analysis, thereby, increasing the reported detection limits.

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

   The evaluation of selected raw data confirmed all information provided in the data packages with the exception of minor errors. There were several samples where individual xylene compounds were identified in the raw data but the laboratory neglected to manually convert them to total-xylene, and therefore had not been reported. These errors were corrected in the data validation process.

6. *Have the correct data qualifiers been used?*

   The laboratory applied the correct qualifiers to the sample data. The validation qualifiers were applied as required by validation guidelines listed in Section 1. The validation qualifier definitions are listed in Section 2.2.

References

New York State Department of Environmental Conservation. *Analytical Services Protocol.* Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.

United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Organic Data Review.* EPA 540-R-99-008. October 1999.

United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.

United States Environmental Protection Agency, Region 2. *Contract Laboratory Program* Organics *Data Review.* SOP No. HW-6, Revision #12. March 2001.

United States Environmental Protection Agency, Region 2. *Standard Operating Procedure for the Validation of Organic Data Acquired Using SW-846 Method 8260B.* SOP No. HW-24, Revision #1. June 1999.

URS Corporation. *GTE Operations Support Incorporated - Groundwater Investigation Work Plan, Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* QAPP: Appendix C. September 2002.

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Attachment A Validated Data

Executive Summary

This report addresses data quality for groundwater samples collected at the former Sylvania Electric Products facility in Hicksville, New York (the Site). Sample collection activities were conducted by Malcolm Pirnie, Inc. (MPI) on March 15th and 16th, 2003.

The environmental samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri for radiochemistry analyses including liquid scintillation counting for technetium-99 and alpha spectrometry for isotopic thorium and isotopic uranium using United States Department of Energy (USDOE) Methods and laboratory standard operating procedures (SOP's) and gas flow proportional counting for gross alpha, radium-226 and radium-228 using USEPA SW-846 Methods and laboratory SOP's. The analytical data generated for this investigation were evaluated by MPI using the quality assurance/quality control (QA/QC) criteria established in the methods as guidance. Non-conformances from the QA/QC criteria were qualified based on guidance provided in the Science Applications International Corporation (SAIC) *Laboratory Data Validation Guidelines For Evaluating Radionuclide Analyses*, 143.-ARCS-00.08, Revision 06, 04 June 2000 and USDOE *Guidance For Radiochemical Data Validation,* Draft RD4, October 4, 1995.

The non-detect liquid scintillation counting results for technetium-99 (Tc-99) for samples MW-1 and MW-12 were qualified as rejected (R) because the net negative results have uncertainties less than their absolute values. This may be an indication of improper blank subtraction, per the data validation guidelines. Tc-99 was not detected in any of the groundwater samples. The affected data listed above was rejected (R) and therefore considered not usable.

Other method non-conformances requiring data validation qualification (J and UJ) include holding time, laboratory control sample recovery, laboratory duplicate analysis, matrix spike sample recovery, radionuclide identification and quantitation and blank contamination. None of these non-conformances were significant enough to jeopardize the usability of the data.

Overall, about 99 percent of the radiochemistry data were determined to be usable for qualitative and quantitative purposes. Those sample results qualified as estimated (J and UJ) due to data validation QA/QC exceedances should be considered conditionally usable and those sample results qualified as rejected (R) should be considered not usable. Therefore, the completeness objective of 90 percent, as stated in the quality assurance project plan (QAPP), was met.

1. Introduction

1.1. Sample Identification

This report addresses the results of a data quality evaluation for groundwater samples collected at the former Sylvania Electric Products facility in Hicksville, New York (the Site). Sample collection activities were conducted by Malcolm Pirnie, Inc. (MPI) on March 15th and March 16th, 2003.

The quantity and types of samples that were submitted for data validation are presented in Table 1-1.

Table 1-1. *Sample Cross-Reference List*

Package Identification	*Date Collected*	*Client ID*	*Laboratory ID*	*Analysis Requested*
F3C190235	3/15/03	MW-7	F3C190235-003	Alpha, GFPC, LSC
	3/15/03	MW-2	F3C190235-004	Alpha, GFPC, LSC
	3/15/03	MW-1	F3C190235-005	Alpha, GFPC, LSC
	3/15/03	MW-11	F3C190235-006	Alpha, GFPC, LSC
	3/15/03	MW-12	F3C190235-007	Alpha, GFPC, LSC
	3/15/03	MW-5	F3C190235-008	Alpha, GFPC, LSC
	3/15/03	MW-10, MS/MSD	F3C190235-009	Alpha, GFPC, LSC
	3/15/03	MW-9	F3C190235-010	Alpha, GFPC, LSC
	3/16/03	MW-6	F3C190235-011	Alpha, GFPC, LSC
	3/16/03	MW-3 *	F3C190235-012	Alpha, GFPC, LSC
	3/16/03	MW-4	F3C190235-013	Alpha, GFPC, LSC
	3/16/03	MW-8	F3C190235-014	Alpha, GFPC, LSC
	3/15/03	MW-FB	F3C190235-015	Alpha, GFPC, LSC
	3/15/03	MW-DUP *	F3C190235-016	Alpha, GFPC, LSC

Notes:
Alpha indicates isotopic thorium or isotopic uranium by Alpha Spectroscopy GFPC indicates Gas-Flow Proportional Counting for gross alpha, radium-226 and radium -228.
LSC indicates Liquid Scintillation Analysis for technetium-99.
DUP indicates field duplicate, EB is equipment blank, and FB is field blank.
MS/MSD indicates Matrix Spike/Matrix Spike Duplicate.
* Indicates that field sampler identified blind field duplicate sample.

1.2. General Considerations

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Although the term is frequently used in discussing methodologies, it applies to all aspects of the analytical system and especially to samples, their measurements, and the actual data output. Accordingly, for the samples and analyses addressed herein, this report outlines deviations from the applicable QC criteria outlined in the following documents:

- GTE Operations Support Incorporated. (GTEOSI). *Soil Remediation Program Work Plan (QAPP: Appendix H), Former Sylvania Electric Products Facility, Hicksville, New York, Site Number V 00089-1*, Revision 2, October 2002.

- United States Department of Energy (USDOE). 1997. *Environmental Measurements Laboratory (EML) Procedures Manual, 28th Edition, Volume 1(HASL 300)*. New York, New York.

Deviations from the QA/QC criteria were qualified based on guidance provided in the following document:

- Science Applications International Corporation (SAIC). 2000. *Laboratory Data Validation Guidelines for Evaluating Radionuclide Analyzes*, 143-ARCS-00.08, Revision 06. Oak Ridge, Tennessee.

- United States Department of Energy (USDOE), October 4, 1995, *Guidance for Radiochemical Data Validation,* Draft RD4, Gaithersburg, Maryland.

1.3. Analytical Methods

The environmental samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri for radiochemistry analyses including alpha spectrometry (thorium-228, thorium-230, thorium-232, uranium-234, uranium-235, and uranium-238) and liquid scintillation (technetium-99) using USDOE Methods and laboratory SOP's and gas-flow proportional counting (gross alpha, radium-226 and radium228) using USEPA SW-846 methods and laboratory SOP's. The methods used in this investigation are presented in Table 1-2.

Table 1-2. *Analytical Method References*

Parameter	***Method***	***Reference***
Liquid Scintillation Counting (technetium-99)	DOE TC-02-RC MOD	1
Gross Alpha by Gas-Flow Proportional Counting	SW-846 9310 MOD	3
Radium-226	SW-846 9315 MOD	3
Radium-228	SW-846 9320 MOD	3
Alpha Spectrometry (Thorium-228, -230, -232)	NAS/DOE 3004/RP (DOE RP-725)*	1, 2
Alpha Spectrometry (Uranium-234, -235, -238)	NAS/DOE 3050/RP (DOE RP-725)*	1, 2

Table 1-2. *Analytical Method References*

Notes:
* Extraction Chromatography method used for analysis utilizes the same technology as the cited reference but includes proprietary techniques, more selective in separation of uranium and thorium from the matrix. Reference is for background information only.

1. United States Department of Energy (USDOE). October 1994. DOE Method for Evaluating Environmental and Waste Management Samples.
2. National Academy of Science (NAS).
3. USEPA SW-846. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 3rd Edition, November 1986 and its updates.

The following sections of this document address distinct aspects of the validation process. Section 2 lists the data QA/QC protocols used to validate the sample data. Specific QA/QC deviations and qualifications performed on the sample data are discussed in Section 3. Data completeness and usability are discussed in Section 4. Section 5 presents the Data Usability Summary Report (DUSR) Summary Information. A copy of the validated electronic deliverable data is summarized in Attachment A.

2. Data Validation Protocols

2.1. Sample Analysis Parameters

The validation of analyses for this project used guidance presented in the QAPP (GTEOSI, 2002), the analytical methodology, and the data validation guidelines referenced in Section 1 herein.

The following QA/QC parameters were evaluated for the radiochemistry (liquid scintillation, alpha spectrometry and gas-flow proportional counting) analyses (where applicable):

- Holding times and sample preservation;
- Calibration;
- Blank analysis:
- Tracer recovery;
- Laboratory Control Sample (LCS);
- Matrix Spike Sample (MS);
- Duplicate analysis;
- Field duplicate analysis;
- Radionuclide quantitation and detection limit evaluation;
- Chemical separation specificity (alpha spectrometry);
- System performance; and
- Documentation completeness.

2.2. Data Validation Qualifiers

The following guidelines are used regarding the assignment of qualifiers and the use of qualified data:

- QA/QC exceedances which do not result in the qualification of an analyte, or which result in additional qualification of the analyte with the same qualifier, are not discussed.

- The use of estimated analytical data for quantitative uses is consistent with the guidance presented in the *USEPA Risk Assessment Guidance for Superfund* (USEPA 1992).

The following qualifiers have been used in this data validation.

"J" The associated numerical value is an estimated quantity, due to a QC or statistical exceedance.

"UJ" The associated non-detect value is an estimated quantity, due to a QC or statistical exceedance.

"U" The associated value is non-detect.

"R" The associated non-detect or numerical value is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

2.3. Data Usability Summary Report Questions

The DUSR determines whether or not the data meets site-specific criteria for data quality and use. It was developed by reviewing and evaluating the analytical data packages. During the course of this review the following questions were addressed (where applicable):

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

2. Have all holding times been met?

3. Do all the QC data (where applicable): blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?

4. Have all of the data been generated using established and agreed upon analytical protocols?

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

6. Have the correct data qualifiers been used?

The answers to the questions presented by the DUSR are presented in the following sections of the report and in the DUSR Summary Information Section, Section 5.

3. Data Quality Evaluation

3.1. Summary

This section summarizes which QA/QC parameters specified in Section 2.1 met validation criteria, and which QA/QC parameters did not meet validation criteria. Samples requiring qualification are described in the following sections, and are identified by the description documented on the sample chain-of-custody records.

3.2. Liquid Scintillation Analyses (technetium-99)

3.2.1. Criteria

The QA/QC parameters presented in Section 2.1 were applied to the environmental samples listed in Table 1-1. The following QA/QC parameters were found to meet validation criteria:

- Holding times and sample preservation;
- Calibration;
- Blank analysis;
- Tracer Recovery;
- Duplicate analysis;
- Field duplicate analysis;
- System performance; and
- Documentation completeness.

Only those QA/QC parameters not meeting validation criteria are discussed in subsequent sections.

3.2.2. Radionuclide Quantitation and Detection Limits

The net negative results for several samples have uncertainties less than their absolute values. This may be an indication of improper blank subtraction, per SAIC data validation guidelines. Tc-99 was not detected in the groundwater samples. The affected data was rejected (R) as summarized in Table 3-1.

Table 3-1. *Evaluation of Negative Results versus Uncertainties for Liquid Scintillation Counting*

Sample ID	***Affected Radionuclide Results***	***Action***
MW-1, MW-12	Technetium-99	R

3.2.3. Laboratory Control Sample (LCS)

The percent recovery was greater than 120 percent for Tc-99 (151%) in the LCS, therefore the affected data was qualified estimated "J" as summarized in table 3-2.

Table 3-2. *Evaluation of Laboratory Control Sample for Tc-99*

Sample ID	*Affected Radionuclide Results*	*Action*
MW-7, MW-2, MW-1, MW-11, MW-12, MW-5, MW-10, MW-9, MW-6, MW-3, MW-4, MW-8, FB, MW-DUP	Technetium-99	J

3.2.4. Matrix Spike Sample (MS)

The percent recovery was greater than 120 percent for Tc-99 (144%) in the aqueous matrix spike sample, therefore the affected data was qualified estimated "J" as summarized in table 3-3. It should be noted that these results were previously qualified "J" due to LCS or rejected due to radionuclide quantitation and detection limits being out of criteria.

Table 3-3. *Evaluation of Matrix Spike Sample for Tc-99*

Sample ID	*Affected Radionuclide Results*	*Action*
MW-7, MW-2, MW-1, MW-11, MW-12, MW-5, MW-10, MW-9, MW-6, MW-3, MW-4, MW-8, FB, MW-DUP	Technetium-99	J

3.3. Alpha Spectrometry Analyses

3.3.1. Criteria

The QA/QC parameters presented in Section 2.1 for radiochemistry were applied to the environmental samples listed in Table 1-1. The following QA/QC parameters were found to meet validation criteria:

- Holding times and sample preservation;
- Calibration;
- Tracer recovery;
- Laboratory Control Sample (LCS);
- Matrix Spike Sample (MS);
- Duplicate analysis;
- Chemical separation specificity;
- System performance; and
- Documentation completeness.

Only those QA/QC parameters not meeting validation criteria are discussed in subsequent sections.

3.3.2. Blank Analysis

The field and laboratory blank results were evaluated using the following statistical approach: if the net blank result was not less than the associated uncertainty and if the sample result ± uncertainty was less than ten times the associated blank result ± uncertainty, the qualifier "J" was applied to the associated sample result. The statistical evaluation of the field and laboratory blank results is summarized in Table 3-4. The QAPP requires method blanks to be less than or equal to the minimum detected concentration (MDC) or less than 5 times the lowest sample activity. The method blanks were not always less than the lowest sample activity. The QAPP requires the laboratory to reanalyze the affected batch. This was not done by the laboratory.

Table 3-4. *Blank Evaluation for Thorium/Uranium Analyses.*

Blank ID	*Radionuclide*	*Blank Concentration ± Uncertainty (pCi/L)*	*Affected Samples*	*Action*
F3C200000-115B (laboratory blank)	Thorium-230	0.66 ± 0.27	MW-7, MW-2, MW-1, MW-11, MW-12, MW-5, MW-10, MW-9, MW-6, MW-3, MW-4, MW-8, MW-DUP	J
FB (Field Blank)	Thorium-230	1.14 ± 0.41	Same samples as laboratory blank (above)	J
FB (Field Blank)	Uranium-234	0.14 ± 0.14	MW-7, MW-11, MW-5, MW-10, MW-9, MW-6, MW-3, MW-4, MW-8, MW-DUP	J

Note:
pCi indicates picocurries
Uncertainty indicates total propagated uncertainty, which includes counting error and non-counting error.

3.3.3. Radionuclide Quantitation and Detection Limits

The net positive uranium-234 results for sample MW-7 and uranium-238 results for samples MW-DUP and FB were less than their uncertainties. This indicates that the sample counts were less than the critical values or less than 95% confidence of positive detection. The sample results were qualified as estimated (J), as summarized in Table 3-5.

Table 3-5. *Evaluation of Positive Results versus Uncertainties for Alpha Spectrometry Analyses*

Sample ID	*Affected Radionuclide Results*	*Sample Concentration ± Uncertainty (pCi/L)*	*Action*
MW-7	Uranium-234	0.10 ± 0.12	J
FB	Uranium-238	0.10 ± 0.12	J
MW-DUP	Uranium-238	0.11 ± 0.13	J

3.4. Gas-Flow Proportional Counting

3.4.1. Criteria

The QA/QC parameters presented in Section 2.1 were applied to the environmental samples listed in Table 1-1. The following QA/QC parameters were found to meet validation criteria:

- Holding times and sample preservation;
- Calibration;
- Blank analysis;
- Matrix Spike Sample (MS)
- Duplicate analysis;
- Field duplicate analysis;
- Radionuclide quantitation and detection limits
- System performance; and
- Documentation completeness.

Only those QA/QC parameters not meeting validation criteria are discussed in subsequent sections.

3.4.2. Laboratory Control Sample (LCS)

The percent recovery was less than 80 percent for radium 226 (73%) in the LCS, therefore the affected data was qualified estimated "J" as summarized in table 3-6.

Table 3-6. *Evaluation of Laboratory Control Sample*

Sample ID	*Affected Radionuclide Results*	*Action*
MW-7, MW-2, MW-1, MW-11, MW-12, MW-5, MW-10, MW-9, MW-6, MW-3, MW-4, MW-8, FB, MW-DUP	Radium-226	J

4. Summary and Data Usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. Overall, 98.5 percent of the radiochemistry data were determined to be usable for qualitative and quantitative purposes. Those sample results qualified as estimated (J and UJ) due to data validation QA/QC exceedances should be considered conditionally usable and those results rejected (R) due to serious deficiencies in the ability to analyze the sample and meet quality control criteria whereas the presence or absence of the analyte cannot be verified should be considered unusable.

The samples collected from the Site in Hicksville, New York were evaluated based on QA/QC criteria established by methods as listed in Section 1.3, by the data validation guidelines listed in Section 1.2, and by the QAPP (GTEOSI, 2002) established for this project. Major deficiencies in the data generation process would have resulted in data being rejected, indicating that the data are considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process resulted in some sample data being characterized as approximate or estimated. Identification of a data point as approximate indicates uncertainty in the reported concentration of the radionuclide, but not its assigned identity.

The following paragraphs present the adherence of the data to the precision, accuracy, representativeness, comparability, completeness, and sensitivity (PSARCC) parameters.

Precision is measured through the evaluation of field duplicate samples and laboratory duplicate samples. For the radiochemistry analyses, none of the data were rejected due to precision non-conformances.

LCS recoveries indicate the accuracy of the data. For the radiochemistry analyses, none of the data were rejected due to accuracy non-conformances.

Holding times, sample preservation, blank analysis, and analyte identification and quantification are indicators of the representativeness of the analytical data. Technetium-99 was rejected in two samples due to net negative results having uncertainties less than their absolute value, which may be an indication of improper blank subtraction therefore technetium-99 was rejected in these two samples due to representativeness non-conformance.

Comparability is not compromised, provided that the analytical methods do not change over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures were consistently used by the laboratory, the comparability criteria for the analytical data were met.

Sensitivity is established by reported detection limits that represent measurable concentrations of analytes that can be determined with a designated level of confidence. Sensitivity requirements were met for the sample data in this project. None of the radiochemistry data were rejected due to the sensitivity non-conformances.

5. Data Usability Summary Report Summary Information

The DUSR was performed to determine whether or not the data meets site-specific criteria for data quality and use. The DUSR is developed by reviewing and evaluating the analytical data package. The following questions were addressed:

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

The QAPP required that USEPA Level III deliverables be provided by the laboratory for each data package. This requirement was met as it applies to the methods used by the laboratory for sample analysis. The evaluation of the sample data was completed using the information provided in the data packages provided by the laboratory.

2. Have all holding times been met?

The holding times were met for the radiochemistry analyses.

3. Do all the QC data: blanks, standards, spike recoveries, replicate analyses, and sample data fall within the protocol-required limits and specifications?

The laboratory used the laboratory control limits during the analyses performed for this sampling event. QA/QC deviations and qualifications performed on the sample data are discussed in Chapter 3. Major non-conformances were not detected for the radiochemistry data.

4. Have all of the data been generated using established and agreed upon analytical protocols?

The QAPP required that USDOE methods are used in the analysis of samples collected for this sampling event. The laboratory used the required method protocols (with some minor modifications) for the analyses performed for this sampling event, which met data user and client needs.

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

The evaluation of selected raw data confirmed information provided in the data packages.

6. Have the correct data qualifiers been used?

The laboratory applied the correct qualifiers to the sample data. The validation qualifiers were applied as required by validation guidelines as listed in Section 1

References

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ARCS-00.08, Revision 06. Oak Ridge, Tennessee.

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United States Department of Energy(USDOE) 1995. *Guidance for Radiochemical Data Validation,* Draft RD4, Gaithersburg, Maryland.

United States Environmental Protection Agency (USEPA). 1992. *USEPA Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A),* 540/1-891002. Washington D.C.

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Attachment A Validated Data

Executive Summary

This report addresses data quality for groundwater samples collected at the former Sylvania Electric Products facility in Hicksville, New York (the Site). Sample collection activities were conducted by Malcolm Pirnie, Inc. (MPI) from April 24, 2003 through February 9, 2004.

The samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri for radiochemistry analyses including alpha spectrometry for isotopic thorium and isotopic uranium using United States Department of Energy (USDOE) Methods and laboratory standard operating procedures (SOP's) and gas flow proportional counting for gross alpha, radium-226 and radium-228 using USEPA SW-846 Methods and laboratory SOP's. The analytical data generated for this investigation were evaluated by MPI using the quality assurance/quality control (QA/QC) criteria established in the methods as guidance. Non-conformances from the QA/QC criteria were qualified based on guidance provided in the Science Applications International Corporation (SAIC) *Laboratory Data Validation Guidelines For Evaluating Radionuclide Analyses*, 143-ARCS-00.08, Revision 06, June 2000 and the USDOE *Guidance for Radiochemical Data Balidation, Draft RD4, October 4, 1995.*

Method non-conformances requiring data validation qualification (J, U, or R) include holding time, laboratory control sample recovery, laboratory duplicate analysis, sample specific chemical recovery, radionuclide identification and quantitation and blank contamination. None of these non-conformances were significant enough to jeopardize the usability of the data.

Overall, 99 percent of the radiochemistry data were determined to be usable for qualitative and quantitative purposes. Those sample results qualified as estimated (J and UJ) due to data validation QA/QC exceedances should be considered conditionally usable. Therefore, the completeness objective of 90 percent, as stated in the quality assurance project plan (QAPP), was met.

1. Introduction

1.1. Sample Identification

This report addresses the results of a data quality evaluation for groundwater samples collected at the former Sylvania Electric Products facility in Hicksville, New York (the Site). Sample collection activities were conducted by Malcolm Pirnie, Inc. (MPI) from April 24, 2003 through February 9, 2004.

The quantity and types of samples that were submitted for data validation are presented in Table 1-1.

Table 1-1. *Sample Cross-Reference List*

Package Identification	*Date Collected*	*Client ID*	*Laboratory ID*	*Analysis Requested*
F3D290160:	4/24/03	P-17-82.25	F3D290160-002	Alpha, GFPC
	4/25/03	P-17-92.25	F3D290160-003	Alpha, GFPC
	4/28/03	P-F-86.48	F3D290160-007	Alpha, GFPC
F3E020153:	4/29/03	P-F-96.48	F3E020153-001	Alpha, GFPC
F3E060217:	5/3/03	P-27-89.75	F3E060217-001X	Alpha, GFPC
	5/3/03	P-27-99.75	F3E060217-003	Alpha, GFPC
	5/3/03	P-28-87.02	F3E060217-007	Alpha, GFPC
	5/3/03	P-28-97.02	F3E060217-008	Alpha, GFPC
F3E140308:	5/12/03	P-26-86.8	F3E140308-002	Alpha, GFPC
	5/12/03	P-26-96.8	F3E140308-003	Alpha, GFPC
F3E160130:	5/15/03	P-E-88.57	F3E160130-012	Alpha, GFPC
F3E200165:	5/15/03	P-E-98.57	F3E200165-007	Alpha, GFPC
F3E290170:	5/27/03	P-D-87.05	F3E290170-002	Alpha, GFPC
	5/27/03	1EB-5/27	F3E290170-003	Alpha, GFPC
	5/28/03	P-D-97.05	F3E290170-004	Alpha, GFPC
	5/28/03	P-15-89.65	F3E290170-012	Alpha, GFPC
	5/28/03	P-15-99.65	F3E290170-013	Alpha, GFPC
F3F12022 0:	6/10/03	P-C-89.60	F3F120220-002	Alpha, GFPC
	6/10/03	P-C-99.60	F3F120220-003	Alpha, GFPC
	6/10/03	P-C-DUP1 #1	F3F120220-012	Alpha, GFPC
F3F170126:	6/16/03	P-24-87.35	F3F170126-006	Alpha, GFPC
F3F180192:	6/16/03	P-24-97.5	F3F180192-002	Alpha, GFPC

Table 1-1. *Sample Cross-Reference List*

Package Identification	Date Collected	Client ID	Laboratory ID	Analysis Requested
F3F260187:	6/24/03	P-23-FB1	F3F260187-002	Alpha, GFPC
	6/24/03	P-23-90.1	F3F260187-004	Alpha, GFOC
	6/24/03	P-23-100.1	F3F260187-005	Alpha, GFPC
F3G110256:	7/8/03	P-25-EB-1	F3G110256-001	Alpha, GFPC
	7/8/03	P-25-89.7	F3G110256-003	Alpha, GFPC
	7/9/03	P-25-99.7	F3G110256-004	Alpha, GFPC
	7/9/03	P-35-87.2	F3G110256-020	Alpha, GFPC
	7/9/03	P-35-97.2	F3G110256-021	Alpha, GFPC
F3G230216:	7/21/03	P-H-EB1	F3G230216-001	Alpha, GFPC
	7/21/03	P-H-86.8	F3G230216-003	Alpha, GFPC
	7/22/03	P-H-96.8	F3G230216-004	Alpha, GFPC
F3G250374:	7/23/03	P-42-89.6	F3G250374-022	Alpha, GFPC
	7/23/03	P-42-99.6	F3G250374-023	Alpha, GFPC
F3H060192:	8/4/03	P-20-89.60	F3H060192-002	Alpha, GFPC
	8/5/03	P-20-99.60	F3H060192-003	Alpha, GFPC
	8/4/03	P-45-81.25	F3H060192-011	Alpha, GFPC
	8/5/03	P-45-91.25	F3H060192-012	Alpha, GFPC
	8/4/03	P-45-DUP1	F3H060192-018	Alpha, GFPC
F3H210288:	8/19/03	P36-EB1	F3H210288-001	Alpha, GFPC
	8/19/03	P36-86.7	F3H210288-003	Alpha, GFPC
	8/19/03	P36-96.7	F3H210288-004	Alpha, GFPC
	8/19/03	P46-89.60	F3H210288-010	Alpha, GFPC
	8/20/03	P46-99.60	F3H210288-011	Alpha, GFPC
	8/19/03	P37-89.95	F3H210288-016	Alpha, GFPC
	8/19/03	P37-99.95	F3H210288-017	Alpha, GFPC
F3H280315:	8/26/03	P-46-330.21	F3H280315-008	Alpha, GFPC
	8/26/03	P-46-307.69	F3H280315-012	Alpha, GFPC
F3I040177:	9/2/03	P-44-89.8	F3I040177-003	Alpha, GFPC
	9/3/03	P-44-99.3	F3I040177-004	Alpha, GFPC
	9/3/03	P-44-DUP#1	F3I040177-005	Alpha, GFPC

Table 1-1. *Sample Cross-Reference List*

Package Identification	Date Collected	Client ID	Laboratory ID	Analysis Requested
	9/3/03	P-46-389.28	F3I040177-007	Alpha, GFPC
F3I050189:	9/4/03	P-47-87.08	F3I050189-010	Alpha, GFPC
F3I180259:	9/16/03	P-29-89.5	F3I180259-002	Alpha, GFPC
	9/16/03	P-29-99.5	F3I180259-004	Alpha, GFPC
	9/17/03	P-38-96.8	F3I180259-023	Alpha, GFPC
	9/17/03	P-38-86.7	F3I180259-024	Alpha, GFPC
F3I090305:	9/4/03	P-47-97.1	F3I090305-020	Alpha, GFPC
F3I120107:	9/9/03	P-43-89.88	F3I120107-003	Alpha, GFPC
	9/10/03	P-43-99.88	F3I120107-004	Alpha, GFPC
F3I230231:	9/20/03	P-29-310.2	F3I230231-014	Alpha, GFPC
	9/21/03	P-29-360.0	F3I230231-020	Alpha, GFPC
	9/22/03	P-29-390.0	F3I230231-044	Alpha, GFPC
F3J030259:	9/30/03	P-30-89.55	F3J030259-002	Alpha, GFPC
	10/1/03	P-30-99.55	F3J030259-003	Alpha, GFPC
F3J070236:	10/4/03	P-18-86.65	F3J070236-035	Alpha, GFPC
	10/5/03	P-18-96-65	F3J070236-036	Alpha, GFPC
F3J240204	10/21/03	P-50-89.90	F3J240204-004	Alpha, GFPC
	10/22/03	P-50-99.90	F3J240204-005	Alpha, GFPC
	10/21/03	P-49-84.25	F3J240204-017	Alpha, GFPC
	10/22/03	P-49-94.3	F3J240204-018	Alpha, GFPC
	10/22/03	P-51-87.78	F3J240204-030	Alpha, GFPC
	10/22/03	P-51-97.78	F3J240204-031	Alpha, GFPC
	10/22/03	P-51-DUP-1	F3J240204-032	Alpha, GFPC
F3K080109	11/4/03	P-54-87.55	F3K080109-002	Alpha, GFPC
	11/5/03	P-54-97.55	F3K080109-003	Alpha, GFPC
	11/5/03	P-52-90.0	F3K080109-016	Alpha, GFPC
	11/5/03	P-52-100.0	F3K080109-017	Alpha, GFPC
	11/4/03	P-58-89.65	F3K080109-029	Alpha, GFPC
	11/4/03	P-58-99.65	F3K080109-030	Alpha, GFPC
F3K110173:	11/7/03	P-58-304.65	F3K110173-005	Alpha, GFPC

Table 1-1. *Sample Cross-Reference List*

Package Identification	Date Collected	Client ID	Laboratory ID	Analysis Requested
	11/7/03	P-58-DUP-3	F3K110173-006	Alpha, GFPC
	11/9/03	P-58-402.40	F3K110173-010	Alpha, GFPC
	11/10/03	P-58-432.05	F3K110173-011	Alpha, GFPC
F3K210372:	11/18/03	P-53-86.40	F3K210372-011	Alpha, GFPC
	11/20/03	P-53-EB-11-20	F3K210372-012	Alpha, GFPC
F3K280120:	11/20/03	P-53-96.40	F3K280120-001	Alpha, GFPC
	11/21/03	P-34-89.55	F3K280120-027	Alpha, GFPC
	11/22/03	P-34-99.55	F3K280120-028	Alpha, GFPC
F3L090146:	12/05/03	P-33-89.6	F3L090146-003	Alpha, GFPC
	12/06/03	P-33-99.6	F3L090146-004	Alpha, GFPC
F4A130259:	1/5/04	P-31-89.25	F4A130259-003	Alpha, GFPC
	1/6/04	P-31-99.25	F4A130259-004	Alpha, GFPC
	1/11/04	P-55-84.10	F4A130259-021	Alpha, GFPC
	1/11/04	P-55-94.55	F4A130259-022	Alpha, GFPC
F4A230292:	1/21/04	P-56-86.55	F4A230292-006	Alpha, GFPC
	1/21/04	P-56-96.55	F4A230292-007	Alpha, GFPC
	1/22/04	P-56-DUP	F4A230292-019	Alpha, GFPC
F4B110140:	2/9/04	P-32-89.35	F4B110140-006	Alpha, GFPC
	2/9/04	P-32-99.35	F4B110140-007	Alpha, GFPC

Notes:
Alpha indicates Alpha Spectrometry of thorium (isotopic) and uranium (isotopic).
GFPC indicates Gas Flow Proportional Counting for gross alpha, radium 226 and radium 228.
Dup is duplicate, EB is equipment blank, and FB is field blank.

1.2. General Considerations

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Although the term is frequently used in discussing methodologies, it applies to all aspects of the analytical system and especially to samples, their measurements, and the actual data output. Accordingly, for the samples and analyses addressed herein, this report outlines deviations from the applicable QC criteria outlined in the following documents:

- GTE Operations Support Incorporated. (GTEOSI). *Soil Remediation Program Work Plan (QAPP: Appendix H), Former Sylvania Electric Products Facility, Hicksville, New York, Site Number V 00089-1*, Revision 2, October 2002.

- United States Department of Energy (USDOE). 1997. *Environmental Measurements Laboratory (EML) Procedures Manual, 28th Edition, Volume 1(HASL-300)*. New York, New York.

Deviations from the QA/QC criteria were qualified based on guidance provided in the following documents:

- Science Applications International Corporation (SAIC). June 2000. *Laboratory Data Validation Guidelines for Evaluating Radionuclide Analyses*, 143-ARCS-00.08, Revision 06. Oak Ridge, Tennessee.

- United States Department of Energy (USDOE). October 4, 1995, *Guidance for Radiochemical Data Validation,* Draft RD4, Gaithesrburg, Maryland.

1.3. Analytical Methods

The environmental samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri for radiochemistry analyses including alpha spectrometry (thorium-228, thorium-230, thorium-232, uranium-234, uranium-235, and uranium-238) using USDOE Methods and laboratory SOP's and gas flow proportional counting (gross alpha, radium 226 and radium 228) using USEPA SW-846 methods and laboratory SOP's. The methods used in this investigation are presented in Table 1-2.

Table 1-2. *Analytical Method References*

Parameter	***Method***	***Reference***
Alpha Spectrometry (Uranium-234, Uranium-235 and Uranium –238)	DOE RP-725*	1
Radium-226 by GFPC	SW-846 9315 MOD	2
Radium-228 by GFPC	SW-846 9320 MOD	2
Alpha Spectrometry (Thorium-228, Thorium-230 and Thorium–232)	DOE RP-725*	1

Notes:
*Extraction Chromatography method used for analysis utilizes the same technology as the cited reference but includes proprietary techniques, more selective in separation of uranium and thorium from the matrix. Reference is for background information only.

1. United States Department of Energy (USDOE). October 1994. DOE Method for Evaluating Environmental and Waste Management Samples.
2. USEPA SW-846. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 3rd Edition, November 1986 and its updates.

The following sections of this document address distinct aspects of the validation process. Section 2 lists the data QA/QC protocols used to validate the sample data. Specific QA/QC deviations and qualifications performed on the sample data are discussed in Section 3. Data completeness and usability are discussed in Section 4. Section 5 presents the Data Usability Summary Report (DUSR) Summary Information. A copy of the validated electronic deliverable data is summarized in Attachment A.

2. Data Validation Protocols

2.1. Sample Analysis Parameters

The validation of analyses for this project used guidance presented in the QAPP (GTEOSI, 2002), the analytical methodology, and the data validation guidelines referenced in Section 1 herein.

The following QA/QC parameters were evaluated for the radiochemistry (alpha spectrometry and gas flow proportional counting) analyses (where applicable):

- Holding times and sample preservation;
- Calibration;
- Blank analysis:
- Tracer recovery;
- Laboratory Control Sample (LCS);
- Matrix Spike Sample (MS)
- Duplicate analysis;
- Field duplicate analysis;
- Radionuclide quantitation and detection limit evaluation;
- Chemical separation specificity (alpha spectrometry);
- System performance; and
- Documentation completeness.

It should be noted that no Matrix Spike samples were associated with these data. The field blind duplicates associated with these data are PC-99.60 associated with P-C-DUP #1; P-45-81.25 associated with P-45-DUP1; P-44-99.3 associated with P-44-DUP#1; P-51-DUP-1 associated with P-51-97.78; P58-304.65 associated with P-58-DUP-3; and P-56-86.55 associated with P-56-DUP.

2.2. Data Validation Qualifiers

The following guidelines are used regarding the assignment of qualifiers and the use of qualified data:

- QA/QC exceedances which do not result in the qualification of an analyte, or which result in additional qualification of the analyte with the same qualifier, are not discussed.

- The use of estimated analytical data for quantitative uses is consistent with the guidance presented in the *USEPA Risk Assessment Guidance for Superfund* (USEPA 1992).

The following qualifiers have been used in this data validation.

"J" The associated numerical value is an estimated quantity, due to a QC or statistical exceedance.

"UJ" The associated non-detect value is an estimated quantity, due to a QC or statistical exceedance.

"U" The associated value is non-detect.

"R" The associated non-detect or numerical value is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

2.3. Data Usability Summary Report Questions

The DUSR determines whether or not the data meets site-specific criteria for data quality and use. It was developed by reviewing and evaluating the analytical data packages. During the course of this review the following questions were addressed (where applicable):

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

2. Have all holding times been met?

3. Do all the QC data (where applicable): blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?

4. Have all of the data been generated using established and agreed upon analytical protocols?

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

6. Have the correct data qualifiers been used?

The answers to the questions presented by the DUSR are presented in the following sections of the report and in the DUSR Summary Information Section, Section 5.

3. Data Quality Evaluation

3.1. Summary

This section summarizes which QA/QC parameters specified in Section 2.1 met validation criteria, and which QA/QC parameters did not meet validation criteria. Samples requiring qualification are described in the following sections, and are identified by the description documented on the sample chain-of-custody records.

3.2. Alpha Spectrometry Analyses

3.2.1. Criteria

The QA/QC parameters presented in Section 2.1 for radiochemistry were applied to the environmental samples listed in Table 1-1. The following QA/QC parameters were found to meet validation criteria:

- Holding times and sample preservation;
- Calibration;
- Field Duplicate Analysis;
- Chemical separation specificity;
- System performance; and
- Documentation completeness.

Only those QA/QC parameters not meeting validation criteria are discussed in subsequent sections.

3.2.2. Blank Analysis

The field and laboratory blank results were evaluated using the following statistical approach: if the net blank result was not less than the associated uncertainty and if the sample result ± uncertainty was less than ten times the associated blank result ± uncertainty, the qualifier "J" was applied to the associated sample result. The statistical evaluation of the field and laboratory blank results is summarized in Table 3-1. The QAPP requires method blanks to be less than or equal to the minimum detected concentration (MDC) or less than 5 times the lowest sample activity. The method blanks were not always less than the lowest sample activity. The QAPP requires the laboratory to reanalyze the affected batch. The laboratory did not do this

Table 3-1. *Blank Evaluation for Thorium/Uranium Analyses.*

Blank ID	*Radionuclide*	*Blank Concentration ± Uncertainty (pCi/L)*	*Affected Samples*	*Action*
F3D290160:				
F3D0300000-110B	Thorium-230	0.48 ± 0.25	P-17-82.25, P-17-92.25, P-F-86.48	J
F3D300000-111B	Uranium-234	0.97 ± 0.50	P-17-82.25, P-17-92.25, P-F-86.48	J
F3E020153:				
F3E0200000-448B	Thorium-230	0.38 ± 0.22	P-F-96.48	J

Table 3-1. *Blank Evaluation for Thorium/Uranium Analyses.*

Blank ID	*Radionuclide*	*Blank Concentration ± Uncertainty (pCi/L)*	*Affected Samples*	*Action*
F3E0200000-452B	Uranium-234 Uranium-235	0.38 ±0.27 0.32 ±0.27	P-F-96.48	J
F3E60217:				
F3E070000-125B	Thorium-228 Thorium-230	0.13 ±0.12 0.94 ±0.37	P-27-89.75 P-27-99.75 P-28-87.02 P-28-97.02	J
F3E140308:				
F3E150000-239B	Thorium-228 Thorium-230	0.18±0.14 0.55 ± 0.27	P-26-86.8 P-26-96.8	J
F3E160130:				
F3E190000-133B	Thorium-230	0.45 ±0.25	P-E-88.57	J
F3E200165:				
F3E210000-111B	Thorium-230	0.22 ±0.16	P-E-98.57	J
F3E290170:				
F3E290000-420B 1EB-5/27	Thorium-230 Thorium-230	0.31 ±0.20 0.27 ± 0.20	P-D-87.05 P-D-97.05 P-15-89.65 P-15-99.65	J
F3E290000-421B	Uranium-234	0.12 ±0.12	P-D-87.05 P-D-97.05 P-15-89.65 P-15-99.65	J
F3F120220:				
F3F120220-139B	Thorium-230 Thorium-232	0.57 ± 0.28 0.14 ± 0.13	P-C-89.60, P-C-99.60, P-C-DUP1 #1	J
F3F170126				
F3F170126-371B F3F170126-369B	Thorium-230 Uranium-234	0.43 ± 0.25 0.25 ± 0.19	P-24-87.35	J
F3F180192:				
F3F190000-160B	Thorium-230	0.68 ± 0.32	P-24-97.35	J
F3F260187:				
F3F260000-381B	Thorium-230 Thorium-232	0.36 ± 0.21 0.084 ± 0.098	P-23-90.1 P-23-100.1	J
F3G110256:				
F3G140000-273B P-25-EB-1	Thorium-230 Thorium-230	0.20 ± 0.16 0.43 ± 0.23	P-25-89.7 P-25-99.7 P-35-87.2 P-35-97.2	J
F3G230216:				
F3G240000-557B P-H-EB1	Thorium-230 Thorium-230	0.62 ± 0.30 0.23 ± 0.17	P-H-86.8 P-H-96.8	J
F3G240374:				
F3G270000-105B	Thorium-230	0.40 ± 0.22	P-42-89.6 P-42-99.6	J
F3H060192:				

Table 3-1. *Blank Evaluation for Thorium/Uranium Analyses.*

Blank ID	*Radionuclide*	*Blank Concentration ± Uncertainty (pCi/L)*	*Affected Samples*	*Action*
F3H070000-257B	Thorium-230	0.39 ± 0.24	P-20-89.60 P-20-99.60 P-45-81.25 P-45-91.25 P-45-DUP1	J
F3H210288:				
F3H220000-114B	Thorium-230	0.57 ± 0.25	P36-86.7 P36-96.7 P46-89.60 P46-99.60 P37-89.95 P37-99.95	J
F3H280315:				
F3I020000-170B	Thorium-230	0.63 ± 0.33	P-46-330.21 P-46-307.69	J
F3I180259:				
F3I190000-260B F3I190000-259B	Uranium-234 Thorium-230	0.17 ± 0.13 0.64 ± 0.29	P-29-89.5 P-29-99.5 P-38-96.8 P-38-86.7	J
F3I090305:				
F3I120000-253B	Thorium-228	0.18 ± 0.15	P-47-97.1	J
F3I120107:				
F3I120000-253B	Thorium-228	0.18 ± 0.15	P-43-89.88 P-43-99.88	J
F3I230231:				
F3I240000-211B	Thorium-230	0.39 ± 0.23	P-29-310.2 P-29-360.0 P-29-390.0	J
F3J030259:				
F3J060000-164B	Thorium-230	0.43 ± 0.25	P-30-89.55 P-30-99.55	J
F3J060000-485B	Uranium-234	0.11 ± 0.10	P-30-89.55 P-30-99.55	J
F3J070236:				
F3J080000-223B	Thorium-230	0.57 ± 0.25	P-18-86.65 P-18-96.65	J
F3J240204:				
F3J270000-652B	Uranium-234 Uranium-238	0.21 ± 0.13 0.12 ± 0.10	P-50-89.90 P-50-99.90 P-49-84.25 P-49-94.3 P-51-87.78 P-51-97.78 P-51-DUP-1	J
F3K080109:				
F3K090000-092B	Thorium-230	0.17 ± 0.15	P-54-87.55 P-54-97.55 P-52-90.0 P-52-100.0 P-58-89.65 P-58-99.65	J
F3K110173:				

Table 3-1. *Blank Evaluation for Thorium/Uranium Analyses.*

Blank ID	Radionuclide	Blank Concentration ± Uncertainty (pCi/L)	Affected Samples	Action
F3K120000-272B	Thorium-230	0.17 ± 0.15	P-58-304.65 P-58-DUP-3 P-58-402.40 P-58-432.05	J
F3K210372:				
F3K20000-098B P53-EB-11-20	Thorium-230 Thorium-230 Uranium-234	0.17 ± 0.15 0.17 ± 0.14 0.17 ± 0.13	P-53-86.40	J
F3K280120:				
F3L040000-542B F3L010000-149B	Thorium-230 Uranium-238	0.31 ± 0.20 0.080 ± 0.093	P-53-96.40 P-34-89.55 P-34-99.55	J
F3L090146:				
F3L090000-348B	Thorium-230	0.22 ± 0.17	P-33-89.6 P-33-99.6	J
F4A230292:				
F4A240000-097B	Thorium-230	0.32 ± 0.21	P-56-86.55 P-56-96.55 P-56-DUP	J
F4B110140:	Thorium-230	0.27 ± 0.18	P-32-89.35 P-32-99.35	J

Note:
pCi indicates picocurries
Uncertainty indicates total propagated uncertainty, which includes counting error and non-counting error.

3.2.3. Sample Specific Chemical Recovery

If the tracer recovery is less than 50 percent or greater than 100 percent then the qualifier "J" was applied to the associated sample results, as summarized in table 3-2.

Table 3-2. *Sample Specific Chemical Recovery*

Sample ID	Affected Radionuclide Results	Action
F3D290160:		
P-17-82.25	Uranium 234, -235, -238	J
F3D290170:		
P-D-87.05	Uranium 234, -235, -238	J
F3G230216:		
P-H-EB1	Uranium-234 Uranium-235 Uranium-238	J
F3G250374:		
P-42-89.6 P-42-99.6	Uranium-234 Uranium-235 Uranium-238	J
F3I040177:		

Table 3-2. *Sample Specific Chemical Recovery*		
Sample ID	***Affected Radionuclide Results***	***Action***
P-44-99.3	Thorium-228 Thorium-230 Thorium-232	J

It should be noted that the laboratory mistakenly did not spike the original sample F3E060217-001 resulting in no tracer recovery, therefore the duplicate results (sample F3E060217-001X), which showed good tracer recovery were reported, however no laboratory duplicate results were available for QA /QC for the samples in group F3E060217.

It should be noted that Uranium-234 was also previously qualified "J" in sample P-D-87.05 due to method blank contamination.

It should be noted that Thorium-230 was also previously qualified "J" in sample P-44-99.3 due to high LCS recovery.

3.2.4. Laboratory Control Sample (LCS)

If the percent recovery is less than 80 percent or greater than 120 percent in the LCS then the qualifier "J" was applied to the associated sample results, as summarized in table 3-3.

Table 3-3. *Evaluation of Laboratory Control Sample*		
Sample ID	***Affected Radionuclide Results***	***Action***
F3D290160:		
P-17-82.25, P-17-92.25, P-F-86.48	Uranium-238	J
F3F120220:		
P-C-89.60, P-C-99.60, P-C-DUP1 #1	Thorium-230	J
F3F170126:		
P-24-87.35	Thorium-230	J
F3F180192:		
P-24-97.35	Thorium-230	J
F3F260187:		
P-23-FB1 P-23-90.1 P-23-100.1	Thorium-230	J
F3G110256:		
P-25-EB-1 P-25-89.7 P-25-99.7 P-35-87.2 P-35-97.2	Thorium-230	J

Table 3-3. *Evaluation of Laboratory Control Sample*		
Sample ID	***Affected Radionuclide Results***	***Action***
F3G230216:		
P-H-EB1 P-H-86.8 P-H-96.8	Thorium-230	J
F3G250374:		
P-42-89.6 P-42-99.6	Thorium-230 Uranium-234	J
F3H210288:		
36-EB1 P36-86.7 P36-96.7 P46-89.60 P46-99.60 P37-89.95 P37-99.95	Thorium-230	J
F3I040177:		
P-44-89.8 P-44-99.3 P-44-DUP#1 P-46-389.28	Thorium-230	J
F3I050189:		
P-47-87.08	Thorium-230	J
F3I180259:		
P-29-89.5 P-29-99.5 P-38-96.8 P-38-86.7	Thorium-230	J
F3I120107:		
P-43-89.88 P-43-99.88	Thorium-230	J
F3I230231:		
P-29-310.2 P-29-360.0 P-29-390.0	Thorium-230	J
F3J070236:		
P-18-86.65 P-18-96.65	Thorium-230	J
F3J240204:		
P-50-89.90 P-50-99.90 P-49-84.25 P-49-94.3 P-51-87.78 P-51-97.78 P-51-DUP-1	Thorium-230	J
F3K080109:		

Table 3-3. *Evaluation of Laboratory Control Sample*		
Sample ID	***Affected Radionuclide Results***	***Action***
P-54-87.55 P-54-97.55 P-52-90.0 P-52.100.0 P-54-89.65 P-54-99.65	Thorium-230	J
F3K210372:		
P-53-86.40 P-53-EB-11-20	Thorium-230	J
F3K280120:		
P-53-96.40 P-34-89.55 P-34-99.55	Thorium-230	J
F3L090146:		
P-33-89.6 P-33-99.6	Thorium-230	J
F4A230292:		
P-56-86.55 P-56-96.55 P-56-DUP	Thorium-230	J
F4A130259:		
P-31-89.25 P-31-99.25 P-55-84.10 P-55-94-.55	Thorium-230	J
F4B110140:		
P-32.89.35 P-32-99.35	Throium-230	J

It should be noted that Thorium-230 was also previously qualified "J" in samples P-C-89.60, P-C-99.60, P-C-DUP1 #1, P-24-87.35, P-24-97.35, P-23-90.1, P-23-100.1, P-25-89.7, P-25-99.7, P-35-87.2, P-35-97.2, P-H-86.8, P-H-96.8, P-42-89.6, P-42-99.6, P36-86.7, P36-99.7, P46-89.60, P46-99.60, P37-89.95, P37-99.95, P-44-99.3, P-29.89.5, P-29-99.5, P-38-96.8, P-38-86.7, P-29-310.2, P-29-360.0, P-29-390.0, P-18-86.65, P-18-96.65, P-54-87.55, P-54-97.55, P-52-90.0, P-52-100.0, P-54-89.65, P-54-99.65, P-53-86.40, P-53-96.40, P-34-89.55, P-34-99.55, P-33-89.6, P-33-99.6, P-56-86.55, P-56-96.55, P56-DUP, P-32-89.35 and P-32-99.35 due to blank contamination.

It should be noted that Uranium-234 was previously qualified "J" in samples P-42-89.6 and P-42-99.6 due to poor tracer recovery.

3.2.5. Duplicate Analysis

If the Duplicate Error Ratio (DER) is greater than one (1) when comparing laboratory or field duplicate samples then the qualifier of "J" was applied to the associated sample results, as summarized in table 3-4.

Table 3-4. *Evaluation of Duplicate Analysis*		
Sample ID	***Affected Radionuclide Results***	***Action***
F3E160130:		
P-E-88.57	Thorium-228	J
F3F170126:		
P-24-87.35	Thorium-230	J
F3H060192:		
P-20-89.60 P-20-99.60 P-45-81.25 P-45-91.25 P-45-DUP1	Thorium-228 Uranium-234	J
F3H210288:		
P36-EB1 P36-86.7 P36-96.7 P46-89.60 P46-99.60 P37-89.95 P37-99.95	Thorium-230	J
F3I040177:		
P-44-89.8 P-44-DUP#1 P-46-389.28	Uranium-238	J
F3I050189:		
P-47-87.08	Uranium-238	J
F3I230231:		
P-29-310.2 P-29-360.0 P-29-390.0	Thorium-230 Uranium-238	J
F3K110173:		
P-58-304.65 P-58-DUP-3 P-58-402.40 P-58-432.05	Uranium-234	J
F4A230292:		
P-56-86.55 P-56-DUP	Thorium-232	J

It should be noted that the laboratory mistakenly did not spike the original sample F3E060217-001 resulting in no tracer recovery, therefore the duplicate results (sample F3E060217-001X), which showed good tracer recovery were reported, however no laboratory duplicate results were available for QA /QC for the samples in SDG F3E060217.

It should be noted that Thorium-230 was also previously qualified "J" in samples P-24.87.35, P36-EB1, P36-86.7, P36-99.7, P46-89.60, P46-99.60, P37-89.95, P37-99.95, P-29-310.2, P-29-360.0 and P-29-390.0 due to method blank contamination or poor LCS recovery.

It should be noted that an equipment blank was used to perform the laboratory duplicate analyses, therefore all of the QC data was carefully judged and professional judgment was exercised.

3.2.6. Radionuclide Quantitation and Detection Limits

If the net positive results are less than their uncertainties and the uncertainty multiplied by 1.65 is greater than the MDC, this would indicate that the sample counts were less than the critical values or less than 95% confidence of positive detection, therefore the sample results were qualified as estimated "J", as summarized in Table 3-5. It the net negative result has an uncertainty smaller than their absolute value, this is an indication of improper blank subtraction and the sample results were rejected "R", as summarized in Table 3-6.

Table 3-5. *Evaluation of Positive Results versus Uncertainties for Alpha Spectrometry Analyses*

Sample ID	*Affected Radionuclide Results*	*Sample Concentration ± Uncertainty (pCi/L)*	*Action*
F3D290160:			
P-17-82.25	Uranium-234	0.14 ± 0.16	J
P-F-86.48	Uranium-238	0.13 ± 0.15	J
F3D290170:			J
P-D-87.05	Uranium-234	0.12 ± 0.14	J
P-D-97.05	Thorium-228	0.077 ± 0.091	J
F3F120220:			
P-C-89.60	Thorium-232	0.09 ± 0.11	J
F3G110256:			
P-35-97.2	Thorium-228	0.1 ± 0.12	J
F3G250374:			
P-42-89.6 P-42-99.6	Uranium-234	0.11 ± 0.18 0.19 ± 0.22	J
F3I040177:			
P-46-389.28	Thorium-232	0.1 ± 0.12	J
F3J070236:			
P-18-96.65	Uranium-234	0.080 ± 0.092	J
F3K080109:			
P-52-100.0	Uranium-234	0.095 ± 0.097	J
F4B110140:			
P-32-89.35 P-32-99.35	Uranium-238 Uranium-238	0.073 ± 0.085 0.068 ± 0.078	J

It should be noted that Uranium-234 was previously qualified "J" in sample P-D-87.05 due to tracer recovery and method blank contamination; Thorium-232 was previously qualified "J" in sample P-C-89.60 due to method blank contamination; and Uranium-234 was previously qualified "J" in sample P-42-89.6 and P-42-99.6 due to tracer recovery and laboratory control sample being out of criteria.

Table 3-6. *Evaluation of Net Negative Results versus Uncertainties for Alpha Spectrometry Analyses*

Sample ID	*Affected Radionuclide Results*	*Sample Concentration ± Uncertainty (pCi/L)*	*Action*
F3G110256:			
P-25-EB-1	Uranium-235	-0.031 ± 0.028	R
P-25-89.7	Thorium-232	-0.030 ± 0.028	R
F3H210288:			
P37-99.95	Thorium-228	-0.039 ± 0.033	R
F4A230292:			
P-56-86.55	Thorium-232	-0.078 ± 0.043	R

3.3. Gas Proportional Counting

3.3.1. Criteria

The QA/QC parameters presented in Section 2.1 were applied to the environmental samples listed in Table 1-1. The following QA/QC parameters were found to meet validation criteria:

- Holding times and sample preservation;
- Calibration;
- Blank analysis;
- Field Duplicate Analysis;
- System performance; and
- Documentation completeness.

Only those QA/QC parameters not meeting validation criteria are discussed in subsequent sections.

3.3.2. Blank Analysis

The field and laboratory blank results were evaluated using the following statistical approach: if the net blank result was not less than the associated uncertainty and if the sample result ± uncertainty was less than ten times the associated blank result ± uncertainty, the qualifier "J" was applied to the associated sample result. The statistical evaluation of the field and laboratory blank results is summarized in Table 3-7. The QAPP requires method blanks to be less than 5 times the minimum detected concentrations (MDC) and the lowest sample activity. The method blanks were not always less than the lowest sample activity. The QAPP requires the laboratory to reanalyze the affected batch. The laboratory did not do this.

Table 3-7. *Blank Evaluation for Radium-226 Analyses.*

Blank ID	*Radionuclide*	*Blank Concentration ± Uncertainty (pCi/L)*	*Affected Samples*	*Action*
F3H210288:				
P36-EB1	Radium-226	0.37 ± 0.20	P36-86.7 P36-96.7 P46-89.60 P46-99.60 P37-89.95 P37-99.95	J
F3I090305:				
F3I120000-564B	Radium-226	0.229 ± 0.078	P-47-97.1	J

3.3.3. Laboratory Control Sample (LCS)

If the percent recovery is less than 80 or greater than 120 in the LCS then the qualifier "J" was applied to the associated sample results, as summarized in table 3-8.

Table 3-8. *Evaluation of Laboratory Control Sample*

Sample ID	*Affected Radionuclide Results*	*Action*
F3G230216:		
P-H-86.8, P-H-96.8, P-H-EB1	Radium-226	J
F3G250374:		
P-42-89.6, P-42-99.6	Radium-226	J
F3H060192:		
P-20-89.60 P-20-99.60 P-45-81.25 P-45-91.25 P-45-DUP1	Radium-226	J
F3H210288:		
P36-EB1 P36-86.7 P36-96.7 P46-89.60 P46-99.60 P37-89.95 P37-99.95	Radium-226	J
F3H280315:		
P-46-330.21 P-46-307.69	Radium-226	J
F3I040177:		
P-44-89.8 P-44-99.3 P-44-DUP#1 P-46-389.28	Radium-226	J
F3I050189:		

Table 3-8. *Evaluation of Laboratory Control Sample*		
Sample ID	***Affected Radionuclide Results***	***Action***
P-47-87.08	Radium-228	J
F3I090305:		
P-47-97.1	Radium-226	J
F3I120107:		
P-43-89.88 P-43-99.88	Radium-226	J
F3J030259:		
P-30-89.55 P-30-99.55	Radium-226	J
F3J240204:		
P-50-89.90 P-50-99.90 P-49-84.25 P-49-94.3 P-51-87.78 P-51-97.78 P-51-DUP-1	Radium-226	J
F3K080109:		
P-54-87.55 P-54-97.55 P-52-90.0 P-52-100.0 P-54-89.65 P-54-99.65	Radium-228	J
F3K110173:		
P-58-304.65 P-58-DUP-3 P-58-402.40 P-58-432.05	Radium-226	J
F3L090146:		
P-33-89.6 P-33-99.6	Radium-226	J
F4A230292:		
P-56-86.55 P-56-96.55 P-56-DUP	Radium-228	J
F4B110140:		
P-32-89.35 P-32-99.35	Radium-226	J

It should be noted that Radium-226 was previously qualified "J" in samples P36-86.7, P36-96.7, P46-89.60, P46-99.60, P37-89.95, P37-99.95 and P-47-97.1 due to equipment or method blank contamination.

3.3.4. Duplicate Analysis

If the Duplicate Error Ration (DER) is greater than one (1) when comparing laboratory or field duplicate samples then the qualifier of "J" was applied to the associated sample results, as summarized in table 3-9.

Table 3-9. *Evaluation of Duplicate Analysis*

Sample ID	*Affected Radionuclide Results*	*Action*
F3D290160:		
P-17-82.25 P-17-92.25 P-F-86.48	Radium-228	J
F3E140308:		
P-86-86.8 P-26-96.8	Radium-226	J
F3I180259:		
P-29-89.5 P-29-99.5 P-38-96.8 P-38-86.7	Radium-228	J
F3I090305:		
P-47-97.1	Radium-226	J
F3J030259:		
P-30-89.55 P-30-99.55	Radium-226	J
F3K080109:		
P-54-87.77 P-54-97.55 P-52-90.0 P-52-100.0 P-54-89.65 P-54-99.65	Radium-226	J
F4B110140:		
P-32-89.35 P-32-99.35	Radium-226	J

It should be noted that Radium-226 was previously qualified "J" in sample P-47-97.1, P-30-89.55, P-30-99.55, P-32-89.35 and P-32-99.35 due to method blank contamination and/or poor LCS recovery.

It should be noted that the LCS results in SDG F3L090146 and F4B110140 were used for laboratory duplicate analyses.

3.3.5. Radionuclide Quantitation and Detection Limits

Detection limits specified in the specific procedures must be met unless other detection limits are specified in the Statement of Work (SOW). The detection limits were not met due to insufficient sample volume. The results were reported with the detection limits that were achieved and the qualifier "DL" was applied to the associated sample results, as summarized in table 3-10.

Table 3-10. *Detection Limits for Radium-228*

Sample ID	*Affected Radionuclide Results*	*Sample Concentration ± Uncertainty (pCi/L)*	*Action*
F3F120220:			
P-C-89.60	Radium-228	0.29 ± 0.79	DL
P-C-99.60	Radium-228	-0.03 ± 0.77	DL
P-C-DUP1 #1	Radium-228	0.48 ± 0.65	DL

It should be noted that the reporting limit for sample P-33-89.6 in SDG F3L090146 was not met for Radium-228 due to insufficient sample volume available for analysis. The results are reported with the MDC achieved.

4. Summary and Data Usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. Overall, 99 percent of the radiochemistry data were determined to be usable for qualitative and quantitative purposes. Those sample results qualified as estimated (J and UJ) due to data validation QA/QC exceedances should be considered conditionally usable and those results rejected (R) due to serious deficiencies in the ability to analyze the sample and meet quality control criteria whereas the presence or absence of the analyte cannot be verified should be considered unusable.

The samples collected from the Site in Hicksville, New York were evaluated based on QA/QC criteria established by methods as listed in Section 1.3, by the data validation guidelines listed in Section 1.2, and by the QAPP (GTEOSI, 2002) established for this project. Major deficiencies in the data generation process would have resulted in data being rejected, indicating that the data are considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process resulted in some sample data being characterized as approximate or estimated. Identification of a data point as approximate indicates uncertainty in the reported concentration of the chemical, but not its assigned identity.

The following paragraphs present the adherence of the data to the precision, accuracy, representativeness, comparability, completeness, and sensitivity (PSARCC) parameters.

Precision is measured through the evaluation of field duplicate samples and laboratory duplicate samples. For the radiochemistry analyses, none of the data were rejected due to precision non-conformances.

LCS recoveries indicate the accuracy of the data. For the radiochemistry analyses, none of the data were rejected due to accuracy non-conformances.

Holding times, sample preservation, blank analysis, and analyte identification and quantification are indicators of the representativeness of the analytical data. For the radiochemistry analyses, none of the data were rejected due to accuracy non-conformances.

Comparability is not compromised, provided that the analytical methods do not change over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures were consistently used by the laboratory, the comparability criteria for the analytical data were met.

Sensitivity is established by reported detection limits that represent measurable concentrations of analytes that can be determined with a designated level of confidence. Sensitivity requirements were met for the sample data in this project. None of the radiochemistry data were rejected due to the sensitivity non-conformances.

5. Data Usability Summary Report Summary Information

The DUSR was performed to determine whether or not the data meets site-specific criteria for data quality and use. The DUSR is developed by reviewing and evaluating the analytical data package. The following questions were addressed:

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

The QAPP required that USEPA Level III deliverables be provided by the laboratory for each data package. This requirement was met as it applies to the methods used by the laboratory for sample analysis. The evaluation of the sample data was completed using the information provided in the data packages provided by the laboratory.

2. Have all holding times been met?

The holding times were met for the radiochemistry analyses.

3. Do all the QC data: blanks, standards, spike recoveries, replicate analyses, and sample data fall within the protocol-required limits and specifications?

The laboratory used the laboratory control limits during the analyses performed for this sampling event. QA/QC deviations and qualifications performed on the sample data are discussed in Chapter 3. Major non-conformances were not detected for the radiochemistry data.

4. Have all of the data been generated using established and agreed upon analytical protocols?

The QAPP required that USDOE methods are used in the analysis of samples collected for this sampling event. The laboratory used the required method protocols (with some minor modifications) for the analyses performed for this sampling event, which met data user and client needs.

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

The evaluation of selected raw data confirmed information provided in the data packages.

6. Have the correct data qualifiers been used?

The laboratory applied the correct qualifiers to the sample data. The validation qualifiers were applied as required by validation guidelines as listed in Section 1

References

GTE Operations Support Incorporated. (GTEOSI). 2002. *Soil Remediation Program Work Plan (QAPP: Appendix H), Former Sylvania Electric Products Facility, Hicksville, New York, Site Number V 00089-1*, Revision 2, October 2002.

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Science Applications International Corporation (SAIC). 1992. *Laboratory Data Validation Guidelines for Evaluating Radionuclide Analyzes*, 143-ARCS-00.08, Revision 06. Oak Ridge, Tennessee.

United States Department of Energy (USDOE).1997. *Environmental Measurements Laboratory (EML) Procedures Manual,* 28th Edition, Volume 1. New York, New York.

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Executive Summary

This report addresses data quality for groundwater samples collected at the former Sylvania Electric Products Incorporated facility in Hicksville, New York. This report is concerned with metals in groundwater samples collected by Malcolm Pirnie, Inc. (MPI) from March 15, 2003 through February 19, 2004.

The environmental samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri, for analyses of metals using United States Environmental Protection Agency (USEPA) guidance methods. A total of 1,123 samples[1] were submitted, which resulted in 1,399 total metal results[2]. Of this number, 1,350 of them are results[3] of actual samples and the remainders are field quality assurance/quality control (QA/QC) indicators[4] of these samples. The analytical data generated for this investigation were evaluated by MPI using the QA/QC criteria established in the methods and USEPA guidelines. Non-conformances from the QA/QC criteria were qualified based on guidance provided in the following references:

- New York State Department of Environmental Conservation. *Analytical Services Protocol.* Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.
- United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* EPA 540-R-01-008. July 2002.
- United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.

In circumstances where the quality of the data or the accuracy of the results is suspect, the project's Quality Assurance Project Plan (QAPP) and professional judgment[5] were also used to determine if results should be qualified as estimated ("J" or "UJ"). Since the individual guidance documents used (as a source of reference for the validation) differ somewhat in the type of qualification applied to data, MPI applied qualifiers generally with an err to caution (conservative). All instrument calibration analyses, laboratory control sample analyses, serial dilution analyses, and interference check sample analyses were acceptable.

There were some laboratory initial calibration blanks, continuing calibration blanks, and method blanks, which contained low concentrations of the target analytes. The presence of these analytes in specific blanks affected many project samples. Qualification of associated results was performed to show the relationship between the laboratory contamination and the uncertainty of the actual project sample results.

Matrix spike samples were not performed for all sample batches. In many instances, the matrix spikes were performed on field blank samples, which offered no information on the possible problems associated with the matrix of the actual samples. In many other instances, the matrix spikes were performed on samples, which were not associated with this project.

[1] Each sample may have been analyzed for more than one metal and may have included total recoverable and dissolved fractions.
[2] This is the number of results reported by the laboratory on their Sample Results reporting form (Form 1).
[3] This is the total number of well data points, which may include more than one metal and may include recoverable and dissolved fractions including duplicate sample results.
[4] These indicators do not include Matrix Spike/Matrix Spike Duplicate or other internal laboratory QA/QC indicators.
[5] Professional judgment is performed by a USEPA certified data validator with over a decade of environmental laboratory experience.

The relative percent differences (RPD) between field duplicate pair results were assessed. Eight (8) of the RPDs were significant enough to qualify some of the data. Ninety-five (95) duplicate pairs were collected. This is equivalent to a field duplicate sample collection rate of 7.6 percent[6]. Based on the QAPP, the rate should have been 10 percent. With 1,255 discrete field sample data[7], 126 field duplicate data should have been collected. Therefore, evaluation of precision has not been adequate.

None of the exceedances of method non-conformances were significant enough to jeopardize the usability of the data with the exception of four hexavalent chromium samples, which exceeded their short holding time criteria. With the exception of the four results, all analytical results are usable based on the findings listed in this Data Usability Summary Report (DUSR).

Overall, 99.7 percent[8] of the metals data were determined to be usable for qualitative and quantitative purposes. Four hexavalent chromium results were qualified as unusable, "R." Sample results, which were qualified as estimated, "J" and "UJ," due to quality control (QC) exceedances should be considered conditionally usable. Therefore, the completeness objective of 90 percent, as stated in the QAPP, has been met for the metals in groundwater database.

[6] Value = (95 duplicate data / 1,255 discrete sample data) X 100.
[7] This number represents 1,350 (non-field blank/equipment blank) total data points minus 95 duplicate sample data points.
[8] Value = ((1,399 all data points – 4 unusable data points) / 1,399 all data points) X 100.

1. Introduction

1.1. Sample Identification

This report addresses the results of a data quality evaluation for groundwater samples collected at the former Sylvania Electric Products Incorporated facility in Hicksville, New York (the Site). This report pertains to metals samples collected by Malcolm Pirnie, Inc. (MPI) from March 15, 2003 through February 19, 2004.

The sample delivery group (SDG) number (laboratory package identification number), field identification, and laboratory identification of the samples that were submitted for data validation are presented in Table 1-1.

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3C190235	MW-7	F3C190235003	Be, Cr, Cu, Ni, and Tl
	MW-2	F3C190235004	Be, Cr, Cu, Ni, and Tl
	MW-1	F3C190235005	Be, Cr, Cu, Ni, and Tl
	MW-11	F3C190235006	Be, Cr, Cu, Ni, and Tl
	MW-12	F3C190235007	Be, Cr, Cu, Ni, and Tl
	MW-5	F3C190235008	Be, Cr, Cu, Ni, and Tl
	MW-10 (also MS/MD)	F3C190235009	Be, Cr, Cu, Ni, and Tl
	MW-9	F3C190235010	Be, Cr, Cu, Ni, and Tl
	MW-6	F3C190235011	Be, Cr, Cu, Ni, and Tl
	MW-3	F3C190235012	Be, Cr, Cu, Ni, and Tl
	MW-4	F3C190235013	Be, Cr, Cu, Ni, and Tl
	MW-8	F3C190235014	Be, Cr, Cu, Ni, and Tl
	FB	F3C190235015	Be, Cr, Cu, Ni, and Tl
	MW-DUP (MW-3)	F3C190235016	Be, Cr, Cu, Ni, and Tl
F3D290160	P-17-82.25 (also MS/MSD)	F3D290160002	Ni Total
	P-17-102.27	F3D290160004	Ni N/A
	P-F-86.48	F3D290160007	Ni Dissolved
F3E020153	P-F-96.48 (also MS/MSD)	F3E020153001	Ni Dissolved
	P-F-106.46	F3E020153002	Ni Dissolved
	P-F-116.49	F3E020153003	Ni Dissolved
F3E090278	P27-79.75 (also MS/MSD)	F3E090278001	Ni Total
	P-27-89.75	F3E090278002	Ni Total
	P-27-99.75	F3E090278003	Ni Total
	P-27-109.75	F3E090278004	Ni Dissolved

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3E090278 Cont'd	P-27-119.75	F3E090278005	Ni Total
	P-27-DUP (P-27-99-75)	F3E090278006	Ni Total
	P-27-129.75	F3E090278007	Ni Dissolved
	P-27-139.75	F3E090278008	Ni Total
	P-27-149.75	F3E090278009	Ni Total
	P-27-159.75	F3E090278010	Ni Total
	P-27-169.75	F3E090278011	Ni Total
	P-27-179.75	F3E090278012	Ni Total
	P-27-189.75	F3E090278013	Ni Total
	P-27-199.75	F3E090278014	Ni Dissolved
	P-27-209.75	F3E090278015	Ni Total
	P-27-219.50	F3E090278016	Ni Dissolved
	P-27-229.50	F3E090278017	Ni Total
	P-27-239.50	F3E090278018	Ni Total
	P-27-267.02	F3E090278019	Ni Total
	P-27-277.02	F3E090278020	Ni Dissolved
	P-28-77.90	F3E090278021	Ni Total
	P-28-87.02	F3E090278022	Ni Dissolved
	P-28-97.02	F3E090278023	Ni Dissolved
	P-28-107.02	F3E090278024	Ni Dissolved
	P-28-117.02	F3E090278025	Ni Total
	P-28-127.02	F3E090278026	Ni Dissolved
	P-28-137.02	F3E090278027	Ni Dissolved
	P-28-147.02	F3E090278028	Ni Dissolved
	P-28-160.02	F3E090278029	Ni Dissolved
	P-28-167.02	F3E090278030	Ni Dissolved
	P-28-177.02	F3E090278031	Ni Dissolved
	P-28-187.02	F3E090278032	Ni Dissolved
	P-28-197.02	F3E090278033	Ni Total
	P-28-207.02	F3E090278034	Ni Total
	P-28-217.02	F3E090278035	Ni Dissolved
	P-28-227.02	F3E090278036	Ni Dissolved
	P-28-237.02	F3E090278037	Ni Dissolved
	P-28-247.02 (also MS/MSD)	F3E090278038	Ni Dissolved

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3E140308	P-26-76.86	F3E140308001	Ni Dissolved
	P-26-86.8	F3E140308002	Ni Dissolved
	P-26-96.8	F3E140308003	Ni Dissolved
	P-26-106.8	F3E140308004	Ni Dissolved
	P-26-116.8	F3E140308005	Ni Dissolved
	P-26-126.8	F3E140308006	Ni Dissolved
	P-26-136.8	F3E140308007	Ni Dissolved
	P-26-146.8 (also MS/MSD)	F3E140308008	Ni Dissolved
F3E160130	P-26-152.25	F3E160130001	Ni Dissolved
	P-26-162.25	F3E160130002	Ni Dissolved
	P-26-172.25	F3E160130003	Ni Dissolved
	P-26-182.25	F3E160130004	Ni Dissolved
	P-26-192.25	F3E160130005	Ni Dissolved
	P-26-202.25	F3E160130006	Ni Dissolved
	P-26-211.25	F3E160130007	Ni Dissolved
	P-26-221.25	F3E160130008	Ni Dissolved
	P-26-231.25	F3E160130009	Ni Dissolved
	P-26-241.25	F3E160130010	Ni Dissolved
	P-E-78.57	F3E160130011	Ni Total
	P-E-88.57	F3E160130012	Ni Total
F3E200165	P-26-257.2	F3E200165001	Ni Dissolved
	P-26A-276.53	F3E200165003	Ni Dissolved
	P-26A-286.5	F3E200165004	Ni Dissolved
	P-E-98.57	F3E200165007	Ni Dissolved
	P-E-108.57	F3E200165008	Ni Total
	P-E-118.57	F3E200165009	Ni Total
	P-E-128.57	F3E200165010	Ni Dissolved
	P-E-138.57	F3E200165011	Ni Dissolved
	P-E-148.57	F3E200165012	Ni Dissolved
	P-E-158.57	F3E200165013	Ni Dissolved
	P-E-168.57	F3E200165014	Ni Total
	P-E-178.57	F3E200165015	Ni Total
	P-E-198.57	F3E200165016	Ni Total
	P-E-208.57	F3E200165017	Ni Dissolved

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3E200165 Cont'd	P-E-218.57	F3E200165018	Ni Dissolved
	P-E-228.57	F3E200165019	Ni Dissolved
	P-E-238.57	F3E200165020	Ni Dissolved
F3E230179	P-26A-295.85	F3E230179001	Ni Dissolved
	P-E-268.57	F3E230179002	Ni Dissolved
	P-E-292.28	F3E230179003	Ni Total
	P-E-301.23	F3E230179004	Ni Dissolved
	P-E-317.15	F3E230179005	Ni Dissolved
	P-E-332.85	F3E230179006	Ni Dissolved
	P-E-327.15	F3E230179007	Ni Dissolved
F3E290170	P-D-77.05	F3E290170001	Ni Dissolved
	P-D-87.05	F3E290170002	Ni Total
	1EB-5/27	F3E290170003	Ni Total
	P-D-97.05	F3E290170004	Ni Dissolved
	P-D-107.05 (also MS/MSD)	F3E290170005	Ni Dissolved
	P-D-127.05	F3E290170006	Ni Total
	P-D-117.05	F3E290170007	Ni Total
	P-D-137.05	F3E290170008	Ni Dissolved
	P-D-147.05	F3E290170009	Ni Dissolved
	P-15-79.65	F3E290170011	Ni Dissolved
	P-15-89.65	F3E290170012	Ni Total
	P-15-99.65	F3E290170013	Ni Total
	P-15-109.65	F3E290170014	Ni Total
	P-15-119.65	F3E290170015	Ni Total
F3F030298	P-15-129.65	F3F030298001	Ni Total
	P-15-139.65	F3F030298002	Ni Total
	P-15-149.65	F3F030298003	Ni Total
	P-15-159.65	F3F030298004	Ni Total
	P-15-169.65	F3F030298005	Ni Total
	P-15-179.65	F3F030298006	Ni Total
	P-15-189.65	F3F030298007	Ni Total
	P-15-199.65	F3F030298008	Ni Total
	P-15-208.00	F3F030298009	Ni Dissolved
	P-15-218.00	F3F030298010	Ni Total

Table 1-1: Sample Cross-Reference List

Package Identification	Sample ID	Laboratory ID	Analysis Performed
F3F030298 Cont'd	P-15-DUP (P-15-218.00)	F3F030298011	Ni Total
	P-15-240.00	F3F030298012	Ni Dissolved
	P-15-290.05	F3F030298013	Ni Dissolved
	P-15-300.05	F3F030298014	Ni Dissolved
	P-15-310.05	F3F030298015	Ni Total
	P-15-329.10	F3F030298016	Ni Total
	P-15-339.10	F3F030298017	Ni Dissolved
	P-D-217.1	F3F030298018	Ni Dissolved
	P-D-227.1 (also MS/MSD)	F3F030298017	Ni Dissolved
	P-D-237.1	F3F030298020	Ni Dissolved
	P-D-247.05 (also MS/MSD)	F3F030298021	Ni Dissolved
	P-D-257.	F3F030298022	Ni Dissolved
	P-D-290.1	F3F030298023	Ni Dissolved
	P-D-157.05	F3F030298029	Ni Dissolved
	P-D-167.1	F3F030298030	Ni Dissolved
	P-D-177.1	F3F030298031	Ni Total
	P-D-DUP (P-D-217.1)	F3F030298032	Ni Dissolved
	P-D-187.1	F3F030298033	Ni Dissolved
	P-D-197.1	F3F030298034	Ni Dissolved
	P-D-207.1	F3F030298035	Ni Dissolved
	P-15-228.00	F3F030298036	Ni Dissolved
F3F050171	P-D-DUP#2 (P-D-321.95)	F3F050171001	Ni Dissolved
	P-D-321.95	F3F050171002	Ni Dissolved
	P-D-331.95	F3F050171003	Ni Dissolved
	P-D-341.95	F3F050171004	Ni Total
	P-D-351.95	F3F050171005	Ni Dissolved
F3F120220	P-C-79.60 (also MS/MSD)	F3F120220001	Ni Total
	P-C-89.6	F3F120220002	Ni Total
	P-C-99.6	F3F120220003	Ni Dissolved
	P-C-109.6	F3F120220004	Ni Dissolved
	P-C-119.6	F3F120220005	Ni Total
	P-C-129.6	F3F120220006	Ni Dissolved
	P-C-139.6	F3F120220007	Ni Dissolved
	P-C-149.6	F3F120220008	Ni Dissolved

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3F120220 Cont'd	P-C-159.6	F3F120220009	Ni Total
	P-C-169.6	F3F120220010	Ni Dissolved
	P-C-179.6	F3F120220011	Ni Total
	P-C-DUP #1 (P-C-99.6)	F3F120220012	Ni Dissolved
F3F170126	P-C-275.3 (also MS/MSD)	F3F170126001	Ni Dissolved
	P-C-DUP-2 (P-C-320.3)	F3F170126002	Ni Dissolved
	P-C-320.3	F3F170126003	Ni Dissolved
	P-C-330.3	F3F170126004	Ni Dissolved
	P-C-337.5	F3F170126005	Ni Dissolved
	P-24-87.35	F3F170126006	Ni Dissolved
	P-24-77.35	F3F170126007	Ni Dissolved
	P-C-FB	F3F170126009	Ni
	P-C-185.3	F3F170126012	Ni Total
	P-C-195.3	F3F170126013	Ni Total
	P-C-205.3	F3F170126014	Ni Dissolved
	P-C-215.3	F3F170126015	Ni Dissolved
	P-C-225.3	F3F170126016	Ni Total
	P-C-235.3	F3F170126017	Ni Total
	P-C-245.3	F3F170126018	Ni Total
	P-C-265.3	F3F170126019	Ni Total
F3F180192	P-24-97.35 (also MS/MSD)	F3F180192002	Ni Dissolved
	P-24-107.35	F3F180192003	Ni Dissolved
	P-24-115.35	F3F180192004	Ni Dissolved
	P-24-127.3	F3F180192005	Ni Total
	P-24-137.3	F3F180192006	Ni Dissolved
	P-24-147.3	F3F180192007	Ni Total
	P-C-347.7	F3F180192008	Ni Total
F3F200145	P-24-157.3 (also MS/MSD)	F3F200145001	Ni Total
	P-24-167.3	F3F200145002	Ni Total
	P-24-177.3	F3F200145003	Ni Dissolved
	P-24-187.3	F3F200145004	Ni Total
	P-24-197.3	F3F200145005	Ni Total
	P-24-207.3	F3F200145006	Ni Total

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3F200145 Cont'd	P-24-217.3	F3F200145007	Ni Total
	P-24-DUP#1 (P-24-167.3)	F3F200145008	Ni Dissolved
	P-24-227.3	F3F200145009	Ni Total
	P-24-237.3	F3F200145010	Ni Total
	P-24-247.3	F3F200145011	Ni Total
	P-24-257.3	F3F200145012	Ni Total
	P-24-267.3	F3F200145015	Ni Dissolved
	P-24-277.3	F3F200145016	Ni Dissolved
	P-24-287.3	F3F200145017	Ni Dissolved
	P-24-DUP#2 (P-24-287.3)	F3F200145018	Ni Dissolved
	P-C-364.5	F3F200145019	Ni Dissolved
	P-C-374.5	F3F200145020	Ni Total
	P-C-394.5	F3F200145021	Ni Total
	P-C-384.5	F3F200145022	Ni Dissolved
F3F260187	P-24-297.3	F3F260187001	Ni Dissolved
	P-23-FB1 (also MS/MSD)	F3F260187002	Ni Total
	P-23-80.1	F3F260187003	Ni Total
	P-23-90.1	F3F260187004	Ni Dissolved
	P-23-100.1	F3F260187005	Ni Total
	P-23-110.1	F3F260187006	Ni Total
	P-23-120.1	F3F260187007	Ni Total
	P-23-130.1	F3F260187008	Ni Dissolved
	P-23-140.1	F3F260187009	Ni Dissolved
	P-23-150.1	F3F260187010	Ni Dissolved
	P-23-160.1	F3F260187011	Ni Dissolved
	P-23-170.1	F3F260187012	Ni Dissolved
	P-23-180.1	F3F260187013	Ni Dissolved
	P-23-DUP-1 (P-23-180.1)	F3F260187014	Ni Dissolved
F3F270132	P-23-190.1	F3F270132002	Ni Dissolved
	P-23-200.1	F3F270132003	Ni Dissolved
	P-23-210.1	F3F270132004	Ni Dissolved
	P-23-220.1	F3F270132005	Ni Total
	P-23-227.65	F3F270132006	Ni Dissolved
F3G010309	P-23-239.8	F3G010309001	Ni Total

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3G010309 Cont'd	P-23-252.0	F3G010309002	Ni Dissolved
	P-23-262.0	F3G010309003	Ni Total
	P-23A-286.96	F3G010309004	Ni Dissolved
	P-23A-293.50	F3G010309005	Ni Dissolved
F3G030162	P-23A-334.1	F3G030162002	Ni Dissolved
	P-23A-343.4	F3G030162003	Ni Dissolved
	P-23A-DUP.1 (P-23A-347.6)	F3G030162004	Ni Total
	P-23A-347.6	F3G030162005	Ni Total
	P-23A-EB-2	F3G030162006	Ni
F3G110256	P-25-EB-1	F3G110256001	Ni
	P-25-79.7	F3G110256002	Ni Total
	P-25-89.7	F3G110256003	Ni Total
	P-25-99.1	F3G110256004	Ni Total
	P-25-109.7	F3G110256005	Ni Total
	P-25-119.7 (also MS/MSD)	F3G110256006	Ni Total
	P-25-129.7	F3G110256007	Ni Total
	P-25-139.7	F3G110256008	Ni Total
	P-25-149.7	F3G110256009	Ni Total
	P-25-159.7	F3G110256010	Ni Dissolved
	P-25-169.7	F3G110256011	Ni Dissolved
	P-25-179.7	F3G110256012	Ni Total
	P-25-189.7	F3G110256013	Ni Total
	P-25-199.7	F3G110256014	Ni Dissolved
	P-25-209.7	F3G110256015	Ni Dissolved
	P-25-219.7	F3G110256016	Ni Dissolved
	P-25-DUP-1 (P-25-179.7)	F3G110256017	Ni Total
	P-35-EB-1	F3G110256018	Ni
	P-35-77.2	F3G110256019	Ni Total
	P-35-87.2	F3G110256020	Ni Total
	P-35-97.2 (also MS/MSD)	F3G110256021	Ni Total
	P-35-107.2	F3G110256022	Ni Total
	P-35-117.2	F3G110256023	Ni Total
	P-35-127.2	F3G110256024	Ni Total
	P-35-137.2	F3G110256025	Ni Total

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3G110256 Cont'd	P-35-147.2	F3G110256026	Ni Total
	P-35-157.2	F3G110256027	Ni Total
	P-35-167.2	F3G110256028	Ni Total
	P-35-177.2	F3G110256029	Ni Total
	P-35-DUP-1 (P-35-177.2)	F3G110256030	Ni Total
F3G150156	P-25-229.5	F3G150156001	Ni Total
	P-25-239.5	F3G150156002	Ni Dissolved
	P-25-249.5 (also MS/MSD)	F3G150156003	Ni Dissolved
	P-25-259.5	F3G150156004	Ni Dissolved
	P-25-269.5	F3G150156005	Ni Total
	P-25-275.8	F3G150156006	Ni Total
	P-25-DUP-2 (P-25-275.8)	F3G150156007	Ni Total
	P-25-290.0	F3G150156008	Ni Total
	P-25-300.0	F3G150156009	Ni Total
	P-25-310.0	F3G150156010	Ni Total
	P-25-320.0	F3G150156011	Ni Dissolved
	P-25-330.0	F3G150156012	Ni Dissolved
	P-25-340.0	F3G150156013	Ni Total
	P-25-349.4	F3G150156014	Ni Total
	P-25-370.0	F3G150156015	Ni Total
	P-25-379.2	F3G150156016	Ni Total
	P-35-187.2	F3G150156017	Ni Dissolved
	P-35-197.2	F3G150156018	Ni Dissolved
	P-35-207.2	F3G150156019	Ni Total
	P-35-217.2	F3G150156020	Ni Dissolved
	P-35-227.2	F3G150156021	Ni Dissolved
	P-35-237.2	F3G150156022	Ni Total
	P-35-247.2 (also MS/MSD)	F3G150156023	Ni Dissolved
	P-35-257.2	F3G150156024	Ni Dissolved
	P-35-267.2	F3G150156025	Ni Total
	P-35-277.2	F3G150156026	Ni Dissolved
	P-35-EB-2	F3G150156027	Ni Total
	P-35-292.2	F3G150156028	Ni Dissolved
	P-35-322.2	F3G150156029	Ni Total

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3G150156 Cont'd	P-35-332.2	F3G150156030	Ni Dissolved
	P-35-DUP-2 (P-35-332.2)	F3G150156031	Ni Dissolved
	P-35-342.2	F3G150156033	Ni Dissolved
	P-35-347.2	F3G150156034	Ni Dissolved
F3G230216	P-H-EB1	F3G230216001	Ni
	P-H-76.8	F3G230216002	Ni Dissolved
	P-H-86.8	F3G230216003	Ni Dissolved
	P-H-96.8	F3G230216004	Ni Total
	P-H-106.8	F3G230216005	Ni Dissolved
	P-H-116.8	F3G230216006	Ni Dissolved
	P-42-EB1	F3G230216008	Ni
F3G250374	P-H-126.8 (also MS/MSD)	F3G250374002	Ni Dissolved
	P-H-DUP1 (P-H-126.8)	F3G250374003	Ni Dissolved
	P-H-136.8	F3G250374004	Ni Dissolved
	P-H-146.8	F3G250374005	Ni Dissolved
	P-H-156.8	F3G250374006	Ni Dissolved
	P-H-166.8	F3G250374007	Ni Dissolved
	P-H-176.8	F3G250374008	Ni Dissolved
	P-H-186.8	F3G250374009	Ni Dissolved
	P-H-196.8	F3G250374010	Ni Dissolved
	P-H-EB2	F3G250374011	Ni
	P-H-206.55	F3G250374012	Ni Total
	P-42-179.6	F3G250374013	Ni Total
	P-42-189.6	F3G250374014	Ni Total
	P-42-197.7	F3G250374015	Ni Total
	P-42-202.7	F3G250374016	Ni Total
	P-42-DUP-1 (P-42-202.7)	F3G250374017	Ni Total
	P-H-DUP2 (P-H-206.55)	F3G250374019	Ni Total
	P-42-79.6	F3G250374021	Ni Total
	P-42-89.6	F3G250374022	Ni Total
	P-42-99.6	F3G250374023	Ni Total
	P-42-109.6 (also MS/MSD)	F3G250374024	Ni Total
	P-42-119.6	F3G250374025	Ni Total

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3G250374 Cont'd	P-42-129.6	F3G250374026	Ni Total
	P-42-139.6	F3G250374027	Ni Total
	P-42-149.6	F3G250374028	Ni Dissolved
	P-42-159.6	F3G250374029	Ni Dissolved
	P-42-169.4	F3G250374030	Ni Total
F3G290207	P-H-216.55	F3G290207001	Ni Total
	P-H-226.55	F3G290207002	Ni Total
	P-H-236.55	F3G290207003	Ni Total
	P-H-328.55	F3G290207004	Ni Total
	P-H-334.97	F3G290207005	Ni Total
	P-H-351.65	F3G290207006	Ni Dissolved
	P-H-376.85	F3G290207007	Ni Dissolved
	P-H-386.5	F3G290207008	Ni Dissolved
	P-H-396.5	F3G290207009	Ni Total
	P-42-EB-2	F3G290207010	Ni
	P-42-217.2	F3G290207011	Ni Total
	P-42-224.6	F3G290207012	Ni Total
	P-42-234.6 (also MS/MSD)	F3G290207013	Ni Dissolved
	P-42-276.4	F3G290207014	Ni Dissolved
	P-42-287.9	F3G290207015	Ni Dissolved
	P-42-298.0	F3G290207016	Ni Total
	P-42-308.6	F3G290207017	Ni Total
	P-42-319.8	F3G290207018	Ni Dissolved
	P-42-329.8	F3G290207019	Ni Total
	P-42-DUP-2 (P-42-329.8)	F3G290207020	Ni Total
	P-42-339.8	F3G290207021	Ni Total
	P-42-354.6	F3G290207022	Ni Total
F3H010243	P-42-389.50	F3H010243001	Ni Dissolved
	P-42-410.07	F3H010243002	Ni Total
	P-42-424.45	F3H010243003	Ni Total
F3H060192	P-20-79.60	F3H060192001	Ni Total
	P-20-89.60	F3H060192002	Ni Total
	P-20-99.60	F3H060192003	Ni Dissolved

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3H060192 Cont'd	P-20-109.60	F3H060192004	Ni Total
	P-20-119.60	F3H060192005	Ni Total
	P-20-129.60	F3H060192006	Ni Dissolved
	P-20-139.60	F3H060192007	Ni Dissolved
	P-20-149.60	F3H060192008	Ni Total
	P-20-159.60	F3H060192009	Ni Total
	P-45-81.25	F3H060192011	Ni Total
	P-45-91.25	F3H060192012	Ni Dissolved
	P-45-101.25	F3H060192014	Ni Total
	P-45-111.25	F3H060192015	Ni Total
	P-45-121.25	F3H060192016	Ni Total
	P-45-131.25	F3H060192017	Ni Dissolved
	P-45-DUP1 (P-45-81.25)	F3H060192018	Ni Total
	P-45-71.25	F3H060192019	Ni Total
F3H080219	P-20-169.60	F3H080219001	Ni Total
	P-20-179.60 (also MS/MSD)	F3H080219002	Ni Total
	P-20-189.60	F3H080219003	Ni Dissolved
	P-20-DUP1 (P-20-169.60)	F3H080219004	Ni Total
	P-20-209.70	F3H080219005	Ni Dissolved
	P-20-220.76	F3H080219006	Ni Total
	P-20-229.70	F3H080219007	Ni Dissolved
	P-20-269.55	F3H080219009	Ni Dissolved
	P-45-151.25	F3H080219010	Ni Dissolved
	P-45-167.25	F3H080219011	Ni Dissolved
	P-45-177.25	F3H080219012	Ni Total
	P-45-187.25	F3H080219013	Ni Total
	P-45-197.25	F3H080219014	Ni Dissolved
	P-45-207.25	F3H080219015	Ni Dissolved
	P-45-217.25	F3H080219016	Ni Dissolved
	P-45-227.25	F3H080219017	Ni Total
	P-45-237.25	F3H080219018	Ni Dissolved
F3H130195	P-45-281.65	F3H130195001	Ni Dissolved
	P-45-291.65	F3H130195002	Ni Total
	P-45-301.25	F3H130195003	Ni Total

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3H130196 Cont'd	P-45-311.65	F3H130195004	Ni Dissolved
	P-45-321.65	F3H130195005	Ni Total
	P-45-340.11	F3H130195006	Ni Dissolved
	P-45-351.75	F3H130195007	Ni Total
	P-20-281.94	F3H130195008	Ni Dissolved
	P-20-289.55	F3H130195009	Ni Total
	P-20-309.60 (also MS/MSD)	F3H130195010	Ni Dissolved
	P-20-319.60	F3H130195011	Ni Total
	P-20-328.19	F3H130195012	Ni Total
	P-20-339.60	F3H130195013	Ni Total
	P-20-349.60	F3H130195014	Ni Total
	P-20-359.60	F3H130195015	Ni Dissolved
	P-20-379.60	F3H130195016	Ni Dissolved
	P-20-392.0	F3H130195017	Ni Dissolved
	P-20-369.60	F3H130195018	Ni Dissolved
	P-20-FB	F3H130195019	Ni
	P-20-427.99	F3H130195021	Ni Dissolved
	P-20-DUP-2 (P-20-427.99)	F3H130195022	Ni Dissolved
F3H180106	P-45-366.39	F3H180106001	Ni Dissolved
	P-45-DUP 2 (P-45-366.39)	F3H180106002	Ni Dissolved
	P-20-462.87	F3H180106003	Ni Dissolved
	P-20-469.15	F3H180106004	Ni Dissolved
	P-20-476.68	F3H180106005	Ni Total
F3H210288	P-36-EB1	F3H210288001	Ni
	P-36-76.7	F3H210288002	Ni Dissolved
	P-36-86.7	F3H210288003	Ni Dissolved
	P-36-96.7	F3H210288004	Ni Dissolved
	P-36-106.7	F3H210288005	Ni Dissolved
	P-36-116.7	F3H210288006	Ni Dissolved
	P-36-126.7	F3H210288007	Ni Dissolved
	P-36-136.7	F3H210288008	Ni Dissolved
	P-46-79.60 (also MS/MSD)	F3H210288009	Ni Dissolved
	P-46-89.60	F3H210288010	Ni Total
	P-46-99.60	F3H210288011	Ni Dissolved

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3H210288 Cont'd	P-46-109.60	F3H210288012	Ni Dissolved
	P-46-119.60	F3H210288013	Ni Total
	P-46-129.60	F3H210288014	Ni Dissolved
	P-37-79.3	F3H210288015	Ni Total
	P-37-89.95	F3H210288016	Ni Dissolved
	P-37-99.95	F3H210288017	Ni Dissolved
	P-37-109.95	F3H210288018	Ni Dissolved
	P-37-119.95	F3H210288019	Ni Dissolved
	P-37-129.95	F3H210288020	Ni Total
	P-37-139.95	F3H210288021	Ni Dissolved
	P-37-149.95	F3H210288022	Ni Total
	P-37-DUP 1 (P-37-119.95)	F3H210288023	Ni Dissolved
F3H220246	P-36-146.7	F3H220246001	Ni Dissolved
	P-36-156.7	F3H220246002	Ni Dissolved
	P-36-DUP-1 (P-36-15.7)	F3H220246003	Ni Dissolved
	P-36-166.7	F3H220246004	Ni Dissolved
	P-36-176.7	F3H220246005	Ni Dissolved
	P-36-186.7	F3H220246006	Ni Dissolved
	P-36-196.7	F3H220246007	Ni Dissolved
	P-36-206.7	F3H220246008	Ni Dissolved
	P-36-216.7	F3H220246009	Ni Dissolved
	P-36-226.7	F3H220246010	Ni Dissolved
	P-46-139.6	F3H220246011	Ni Total
	P-46-DUP-1 (P-46-139.60)	F3H220246012	Ni Total
	P-46-149.60	F3H220246013	Ni Dissolved
	P-46-159.60	F3H220246014	Ni Dissolved
	P-46-169.60 (also MS/MSD)	F3H220246015	Ni Dissolved
	P-46-179.60	F3H220246016	Ni Dissolved
	P-46-189.60	F3H220246017	Ni Total
	P-46-199.60	F3H220246018	Ni Dissolved
	P-37-159.95	F3H220246019	Ni Total
	P-37-169.95	F3H220246020	Ni Dissolved
	P-37-179.95	F3H220246021	Ni Dissolved
	P-37-189.95	F3H220246022	Ni Dissolved

Table 1-1: Sample Cross-Reference List

Package Identification	Sample ID	Laboratory ID	Analysis Performed
F3E090278 Cont'd	P-37-EB-1 (also MS/MSD)	F3H220246023	Ni
F3H220246	P-46-209.60 (also MS/MSD)	F3H270230001	Ni Dissolved
	P-46-215.15	F3H270230002	Ni Total
	P-46-275.42	F3H270230003	Ni Dissolved
	P-46-DUP-2 (P-46-275.42)	F3H270230004	Ni Dissolved
	P-46-284.32	F3H270230005	Ni Total
	P-46-291.69	F3H270230006	Ni Dissolved
	P-46-298.35	F3H270230007	Ni Total
	P-46-307.69	F3H270230008	Ni Dissolved
	P-36A-266.8	F3H270230009	Ni Total
	P-36A-282.0	F3H270230010	Ni Total
	P-36A-292.4	F3H270230011	Ni Total
	P-36-236.7	F3H270230012	Ni Dissolved
	P-36A-371.75	F3H270230013	Ni Dissolved
	P-36A-328.4	F3H270230014	Ni Dissolved
	P-36A-EB2 (also MS/MSD)	F3H270230015	Ni
	P-37-224.75	F3H270230017	Ni Dissolved
	P-37-264.85	F3H270230018	Ni Total
	P-37-274.85	F3H270230019	Ni Total
	P-37-284.4	F3H270230020	Ni Total
	P-37-304.8	F3H270230021	Ni Dissolved
	P-37-DUPL#2 (P-37-304.8)	F3H270230022	Ni Dissolved
	P-37-314.8	F3H270230023	Ni Total
F3H280315	P-37A-324.8	F3H280315001	Ni Dissolved
	P-27A-333.2	F3H280315002	Ni Total
	P-37A-356.15	F3H280315003	Ni Dissolved
	P-37A-385.0	F3H280315004	Ni Total
	P-37A-394.5	F3H280315005	Ni Total
	P-36A-475.2	F3H280315006	Ni Total
	P-46-318.42	F3H280315007	Ni Dissolved
	P-46-330.21	F3H280315008	Ni, Cr Dissolved
	P-46-340.21	F3H280315009	Ni Total
	P-46-348.32	F3H280315010	Ni Dissolved
	P-46-360.21	F3H280315011	Ni Total

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3H280315 Cont'd	P-46-307.69 (also MS/MSD)	F3H280315012	Cr Dissolved
F3I040177	P-44-89.8 (also MS/MSD for Ni and Cr)	F3I040177003	Ni Dissolved
	P-44-99.3	F3I040177004	Ni Dissolved
	P-44-DUP 1 (P-44-99.3)	F3I040177005	Ni Dissolved
	P-44-109.8	F3I040177006	Ni Dissolved
	P-46-389.28 (also MS for Cr+6)	F3I040177007	Ni, Cr, Cr+6 Total
	P-44-121.55	F3I040177008	Ni Dissolved
	P-44-79.3	F3I040177010	Ni Dissolved
F3I050189	P-44-131.1	F3I050189001	Ni Dissolved
	P-44-139.8	F3I050189002	Ni Dissolved
	P-44-149.8	F3I050189003	Ni Dissolved
	P-44-159.8	F3I050189004	Ni Dissolved
	P-44-169.8	F3I050189005	Ni Dissolved
	P-44-179.8	F3I050189006	Ni Dissolved
	P-44-189.8	F3I050189007	Ni Dissolved
	P-44-199.8	F3I050189008	Ni Dissolved
	P-47-77.1	F3I050189009	Ni Total
	P-47-87.08	F3I050189010	Ni Total
	P-46-399.30	F3I050189011	Ni Dissolved
	P-46-409.34	F3I050189012	Ni Total
	P-46-DUP-3 (P-46-409.34)	F3I050189013	Ni Total
	P-46-419.27	F3I050189014	Ni Dissolved
	P-46-429.95	F3I050189015	Ni Dissolved
F3I090305	P-46-438.47	F3I090305001	Ni Dissolved
	P-46-470.25	F3I090305002	Ni Dissolved
	P-46-480.25	F3I090305003	Ni Dissolved
	P-46-490.25	F3I090305004	Ni Dissolved
	P-46-498.12 (also MS/MSD)	F3I090305005	Ni Dissolved
	P-44-DUP-2 (P-44-239.85)	F3I090305006	Ni Dissolved
	P-44-215.5	F3I090305007	Ni Total
	P-44-229.2	F3I090305008	Ni Total
	P-44-239.85	F3I090305009	Ni Dissolved
	P-44-249.85	F3I090305010	Ni Total
	P-44-257.1	F3I090305011	Ni Total

Table 1-1: Sample Cross-Reference List

Package Identification	Sample ID	Laboratory ID	Analysis Performed
Dissolved F3I090305 Cont'd	P-44-284.85	F3I090305012	Ni Total
	P-44-299.85	F3I090305013	Ni Total
	P-44-307.9	F3I090305014	Ni Dissolved
	P-44-EB-3	F3I090305015	Ni
	P-44-DUP-3 (P-44-339.8)	F3I090305016	Ni Dissolved
	P-44-339.8	F3I090305017	Ni Dissolved
	P-44-349.8	F3I090305018	Ni Dissolved
	P-44-356.1	F3I090305019	Ni Dissolved
	P-47-97.1	F3I090305020	Ni Total
	P-47-107.1	F3I090305021	Ni Total
	P-47-117.1	F3I090305022	Ni Total
	P-47-127.1	F3I090305023	Ni Total
	P-47-137.1	F3I090305024	Ni Dissolved
	P-47-147.1	F3I090305026	Ni Dissolved
	P-47-157.1	F3I090305027	Ni Dissolved
	P-47-DUP-2 (P-47-163.9)	F3I090305028	Ni Dissolved
	P-47-163.9	F3I090305029	Ni Dissolved
	P-47-177.0	F3I090305030	Ni Dissolved
	P-47-DUP-3 (P-47-187.0)	F3I090305031	Ni Dissolved
	P-47-187.0	F3I090305032	Ni Dissolved
	P-47-197.0	F3I090305033	Ni Dissolved
	P-47-205.7	F3I090305034	Ni Dissolved
	P-47-217.0	F3I090305035	Ni Dissolved
	P-47-227.0	F3I090305036	Ni Total
	P-47-247.0	F3I090305037	Ni Total
	P-47-272.0 (also MS/MSD)	F3I090305038	Ni Total
F3I120107	P-43-79.88	F3I120107002	Ni Total
	P-43-89.88	F3I120107003	Ni Total
	P-43-99.88	F3I120107004	Ni Dissolved
	P-43-109.88	F3I120107005	Ni Total
	P-43-119.88	F3I120107006	Ni Dissolved
	P-43-DUP-1 (P-43-119.88)	F3I120107007	Ni Dissolved
	P-43-129.88	F3I120107008	Ni Dissolved
	P-47-282.0 (also MS/MSD)	F3I120107009	Ni Total

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3I120107 Cont'd	P-47-308.5	F3I120107010	Ni Total
	P-47-DUP-4 (P-47-317.0)	F3I120107011	Ni Total
	P-47-317.0	F3I120107012	Ni Total
	P-47-327.7	F3I120107013	Ni Dissolved
	P-47-337.0	F3I120107014	Ni Dissolved
	P-47-344.1	F3I120107015	Ni Dissolved
F3I150101	P-47-368.4	F3I150101001	Ni Dissolved
	P-47-377.0	F3I150101002	Ni Dissolved
	P-47-387.0	F3I150101003	Ni Dissolved
	P-47-397.00	F3I150101007	Ni Total
F3I180259	P-29-79.5	F3I180259001	Ni Total
	P-29-89.5	F3I180259002	Ni Dissolved
	P-29-99.5	F3I180259003	Ni Dissolved
	P-29-109.5	F3I180259005	Ni Dissolved
	P-29-DUP-1 (P-29-109.5)	F3I180259006	Ni Dissolved
	P-29-119.5 (also MS/MSD)	F3I180259007	Ni Total
	P-29-129.5	F3I180259008	Ni Total
	P-29-139.5	F3I180259009	Ni Total
	P-29-149.5	F3I180259010	Ni Total
	P-29-159.5	F3I180259011	Ni Total
	P-43-139.88	F3I180259013	Ni Dissolved
	P-43-153.05	F3I180259014	Ni Dissolved
	P-43-161.65	F3I180259015	Ni Dissolved
	P-43-169.88	F3I180259016	Ni Dissolved
	P-43-179.88	F3I180259017	Ni Dissolved
	P-43-189.88	F3I180259018	Ni Dissolved
	P-43-199.88	F3I180259019	Ni Total
	P-38-76.7	F3I180259021	Ni Total
	P-38-86.7	F3I180259022	Ni Dissolved
	P-38-96.8	F3I180259025	Ni Dissolved
	P-38-106.7	F3I180259026	Ni Total
	P-38-116.7	F3I180259027	Ni Dissolved
	P-38-DUP-1 (P-38-116.7)	F3I180259028	Ni Dissolved
	P-38-126.7	F3I180259029	Ni Dissolved

Table 1-1: Sample Cross-Reference List

Package Identification	Sample ID	Laboratory ID	Analysis Performed
F3I180259 Cont'd	P-38-136.7	F3I180259030	Ni Dissolved
	P-38-146.7 (also MS/MSD)	F3I180259031	Ni Dissolved
	P-38-152.5	F3I180259032	Ni Total
F3I230231	P-29-169.35	F3I230231001	Ni Total
	P-29-176.7	F3I230231002	Ni Dissolved
	P-29-EB-1	F3I230231003	Ni
	P-29-191.33	F3I230231004	Ni Dissolved
	P-29-200.8	F3I230231005	Ni Total
	P-29-231.0	F3I230231006	Ni Total
	P-29-239.45	F3I230231007	Ni Dissolved
	P-29-249.85	F3I230231008	Ni Total
	P-29-259.5	F3I230231009	Ni Total
	P-29-268.4	F3I230231010	Ni Total
	P-29-278.4	F3I230231011	Ni Total
	P-29-289.85	F3I230231012	Ni Total
	P-29-299.85	F3I230231013	Ni Total
	P-29-310.2 (also MS/MSD)	F3I230231014	Ni, Cr, Cr+6 Total
	P-29-318.9	F3I230231015	Ni Total
	P-29-329.85	F3I230231016	Ni Total
	P-29-DUP-2 (P-29-329.85)	F3I230231017	Ni Total
	P-29-339.5	F3I230231018	Ni
	P-29-EB-2	F3I230231019	Ni
	P-29-360.0	F3I230231020	Ni, Cr, Cr+6 Total
	P-29-369.2 (also MS/MSD)	F3I230231021	Ni Total
	P-38-166.3	F3I230231022	Ni Total
	P-38-176.3	F3I230231023	Ni Total
	P-38-186.3	F3I230231024	Ni Total
	P-38-207.5	F3I230231025	Ni Total
	P-38-216.3	F3I230231026	Ni Dissolved
	P-38-226.3	F3I230231027	Ni Dissolved
	P-38-260.7	F3I230231028	Ni Dissolved
	P-38-312.9	F3I230231029	Ni Total
	P-38-322.9	F3I230231030	Ni Dissolved
	P-38-DUP-2 (P-38-322.9)	F3I230231031	Ni Dissolved

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3I230231 Cont'd	P-38-332.3	F3I230231032	Ni NA
	P-38-341.1	F3I230231033	Ni Dissolved
	P-43-233.85	F3I230231034	Ni Total
	P-43-246.68	F3I230231035	Ni Dissolved
	P-43-DUP-2 (P-43-246.68)	F3I230231036	Ni Dissolved
	P-43-254.85	F3I230231037	Ni Dissolved
	P-43-264.85	F3I230231038	Ni Dissolved
	P-43-274.85	F3I230231039	Ni Dissolved
	P-43-284.85	F3I230231040	Ni Dissolved
	P-43-294.85	F3I230231041	Ni Total
	P-43-304.85	F3I230231042	Ni Dissolved
	P-29-390.0 (also MS/MSD)	F3I230231044	Ni, Cr, Cr+6 Total
F3I250196	P-38-370.1	F3I250196001	Ni Dissolved
	P-38-381.3	F3I250196002	Ni NA
	P-38-391.3	F3I250196003	Ni NA
	P-38-FB-2	F3I250196004	Ni
	P-38-DUP-3 (P-38-381.3)	F3I250196005	Ni NA
	P-29-410.7	F3I250196006	Ni Total
F3J030259	P-30-79.55	F3J030259001	Ni Dissolved
	P-30-89.50 (also MS/MSD)	F3J030259002	Ni Dissolved
	P-30-99.50	F3J030259003	Ni Dissolved
	P-30-119.50	F3J030259004	Ni Dissolved
	P-30-128.80	F3J030259005	Ni Dissolved
	P-30-139.50	F3J030259006	Ni Dissolved
	P-30-149.50	F3J030259007	Ni Dissolved
	P-30-186.25	F3J030259008	Ni Dissolved
	P-30-194.35	F3J030259009, 010	Ni Dissolved, Ni Total
	P-30-204.55	F3J030259011, 012	Ni Dissolved, Ni Total
	P-30-DUP-1 (P-30-204.55)	F3J030259013, 014	Ni Dissolved, Ni Total
F3J070236	P-30-214.55		Ni Dissolved, Ni Total
	P-30-224.55		Ni Dissolved
	P-30-232.85 (also MS/MSD)		Ni Dissolved
	P-30-244.5		Ni Dissolved
	P-30A-260.85		Ni Dissolved

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3J070236 Cont'd	P-30A-269.00		Ni Dissolved
	P-30A-279.00		Ni Dissolved, Ni Total
	P-30A-289.0		Ni Dissolved, Ni Total
	P-30A-298.6		Ni Dissolved, Ni Total
	P-30A-DUP-2 (P30A-298.6)		Ni Dissolved, Ni Total
	P-30A-307.45		Ni Dissolved, Ni Total
	P-30-EB-2		Ni Total
	P-18-EB-1		Ni Dissolved
	P-18-76.65		Ni Dissolved, Ni Total
	P-18-86.65		Ni Dissolved, Ni Total
	P-18-96.65		Ni Dissolved, Ni Total
	P-18-106.65 (Total – also MS/MSD)		Ni Dissolved, Ni Total
	P-18-116.65		Ni Dissolved
	P-18-126.65		Ni Dissolved, Ni Total
	P-18-136.65		Ni Dissolved, Ni Total
	P-18-146.65		Ni Dissolved
	P-18-156.65 (Dissolved – also MS/MSD)		Ni Dissolved, Ni Total
	P-18-DUP-1 (P-18-156.65)		Ni Dissolved, Ni Total
	P-18-166.65		Ni Dissolved
	P-18-176.65		Ni Dissolved
	P-18-186.65		Ni Dissolved, Ni Total
F3J110172	P-30A-331.0 (Dissolved – also MS/MSD)	F3J110172001, 018	Ni Dissolved, Ni Total
	P-30A-340.0	F3J110172035	Ni Dissolved
	P-30A-345.25 (Total – also MS/MSD)	F3J110172002, 019	Ni Dissolved, Ni Total
	P-30A-390.8	F3J110172036	Ni Dissolved
	P-30A-399.2	F3J110172037	Ni Dissolved
	P-30A-406.55	F3J110172003, 020	Ni Dissolved, Ni Total
	P-30A-DUP-3 (P-30A-406.55)	F3J110172004, 021	Ni Dissolved, Ni Total
	P-18-207.65	F3J110172005	Ni Dissolved
	P-18-217.65	F3J110172006	Ni Dissolved, Ni Total
	P-18-227.65	F3J110172007	Ni Dissolved
	P-18-237.65	F3J110172008	Ni Dissolved
	P-18-247.65	F3J110172009, 026	Ni Dissolved, Ni Total

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3J110172 Cont'd	P-18-DUP-2 (P-18-247.65)	F3J110172010, 027	Ni Dissolved, Ni Total
	P-18-257.65	F3J110172011	Ni Dissolved
	P-18-267.65	F3J110172012	Ni Dissolved
	P-18-277.65	F3J110172013	Ni Dissolved
	P-18-287.65	F3J110172014, 031	Ni Dissolved, Ni Total
	P-18-302.66	F3J110172015, 032	Ni Dissolved, Ni Total
	P-18-328.31	F3J110172016	Ni Dissolved
	P-18-335.80	F3J110172017, 034	Ni Dissolved, Ni Total
F3J240204	P18-343.96	F3J240204001	Ni Dissolved
	P-18-350.25	F3J240204002	Ni Dissolved
	P-50-82.90	F3J240204003	Ni Dissolved
	P-50-89.90	F3J240204004	Ni Dissolved
	P-50-99.90	F3J240204005	Ni Dissolved
	P-50-109.90	F3J240204006	Ni Dissolved
	P-50-119.90	F3J240204007	Ni Dissolved
	P-50-129.90	F3J240204008	Ni Dissolved
	P-50-DUP-1 (P-50-129.90)	F3J240204009	Ni Dissolved
	P-50-139.90	F3J240204010	Ni Dissolved
	P-50-149.90	F3J240204011	Ni Dissolved
	P-50-159.90	F3J240204012	Ni Dissolved
	P-50-169.90	F3J240204013	Ni Dissolved
	P-50-179.90	F3J240204014	Ni Dissolved
	P-50-189.90 (also MS/MSD)	F3J240204015	Ni Dissolved
	P-49-74.25	F3J240204016	Ni Dissolved, Ni Total
	P-49-84.25	F3J240204017	Ni Dissolved
	P-49-94.3	F3J240204018	Ni Dissolved
	P-49-104.6	F3J240204019	Ni Dissolved
	P-49-114.3	F3J240204020	Ni Dissolved
	P-49-124.3	F3J240204021	Ni Dissolved
	P-49-134.3	F3J240204022	Ni Dissolved, Ni Total
	P-49-144.3	F3J240204023	Ni Dissolved
	P-49-167.3	F3J240204024	Ni Dissolved
	P-49-DUP-1 (P-49-167.3)	F3J240204025	Ni Dissolved
	P-49-177.3	F3J240204026	Ni Dissolved, Ni Total

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3J240204 Cont'd	P-50-198.55	F3J240204028	Ni Dissolved
	P-51-77.78	F3J240204029	Ni Dissolved
	P-51-87.78	F3J240204030	Ni Dissolved
	P-51-97.78	F3J240204031	Ni Dissolved
	P-51-DUP-1 (P-51-97.78)	F3J240204032	Ni Dissolved
	P-51-107.78	F3J240204033	Ni Dissolved, Ni Total
	P-51-117.78	F3J240204034	Ni Dissolved
	P-51-127.78	F3J240204035	Ni Dissolved
	P-51-137.78	F3J240204036	Ni Dissolved
	P-51-147.78	F3J240204037	Ni Dissolved, Ni Total
	P-51-158.02	F3J240204038	Ni Dissolved
	P-51-167.78	F3J240204039	Ni Dissolved
	P-49-EB-1	F3J240204040	Ni Dissolved
	P-51-177.78	F3J240204041	Ni Dissolved
	P-51-EB-1	F3J240204042	Ni Dissolved, Ni Total
	P-50-EB-1 (also MS/MSD)	F3J240204043	Ni Total
F3J290103	P-50-206.64	F3J290103001	Ni Dissolved
	P-50-242.55	F3J290103002	Ni Dissolved
	P-50-249.90	F3J290103003	Ni Dissolved
	P-50-259.90	F3J290103004	Ni Dissolved
	P-50-267.44	F3J290103005	Ni Dissolved, Ni Total
	P-50-279.90	F3J290103006	Ni Dissolved
	P-50-289.90	F3J290103007	Ni Dissolved, Ni Total
	P-50-299.90	F3J290103008	Ni Dissolved, Ni Total
	P-50-309.90	F3J290103009	Ni Dissolved, Ni Total
	P-50-319.90	F3J290103010	Ni Dissolved, Ni Total
	P-50-327.07	F3J290103011	Ni Dissolved, Ni Total
	P-50-EB-2	F3J290103012	Ni Dissolved, Ni Total
	P-50-342.60	F3J290103013	Ni Dissolved, Ni Total
	P-50-DUP-2 (P-50-342.60)	F3J290103014	Ni Dissolved, Ni Total
	P-50-349.90 (also MS/MSD)	F3J290103015	Ni Dissolved, Ni Total
	P-50-359.90	F3J290103016	Ni Dissolved, Ni Total
	P-50-370.45	F3J290103017	Ni Dissolved, Ni Total
	P-50-376.74	F3J290103018	Ni Dissolved, Ni Total

Table 1-1: Sample Cross-Reference List

Package Identification	Sample ID	Laboratory ID	Analysis Performed
F3J290103 Cont'd	P-50-385.90	F3J290103020	Ni Dissolved, Ni Total
	P-49-222.3	F3J290103021	Ni Dissolved
	P-49-232.3	F3J290103022	Ni Dissolved
	P-49-239.3	F3J290103023	Ni Dissolved
	P-49-249.3 (also MS/MSD)	F3J290103024	Ni Dissolved
	P-49-261	F3J290103025	Ni Dissolved
	P-49-284.3	F3J290103027	Ni Dissolved
	P-49-314.0 (also MS/MSD)	F3J290103028	Ni Dissolved
	P-49-333.0	F3J290103029	Ni Dissolved
	P-49-324.0	F3J290103030	Ni Dissolved
	P-49-340.8	F3J290103031	Ni Dissolved
	P-49-DUP-2 (P-49-340.8)	F3J290103032	Ni Dissolved
	P-51-201.20	F3J290103034	Ni Dissolved, Ni Total
	P-51-226.75	F3J290103035	Ni Dissolved
	P-51-236.75	F3J290103036	Ni Dissolved
	P-51-DUP-2 (P-51-246.75)	F3J290103037	Ni Dissolved
	P-51-246.75	F3J290103038	Ni Dissolved
	P-51-256.75	F3J290103039	Ni Dissolved
	P-51-266.71	F3J290103040	Ni Dissolved
	P-51-276.75	F3J290103041	Ni Dissolved
	P-51-286.75	F3J290103042	Ni Dissolved
	P-51-295.25	F3J290103043	Ni Dissolved, Ni Total
	P-51-301.12	F3J290103044	Ni Dissolved
F3J310287	P-50-413.43	F3J310287001	Ni Total
	P-50-424.08	F3J310287002	Ni Dissolved
	P-50-434.90	F3J310287003	Ni Dissolved, Ni Total
	P-49-394.1 (also MS/MSD)	F3J310287004	Ni Dissolved
	P-49-423.0	F3J310287005	Ni Dissolved, Ni Total
	P-49-444.1	F3J310287006	Ni Dissolved
	P-49-463.2	F3J310287007	Ni Dissolved
	P-51-321.00	F3J310287008	Ni Dissolved, Ni Total
	P-51-327.85	F3J310287010	Ni Dissolved, Ni Total
	P-51-336.85 (Total also MS/MSD)	F3J310287011	Ni Dissolved, Ni Total
	P-51-346.85	F3J310287012	Ni Dissolved, Ni Total

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3J310287 Cont'd	P-51-363.30	F3J310287013	Ni Dissolved, Ni Total
	P-51-371.80	F3J310287014	Ni Dissolved, Ni Total
	P-51-381.80	F3J310287015	Ni Dissolved
F3K080109	P-54-74.15	F3K080109001	Ni Dissolved
	P-54-87.55	F3K080109002	Ni Dissolved
	P-54-97.55	F3K080109003	Ni Dissolved
	P-54-107.55 (also MS/MSD)	F3K080109004	Ni Dissolved
	P-54-117.55	F3K080109005	Ni Dissolved, Ni Total
	P-54-127.55	F3K080109006	Ni Dissolved, Ni Total
	P-54-137.55 (Total also MS/MSD)	F3K080109007	Ni Dissolved, Ni Total
	P-54-DUP-1 (P-54-137.55)	F3K080109008	Ni Dissolved, Ni Total
	P-54-147.55	F3K080109009	Ni Dissolved, Ni Total
	P-54-155.75	F3K080109010	Ni Dissolved, Ni Total
	P-54-165.85	F3K080109011	Ni Dissolved, Ni Total
	P-54-177.55	F3K080109012	Ni Dissolved
	P-54-187.55	F3K080109013	Ni Dissolved
	P-52-EB-1	F3K080109014	Ni Dissolved
	P-52-80.0	F3K080109015	Ni Dissolved, Ni Total
	P-52-90.0	F3K080109016	Ni Dissolved, Ni Total
	P-52-100.0	F3K080109017	Ni Dissolved, Ni Total
	P-52-110.0	F3K080109018	Ni Dissolved
	P-52-120.0	F3K080109019	Ni Dissolved
	P-52-130.0	F3K080109020	Ni Dissolved, Ni Total
	P-52-140.0	F3K080109021	Ni Dissolved, Ni Total
	P-52-150.0	F3K080109022	Ni Dissolved, Ni Total
	P-52-160.0 (Dissolved also MS/MSD)	F3K080109023	Ni Dissolved, Ni Total
	P-52-170.0	F3K080109024	Ni Dissolved, Ni Total
	P-52-DUP-1 (P-52-170.0)	F3K080109025	Ni Dissolved, Ni Total
	P-52-180.0	F3K080109026	Ni Dissolved
	P-58-EB-1	F3K080109027	Ni Total
	P-58-79.65	F3K080109028	Ni Dissolved, Ni Total
	P-58-89.65	F3K080109029	Ni Dissolved
	P-58-99.65	F3K080109030	Ni Dissolved
	P-58-109.65	F3K080109031	Ni Dissolved

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3K080109 Cont'd	P-58-119.65	F3K080109032	Ni Dissolved
	P-58-129.65	F3K080109033	Ni Dissolved
	P-58-139.65 (also MS/MSD)	F3K080109034	Ni Dissolved
	P-58-149.65	F3K080109035	Ni Dissolved
	P-58-159.65	F3K080109036	Ni Dissolved
	P-58-DUP-1 (P-58-159.65)	F3K080109037	Ni Dissolved
	P-58-169.65	F3K080109038	Ni Dissolved, Ni Total
	P-58-179.65	F3K080109039	Ni Dissolved, Ni Total
	P-58-189.65	F3K080109040	Ni Dissolved, Ni Total
	P-58-196.02	F3K080109041	Ni Dissolved
	P-58-213.20	F3K080109042	Ni Dissolved
	P-54-EB-1	F3K080109043	Ni Dissolved, Ni Total
F3K110173	P-58-274.65	F3K110173001	Ni Dissolved, Ni Total
	P-58-DUP-2 (P-58-274.65)	F3K110173002	Ni Dissolved, Ni Total
	P-58-284.65	F3K110173003	Ni Dissolved
	P-58-294.65	F3K110173004	Ni Dissolved
	P-58-304.65	F3K110173005	Ni Dissolved, Cr, Cr+6
	P-58-314.65	F3K110173007	Ni Dissolved, Ni Total
	P-58-323.15	F3K110173008	Ni Dissolved, Ni Total
	P-58-342.25	F3K110173009	Ni Dissolved, Ni Total
	P-58-402.40	F3K110173010	Ni Dissolved, Cr, Cr+6
	P-58-432.05 (Ni Dissolved, Ni Total, Cr, and Cr+6 also MS/MSD)	F3K110173011	Ni Dissolved, Ni Total, Cr, Cr+6
	P-52-224.5	F3K110173012	Ni Dissolved, Ni Total
	P-54-226.55	F3K110173013	Ni Dissolved
	P-54-236.55	F3K110173014	Ni Dissolved
	P-54-246.55	F3K110173015	Ni Dissolved
	P-54-256.55	F3K110173016	Ni Dissolved, Ni Total
	P-54-267.95	F3K110173017	Ni Dissolved
	P-54-DUP-2 (P-54-267.95)	F3K110173018	Ni Dissolved
	P-54-276.4	F3K110173019	Ni Dissolved, Ni Total
	P-54-285.4	F3K110173020	Ni Dissolved, Ni Total
	P-54-296.25	F3K110173021	Ni Dissolved, Ni Total
	P-54-303.55	F3K110173022	Ni Dissolved, Ni Total

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3K110173 Cont'd	P-52-232.3	F3K110173023	Ni Dissolved, Ni Total
	P-52-243.7	F3K110173024	Ni Dissolved
	P-52-254.5	F3K110173025	Ni Dissolved
	P-52-264.5	F3K110173026	Ni Dissolved
	P-52-274.5	F3K110173027	Ni Dissolved
	P-52-283.5	F3K110173028	Ni Dissolved, Ni Total
	P-52-291.7 (also MS/MSD)	F3K110173029	Ni Dissolved
	P-52-299.5	F3K110173030	Ni Dissolved
F3K140242	P-58-471.35	F3K140242001	Ni Dissolved, Ni Total
	P-54-326.25	F3K140242002	Ni Dissolved, Ni Total
	P-54-334.4	F3K140242003	Ni Dissolved, Ni Total
	P-54-342.95 (Total also MS/MSD)	F3K140242004	Ni Dissolved, Ni Total
	P-54-351.25	F3K140242005	Ni Dissolved
	P-54-DUP-3 (P-54-351.25)	F3K140242006	Ni Dissolved
	P-54-360.8	F3K140242007	Ni Dissolved
	P-54-400.5	F3K140242008	Ni Dissolved, Ni Total
	P-52-319.2	F3K140242010	Ni Dissolved, Ni Total
	P-52-327.2	F3K140242011	Ni Dissolved, Ni Total
	P-52-339.2 (also MS/MSD)	F3K140242012	Ni Dissolved
	P-52-364.2	F3K140242013	Ni Dissolved, Ni Total
	P-52-DUP-2 (P-52-364.2)	F3K140242014	Ni Dissolved, Ni Total
	P-52-374.4	F3K140242015	Ni Dissolved, Ni Total
	P-52-395.4	F3K140242016	Ni Dissolved
	P-54-411.05	F3K140242017	Ni Dissolved, Ni Total
F3K210372	P-52-404.45	F3K210372001	Ni Dissolved
	P-52-414.15	F3K210372002	Ni Dissolved, Ni Total
	P-52-444.35	F3K210372003	Ni Dissolved
	P-52-483.38	F3K210372004	Ni Dissolved
	P-52-EB-2	F3K210372005	Ni Total
	EB-P-54-11-17	F3K210372007	Ni Dissolved, Ni Total
	P-54-421.00	F3K210372008	Ni Dissolved
	P-54-431.00	F3K210372009	Ni Dissolved
	P-54-437.05	F3K210372010	Ni Dissolved
	P-53-86.40	F3K210372011	Ni Dissolved, Ni Total

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3K210372 Cont'd	P-53-EB-11-20	F3K210372012	Ni Dissolved, Ni Total
	P-53-76.40	F3K210372013	Ni Dissolved, Ni Total
F3K280120	P-53-96.40	F3K280120001	Ni Dissolved, Ni Total
	P-53-106.40	F3K280120002	Ni Dissolved, Ni Total
	P-53-116.40	F3K280120003	Ni Dissolved, Ni Total
	P-53-126.40	F3K280120004	Ni Dissolved
	P-53-136.40	F3K280120005	Ni Dissolved
	P-53-146.40	F3K280120006	Ni Dissolved, Ni Total
	P-53-DUP-1 (P-53-146.40)	F3K280120007	Ni Dissolved, Ni Total
	P-53-156.40 (also MS/MSD)	F3K280120008	Ni Dissolved
	P-53-165.70	F3K280120009	Ni Dissolved, Ni Total
	P-53-176.40	F3K280120010	Ni Dissolved
	P-53-188.85	F3K280120011	Ni Dissolved, Ni Total
	P-53-212.60	F3K280120012	Ni Dissolved, Ni Total
	P-53-221.35	F3K280120013	Ni Dissolved
	P-53-231.35	F3K280120014	Ni Dissolved
	P-53-238.55	F3K280120015	Ni Dissolved
	P-53-248.35	F3K280120016	Ni Dissolved
	P-53-256.35	F3K280120017	Ni Dissolved
	P-53-266.35	F3K280120018	Ni Dissolved
	P-53-DUP-2 (P-53-266.35)	F3K280120019	Ni Dissolved
	P-53-276.35	F3K280120020	Ni Dissolved
	P-53-286.35	F3K280120021	Ni Dissolved
	P-53-295.50	F3K280120022	Ni Dissolved
	P-53-306.00	F3K280120023	Ni Dissolved
	P-53-313.30 (also MS/MSD)	F3K280120024	Ni Dissolved
	P-34-EB-1	F3K280120025	Ni Total
	P-34-79.55 (Total also MS/MSD)	F3K280120026	Ni Dissolved, Ni Total
	P-34-89.55	F3K280120027	Ni Dissolved, Ni Total
	P-34-99.55	F3K280120028	Ni Dissolved, Ni Total
	P-34-109.55	F3K280120029	Ni Dissolved
	P-34-119.55	F3K280120030	Ni Dissolved
	P-34-129.55	F3K280120031	Ni Dissolved, Ni Total
	P-34-139.55	F3K280120032	Ni Dissolved, Ni Total

Table 1-1: Sample Cross-Reference List

Package Identification	Sample ID	Laboratory ID	Analysis Performed
F3K280120 Cont'd	P-34-DUP-1 (P-34-139.55)	F3K280120033	Ni Dissolved, Ni Total
	P-34-164.55	F3K280120034	Ni Dissolved, Ni Total
	P-34-154.55	F3K280120035	Ni Dissolved, Ni Total
	P-34-174.55	F3K280120036	Ni Dissolved
	P-34-184.55 (Dissolved also MS/MSD)	F3K280120037	Ni Dissolved, Ni Total
	P-34-194.55	F3K280120038	Ni Dissolved, Ni Total
	P-34-204.55	F3K280120039	Ni Dissolved, Ni Total
	P-34-214.55	F3K280120040	Ni Dissolved, Ni Total
	P-34-224.55	F3K280120041	Ni Dissolved, Ni Total
	P-34-234.55	F3K280120042	Ni Dissolved, Ni Total
	P-34-244.55	F3K280120043	Ni Dissolved, Ni Total
	P-34-DUP-2 (P-34-244.55) (Total also MS/MSD)	F3K280120044	Ni Dissolved, Ni Total
	P-34-254.55	F3K280120045	Ni Dissolved, Ni Total
	P-34-264.55	F3K280120046	Ni Dissolved, Ni Total
	P-34-284.55	F3K280120047	Ni Dissolved
	P-34-294.55	F3K280120048	Ni Dissolved
	P-34-304.50	F3K280120049	Ni Dissolved, Ni Total
	P-53-331.10	F3K280120051	Ni Dissolved
	P-53-340.05	F3K280120052	Ni Dissolved, Ni Total
F3L050365	P-34-324.50	F3L050365001	Ni Dissolved, Ni Total
	P-34-334.50 (Total also MS/MSD)	F3L050365002	Ni Dissolved, Ni Total
	P-34-352.73	F3L050365003	Ni Dissolved, Ni Total
	P-34-384.35	F3L050365004	Ni Dissolved, Ni Total
	P-34-394.55 (also MS/MSD)	F3L050365005	Ni Dissolved
	P-34-401.58	F3L050365006	Ni Dissolved
	P-53-366.65	F3L050365008	Ni Dissolved
	P-53-391.6	F3L050365009	Ni Dissolved, Ni Total
	P-53-401.10	F3L050365010	Ni Dissolved
	P-53-410.15	F3L050365011	Ni Dissolved, Ni Total
F3L090146	P-33-EB-1	F3L090146001	Ni Total
	P-33-79.6	F3L090146002	Ni Dissolved
	P-33-89.6	F3L090146003	Ni Dissolved
	P-33-99.6	F3L090146004	Ni Dissolved
	P-33-109.6	F3L090146005	Ni Dissolved

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F3L090146 Cont'd	P-33-119.6	F3L090146006	Ni Dissolved
	P-33-129.6	F3L090146007	Ni Dissolved
	P-33-139.6	F3L090146008	Ni Dissolved
	P-33-149.6 (Total also MS/MSD)	F3L090146009	Ni Dissolved, Ni Total
	P-33-159.6	F3L090146010	Ni Dissolved, Ni Total
	P-33-169.6	F3L090146011	Ni Dissolved
	P-33-179.6	F3L090146012	Ni Dissolved, Ni Total
	P-33-DUP-1 (P-33-169.6)	F3L090146013	Ni Dissolved
	P-33-189.6	F3L090146014	Ni Dissolved, Ni Total
	P-33-198.1	F3L090146015	Ni Dissolved, Ni Total
	P-33-214.6	F3L090146016	Ni Dissolved
	P-33-224.6	F3L090146017	Ni Dissolved
	P-53-426.75	F3L090146018	Ni Total
	P-53-480.90 (Dissolved also MS/MSD)	F3L090146019	Ni Dissolved
F3L120339	P-53-487.40	F3L120339001	Ni Dissolved, Ni Total
	P-53-497.00	F3L120339002	Ni Dissolved
	P-53-504.80	F3L120339003	Ni Dissolved, Ni Total
	P-33-234.6	F3L120339004	Ni Dissolved
	P-33-244.6	F3L120339005	Ni Dissolved, Ni Total
	P-33-254.6	F3L120339006	Ni Dissolved, Ni Total
	P-33-264.6	F3L120339007	Ni Dissolved
	P-33-274.6 (Total also MS/MSD)	F3L120339008	Ni Dissolved, Ni Total
	P-33-284.6	F3L120339009	Ni Dissolved
	P-33-294.6	F3L120339010	Ni Dissolved, Ni Total
	P-33-304.6	F3L120339011	Ni Dissolved, Ni Total
	P-33-DUP-2 (P-33-304.6)	F3L120339012	Ni Dissolved, Ni Total
	P-33-344.3	F3L120339013	Ni Dissolved
	P-33-374.3 (Dissolved also MS/MSD)	F3L120339014	Ni Dissolved, Ni Total
	P-33-412.4	F3L120339015	Ni Dissolved, Ni Total
F3L160348	P-33-423.8	F3L160348001	Ni Dissolved
	P-33-432.6	F3L160348002	Ni Dissolved, Ni Total
	P-33-454.3	F3L160348003	Ni Dissolved
	P-33-481.1 (Dissolved also MS/MSD)	F3L160348004	Ni Dissolved, Ni Total

Table 1-1: Sample Cross-Reference List

Package Identification	Sample ID	Laboratory ID	Analysis Performed
F4A130259	P-31-79.25	F4A130259002	Ni Dissolved
	P-31-89.25	F4A130259003	Ni Dissolved
	P-31-99.25	F4A130259004	Ni Dissolved
	P-31-111.67	F4A130259005	Ni Dissolved
	P-31-EB-2 (also MS/MSD)	F4A130259006	Ni Total
	P-31-124.25	F4A130259007	Ni Dissolved
	P-31-134.25	F4A130259008	Ni Dissolved
	P-31-143.30	F4A130259009	Ni Dissolved
	P-31-184.25	F4A130259010	Ni Total
	P-31-190.40	F4A130259011	Ni Dissolved
	P-31-DUP-1 (P-31-190.40)	F4A130259012	Ni Dissolved
	P-31-199.25 (also MS/MSD)	F4A130259013	Ni Dissolved
	P-31-223.75	F4A130259014	Ni Dissolved
	P-31-233.11	F4A130259015	Ni Dissolved, Ni Total
	P-31-244.25	F4A130259016	Ni Dissolved
	P-31-254.25	F4A130259017	Ni Dissolved
	P-31-263.70	F4A130259018	Ni Dissolved
	P-55-EB-1	F4A130259019	Ni Dissolved, Ni Total
	P-55-74.55	F4A130259020	Ni Dissolved
	P-55-84.10	F4A130259021	Ni Dissolved, Ni Total
	P-55-94.55	F4A130259022	Ni Dissolved, Ni Total
	P-55-104.55	F4A130259023	Ni Dissolved
	P-55-114.55	F4A130259024	Ni Dissolved, Ni Total
	P-55-DUP-1 (P-55-154.55)	F4A130259025	Ni Dissolved
	P-55-124.55	F4A130259026	Ni Dissolved
	P-55-134.55	F4A130259027	Ni Dissolved
	P-55-144.55	F4A130259028	Ni Dissolved, Ni Total
	P-55-154.55 (also MS/MSD)	F4A130259029	Ni Dissolved
	P-55-164.55	F4A130259031	Ni Dissolved
F4A150320	P-31-284.25	F4B150320001	Ni Dissolved, Ni Total
	P-31-294.25	F4B150320002	Ni Dissolved, Ni Total
	P-31-304.25	F4B150320003	Ni Dissolved
	P-31-344.25	F4B150320004	Ni Dissolved
	P-31-351.55	F4B150320005	Ni Dissolved
	P-31-DUP-2 (P-31-351.55)	F4B150320006	Ni Dissolved

Table 1-1: Sample Cross-Reference List

Package Identification	Sample ID	Laboratory ID	Analysis Performed
F4A150320 Cont'd	P-55-174.55	F4B150320008	Ni Dissolved, Ni Total
	P-55-186.15	F4B150320009	Ni Dissolved
	P-55-244.40	F4B150320011	Ni Dissolved
	P-55-254.40	F4B150320012	Ni Dissolved
	P-55-264.40	F4B150320013	Ni Dissolved, Ni Total
	P-55-271.00	F4B150320014	Ni Dissolved
F4A230292	P-31-363.2	F4A230292001	Ni Dissolved
	P-31-374.25	F4A230292002	Ni Dissolved
	P-31-404.25	F4A230292003	Ni Dissolved, Ni Total
	P-56-EB-1	F4A230292004	Ni Dissolved, Ni Total
	P-56-76-55	F4A230292005	Ni Dissolved
	P-56-86.55	F4A230292006	Ni Dissolved, Ni Total
	P-56-96.55	F4A230292007	Ni Dissolved, Ni Total
	P-56-106.55	F4A230292008	Ni Dissolved, Ni Total
	P-56-116.55	F4A230292009	Ni Dissolved, Ni Total
	P-56-126.55	F4A230292010	Ni Dissolved
	P-56-136.55 (also MS/MSD)	F4A230292011	Ni Dissolved
	P-56-146.55	F4A230292012	Ni Dissolved, Ni Total
	P-56-156.55	F4A230292013	Ni Dissolved
	P-56-166.55	F4A230292014	Ni Dissolved
	P-56-176.55	F4A230292015	Ni Dissolved
	P-56-186.55	F4A230292016	Ni Dissolved
	P-56-194.40	F4A230292017	Ni Dissolved
	P-31-414.25	F4A230292018	Ni Dissolved
	P-56-DUP (P-56-86.55)	F4A230292019	Ni Dissolved, Ni Total
F4A300327	P-31-444.25	F4A300327001	Ni Dissolved
	P-55-294.45	F4A300327002	Ni Dissolved
	P-55-304.45	F4A300327003	Ni Dissolved, Ni Total
	P-55-311.95	F4A300327004	Ni Dissolved, Ni Total
	P-55-DUP-2 (P-55-311.95)	F4A300327005	Ni Dissolved, Ni Total
	P-55-334.55 (Total also MS/MSD)	F4A300327006	Ni Dissolved, Ni Total
	P-55-340.35	F4A300327007	Ni Dissolved, Ni Total
	P-55-374.35	F4A300327008	Ni Dissolved
	P-56-388.60	F4A300327010	Ni Dissolved, Ni Total

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F4A300327 Cont'd	P-55-EB-3	F4A300327011	Ni Total
	P-56-211.45	F4A300327012	Ni Dissolved, Ni Total
	P-56-221.45	F4A300327013	Ni Dissolved, Ni Total
	P-56-231.45	F4A300327014	Ni Dissolved
	P-56-241.45	F4A300327015	Ni Dissolved
	P-56-251.45	F4A300327016	Ni Dissolved
	P-56-261.45	F4A300327017	Ni Dissolved
	P-56-305.90	F4A300327018	Ni Dissolved
	P-56-316.45	F4A300327019	Ni Dissolved, Ni Total
	P-56-324.20 (also MS/MSD)	F4A300327020	Ni Dissolved
	P-56-346.60	F4A300327060	Ni Dissolved
	P-56-354.00	F4A300327022	Ni Dissolved
F4B110140	P-55-404.45 (also MS/MSD)	F4B110140001	Ni Dissolved
	P-55-425.35	F4B110140002	Ni Dissolved
	P-55-434.45	F4B110140003	Ni Dissolved, Ni Total
	P-55-442.25	F4B110140004	Ni Dissolved, Ni Total
	P-32-79.95	F4B110140005	Ni Dissolved
	P-32-89.35	F4B110140006	Ni Dissolved
	P-32-99.35	F4B110140007	Ni Dissolved
	P-32-109.35	F4B110140008	Ni Dissolved
	P-32-119.35	F4B110140009	Ni Dissolved
	P-32-128.75	F4B110140010	Ni Dissolved
	P-32-139.35	F4B110140011	Ni Dissolved
F4B130279	P-32-174.35	F4B130279001	Ni Dissolved
	P-32-DUP-1 (P-32-174.35)	F4B130279002	Ni Dissolved
	P-32-184.35	F4B130279003	Ni Dissolved
	P-32-194.35	F4B130279004	Ni Dissolved
	P-32-224.35 (Total also MS/MSD)	F4B130279005	Ni Dissolved, Ni Total
	P-32-234.35	F4B130279006	Ni Dissolved, Ni Total
	P-32-241.01	F4B130279007	Ni Dissolved, Ni Total
	P-32-251.77	F4B130279008	Ni Dissolved
	P-32-259.35	F4B130279009	Ni Dissolved, Ni Total
	P-32-269.35	F4B130279010	Ni Dissolved, Ni Total
	P-32-279.35	F4B130279011	Ni Dissolved

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F4B170134	P-32-289.35 (Dissolved also MS/MSD)	F4B170134002	Ni Dissolved, Ni Total
	P-32-299.35	F4B170134003	Ni Dissolved
	P-32-309.35	F4B170134004	Ni Dissolved, Ni Total
	P-32-352.0	F4B170134005	Ni Dissolved, Ni Total
	P-32-359.25	F4B170134006	Ni Dissolved
	P-32-369.25	F4B170134007	Ni Dissolved
	P-32-379.25	F4B170134008	Ni Dissolved
	P-32-387.80	F4B170134009	Ni Dissolved
	P-32-DUP-2 (P-32-359.25)	F4B170134010	Ni Dissolved
F4B200226	P-32-411.3	F4B200226001	Ni Dissolved
	P-32-419.3	F4B200226002	Ni Dissolved, Ni Total
	P-32-426.7	F4B200226003	Ni Dissolved, Ni Total
	P-32-461.0	F4B200226004	Ni Dissolved, Ni Total
	P-32-481.0	F4B200226005	Ni Dissolved, Ni Total
	P-32-488.9	F4B200226006	Ni Dissolved, Ni Total
	P-32-DUP-3 (P-32-488.9) (Dissolved also MS/MSD)	F4B200226007	Ni Dissolved, Ni Total

1.2. General Considerations

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Although the term is frequently used in discussing methodologies, it applies to all aspects of the analytical system and especially to samples, their measurements, and the actual data output. Accordingly, for the samples and analyses addressed herein, this report summarizes the findings of the review and outlines any deviations from the applicable quality control (QC) criteria referenced in the following documents:

- *Analytical Services Protocol,* New York State Department of Environmental Conservation. Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.

- GTE Operations Support Incorporated (GTEOSI). *Groundwater Investigation Work Plan (QAPP: Appendix C), Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* URS, September 2002.

- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* (SW-846) USEPA, Final Update IIIA. April 1998.

- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* EPA 540-R-01-008. July 2002.

1.3. Analytical Methods

The environmental samples presented in this report were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri, for selected metals, including nickel, analyses. The laboratory used the following USEPA guidance methods for the analyses:

- SW-846 Method 3010A: Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by FLAA or ICP Spectroscopy
- SW-846 Method 6010B: Inductively Coupled Plasma-Atomic Emission Spectrometry
- SW-846 Method 7196A: Chromium, Hexavalent (Colorimetric)

The laboratory assigned an SDG number to a group of samples during the sample log-in process. The SDG number is the means by which the laboratory tracks samples and QC analyses. A total of 1,123[9] samples in a total of 64 SDGs are included in this data validation report. Of the 1,123 total number of samples, 14 were analyzed for total beryllium, 23 for total chromium, 7 for hexavalent chromium, 14 for total copper, 14 for total thallium, 499 for total nickel, 804 for dissolved nickel, and 24 for unspecified[10] nickel. The SDG, field identification, and laboratory identification for each sample are summarized in Table 1-1.

The following sections of this document address distinct aspects of the validation process. Section 2 lists the data QA/QC protocols used to validate the sample data. Section 3 presents a summary of the findings associated with the validation and a discussion of the specific QA/QC deviations and qualifications performed on the sample data. Section 4 presents a discussion of data completeness and usability. Section 5 presents the Data Usability Summary Report (DUSR) summary information.

[9] Each sample may have been analyzed for more than one metal and may have included total recoverable and dissolved fractions.
[10] It was not specified whether total or dissolved nickel was collected.

2. Data Validation Protocols

2.1. Sample Analysis Parameters

The validation of analyses for this project used guidance presented in the QAPP (GTEOSI, 2002), the analytical methodologies, the data validation guidelines referenced in Section 1, and professional judgment[11]. MPI performed a data review of all analytical results to assess data quality. A data review includes an assessment of sample handling protocols and supporting laboratory and field QC parameters. The following is a list of specific analytical information evaluated during the validation:

- Data package completeness review – per the NYSDEC ASP Category B or USEPA CLP deliverables requirements
- Analytical methods performed and test method references
- Sample condition - review of log-in records for cooler temperature, chemical preservation, etc.
- Holding times - comparison of collection, preparation, and analysis dates
- Analytical results - units, values, significant figures
- Sample traceability to raw data
- Initial calibration – comparison to technical guideline criteria
- Continuing calibration – comparison to technical guideline criteria
- Initial and continuing calibration blanks
- Method blank results and laboratory contamination
- Laboratory control sample (LCS) results and comparison to laboratory control limits
- Matrix spike/matrix spike duplicate (MS/MSD) results and comparison to laboratory control limits
- Matrix duplicate analyses
- Field replicate/duplicate results and comparison to technical guideline criteria
- Field QC sample (i.e., equipment blanks and field blanks)
- Reporting limits and Dilutions
- Electronic Data Deliverables (EDDs) – comparison to the hardcopy analytical report

The analytical reports were reviewed for completeness and the accompanying QC data were reviewed for acceptable performance. When QC results indicated poor performance, MPI applied data qualifiers to the

[11] Professional judgment is performed by a USEPA certified data validator with over a decade of environmental laboratory experience.

results to inform the data user of the possible performance problem. These qualifiers are in addition to or a revision of the qualifiers provided by the laboratory. A summary of the data qualifiers used for this review is presented in Section 2.2.

2.2. Data Qualifiers

The following qualifiers have been used by the laboratory for metals analyses:

"U" Non-detect result at the established laboratory reporting limit.

"B" Indicates an estimated value or a value below the established reporting limit but above the method detection limit.

Laboratory qualifiers defined above, are retained in the final database unless revised during the data validation process to one of the following qualifiers:

"U" The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

"J" The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

"UJ" The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

"R" The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

2.3. Data Usability Summary Report Questions

The DUSR determines whether or not the data meets Site-specific criteria for data quality and use. It was developed to review and evaluate the analytical data packages. During the course of this review the following questions were addressed (where applicable):

1. *Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?*

2. *Have all holding times been met?*

3. *Do all the QC data: blanks, calibration standards, calibration verifications, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?*

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

6. *Have the correct data qualifiers been used?*

The answers to the questions presented by the DUSR are presented in the following sections of the report and in the DUSR Summary Information Section, Section 5.

3. Data Quality Evaluation

3.1. Summary

This section summarizes whether the QA/QC parameters reported, which were specified in Section 2.1, met validation criteria. Summary of the individual components of the review are described in the following sub-sections.

3.2. Review of Validation Criteria

3.2.1. Completeness Review

The laboratory provided the analytical report using Contract Laboratory Program (CLP) –like format. With the exception of forms and raw data detailed in Section 3.2.5, all necessary documents were included in the report packages including a case narrative summarizing the QC issues associated with the project analyses.

3.2.2. Test Methods

The laboratory performed the analyses using the analytical test methods listed in Section 1.3. They included USEPA SW-846 Method 3010 (digestion of aqueous samples) followed by Method 6010B (ICP) for metals analysis, and Method 7196A for hexavalent chromium analysis. No method anomalies were noted.

3.2.3. Sample Receipt

The laboratory received 1,123 aqueous samples[12] for metals analysis between March 18, 2003 and February 20, 2003. Samples collected for different analysis from the same profile at the same depth are defined as the same sample within this data validation report. The sample temperatures at the time of receipt by the laboratory were within the recommended temperature range of 4°C ± 2°C for almost all SDGs. Field and laboratory personnel completed the chain-of-custody (COC) documents recording the signature, date, and time of custody transfer. The laboratory recorded the condition of the samples at the time of receipt on a "Conditions Upon Receipt Form." This form identifies whether the containers were received undamaged, within the proper temperature range, at the proper pH, in a container that is sealed with a custody seal on the exterior, and with a completed COC enclosed to identify all samples submitted to the laboratory.

The following problems with sample receipts were found:

- SDG F3E290170: there was a sample container, which was not labeled – the laboratory resolved the sample identity through a process of elimination and informed MPI.
- SDG F3F030298: sample P-15-230.00 was not submitted but was on the COC; sample P-15-228.00 was not written on the COC but was submitted – the laboratory made corrections after contacting MPI. Also, samples P-D-207.1 and P-D-197.1 were preserved at the laboratory subsequent to checking the pH – no data validation qualifications are necessary.
- SDG F3F120220: samples P-C-159.6 and P-C-169.6 were crossed off the COC by accident. The samples were received by the laboratory in good condition.

[12] Each sample may have been analyzed for more than one metal and may have included total recoverable and dissolved fractions.

- SDG F3F260187: sample FB-6-24 was relabeled on the COC as P-23-FB1, but was not relabeled on one of the sample bottles.

- SDG F3G110256: sample P-35-DUP-1 was mistakenly documented as P-35-DUP-2 during the laboratory's sample log-in process, resulting in the wrong sample ID reported – the ID was manually corrected during the validation process.

- SDG F3G150156: three samples were received at the laboratory with no sample ID: two were identified based on sampling time, the other one was matched based on what was left on the COC as P-25-320.0 (this bottle's sampling time did not match any samples on the COC).

- SDG F3G250374: sample P-42-79.6 on the COC was labeled as P-42-79.5 on the sample bottle. The COC designation was used. Also, bottle for sample P-42-EB-2 was not received by the laboratory; and therefore, could not be analyzed.

- SDG F3G290207: sample P-42-336.8 was labeled as P-42-339.8 on the sample bottle; the laboratory data are labeled as P-42-339.8 – the ID was manually corrected during the validation process. The COC also had sample TB-724728 included, which was not submitted for analysis.

- SDG F3H060192: a labeled bottle for sample P-45-71.25 was received by the laboratory but was not included in the COC. The laboratory added the sample for nickel analysis on the COC.

- SDG F3H130195: samples P-45-291.65 and P-45-311.65 were mistakenly documented as P-45-291.25 and P-45-311.25, respectively, during the laboratory's sample log-in process, resulting in the wrong sample ID reported – the ID was manually corrected during the validation process.

- SDG F3H180106: all samples were received at the laboratory at 29 degrees Celsius. All of the ice within the shipping cooler had melted as it took Federal Express four days to deliver the cooler. No qualification actions are performed because the concentration of nickel is not expected to be affected with this increase in temperature.

- SDG F3H270230: the sample bottle labeled as P-37-265.85 is labeled as P-37-264.85 on the COC. The correct ID is P-37-265.85 and was manually corrected on the reports during this validation process.

- SDG F3H280315: samples P-46-330.21 and P-46-307.69 had Cr+6 requested on the COC; however, the laboratory was unable to perform the analysis because the samples received were preserved with HNO3.

- SDG F3I040177: sample P-44-79.3 was not listed on the COC. Also, sample P-44-109.8 required pH adjustment to <2 at the laboratory as the pH was received at 5. No validation qualification is necessary.

- SDG F3I090305: sample P-47-DUP-1 was not submitted but was on the COC. The analysis was not performed.

- SDG F3I230231: sample P-29-318.9 was mistakenly documented as P-29-389.9 during the laboratory's sample log-in process, resulting in the wrong sample ID reported – the ID was manually corrected during the validation process. Samples P-29-310.2 and P-29-360.0 for hexavalent chromium had already exceeded the 24 hour holding time by the time they were shipped to the laboratory.

- SDG F3J030259: samples P-30-89.50 and P-30-99.50 were mistakenly documented as P-30-89.55 and P-30-99.55, respectively, during the laboratory's sample log-in process, resulting in the wrong sample ID reported – the ID was manually corrected during the validation process. This SDG had both total and dissolved nickel samples. The laboratory only identified some of the dissolved samples as dissolved. The IDs were manually corrected to reflect total and dissolved samples during the validation process to maintain consistency for this SDG.

- SDG F3J070236: samples P-30-224.55, P-30-232.85, P-30-244.5, P-30A-260.85, P-30A-269.00, and P-18-EB-1 were labeled for dissolved nickel on the COC; however, the bottles were not labeled for dissolved or filtered. The laboratory correctly identified the samples as for dissolved. Sample P-30A-307.4 was requested for both dissolved and total nickel. The laboratory performed both analyses but had identified on both reports as total. One of them was hand corrected as dissolved, through the validation process, based on time of analysis in association with other dissolved nickel analysis.

- SDG F3J110172: samples P-18-257.65 and P-18-267.65 were labeled for dissolved nickel on the COC; however, the bottles were not labeled for dissolved or filtered. The laboratory correctly identified the samples as for dissolved.

- SDG F3J290103: sample P-51-295-25 was submitted for total nickel, in addition to the dissolved nickel that was specified on the COC. Both analyses were performed.

- SDG F3K080109: sample P-54-EB-1 was received for total and dissolved nickel but was not listed on the COC. The laboratory added it onto the COC.

- SDG F3K110173: sample P-54-267.95 was mistakenly documented as P-54-268.95 during the laboratory's sample log-in process, resulting in the wrong sample ID reported; the ID is manually corrected during the validation process. Samples P-58-304.65 and P-58-402.40 were not at the correct pH when received at the laboratory; the laboratory preserved it at receipt. The laboratory did not document the specific fraction - no data validation qualifications are necessary.

- SDG F3K210372: sample P-53-86.40 was mistakenly documented as P-54-86.40 during the laboratory's sample log-in process, resulting in the wrong sample ID reported; the ID was manually corrected during the validation process.

- SDG F3L090146: sample P-53-426.75 was identified as total on the COC and as filtered on the sample container. The laboratory correctly identified it as total.

- SDG F4A230292: sample P-56-DUP was received for total and dissolved nickel but was not listed on the COC. The laboratory added it onto the COC.

- SDG F4A300327: sample P-56-388.60 was received for total and dissolved nickel and sample P-55-EB-3 was received for total nickel, but they were not listed on the COC. The laboratory added them onto the COC. Three samples were identified as for dissolved nickel on the COC but not on the sample bottles. The laboratory correctly identified them as dissolved for their analysis.

- SDG F4B110140: sample P-32-EB-1 for total nickel was submitted to the laboratory but was crossed off on the COC by mistake. The laboratory should have analyzed it but did not.

There were no custody seals attached to individual sample containers. No qualification is necessary because the exterior of the shipment coolers had intact custody seals. However, some cooler exteriors

were noted to have no custody seals: SDGs F3F120220, F3F170126, F3F260187, F3G150156, F3I150101, F3L090146, F3L160348, and F3B200226. Based on professional judgment, no qualifications are performed because the custodies during shipment were maintained by Federal Express and the coolers were shipped over-night with early morning arrival at the laboratory.

3.2.4. Holding Times

The laboratory performed all beryllium, copper, nickel, thallium, and total chromium analyses within the EPA-recommended holding time of 180 days for acid preserved samples.

The holding time for hexavalent chromium is 24 hours from time of sample collection. Holding time for the following hexavalent chromium samples were not met:

- SDG F3I230231: samples P-29-310.2 and P-29-360.0. The samples were received outside of holding time. Since the hexavalent chromium results for these two samples were non-detects, the results were qualified as unusable, "R."

- SDG F3K110173: samples P-58-304.65 and P-58-402.40. The samples were received outside of holding time. Since the hexavalent chromium results for these two samples were non-detects, the results were qualified as unusable, "R."

3.2.5. Analytical Results

For each sample tested, the laboratory provided the analytical test information using a laboratory standard format, which shows critical information pertaining to the analyses performed. The information provided includes the following: the laboratory name; the project name; the analysis type; the laboratory sample ID; matrix; date sampled; date received; preparation batch ID; the result; the reporting limit; the units of measure; the laboratory method; dilution factor; analysis time; preparation date; analysis date; work order number, and laboratory qualifiers (if any). The laboratory provided all the appropriate forms for the requested methods with the following exceptions.

- SDG F3I040177: chromium calibration forms were not included. The chromium information missing in the calibration forms were found within the raw data.

- SDG F3K110173: hexavalent chromium calibration forms and raw data were not included.

- SDG F3K210372: five results for total nickel and four results for dissolved nickel analyses were mistakenly reported with the wrong values on the reporting forms (Form 1). The results were corrected from the raw data during the validation process.

- SDG F3J240204: sample P-51-177.78 was mistakenly logged in at the laboratory as P-49-177.78. The ID was manually corrected on the report form (Form 1) during the validation process.

3.2.6. Traceability to Raw Data

Traceability of the metals analyses is established by the digestion (preparation) logs. These forms list the project samples analyzed per laboratory batch processed and the corresponding QC samples (e.g., preparation blank and laboratory control sample) performed with the project samples. All project samples analyzed, for all SDGs, were included on the applicable forms.

3.2.7. Initial Calibration

The laboratory prepared an initial calibration (ICAL) curve for each analyte in accordance with method criteria. All ICALs are acceptable. Initial calibration verification (ICV) standards were analyzed immediately after each ICAL, with recoveries all within ± 10% of the true values for all analytes. All ICVs are acceptable.

3.2.8. Continuing Calibration Verification

The continuing calibration verification (CCV) standards were analyzed after the ICALs and after every 10 project samples as required by the reference test method. The percent recoveries were all within ± 10% of the true values for all analytes. All CCVs are acceptable.

3.2.9. Initial and Continuing Calibration Blanks

The initial calibration blank (ICB) and continuing calibration blanks (CCB) were analyzed after the ICALs and after every 10 project samples as required by the reference test method. In general, most initial and continuing calibration blank results were less than the laboratory reporting limit, but in a few cases the blank results were greater than the laboratory MDL or (-MDL). For these cases, if an analyte in the associated field samples was detected at a concentration greater than the MDL but less than the laboratory reporting limit, the validation process qualified the result to account for the potential contamination associated with the analysis system. A summary of the samples and analytes that were revised due to laboratory contamination are presented in Table 3-1.

Table 3-1. *Evaluation of Laboratory Initial and Continuing Calibration Blanks*

Package Identification	***Sample ID***	***Analyte***	***Action***
F3C190235	MW-10	Beryllium	Revise to "U" non-detect
F3D290160			None
F3E020153	P-F-96.48 P-F-106.46	Nickel	Revise to "U" non-detect
F3E090278			None
F3E140308	P-26-86.8 P-26-96.8 P-26-106.8 P-26-116.8 P-26-126.8 P-26-136.8 P-26-146.8	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL.
F3E160130			None
F3E230179			None
F3E200165			None
F3E290170			None
F3F030298			None
F3F050171			None
F3F120220			None
F3F170126			None
F3F180192			None

Table 3-1. *Evaluation of Laboratory Initial and Continuing Calibration Blanks*

Package Identification	***Sample ID***	***Analyte***	***Action***
F3F200145			None
F3F260187	P-23-80.1 P-23-90.1 P-23-100.1 P-23-110.1 P-23-130.1 P-23-140.1 P-23-150.1 P-23-170.1 P-23-180.1 P-23-DUP-1	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL.
F3F270132			None
F3G010309	P-23-262.0 P-23A-293.50	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL.
F3G030162	P-23A-DUP.1 P-23A-347.6	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL.
F3G110256	P-25-79.7 P-25-89.7 P-25-99.1 P-25-139.7 P-25-149.7 P-25-159.7 P-25-169.7 P-25-179.7 P-25-189.7 P-25-199.7 P-25-209.7 P-25-219.7 P-25-DUP-1 P-35-77.2 P-35-87.2 P-35-137.2 P-35-147.2 P-35-157.2 P-35-167.2 P-35-177.2 P-35-DUP-1	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL.

Table 3-1. *Evaluation of Laboratory Initial and Continuing Calibration Blanks*

Package Identification	***Sample ID***	***Analyte***	***Action***
F3G150156	P-25-229.5 P-25-239.5 P-25-249.5 P-25-259.5 P-25-269.5 P-25-275.8 P-25-DUP-2 P-25-290.0 P-25-300.0 P-25-310.0 P-25-320.0 P-25-330.0 P-25-340.0 P-25-349.4 P-25-379.2 P-35-187.2 P-35-197.2 P-35-207.2 P-35-227.2 P-35-237.2 P-35-247.2 P-35-257.2 P-35-267.2 P-35-277.2 P-35-322.2 P-35-332.2 P-35-DUP-2 P-35-342.2 P-35-347.2	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL (blanks were < (-MDL)).
F3G230216	P-H-76.8 P-H-86.8 P-H-106.8 P-H-116.8	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL.
F3G250374	P-H-126.8 P-H-DUP1 P-H-136.8 P-H-146.8 P-H-156.8 P-H-166.8 P-H-176.8 P-H-186.8 P-42-189.6 P-42-197.7 P-42-202.7 P-42-DUP-1 P-42-99.6 P-42-109.6 P-42-139.6 P-42-149.6 P-42-159.6 P-42-169.4	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL.
F3G290207	P-H-226.55	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL.
F3H010243			None

Table 3-1. *Evaluation of Laboratory Initial and Continuing Calibration Blanks*

Package Identification	*Sample ID*	*Analyte*	*Action*
F3H060192	P-20-79.60 P-20-89.60 P-20-99.60 P-20-109.60 P-20-119.60 P-45-81.25 P-45-91.25 P-45-101.25 P-45-111.25 P-45-121.25 P-45-131.25 P-45-DUP1	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL.
F3H080219	P-20-189.60 P-20-DUP1 P-45-151.25 P-45-167.25 P-45-197.25 P-45-207.25 P-45-217.25 P-45-227.25 P-45-237.25	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL.
F3H130195	P-20-359.60 P-20-379.60 P-20-369.60	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL.
F3H180106			None
F3H210288			None
F3H220246			None
F3H270230			None
F3H280315			None
F3I040177	P-44-89.8 P-44-99.3 P-44-DUP 1 P-44-109.8 P-44-121.55 P-44-79.3	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL.
	P-46-389.28	Chromium	Revise to "U" non-detect at PQL, for all detects < PQL.
F3I050189	P-44-131.1 P-44-139.8 P-44-149.8 P-44-159.8 P-44-169.8 P-44-179.8 P-44-199.8 P-47-77.1 P-47-87.08	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL.
F3I090305			None
F3I120107			None
F3I150101			None
F3I180259			None

Table 3-1. *Evaluation of Laboratory Initial and Continuing Calibration Blanks*

Package Identification	***Sample ID***	***Analyte***	***Action***
F3I230231	P-29-278.4 P-29-289.85 P-29-299.85 P-29-310.2 P-29-318.9 P-29-329.85 P-29-DUP-2 P-29-339.5 P-29-360.0 P-29-369.2 P-38-166.3 P-38-176.3 P-38-186.3 P-38-216.3 P-38-226.3 P-38-312.9 P-38-322.9 P-38-DUP-2 P-38-332.3 P-38-341.1 P-43-264.85 P-43-274.85 P-43-284.85	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL.
	P-29-310.2	Chromium	Revise to "U" non-detect at PQL, for all detects < PQL.
F3I250196	P-38-370.1 P-38-381.3 P-38-391.3 P-38-DUP-3 P-29-410.7	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL.
F3J030259	P-30-149.50	Nickel Dissolved	Revise to "U" non-detect at PQL, for all detects < PQL (blanks were < (-MDL)).
F3J070236	P-18-76.65 P-18-86.65 P-18-96.65 P-18-106.65 P-18-116.65 P-18-126.65 P-18-136.65 P-18-146.65 P-18-156.65 P-18-DUP-1 P-18-166.65 P-18-176.65 P-18-186.65	Nickel Dissolved	Revise to "U" non-detect at PQL, for all detects < PQL.
F3J110172			None
F3J240204	P-50-198.55 P-51-77.78 P-51-117.78 P-51-137.78 P-51-158.02	Nickel Dissolved	Revise to "U" non-detect at PQL, for all detects < PQL.
F3J290103			None
F3J310287	P-51-363.30 P-51-371.80	Nickel Total	Revise to "U" non-detect at PQL, for all detects < PQL.

Table 3-1. *Evaluation of Laboratory Initial and Continuing Calibration Blanks*

Package Identification	***Sample ID***	***Analyte***	***Action***
F3J310287 Cont'd	P-50-434.90 P-51-321.00 P-51-327.85 P-51-371.80 P-51-381.80	Nickel Dissolved	Revise to "U" non-detect at PQL, for all detects < PQL.
F3K080109	P-54-117.55 P-54-127.55 P-54-137.55 P-54-DUP-1 P-54-147.55 P-54-155.75 P-54-165.85 P-52-80.0 P-52-90.0 P-52-100.0 P-52-130.0 P-52-140.0 P-58-79.65	Nickel Total	Revise to "U" non-detect at PQL, for all detects < PQL.
	P-52-80.0 P-52-90.0 P-52-100.0 P-52-110.0 P-52-120.0 P-52-130.0 P-52-140.0 P-58-79.65 P-58-89.65 P-58-99.65 P-58-109.65 P-58-119.65 P-58-189.65	Nickel Dissolved	Revise to "U" non-detect at PQL, for all detects < PQL.
F3K110173	P-58-304.65 P-58-402.40	Chromium	Revise to "U" non-detect at PQL, for all detects < PQL.
	P-58-314.65 P-58-323.15 P-54-256.55 P-54-276.4 P-54-285.4 P-54-296.25 P-54-303.55	Nickel Total	Revise to "U" non-detect at PQL, for all detects < PQL.
F3K140242			None
F3K210372	P-52-404.45 P-52-483.38 P-54-421.00 P-54-431.00 P-54-437.05 P-53-86.40 P-53-76.40	Nickel Dissolved	Revise to "U" non-detect at PQL, for all detects < PQL.

Table 3-1. *Evaluation of Laboratory Initial and Continuing Calibration Blanks*

Package Identification	***Sample ID***	***Analyte***	***Action***
F3K280120	P-53-96.40 P-53-106.40 P-53-116.40 P-53-126.40 P-53-136.40 P-53-146.40 P-53-DUP-1 P-53-156.40 P-53-165.70 P-53-176.40 P-53-188.85 P-53-212.60 P-53-221.35 P-53-231.35 P-53-238.55	Nickel Dissolved	Revise to "U" non-detect at PQL, for all detects < PQL.
F3L050365			None
F3L090146			None
F3L120339			None
F3L160348			None
F4A130259	P-55-94.55 P-55-114.55 P-55-144.55	Nickel Total	Revise to "U" non-detect at PQL, for all detects < PQL.
	P-31-79.25 P-31-89.25 P-31-111.67 P-31-124.25 P-31-134.25 P-31-190.40 P-31-DUP-1 P-31-223.75 P-31-233.11 P-31-263.70 P-55-94.55 P-55-104.55 P-55-114.55 P-55-DUP-1 P-55-124.55 P-55-134.55 P-55-144.55 P-55-154.55 P-55-164.55	Nickel Dissolved	Revise to "U" non-detect at PQL, for all detects < PQL.
F4A150320	P-31-294.25 P-31-304.25 P-31-344.25 P-55-174.55 P-55-186.15	Nickel Dissolved	Revise to "U" non-detect at PQL, for all detects < PQL
F4A230292	P-31-404.25 P-56-116.55	Nickel Total	Revise to "U" non-detect at PQL, for all detects < PQL.

Table 3-1. *Evaluation of Laboratory Initial and Continuing Calibration Blanks*

Package Identification	***Sample ID***	***Analyte***	***Action***
F4A230292 Cont'd	P-31-404.25 P-56-96.55 P-56-106.55 P-56-116.55 P-56-126.55 P-56-146.55 P-56-156.55 P-56-186.55 P-56-194.40 P-31-414.25	Nickel Dissolved	Revise to "U" non-detect at PQL, for all detects < PQL.
F4A300327	P-55-311.95 P-55-DUP-2 P-55-334.55 P-55-340.35 P-56-388.60	Nickel Total	Revise to "U" non-detect at PQL, for all detects < PQL.
	P-55-304.45 P-55-311.95 P-55-DUP-2 P-55-334.55 P-55-340.35 P-55-374.35 P-56-388.60 P-56-211.45 P-56-221.45 P-56-241.45 P-56-251.45 P-56-316.45	Nickel Dissolved	Revise to "U" non-detect at PQL, for all detects < PQL
F4B110140	P-55-434.45 P-55-442.25	Nickel Total	Revise to "U" non-detect at PQL, for all detects < PQL
F4B130279	P-32-224.35 P-32-234.35 P-32-241.01	Nickel Total	Revise to "U" non-detect at PQL, for all detects < PQL
F4B170134			None
F4B200226	P-32-426.7	Nickel Total	Revise to "U" non-detect at PQL, for all detects < PQL

3.2.10. Laboratory Method Blanks (Preparation Blanks)

There were contaminants detected in some preparation blanks. When contamination is detected, the corresponding project sample results for the identified contaminants were revised to non-detect if the associated sample results were less than five times the method blank results in accordance with the QAPP (GTEOSI, 2002). A summary of the samples and analytes that were revised due to laboratory contamination are presented in Table 3-2.

Table 3-2. *Evaluation of Laboratory Method Blanks*

Package Identification	***Sample ID***	***Analyte***	***Action***
F3C190235			None
F3D290160			None
F3E020153			None
F3E090278			None
F3E140308			None
F3E160130			None
F3E230179			None
F3E200165			None
F3E290170			None
F3F030298			None
F3F050171			None
F3F120220			None
F3F170126			None
F3F180192			None
F3F200145			None
F3F260187			None
F3F270132			None
F3G010309			None
F3G030162			None
F3G110256	P-35-137.2* P-35-147.2* P-35-157.2* P-35-167.2* P-35-177.2* P-35-DUP-1*	Nickel	Revised to "U" (non-detect)

Table 3-2. *Evaluation of Laboratory Method Blanks*

Package Identification	***Sample ID***	***Analyte***	***Action***
F3G150156	P-25-229.5* P-25-239.5* P-25-249.5* P-25-259.5* P-25-269.5* P-25-275.8* P-25-DUP-2* P-25-290.0* P-25-300.0* P-25-310.0* P-25-320.0* P-25-330.0* P-25-340.0* P-25-349.4* P-25-379.2* P-35-187.2* P-35-197.2* P-35-207.2* P-35-217.2 P-35-227.2* P-35-237.2* P-35-247.2* P-35-257.2* P-35-267.2* P-35-277.2* P-35-322.2* P-35-332.2* P-35-DUP-2* P-35-342.2* P-35-347.2*	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL (blanks were < (-MDL)).
F3G230216			None
F3G250374			None
F3G290207			None
F3H010243			None
F3H060192			None
F3H080219			None
F3H130195	P-20-359.60* P-20-379.60* P-20-369.60*	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL (blanks were < (-MDL)).
F3H180106			None
F3H210288			None
F3H220246			None
F3H270230			None
F3H280315			None
F3I040177			None
F3I050189			None

Table 3-2. *Evaluation of Laboratory Method Blanks*

Package Identification	*Sample ID*	*Analyte*	*Action*
F3I090305	P-46-480.25 P-46-490.25 P-44-DUP-2 P-44-257.1 P-44-284.85 P-44-299.85 P-44-349.8 P-47-97.1	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL (blanks were < (-MDL)).
F3I120107			None
F3I150101			None
F3I180259			None
F3I230231			None
F3I250196			None
F3J070236	P-18-76.65 P-18-96.65 P-18-106.65 P-18-126.65 P-18-136.65 P-18-156.65 P-18-DUP-1 P-18-186.65	Nickel Total	Revise to "U" non-detect at PQL, for all detects < PQL (blanks were < (-MDL)).
F3J110172			None
F3J030259			None
F3J240204	P-49-74.25 P-49-177.3	Nickel Total	Revise to "U" non-detect at PQL, for all detects < PQL (blanks were < (-MDL)).
	P-50-189.90 P-49-74.25 P-49-104.6 P-49-134.3 P-50-198.55* P-51-77.78*	Nickel Dissolved	Revise to "U" non-detect at PQL, for all detects < PQL (blanks were < (-MDL)).
F3J290103			None
F3J310287	P-50-434.90* P-51-321.00* P-51-327.85* P-51-371.80* P-51-381.80*	Nickel Dissolved	Revised to "U" (non-detect)
F3K080109			None
F3K110173	P-58-304.65* P-58-402.40*	Chromium	Revised to "U" (non-detect)
F3K140242			None
F3K210372			None
F3K280120			None
F3L050365			None
F3L090146			None
F3L120339			None

Table 3-2. *Evaluation of Laboratory Method Blanks*

Package Identification	*Sample ID*	*Analyte*	*Action*
F3L160348			None
F4A130259			None
F4A150320			None
F4A230292			None
F4A300327			None
F4B110140			None
F4B130279			None
F4B170134			None
F4B200226			None

* - Also qualified due to other types of blank contamination

3.2.11. Laboratory Control Sample Results

The laboratory analyzed an LCS for each QC batch. The percent recoveries were within laboratory control limits for all QC batches.

3.2.12. Matrix Spike Analyses

Matrix Spike (MS) or MS/MSD samples were submitted to the laboratory for analysis. The MS sample analysis is designed to provide information about the effects of a sample matrix on the sample preparation procedures and the measurement methodology. When the MS/MSD pair is performed, precision can also be measured. All percent recoveries (%R) and relative percent differences (RPD) were within criteria ($75 \leq \%R \leq 125$; $RPD \leq 20\%$) - no qualifications were required.

The laboratory performed an MS and Matrix Duplicate (MS/MD) pair for the first SDG (F3C190235), see Section 3.2.13. For all subsequent SDGs, the laboratory performed MS/MSD pairs, when performed. Both techniques offered similar QC indicators of accuracy and precision with respect to the sample matrices. Table 1-1 specified what technique was performed, and on which samples.

For the following, matrix effect of the samples for accuracy and precision was not evaluated:

- For SDGs F3E160130, F3E200165, F3F050171, F3G230216, F3H010243, F3I050189, and F3I250196, MS/MSDs were performed only on samples from other clients of the laboratory.
- For SDGs F3E230179, SDG F3F270132, F3G010309, F3G030162, F3H060192, F3H180106, and F3K210372, no MS/MSDs were performed.
- For SDG F3F260187, the laboratory performed MS/MSD on the field blank sample; MS/MSD should never be performed on field blank samples, as they offer no information on matrix effects of the actual field samples.
- For SDGs F3H220246 F3H270230, F3J240204, and F4A130259, the laboratory performed MS/MSDs on the equipment blank samples; MS/MSD should never be performed on equipment blank samples, as they offer virtually no information on matrix effects of the actual field samples.

Of the 1,123 samples submitted to the laboratory, 82 of them were also analyzed for MS/MSD. This represented a rate of 7.2 percent which exceeds the QAPP's minimum required rate of 5 percent.

3.2.13. Matrix Duplicate Analyses

One matrix duplicate (MD) sample was analyzed by the laboratory. The MD sample was analyzed in conjunction with the MS sample in place of the MS/MSD pair (see Section 3.2.12). The objective of the duplicate sample analysis is to demonstrate acceptable method precision by the laboratory at the time of analysis. An evaluation of the precision of the laboratory analysis procedure was made based on RPDs calculated for the original and duplicate sample results. Calculations were made only when both results were above the laboratory reporting limits. All MD RPDs were within the criterion of ≤ 20% - no qualifications were required.

3.2.14. Field Duplicate Analyses

Seventy-four project samples were submitted as blind field duplicates. This represents 95 duplicate data points. By design, the laboratory was never made aware of which field samples the blind field duplicates were associated with. An evaluation of the precision of the field sampling procedure (as well as the laboratory analysis procedure) was made based on RPD calculated for the original and duplicate sample results. Blind field duplicate samples were collected and analyzed to assess the overall sampling and analytical precision. Evaluation calculations were made only when both results were above the laboratory reporting limits. The RPD values for most duplicates were within the criterion of ≤ 30%.

- For SDG F3G290207, the RPD for the duplicate set (P-42-329.8 and P-42-DUP-2) was 83.6%. Since the sample results were less than 5 times
- (5X) the laboratory's reporting limit, no qualification actions are taken, per the *National Functional Guidelines for Inorganic Data Review*. However, even though the associated batch samples are not qualified, the duplicate pair itself was qualified based on professional judgment.

- For SDG F3I050189, the RPD for the duplicate set (P-46-409.34 and P-46-DUP-3) was 42.8%. Since the sample results were less than 5X the laboratory's reporting limit, no qualification actions are taken, per the *National Functional Guidelines for Inorganic Data Review*. However, even though the associated batch samples are not qualified, the duplicate pair itself was qualified based on professional judgment.

- For SDG F3J290103, the RPD for the duplicate set (P-49-340.8 and P-49-DUP-2) was 38.6%. Since the sample results were less than 5X the laboratory's reporting limit, no qualification actions are taken, per the *National Functional Guidelines for Inorganic Data Review*. However, even though the associated batch samples are not qualified, the duplicate pair itself was qualified based on professional judgment.

- For SDG F3K140242, the RPD for the duplicate set (P-52-364.2 and P-52-DUP-2) for total nickel was 61.3%. Since the sample results were less than 5X the laboratory's reporting limit, no qualification actions are taken, per the *National Functional Guidelines for Inorganic Data Review*. However, even though the associated batch samples are not qualified, the duplicate pair itself was qualified based on professional judgment.

- For SDG F3L120339, the RPD for the duplicate set (P-33-304.6 and P-33-DUP-2) for total nickel was 83.7%. Since the sample results were less than 5X the laboratory's reporting limit, no qualification actions are taken, per the *National Functional Guidelines for Inorganic Data Review*. However, even though the associated batch samples are not qualified, the duplicate pair itself was qualified based on professional judgment.

- For SDG F4B170134, the RPD for the duplicate set (P-32-359.25 and P-32-DUP-2) for dissolved nickel was 53.0%. Since the sample results were less than 5X the laboratory's reporting limit, no qualification actions are taken, per the *National Functional Guidelines for Inorganic Data Review*. However, even though the associated batch samples are not qualified, the duplicate pair itself was qualified based on professional judgment.

- For SDG F4B200226, the RPD for the duplicate set (P-32-488.9 and P-32-DUP-3) for total nickel was 35.1%. Since the sample results were less than 5X the laboratory's reporting limit, no qualification actions are taken, per the *National Functional Guidelines for Inorganic Data Review*. However, even though the associated batch samples are not qualified, the duplicate pair itself was qualified based on professional judgment.

It should be noted that QAPP requirements (GTEOSI, 2002) specified that a field duplicate sample be collected at a rate of one sample for every ten samples (collection rate of 10%). One-hundred-twenty-six (126) field duplicates data points were required to be collected for the project since a total of 1,255[13] project samples were submitted (not including other field QC samples collected) for analysis. The actual collection rate performed was equivalent to 7.6 percent[14]. Since an adequate number of field duplicate samples were not collected, the precision objective for the project was not in compliance. Table 3-3 shows the evaluation of field duplicate samples submitted.

Table 3-3. *Evaluation of Field Duplicate Samples*

Package Identification	***Sample ID***	***Analytes***	***Action***
F3C190235	MW-3		None
F3E090278	P-27-99.75		None
F3F030298	P-15-218.00		None
	P-D-217.1		None
F3F050171	P-D-321.95		None
F3F120220	P-C-99.6		None
F3F170126	P-C-320.3		None
F3F200145	P-24-167.3		None
	P-24-287.3		None
F3F260187	P-23-180.1		None
F3G030162	P-23A-347.6		None
F3G110256	P-25-179.7		None
	P-35-177.2		None
F3G150156	P-25-275.8		None
	P-35-332.2		None
F3G250374	P-H-126.8		None
	P-42-202.7		None
	P-H-206.55		None

[13] This number represents 1,350 (non-field blank/equipment blank) total data points minus 95 duplicate sample data points.
[14] Value = (95 duplicate data / 1,255 discrete sample data) X 100.

Table 3-3. *Evaluation of Field Duplicate Samples*

Package Identification	***Sample ID***	***Analytes***	***Action***
F3G290207	P-42-329.8 P-42-DUP-2	Nickel	"J" (RPD > 30%)
F3H060192	P-45-81.25		None
F3H080219	P-20-169.60		None
F3H130195	P-20-427.99		None
F3H180106	P-45-366.39		None
F3H220246	P-36-15.7		None
	P-46-139.60		None
F3H270230	P-46-275.42		None
	P-37-304.8		None
F3I040177	P-44-99.3		None
F3I050189	P-46-409.34 P-46-DUP-3	Nickel	"J" (RPD > 30%)
F3I090305	P-44-239.85		None
	P-44-339.8		None
	P-47-163.9		None
	P-47-187.0		None
F3I120107	P-43-119.88		None
	P-47-317.0		None
F3I180259	P-29-109.5		None
	P-38-116.7		None
F3I230231	P29-329.85		None
	P-38-322.9		None
	P-43-246.68		None
F3I250196	P-38-381.3		None
F3J030259	P-30-204.55	Nickel Dissolved	None
	P-30-204.55	Nickel Total	None
F3J070236	P-30A-298.6	Nickel Dissolved	None
	P-30A-298.6	Nickel Total	None
	P-18-156.65	Nickel Dissolved	None
	P-18-156.65	Nickel Total	None
F3J110172	P-30A-406.55	Nickel Dissolved	None
	P-30A-406.55	Nickel Total	None
	P-18-247.65	Nickel Dissolved	None
	P-18-247.65	Nickel Total	None

Table 3-3. *Evaluation of Field Duplicate Samples*

Package Identification	*Sample ID*	*Analytes*	*Action*
F3J240204	P-50-129.90	Nickel Dissolved	None
	P-49-167.3	Nickel Dissolved	None
	P-51-97.78	Nickel Dissolved	None
F3J290103	P-50-342.60	Nickel Total	None
	P-50-342.60	Nickel Dissolved	None
	P-49-340.8 P-49-DUP-2	Nickel Dissolved	"J" (RPD > 30%)
	P-51-246.75	Nickel Dissolved	None
F3K080109	P-54-137.55	Nickel Total	None
	P-54-137.55	Nickel Dissolved	None
	P-52-170.0	Nickel Total	None
	P-52-170.0	Nickel Dissolved	None
	P-58-159.65	Nickel Dissolved	None
F3K110173	P-58-274.65	Nickel Total	None
	P-58-274.65	Nickel Dissolved	None
	P-54-267.95	Nickel Dissolved	None
F3K140242	P-54-351.25	Nickel Total	None
	P-52-364.2 P-52-DUP-2	Nickel Total	"J" (RPD > 30%)
	P-52-364.2	Nickel Dissolved	None
F3K280120	P-53-146.40	Nickel Total	None
	P-53-146.40	Nickel Dissolved	None
	P-53-266.35	Nickel Dissolved	None
	P-34-139.55	Nickel Total	None
	P-34-139.55	Nickel Dissolved	None
	P-34-244.55	Nickel Total	None
	P-34-244.55	Nickel Dissolved	None
F3L090146	P-33-169.6 P-33-DUP-1	Nickel Dissolved	"J" (RPD > 30%)
F3L120339	P-33-304.6 P-33-DUP-2	Nickel Total	"J" (RPD > 30%)
	P-33-304.6	Nickel Dissolved	None
F4A130259	P-31-190.40	Nickel Dissolved	None
	P-55-154.55	Nickel Dissolved	None
F4B150320	P-31-284.25	Nickel Dissolved	None
F4A230292	P-56-86.55	Nickel Total	None
	P-56-86.55	Nickel Dissolved	None

Table 3-3. *Evaluation of Field Duplicate Samples*

Package Identification	*Sample ID*	*Analytes*	*Action*
F4A300327	P-55-311.95	Nickel Total	None
	P-55-311.95	Nickel Dissolved	None
F4B130279	P-32-174.35	Nickel Dissolved	None
F4B170134	P-32-359.25	Nickel Dissolved	"J" (RPD > 30%)
F4B200226	P-32-488.9	Nickel Total	"J" (RPD > 30%)
	P-32-488.9	Nickel Dissolved	None

3.2.15. Field Blanks and Equipment Blanks

A total of 9 field blanks and 40 equipment blank data points were performed as part of the samples submitted for this data validation report. Although this limited number of blanks was in compliance with the QAPP, it was slightly insufficient to fully evaluate field contaminations (false positives). A more appropriate frequency of blank collections should have been at a 5 percent rate or each time the sampling equipment was cleaned. Based on the 5 percent rate, 63[15] field blanks and/or equipment blank data points should been performed. The actual rate performed is 3.9 percent[16].

If an analyte was detected in the field blank or equipment blank, the associated field sample results were revised to non-detect if they were less than 10 times the blank result (when blank result > PQL), or to non-detect at the PQL value (when blank result < PQL). A summary of the samples and analytes that were revised due to field sampling contamination are presented in Table 3-4.

Table 3-4. *Evaluation of Field Blank and Equipment Blank Results*

Package Identification	*Sample ID*	*Analyte*	*Action*
F3F260187	P-23-80.1* P-23-90.1* P-23-100.1* P-23-110.1* P-23-130.1* P-23-140.1* P-23-150.1* P-23-170.1* P-23-180.1* P-23-DUP-1*	Nickel	Revised to "U" (non-detect)

[15] Value = (1,350 (non-field blank/equipment blank) total data points minus 95 duplicate sample data points) X 0.05.
[16] Value = 49 / (1,350 (non-field blank/equipment blank) total data points minus 95 duplicate sample data points) X 100.

Table 3-4. *Evaluation of Field Blank and Equipment Blank Results*

Package Identification	***Sample ID***	***Analyte***	***Action***
F3G110256	P-25-79.7* P-25-89.7* P-25-99.1* P-25-139.7* P-25-149.7* P-25-159.7* P-25-169.7* P-25-179.7* P-25-189.7* P-25-199.7* P-25-209.7* P-25-219.7* P-25-DUP-1* P-35-77.2* P-35-87.2* P-35-137.2* P-35-147.2* P-35-157.2* P-35-167.2* P-35-177.2* P-35-DUP-1*	Nickel	Revised to "U" (non-detect)
F3G030162	P-23A-DUP.1* P-23A-347.6*	Nickel	Revised to "U" (non-detect)
F3G230216	P-H-76.8* P-H-86.8* P-H-106.8* P-H-116.8*	Nickel	Revised to "U" (non-detect)
F3G250374	P-H-126.8* P-H-DUP1* P-H-136.8* P-H-146.8* P-H-156.8* P-H-166.8* P-H-176.8* P-H-186.8* P-42-189.6* P-42-197.7* P-42-202.7* P-42-DUP-1* P-42-99.6* P-42-109.6* P-42-139.6* P-42-149.6* P-42-159.6* P-42-169.4*	Nickel	Revised to "U" (non-detect)
F3G290207	P-H-226.55*	Nickel	Revised to "U" (non-detect)
F3H130195	P-20-359.60* P-20-379.60* P-20-369.60*	Nickel	Revised to "U" (non-detect)

Table 3-4. *Evaluation of Field Blank and Equipment Blank Results*

Package Identification	*Sample ID*	*Analyte*	*Action*
F3H210288	P-36-76.7 P-36-86.7 P-36-96.7 P-36-106.7 P-36-116.7 P-36-126.7 P-36-136.7 P-46-79.60 P-46-89.60 P-46-99.60 P-46-109.60 P-46-119.60 P-46-129.60 P-37-79.3 P-37-89.95 P-37-99.95 P-37-109.95 P-37-119.95 P-37-129.95 P-37-139.95 P-37-149.95 P-37-DUP 1	Nickel	Revised to "U" (non-detect)
F3H220246	P-36-146.7 P-36-186.7 P-36-206.7 P-37-159.95 P-37-179.95 P-37-189.95	Nickel	Revised to "U" (non-detect)
F3H270230	P-36A-266.8 P-36A-282.0 P-36-236.7 P-36A-371.75 P-36A-328.4 P-37-314.8	Nickel	Revised to "U" (non-detect)
F3I230231	P-29-278.4* P-29-289.85* P-29-299.85* P-29-310.2* P-29-318.9* P-29-329.85* P-29-DUP-2* P-29-339.5* P-29-360.0* P-29-369.2* P-38-166.3* P-38-176.3* P-38-186.3* P-38-216.3* P-38-226.3* P-38-312.9* P-38-322.9* P-38-DUP-2* P-38-332.3* P-38-341.1* P-43-264.85* P-43-274.85* P-43-284.85* P-43-294.85 P-43-304.85	Nickel	Revised to "U" (non-detect)

Table 3-4. *Evaluation of Field Blank and Equipment Blank Results*

Package identification	*Sample ID*	*Analyte*	*Action*
F3J070236	P-18-76.65* P-18-86.65* P-18-96.65* P-18-106.65* P-18-116.65* P-18-126.65* P-18-136.65* P-18-146.65* P-18-156.65* P-18-DUP-1* P-18-166.65* P-18-176.65* P-18-186.65*	Nickel Dissolved	Revised to "U" (non-detect)
	P-18-76.65* P-18-96.65* P-18-106.65* P-18-126.65* P-18-136.65* P-18-156.65* P-18-DUP-1* P-18-186.65*	Nickel Total	Revised to "U" (non-detect)
F3K080109	P-54-117.55 * P-54-127.55 * P-54-137.55 * P-54-DUP-1 * P-54-147.55 * P-54-155.75 * P-54-165.85 * P-52-80.0 * P-52-90.0 * P-52-100.0 * P-52-130.0 * P-52-140.0 * P-58-79.65 *	Nickel Total	Revised to "U" (non-detect)
	P-54-97.55 P-54-127.55 P-54-137.55 P-54-155.75 P-54-165.85 P-52-80.0 * P-52-90.0 * P-52-100.0 * P-52-110.0 * P-52-120.0 * P-52-130.0 * P-52-140.0 * P-58-79.65 * P-58-89.65 * P-58-99.65 * P-58-109.65 * P-58-119.65 * P-58-189.65 *	Nickel Dissolved	Revised to "U" (non-detect)
F3K210372	P-53-86.40 P-53-76.40	Nickel Total	Revised to "U" (non-detect)

Table 3-4. *Evaluation of Field Blank and Equipment Blank Results*

Package Identification	***Sample ID***	***Analyte***	***Action***
F3K210372 Cont'd	P-52-404.45* P-52-483.38* P-54-421.00* P-54-431.00* P-54-437.05* P-53-86.40* P-53-76.40*	Nickel Dissolved	Revised to "U" (non-detect)
F3K280120	P-53-96.40 P-53-106.40 P-53-116.40 P-53-146.40 P-53-DUP-1 P-53-165.70 P-53-188.85 P-53-212.60 P-34-79.55 P-34-89.55 P-34-99.55 P-34-129.55 P-34-139.55 P-34-DUP-1 P-34-164.55 P-34-154.55 P-34-184.55 P-34-194.55 P-34-204.55 P-34-214.55 P-34-224.55 P-34-234.55 P-34-244.55 P-34-DUP-2 P-34-254.55 P-34-264.55 P-34-304.50 P-53-340.05	Nickel Total	Revised to "U" (non-detect)
F4A130259	P-55-94.55* P-55-114.55* P-55-144.55*	Nickel Total	Revised to "U" (non-detect)
	P-31-79.25* P-31-89.25* P-31-111.67* P-31-124.25* P-31-134.25* P-31-190.40* P-31-DUP-1* P-31-223.75* P-31-233.11* P-31-263.70* P-55-94.55* P-55-104.55* P-55-114.55* P-55-DUP-1* P-55-124.55* P-55-134.55* P-55-144.55* P-55-154.55* P-55-164.55*	Nickel Dissolved	Revised to "U" (non-detect)
F4A230292	P-31-404.25* P-56-116.55*	Nickel Total	Revised to "U" (non-detect)

Table 3-4. *Evaluation of Field Blank and Equipment Blank Results*

Package Identification	*Sample ID*	*Analyte*	*Action*
F4A230292 Cont'd	P-31-404.25* P-56-96.55* P-56-106.55* P-56-116.55* P-56-126.55* P-56-146.55* P-56-156.55* P-56-186.55* P-56-194.40* P-31-414.25*	Nickel Dissolved	Revised to "U" (non-detect)
F4A300327	P-55-311.95* P-55-DUP-2* P-55-334.55* P-55-340.35* P-56-388.60*	Nickel Total	Revised to "U" (non-detect)
	P-55-304.45* P-55-311.95* P-55-DUP-2* P-55-334.55* P-55-340.35* P-55-374.35* P-56-388.60* P-56-211.45* P-56-221.45* P-56-241.45* P-56-251.45* P-56-316.45*	Nickel Dissolved	Revised to "U" (non-detect)

* - Also qualified due to other types of blank contamination

3.2.16. Quantitation of Results

The laboratory reporting limits for the metals were in accordance with the NYSDEC requirements (i.e., reporting at the Practical Quantitation Limits specified in the QAPP). The laboratory reported estimated data below the laboratory reporting limit but above the laboratory MDL, and qualified the estimated data with a "B" qualifier. The validation process revised the "B" qualifier to a "J" qualifier to provide consistency for others in review of the validated database.

3.2.17. Electronic Data Deliverables

The results in electronic database, for most samples, matched results listed on the hardcopy analytical report including laboratory qualifiers. Since the electronic deliverables were received in Microsoft Access database formats and were subsequently transferred to Microsoft Excel spreadsheet tables for presentation, it was not determined where the error was. However, all discrepancies have been corrected for the data tables in the Groundwater Investigation Report and the Access database. The qualifiers and results were revised based on quality control issues, and foundation for changes are listed in previous sections of this DUSR. The qualifiers were also placed onto the hardcopy reporting forms located near the beginning of each deliverable package (i.e., SDG package).

4. Summary and Data Usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. Overall, 99.7 percent[17] of the metal data were determined to be usable. However, those sample results qualified as estimated, "J" and "UJ," due to data validation QC exceedances should be considered conditionally usable for qualitative and quantitative purposes.

The samples collected from the Site in Hicksville, New York were evaluated based on QA/QC criteria established by methods as listed in Section 1.3, in the data validation guidelines listed in Section 1.2, in the QAPP (GTEOSI, 2002) established for this project, and by professional judgment. Major deficiencies in the data generation process have resulted in the rejection of four hexavalent chromium data points, indicating that the data are considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process resulted in some sample data being characterized as approximate or estimated. Identification of a data point as approximate indicates uncertainty in the reported concentration of the analyte, but not its assigned identity.

The following paragraphs present the adherence of the data to the precision, accuracy, representativeness, comparability, completeness, and sensitivity (PSARCC) parameters. Completeness has been discussed above.

Precision is measured through the evaluation of field duplicate samples and laboratory duplicate samples. For the metals analyses, none of the data were rejected due to precision non-conformances. However, the frequency of duplicate sample collection was insufficient, and therefore, evaluation of this criteria may not be adequate.

LCS, MS, and MSD recoveries indicate the accuracy of the data. For the metals analyses, none of the data were rejected due to accuracy non-conformances.

Holding times, sample preservation, blank analysis, and analyte quantification are indicators of the representativeness of the analytical data. Four of the hexavalent chromium data were rejected due to representativeness non-conformances.

Comparability is not compromised, provided that the analytical methods do not change over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures were consistently used by the laboratory, the comparability criteria for the analytical data were met.

Sensitivity is established by reported detection limits that represent measurable concentrations of analytes that can be determined with a designated level of confidence. None of the metals data were rejected due to sensitivity non-conformances.

[17] Value = ((1,399 all data points – 4 unusable data points) / 1,399 all data points) X 100.

5. Data Usability Summary Report Summary Information

The DUSR was performed to determine whether or not the data meets Site-specific criteria for data quality and use. The DUSR is developed by reviewing and evaluating the analytical data package. The following questions were addressed:

1. *Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?*

   The QAPP required that USEPA Level III deliverables be provided by the laboratory for each data package. This requirement was met with the exception of some missing forms as discussed in Sections 3.2.1 and 3.2.5. The evaluation of the sample data was completed using the information provided in the data packages provided by the laboratory.

2. *Have all holding times been met?*

   The holding times were met for all with the exception of four analyses for hexavalent chromium. These results were qualified as unusable.

3. *Do all the QC data: blanks, standards, spike recoveries, replicate analyses, and sample data fall within the protocol-required limits and specifications?*

   The laboratory used laboratory control limits. QA/QC deviations and qualifications performed on the sample data are discussed in Chapter 3. With the exception of holding-time for four hexavalent chromium samples, major non-conformances were not detected for the data. However, the low frequency of replicate (duplicate) analyses was not in compliance with the QAPP.

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

   The QAPP required that USEPA guidance methods be used in the analysis of the samples. The laboratory used the required method protocols for the analyses performed for this sampling event, which met data user and client needs.

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

   The evaluation of selected raw data confirmed all information provided in the data packages with the exception of some minor discrepancies as discussed in Section 3.2.5. These discrepancies were corrected.

6. *Have the correct data qualifiers been used?*

   The laboratory applied the correct qualifiers to the sample data. The laboratory qualifiers were revised and/or new qualifiers applied as required by the validation guidelines listed in Section 1. The validation guideline qualifier definitions are listed in Section 2.2.

References

New York State Department of Environmental Conservation. *Analytical Services Protocol.* Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.

United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* 540-R-01-008. July 2002.

United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.

URS Corporation. *GTE Operations Support Incorporated - Groundwater Investigation Work Plan, Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* QAPP: Appendix C. September 2002.

2005 Groundwater Sampling

REPORT

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Executive Summary

This report addresses data quality for groundwater samples collected at the former Sylvania Electric Products Incorporated Facility in Hicksville, New York (the Site). This report pertains to Volatile Organic Compound (VOC) samples collected by Malcolm Pirnie, Inc. (Malcolm Pirnie) from April 18, 2005 through May 26, 2005.

The environmental samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri, for VOC analysis using United States Environmental Protection Agency (USEPA) guidance methods. A total of 13 samples[1] were submitted, which resulted in 485 VOC results[2]. Of this number, 263 of them are actual sample results[3] and the remainders are field quality assurance/quality control (QA/QC) indicators[4] of the samples. The analytical data generated for this investigation were evaluated by Malcolm Pirnie using the QA/QC criteria established in the methods and USEPA guidelines. Non-conformances from the QA/QC criteria were qualified based on guidance provided in the following references:

- New York State Department of Environmental Conservation. *Analytical Services Protocol.* Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.
- United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.
- United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Organic Data Review.* EPA 540-R-99-008. October 1999.
- United States Environmental Protection Agency, Region 2. *Contract Laboratory Program* Organics *Data Review.* SOP No. HW-6, Revision #12. March 2001.
- United States Environmental Protection Agency, Region 2. *Standard Operating Procedure for the Validation of Organic Data Acquired Using SW-846 Method 8260B.* SOP No. HW-24, Revision #1. June 1999.

In circumstances where the quality of the data or the accuracy of the results is suspect, the project's Quality Assurance Project Plan (QAPP) and professional judgment[5] were also used to consider if results should be qualified as estimated ("J" or "UJ"). Since individual guidance documents used (as a source of reference for the validation) may differ slightly in the type of qualification applied to data, Malcolm Pirnie applied qualifiers generally with an err to caution. Method non-conformances included exceedances of the relative percent standard deviation for the initial calibrations, the percent differences of the continuing calibrations, and the excessively low response factors in both the initial and continuing calibrations. Results rejected were due to initial and continuing calibration response factor non-conformances.

[1] Total number of samples includes field samples, field duplicates, trip blanks, field blanks, and equipment blanks.
[2] Total number of results includes 481 results for targeted compounds and four results for tentatively identified compounds. This number includes some results, which were rejected by the validation process.
[3] This is the total number of results minus trip blank, field blank, and equipment blank results.
[4] These indicators do not include Matrix Spike/Matrix Spike Duplicate or other internal laboratory QA/QC indicators.
[5] Professional judgment is performed by a USEPA certified data validator with over a decade of environmental laboratory experience.

Additionally, most laboratory method blanks contained low level contamination from common laboratory contaminants, including acetone and methylene chloride. The presence of these contaminants affected some project samples. Qualification of associated results was performed to show the relationship between the laboratory contamination and the uncertainty of the final sample result. In many cases, the project trip blanks and equipment blank contained low-levels of the same contaminants as were seen in the laboratory method blanks, in addition to other contaminants due to cross-contamination during field sampling activities. Again, Malcolm Pirnie qualified the affected data to show the potential impact on the final sample results.

Other quality issues requiring data validation qualification included replacement of results which exceeded the laboratory calibration range (i.e., qualified with an "E" by the laboratory) with re-analysis results, and qualification of all tentatively identified compounds (TIC). TIC results are qualitative only, and not considered usable for quantitative assessments, in particular risk screening evaluations.

Overall, 96.5 percent[6] of the VOC results retained in the database as final data were determined to be usable for qualitative and quantitative purposes. The other 3.5 percent were qualified as unusable, "R," – the presence or absence of the compounds cannot be verified. Sample results qualified as estimated, "J" and "UJ," due to quality control (QC) deficiencies should be considered conditionally usable. Therefore, the completeness objective of 90 percent, as presented in the QAPP, was met for the VOCs database.

[6] Value = (481 total target compound list data points – 17 rejected TCL data points) / 481 X 100

1. Introduction

1.1. Sample Identification

This report addresses the results of a data quality evaluation for groundwater samples for VOCs collected at the Site by Malcolm Pirnie from April 18, 2005 through May 26, 2005.

The sample delivery group (SDG) number (laboratory package identification number), field identification, and corresponding laboratory identification of the samples that were submitted for data validation are presented in Table 1-1.

Table 1-1. *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F5D220296	P-103-EB#1	F5D220296001	VOCs
	P-103-74	F5D220296002	VOCs
	P-103-174.5	F5D220296012	VOCs
	TRIP BLANK	F5D220296019	VOCs
F5D290261	P-103-344.2	F5D290261013	VOCs
	TB04210428	F5D290261020	VOCs
F5E060294	P108-74.15	F5E060294001	VOCs
	P108-DUP1 (P-108-84.15)	F5E060294003	VOCs
	TB05020505	F5E060294023	VOCs
F5E200169	P-107-74.30	F5E200169003	VOCs
	TB05120519	F5E200169037	VOCs
F5E270218	P-107-324.1	F5E270218007	VOCs
	TB05202605	F5E270218014	VOCs

1.2. General Considerations

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Although the term is frequently used in discussing methodologies, it applies to all aspects of the analytical system and especially to samples, their measurements, and the actual data output. Accordingly, for the samples and analyses addressed herein, this report summarizes the findings of the review and outlines any deviations from the applicable quality control (QC) criteria referenced in the following documents:

- New York State Department of Environmental Conservation. *Analytical Services Protocol.* Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.
- United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Organic Data Review.* EPA 540-R-99-008. October 1999.
- United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.
- United States Environmental Protection Agency, Region 2. *Contract Laboratory Program* Organics *Data Review.* SOP No. HW-6, Revision #12. March 2001.
- United States Environmental Protection Agency, Region 2. *Standard Operating Procedure for the Validation of Organic Data Acquired Using SW-846 Method 8260B.* SOP No. HW-24, Revision #1. June 1999.
- URS Corporation. *GTE Operations Support Incorporated - Groundwater Investigation Work Plan, Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* QAPP: Appendix C. September 2002.

1.3. Analytical Methods

The environmental samples presented in this report were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri, for VOC analyses. The laboratory used the following USEPA guidance methods for the analyses:

- SW846 Method 5030B: Purge-and-Trap for Aqueous Samples
- SW846 Method 8260B: Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)

The laboratory assigned an SDG number to a group of samples during the sample log-in process. The SDG number is the means by which the laboratory tracks samples and QC analyses. A total of 13 samples in a total of five SDGs are included in this data validation report. The SDG, field identification, and laboratory identification for each sample are summarized in Table 1-1.

The following sections of this document address distinct aspects of the validation process. Section 2 lists the data QA/QC protocols used to validate the sample data. Section 3 presents a summary of the findings associated with the validation and a discussion of the specific QA/QC deviations and qualifications performed on the sample data. Section 4 presents a discussion of data completeness and usability. Section 5 presents the Data Usability Summary Report (DUSR) summary information.

2. Data Validation Protocols

2.1. Sample Analysis Parameters

The validation of analyses for this project used guidances presented in the QAPP (GTEOSI, 2002), the analytical methodologies, the data validation guidelines referenced in Section 1, and professional judgment[7]. Malcolm Pirnie performed a data review of all analytical results to assess data quality. The data review included an assessment of sample handling protocols and supporting laboratory and field QC parameters. The following is a list of specific analytical information evaluated during the validation:

- Data package completeness review – per the NYSDEC ASP Category B or USEPA CLP deliverables requirements
- Analytical methods performed and test method references
- Sample condition - review of log-in records for cooler temperature, absence of headspace, chemical preservation, etc.
- Holding times - comparison of collection, preparation, and analysis dates
- Analytical results - units, values, significant figures
- Sample traceability to raw data
- Instrument tuning
- Initial calibration – comparison to technical guideline criteria
- Continuing calibration – comparison to technical guideline criteria
- Method blank results and laboratory contamination
- Laboratory control sample (LCS) results and comparison to laboratory control limits
- Matrix spike/matrix spike duplicate (MS/MSD) results and comparison to laboratory control limits
- Field replicate/duplicate results and comparison to technical guideline criteria
- Field QC sample (i.e., trip blanks, field blanks, equipment blanks)
- Surrogate standard recoveries and comparison to laboratory control limits
- Internal standards and comparison to technical guideline criteria
- Compound identifications, quantitations, dilutions, and reporting limits
- Tentatively Identified Compounds (TICs)

[7] Professional judgment is performed by a USEPA certified data validator with over a decade of environmental laboratory experience.

- Electronic Data Deliverables (EDDs) – comparison to the hardcopy analytical

The analytical reports were reviewed for completeness and the accompanying QC data were reviewed for acceptable performance. When QC results indicated poor performance, Malcolm Pirnie applied data qualifiers to the results to inform the data user of the possible performance problem. These qualifiers are in addition to or a revision of the qualifiers provided by the laboratory. A summary of the data qualifiers used for this review is presented in Section 2.2.

2.2. Data Qualifiers

The following qualifiers have been used by the laboratory for organic analyses:

"U" Non-detect result at the laboratory established reporting limit.

"B" Associated with a result if the compound was also identified in the corresponding method blank.

"J" Indicates an estimated value or a value below the laboratory established reporting limit but above the method detection limit.

"E" This flag identifies compounds whose concentrations exceed the calibration range of the instrument for the specific analysis; data qualified with an "E" are qualitative only and not useable for quantitative purposes. All results qualified with an "E" were required to be re-analyzed using an applicable dilution and re-reported.

Laboratory qualifiers defined above, are retained in the final database unless revised during the data validation process to one of the following qualifiers:

"U" The compound was analyzed for, but was not detected above the reported quantitation limit.

"J" The compound was positively identified; the associated numerical value is the approximate concentration of the compound in the sample.

"N" The analysis indicates the presence of a compound for which there is presumptive evidence to make a "tentative identification".

"NJ" The analysis indicates the presence of a compound that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

"UJ" The compound was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the compound in the sample.

"R" The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the compound cannot be verified.

2.3. Data Usability Summary Report Questions

The DUSR determines whether or not the data meets Site-specific criteria for data quality and use. It was developed to review and evaluate the analytical data packages. During the course of this review the following questions were addressed (where applicable):

1. *Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?*

2. *Have all holding times been met?*

3. *Do all the QC data: blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?*

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

6. *Have the correct data qualifiers been used?*

The answers to the questions presented by the DUSR are presented in the following sections of the report and in the DUSR summary information section, Section 5.

3. Data Quality Evaluation

3.1. Summary

This section summarizes whether the QA/QC parameters reported, which were specified in Section 2.1, met validation criteria. Summaries of the individual components of the review are described in the following sections.

3.2. Review of Validation Criteria

3.2.1. Completeness Review

The laboratory provided the analytical results using formats based on the Contract Laboratory Program (CLP). Most documents were included in the report packages including a case narrative summarizing the QC issues associated with the project analyses. It should be noted that although the case narratives were included in each SDG, they were indiscriminately written and usually did not contain information relevant to the data reported for this project. They were not relied upon in this data validation. Documents missing from the report packages are detailed in Section 3.2.5.

3.2.2. Test Methods

The laboratory performed the analyses using the analytical test methods listed in Section 1.3. They included USEPA SW-846 Method 5030B (purge and trap sample introduction) followed by Method 8260B (gas chromatography/mass spectrometry sample analysis). All samples were analyzed using a 25 mL (common volume used is 5 mL) purge volume, which offered lower reporting limits for each compound.

3.2.3. Sample Receipt

The laboratory received 13 water samples for VOC analysis between April 22, 2005 and May 27, 2005. The temperatures within all VOC sample shipment coolers at the time of laboratory receipt were within the recommended temperature range of 4°C ± 2°C. Field and laboratory personnel completed the Chain-of-Custody (COC) documents recording the signature, date, and time of custody transfer. The laboratory recorded the condition of the samples at the time of receipt on a "Conditions Upon Receipt Form." This form identifies whether the containers were received undamaged, within the proper temperature range, at the proper pH, in a container that is sealed with a custody seal on the exterior, and with a completed COC enclosed to identify all samples submitted to the laboratory.

The following problem with sample receipt was found:

- SDG F5D220296: the trip blank sample was not listed on the COC for analysis. The sample was submitted with the SDG and the laboratory added it onto the COC upon receipt at the laboratory.

There were no custody seals attached to individual sample bottles. No qualification is necessary because the exterior of the shipment coolers had intact custody seals.

3.2.4. Holding Times

The laboratory performed all VOC analyses within the technical holding time of 14 days from date of sample collection. All samples were correctly preserved with acid to a pH of ≤ 2. There were no problems observed.

3.2.5. Analytical Results

For each sample tested, the laboratory provided the analytical test information using formats based on the CLP program. This format requires the use of stylized forms to present critical information pertaining to the analyses performed. For all analytical results, the laboratory provided a "Form I" with the reported analytical results for the requested analyses. The Form I format shows the following information for organic analyses: the laboratory name; the laboratory sample identification; the matrix; the sample identification; the date the sample was received; the date the sample was analyzed; the dilution factor; the chemical abstract service (CAS) number; the units of measure; and the laboratory qualifier (if any).

- SDG F5D290261: sample P-103-344.2 was analyzed twice at the same dilution. It was analyzed the second time because the laboratory had erroneously thought that there was carryover from the previous sample from another client. Both sets of data were submitted; however, for this validation, the second set was not reviewed and is to be ignored.

3.2.6. Traceability to Raw Data

Traceability of the VOC analyses is established by Form V (Instrument Performance Check). These forms list the project samples analyzed per laboratory batch processed and the corresponding QC samples performed with the project samples.

3.2.7. Instrument Tuning

The GC/MS instrument performance (i.e., "tuning data," or a check of mass spectral ion intensities using bromofluorobenzene [BFB]) met method criteria. The instrument performance was checked prior to calibration and once every 12-hour shift for all analytical batches. There were no deficiencies found.

3.2.8. Initial Calibration

Initial Calibrations (ICALs) were performed at seven levels with most compound concentrations from 0.5 ug/L to 30 ug/L. The ICAL performed on 5/19/05 was with six levels with concentrations from 1.0 ug/L to 40 ug/L. Some compounds in the ICALs did not meet data validation criteria [i.e., relative response factors (RRFs) technical criteria of ≥ 0.05, and the percent relative standard deviations (%RSDs) technical criteria of $\leq 15\%$]. For some chemicals with elevated %RSD, the laboratory had employed a linear regression equation to determine the calibration curve. For these chemicals, an acceptable calibration must have the coefficient of the determination (COD) greater than or equal to 0.99 (SW-846 8000B criterion). Table 3-1 shows a summary of the samples and compounds qualified as estimated, "J," or not usable, "R," due to ICAL deficiencies.

Table 3-1. *Evaluation of Initial Calibration Results*

Package Identification	*Initial Calibration Date*	*Sample ID*	*Compounds*	*Action*
F5D220296	04/20/05, 15:12	P-103-EB#1 P-103-74	RRF: Acetone 2-Hexanone	RRF < 0.05 R – all non-detect results
	04/25/05, 12:39	P-103-174.5	RRF: Acetone 2-Butanone	RRF < 0.05 R – all non-detect results
	05/03/05, 02:09	TRIP BLANK	RRF: Acetone 2-Hexanone	RRF < 0.05 R – all non-detect results
F5D290261	04/25/05, 12:39	P-103-344.2 TB04210428	RRF: Acetone 2-Butanone	RRF < 0.05 R – all non-detect results
F5E060294	05/05/05, 14:38	P108-74.15 P108-DUP1 TB05020505	RRF: Acetone 2-Butanone	RRF < 0.05 R – all non-detect results J – all positive results

Table 3-1. *Evaluation of Initial Calibration Results*

Package Identification	Initial Calibration Date	Sample ID	Compounds	Action
F5E200169	05/19/05, 12:02	P-107-74.30 TB05120519	None	None
F5E270218	05/24/05, 03:15	P-107-324.1 TB05202605	RRF: Acetone	RRF < 0.05 R – all non-detect results J – all positive results

3.2.9. Continuing Calibration

The continuing calibration (CCAL) verification analyses were performed with a mid-level standard immediately following the tuning check at the beginning of each 12-hour analytical sequence. Some compounds in the CCAL verification analyses did not meet data validation criteria (i.e., RRFs technical criteria of ≥ 0.05, and the percent differences (%Ds) from the average RRF technical criteria of $\leq 20\%$). For chemicals that had employed a linear regression equation to determine the calibration curve, the % drift in the CCAL must be within ± 15% (SW-846 8000B criterion). Table 3-2 shows a summary of the samples and compounds qualified as estimated, "J," or not usable, "R," due to CCAL deficiencies.

Table 3-2. *Evaluation of Continuing Calibration Results*

Package Identification	CCAL Date	Sample ID	Compounds	Action
F5D220256	04/29/05, 11:40	P-103-EB#1 P-103-74	% D: Acetone RRF: Acetone 2-Hexanone	%D > 20% UJ – all non-detect results RRF < 0.05 R – all non-detect results
	05/02/05, 14:13	P-103-74 DL P-103-174.5	% D: Bromomethane 2-Butanone 1,2-Dichloroethane Bromodichloromethane 4-Methyl-2-pentanone Tetrachloroethene Dibromochloromethane 2-Hexanone Bromoform RRF: Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results
	05/05/05, 10:38	TRIP BLANK	% D: 2-Hexanone RRF: Acetone 2-Hexanone	%D > 20% UJ – all non-detect results RRF < 0.05 R – all non-detect results
F5D290261	05/04/05, 15:14	P-103-344.2 TB04210428	% D: Bromomethane 4-Methyl-2-pentanone Tetrachloroethene 2-Hexanone RRF: Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 R – all non-detect results

Table 3-2. *Evaluation of Continuing Calibration Results*

Package Identification	CCAL Date	Sample ID	Compounds	Action
F5E060294	05/09/05, 11:17	P-108-74.15 P-108-DUP1	RRF: Acetone 2-Butanone	RRF < 0.05 R – all non-detect results
	05/10/05, 15:27	P-108-74.15 DL P-108-DUP1 DL		None
	05/16/05, 20:34	TB05020505	% D: Acetone Methylene chloride 2-Butanone 4-Methyl-2-pentanone 2-Hexanone RRF: Acetone 2-Butanone	%D > 20% UJ – all non-detect results J – all positive results RRF < 0.05 J – all positive results
F5E200169	05/24/05, 13:08	P-107-74.30 TB05120519	% D / % Drift: Chloromethane Bromomethane Acetone Tetrachloroethene	%D > 20%, % Drift > 15% UJ – all non-detect results J – all positive results
F5E270218	05/29/05, 17:06	P-107-324.1 TB05202605	% D: Chloromethane	%D > 20% UJ – all non-detect results

Note:
DL Suffix – Indicates a secondary diluted sample reanalysis

3.2.10. Laboratory Method Blanks

In general, most laboratory method blanks contained trace levels of one or more common laboratory contaminants. The corresponding sample results for the identified contaminants were revised to non-detect results if these results were "less than five times" (< 5 X) the method blank results for laboratory contaminants in accordance with the QAPP (GTEOSI, 2002). However, per National Functional Guidelines (EPA 540-R-99-008), common laboratory contaminants (methylene chloride, acetone, 2-butanone, and cyclohexane) criterion is "< 10 X" the method blank results. The National Functional Guidelines' criterion was also used. Most samples were affected by these qualification guidelines. A summary of the samples and compounds that were revised due to laboratory contamination are presented in Table 3-3.

Table 3-3. *Evaluation of Laboratory Method Blank Results*

Package Identification	Sample ID	Compounds	Action
F5D220296	TRIP BLANK	Methylene chloride	Removed "B" qualifier. No need to qualify TB with MB
F5D290261	P-103-344.2	1,4-Dichlorobenzene 1,2-Dichlorobenzene Chlorobenzene	Revise "B" qualifier to "U" to indicate non-detect result
	TB04210428	1,4-Dichlorobenzene 1,2-Dichlorobenzene Chlorobenzene	Removed "B" qualifier. No need to qualify TB with MB
F5E060294	P108-74.15	Tetrachloroethene	Removed "B" qualifier. Blank concentration < 5X of sample
	P108-DUP1	Tetrachloroethene	Removed "B" qualifier. Blank concentration < 5X of sample
	TB05020505	Acetone	Removed "B" qualifier. No need to qualify TB with MB

Table 3-3. *Evaluation of Laboratory Method Blank Results*

Package Identification	Sample ID	Compounds	Action
F5E200169			None
F5E270218			None

3.2.11. Laboratory Control Sample Results

The laboratory analyzed a laboratory control sample (LCS) for each day of sample analysis. Most LCS percent recoveries were within the laboratory control limits for each of the batches. Generally, for recoveries exceeding laboratory control limits substantially, the associated data would be qualified as estimated ("J" or "UJ") using the following validation guidance: 1) if the percent recovery was greater than the upper control limit, positive results are qualified as estimated; non-detects are not qualified; 2) if the percent recovery was below the lower control limit, both positive and non-detect results are qualified as estimated. For compounds that were slightly out, but were within the method default range of 70% to 130%, they were not qualified based on professional judgment. Table 3-4 shows the evaluation of LCS samples.

Table 3-4. *Evaluation of Laboratory Control Sample Results*

Package Identification	LCS Date	Sample ID	Compound(s) Out	Action
F5D220296	04/29/05		None	None
	05/02/05		None	None
	05/05/05		None	None
F5D290261	05/04/05		None	None
F5E060294	05/09/05		None	None
	05/10/05		None	None
	05/16/05	TB05020505	4-Methyl-2-pentanone	None (high %R but not detected in samples)
F5E200169	05/24/05		None	None
F5E270218	05/29/05		None	None

3.2.12. Matrix Spike/Matrix Spike Duplicate Analyses

The MS/MSD analyses are designed to provide information about the effect of sample matrix on the sample preparation procedures and the measurement methodology. Data precision from the field sampling and the analytical techniques can also be assessed.

Only the associated non-spiked MS/MSD samples were evaluated for qualification (unless a trend can be determined for all other samples within the SDG). Where recoveries exceeded laboratory control limits, the associated data are qualified as estimated ("J" or "UJ") using the following validation guidance: 1) if the percent recovery was greater than the upper control limit, positive results are qualified as estimated; 2) if the percent recovery was below the lower control limit, both positive and non-detect results are qualified as estimated. No qualification of data is required when percent recoveries are above the upper control limit and the VOC results are non-detect. However, there were no MS/MSDs submitted that were relevant to the samples of this project.

- SDGs F5D220296, F5D290261, F5E060294, and F5E270218: the MS/MSDs were performed on samples from other clients of the laboratory. Matrix effect of the samples for accuracy and precision was not evaluated because those MS/MSDs offer no pertinent information on matrix effects of field samples from this project.

- SDG F5E200169: an MS/MSD set was analyzed for sample P-107-74.30. However, the laboratory had analyzed the sample and the MS/MSD at 10X dilution. The dilution was unnecessary. The laboratory subsequently reanalyzed the sample with no dilution but did not reanalyze the MS/MSD. Therefore, the diluted MS/MSD was not evaluated because it did not represent the undiluted matrix of the sample. In addition, the laboratory had noted that there was a problem with the spiking solution which resulted in poor recoveries.

- SDGs F5E060294 and F5E200169: the MS/MSDs were also performed on laboratory water, as the LCS and LCS duplicate; they offer no information on matrix effects of the actual field samples.

Table 3-5 shows the samples and compounds that were qualified as estimated due to MS/MSD percent recoveries exceeding criteria.

Table 3-5. *Evaluation of Matrix Spike/Matrix Spike Duplicate Sample Results*

Package Identification	*Sample ID*	*Compounds*	*Action*
Not Evaluated			None

3.2.13. Field Duplicate Analyses

Blind field duplicate samples were supposed to be collected and analyzed to assess the overall sampling and analytical technique's precision. And by design, the laboratory was never made aware of which field samples the blind duplicates were associated with. However, there were no field duplicates submitted for assessment.

- SDG F5E060294: sample P-108-DUP1 is a blind field duplicate of sample P-108-84. However, the original sample, P-108-84, was not submitted to the laboratory for analysis. Therefore, the duplicate sample is considered the original sample and duplicate evaluation could not be performed.

There were no field duplicates submitted with SDGs F5D220296, F5D290261, F5E060294, F5E200169, and F5E270218. It should be noted that QAPP requirements (GTEOSI, 2002) specified that a field duplicate sample be collected at a rate of one sample for every ten samples (collection rate of 10%). There were no field duplicates collected for the seven field samples submitted (not including blank samples collected as QCs) for analysis. Therefore, the frequency is not satisfied and field precision is not considered to have been evaluated to the QAPP's requirements.

3.2.14. Trip Blanks, Field Blanks, and Equipment Blanks

Five trip blanks, no field blanks, and one equipment blank were submitted for analysis. Many of the trip blanks that were submitted contained common contaminants. Revisions made on the affected target compound results were based on trip blank and equipment blank contamination, in accordance with practices described in the validation guidance documents listed in Sections 1.2 and 3.2.10 (method blank contamination). It should be noted that the results for the trip blanks and equipment blank were not revised with respect to the method blank's contamination; but the original result were retained to show

data users the presence and concentrations of contamination that was used to qualify the project sample results. The laboratory's "B" qualifiers in the trip blanks and equipment blank were removed. The contamination in the trip blanks and equipment blank, like the project samples, is potentially attributable to contamination from sample collection techniques in the field, cross-contamination from samples during shipment, or contamination during the preparation and analysis of these QC samples (at the laboratory).

There were no field blanks or equipment blanks submitted with SDGs F5D290261, F5E060294, F5E200169 and F5E270218. Equipment blanks were evaluated against the groundwater profiler location samples. Therefore, SDG F5D290261 used the equipment blank submitted with F5D220296. There was no equipment blank or field blank associated with groundwater profiler location P-108 or P-107. However, a trip blank was submitted with each SDG.

Table 3-6 shows the samples and compounds that were qualified as non-detect, "U."

Table 3-6. *Evaluation of Trip Blank, Field Blank, and Equipment Blank Results*

Package Identification	***Sample ID***	***Compound***	***Action***
F5D220296	P-103-74	Carbon Disulfide	Revised result to "U" (non-detect)
F5D290261	P-103-344.2	Chloroform 1,4-Dichlorobenzene* 1,2-Dichlorobenzene* Chlorobenzene*	Revised result to "U" (non-detect)
F5E060294			None
F5E200169			None
F5E270218			None

Note:
* - Also qualified due to method blank contamination

In addition to the above, the following actions were also performed.

- SDG F5E060294: Sample P-108-74.15 – 1,2-Dichlorobenzene was detected at a concentration of 1.3 ug/L. It was also detected in its associated trip blank at 0.10 J ug/L. A small peak was present in the method blank at the elution time of 1,2-dichlorobenzene, so a request for additional information was made to the laboratory. It was determined that 1,2-dichlorobenzene was also present in the method blank at a concentration of 0.12 J ug/L. Based on other project samples and on professional judgment, the result for 1,2-dichlorobenzene in this sample will be qualified as a false positive and the concentration will be changed from 1.3 ug/L to 1.3 U ug/L.
- SDG F5E060294: Sample P-108-84.15 – 1,2-Dichlorobenzene was detected at a concentration of 0.56 ug/L. It was also detected in its associated trip blank at 0.10 J ug/L. A small peak was present in the method blank at the elution time of 1,2-dichlorobenzene, so a request for additional information was made to the laboratory. It was determined that 1,2-dichlorobenzene was also present in the method blank at a concentration of 0.12 J ug/L. Since the method blank concentration is right at one-fifth the concentration of the sample concentration, the result for 1,2-dichlorobenzene in this sample will be qualified as a false positive and the concentration will be changed from 0.56 J ug/L to 1.0 U ug/L.

3.2.15. System Monitoring Compounds

All percent recoveries for the VOC surrogates were within laboratory control limits. There were no deficiencies found.

3.2.16. Internal Standards

All internal standard retention times were within ± 0.5 minutes from that of the associated calibration for all analyses. The responses of all internal standards were within the range of 50-200% of the associated calibration verification for all samples. There were no deficiencies found.

3.2.17. Compound Identification and Quantitation of Results / Dilutions

The laboratory's evaluations of the gas chromatographs and mass spectra for the identified compounds were acceptable with the exception.

- SDG F5D290261: Sample P-103-344.2 - carbon tetrachloride and 1,1,1-trichloroethane was both reported and had been detected at the same retention time. It is determined that co-elution did not occur and that the peak was 1,1,1-trichloroethane. Therefore, carbon tetrachloride is a false positive and the concentration will be changed to the non detected value of 1.0 U ug/L.
- SDG F5E060294: Sample P-108-74.15 – benzene was detected at a concentration of 0.085 ug/L. Since the concentration was substantially below the reporting limit, and it cannot be confirmed if benzene was also present at a similar low level in the blanks, the presence of benzene will be qualified as estimated, "N," in additional to its estimated value, "J." Therefore, the result for benzene will be changed from 0.085 J ug/L to 0.085 JN ug/L.
- SDT F5E200169: Sample P-107-74.30 – carbon tetrachloride was detected in the sample at 1.7 ug/L. Although an acceptable linear regression calibration was used to calculate the concentration, the calibration curve does not appear to produce accurate results at low concentrations. If the average relative response factor was used instead of a linear regression equation, a %RSD of 23.8 would be calculated for the initial calibration, which would result in a sample concentration that is qualified as estimated. Using the average RRF, the concentration of carbon tetrachloride would be 0.017 J µg/L, a very low but more likely concentration than 1.7 J µg/L, based on the low area count. Since it is believed, based on professional judgment, that the estimated concentration is near but above the true minimum level of detection and that "blank contamination" may be possible but cannot be confirmed near that level, the presence of carbon tetrachloride will be qualified as tentative, "N." Consequently, the result for carbon tetrachloride will be changed from 1,7 µg/L to 0.017 JN µg/L.

Some samples contained elevated concentrations of target compounds that exceeded the calibration range for the VOC analysis. The laboratory reported and qualified these results with an "E" qualifier. As part of the laboratory's corrective action, the affected samples were reanalyzed at a dilution to obtain usable results within the established calibration curve range. As part of this validation, specific compound results, which exceeded the calibration range in the original analysis, were replaced with the compound results from the secondary dilution analysis. The sample results, in effect, are made whole when the initial and secondary analyses are "hybridized," into one. A list of the re-analyzed samples and the affected compounds are listed in Table 3-7.

Table 3-7. *Summary of Laboratory Re-Analyses*

Package Identification	***Sample ID***	***Compound Reported From Re-Analysis***

Table 3-7. *Summary of Laboratory Re-Analyses*

Package Identification	*Sample ID*	*Compound Reported From Re-Analysis*
F5C220296	P-103-74	Tetrachloroethene
F5E060294	P108-74.15	cis-1,2-Dichloroethene Tetrachloroethene Trichloroethene
	P108-DUP1	cis-1,2-Dichloroethene Tetrachloroethene Trichloroethene

SDG: F5E060296: cis-1,2-dichloroethene and trichloroethene were diluted for in samples P-108-74.15 and P-108-DUP1. However, the dilution of the diluted sample was so excessive that the raw diluted results were either not detected or below the reporting limit. Therefore, the original values were kept for these compounds and qualified as estimated, "J."

SDG F5E200169: samples P-107-74.30 and TB05120519 were initially analyzed a dilution of 10X. The laboratory subsequently reanalyzed the samples with no dilution after realizing that dilutions were not necessary. Therefore, the diluted analyses are to be ignored.

Table 3-8 lists the samples that were analyzed diluted without an undiluted analysis. This table is not applicable because all diluted analyses had associated undiluted analyses.

Table 3-8. *Summary of Samples Analyze Diluted Without an Undiluted Analysis*

Package Identification	*Sample ID*	*Initial Dilution*
Not applicable		

3.2.18. Tentatively Identified Compounds (TICs)

The laboratory was required to perform library searches for TICs present in the samples and QC matrices for the VOC analyses. Since the TIC evaluation provides only the identity of a possible compound in the matrix and not the actual concentration of a compound, all TIC data should be considered tentatively qualitative (i.e., not usable for quantitative purposes). The "N" qualifier was added to all TIC results to indicate to the data user that the compound identifications are tentative. The "J" qualifier was added to all TIC results to indicate to the data user that the values are estimated.

- SDG F5D290261: a TIC was detected in sample TB04210428 at 11.682 minutes. Upon closer inspection, this compound was also detected in sample P-103-344.2, which was analyzed immediately before it. The TIC detection in TB04210428 is determined to be a carry-over, and the same TIC in sample P-103-344.1 is determined not to be a result of contamination. The reanalysis of these two samples on 5/09/05, which were not evaluated, confirmed this.

- SDG F5E060294: a TIC was detected in sample P-108-74.15 at 11.69 minutes. The laboratory failed to report it. The TIC has been reported as a result of this data validation effort.

The TICs identified in the project and laboratory QC samples (d-limonene and a substituted cyclohexene) are tabulated for inclusion in tables in the associated Groundwater Investigation Report.

3.2.19. Electronic Data Deliverables

The results in the electronic database matched results listed on the hardcopy analytical report including laboratory qualifiers. The qualifiers and results were revised based on quality control issues; and foundation for changes are listed in previous sections of this DUSR. The qualifiers were also placed onto the reporting forms located near the beginning of each hardcopy deliverable package (i.e., SDG package).

4. Summary and Data Usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. Overall, 96.5 percent[8] of the VOC data (individual compound results) were determined to be usable for qualitative and quantitative purposes. The other 3.5 percent were qualified as rejected – the presence or absence of the compounds cannot be verified. Those sample results qualified as estimated, "J" and "UJ," due to QC deficiencies should be considered conditionally usable. TIC identifications are only presumptive evidence of the compound's presence, and are qualified with "N."

The samples collected from the Site were evaluated based on QA/QC criteria established by methods as listed in Section 1.3, in the data validation guidelines listed in Section 1.2, on the QAPP (GTEOSI, 2002) established for this project, and by professional judgment[9]. Major deficiencies in the data generation process have resulted in some sample data being rejected, indicating that the data are considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process have resulted in some sample data being characterized as approximate or estimated. Identification of a data point as approximate, "J," indicates uncertainty in the reported concentration or detection limit of the chemical, but not its assigned identity.

The following paragraphs present the adherence of the data to the precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS) parameters. Completeness has been discussed above.

Precision is measured through the evaluation of field duplicate samples. For the VOC analyses, precision was not evaluated because there were no field duplicate samples to evaluate. The frequency of duplicates should have been at a minimum of 10 percent as presented in the QAPP.

LCS, MS, and MSD recoveries indicate the accuracy of the data. For the VOC analyses, none of the data were rejected due to LCS deficiencies. However, MS/MSD recoveries were not evaluated because there were no MS/MSD data that were relevant to this project. Therefore, accuracy of the data was not evaluated.

Holding times, sample preservation, blank analysis, and analyte identification and quantification are indicators of the representativeness of the analytical data. There were some VOC data qualified as false-positives due to field and/or laboratory contamination. Details are summarized within Section 3.

Comparability is not compromised, provided that the analytical methods do not change over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures were consistently used by the laboratory, the comparability criteria for the analytical data were met.

Sensitivity is established by reported detection limits that represent measurable concentrations of analytes that can be determined with a designated level of confidence. Sensitivity requirements were not met for several project samples due to excessively poor compound responses in the initial and continuing calibrations performed. All of the VOC data rejected were due to this sensitivity non-conformance.

[8] Value = (481 total target compound list data points – 17 rejected TCL data points) / 481 X 100

[9] Professional judgment is performed by a USEPA certified data validator with over a decade of environmental laboratory experience.

5. Data Usability Summary Report Summary Information

The DUSR was performed to determine whether or not the data meets Site-specific criteria for data quality and use. The DUSR is developed by reviewing and evaluating the analytical data packages. The following questions were addressed:

1. *Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?*

   The QAPP required that USEPA Level III deliverables be provided by the laboratory for each data package. This requirement was met as it applies to the methods used by the laboratory for sample analysis. The evaluation of the sample data was completed using the information provided in the data packages provided by the laboratory.

2. *Have all holding times been met?*

   The holding times were met for all VOC samples. There were no problems observed.

3. *Do all the QC data: blanks, standards, spike recoveries, replicate analyses, and sample data fall within the protocol-required limits and specifications?*

   The laboratory used laboratory control limits. QC deviations and qualifications performed on the sample data are discussed in Section 3. There were no matrix spike/matrix spike duplicate or field duplicate analyses suitable for evaluation. Major non-conformances were observed with initial and continuing calibrations and with sample conditions upon receipt – 3.5 percent of all data were qualified as not usable.

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

   The QAPP required that USEPA guidance methods be used in the analysis of the samples. The laboratory used the required method. Some samples had results which were over diluted.

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

   The evaluation of selected raw data confirmed most information provided in the data packages. One chemical in one sample was falsely identified and another chemical in another sample had a detected concentration that cannot be correct due to the usage of a linear regression equation.

6. *Have the correct data qualifiers been used?*

   The laboratory applied the correct qualifiers to the sample data. The validation qualifiers were applied as required by validation guidelines listed in Section 1. The laboratory and validation qualifier definitions are listed in Section 2.2.

References

New York State Department of Environmental Conservation. *Analytical Services Protocol.* Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.

United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Organic Data Review.* PA 540-R-99-008. October 1999.

United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.

United States Environmental Protection Agency, Region 2. *Contract Laboratory Program Organics Data Review.* SOP No. HW-6, Revision #12. March 2001.

United States Environmental Protection Agency, Region 2. *Standard Operating Procedure for the Validation of Organic Data Acquired Using SW-846 Method 8260B.* SOP No. HW-24, Revision #1. June 1999.

URS Corporation. *GTE Operations Support Incorporated - Groundwater Investigation Work Plan, Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* QAPP: Appendix C. September 2002.

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Executive Summary

This report addresses data quality for groundwater samples collected at the former Sylvania Electric Products facility in Hicksville, New York (the Site). Sample collection activities were conducted by Malcolm Pirnie, Inc. (Malcolm Pirnie) from April 18 through May 17, 2005.

The environmental samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri for radiochemistry analyses including alpha spectrometry for isotopic thorium and isotopic uranium using United States Department of Energy (USDOE) Methods and laboratory standard operating procedures (SOP's) and gas proportional counting for gross alpha, radium-226 and radium-228 using USEPA SW-846 Methods and laboratory SOP's. The analytical data generated for this investigation were evaluated by Malcolm Pirnie using the quality assurance/quality control (QA/QC) criteria established in the methods as guidance. Non-conformances from the QA/QC criteria were qualified based on guidance provided in the Science Applications International Corporation (SAIC) *Laboratory Data Validation Guidelines For Evaluating Radionuclide Analyses*, 143-ARCS-00.08, Revision 06, June 2000 and USDOE *Guidance For Radiochemical Data Validation*, Draft RD4, October 4, 1995.

Method non-conformances requiring data validation qualification (J) include laboratory duplicate analysis, field duplicate analysis and equipment blank contamination. None of these non-conformances were significant enough to jeopardize the usability of the data.

Overall, 90 percent of the radiochemistry data were determined to be usable for qualitative and quantitative purposes. Those sample results qualified as estimated (J) due to data validation QA/QC exceedances should be considered conditionally usable. Therefore, the completeness objective of 90 percent, as stated in the quality assurance project plan (QAPP), was met.

1. Introduction

1.1. Sample Identification

This report addresses the results of a data quality evaluation of groundwater samples with radionuclides collected at the Site by Malcolm Pirnie from April 18 through May 17, 2005.

The quantity and types of samples that were submitted for data validation are presented in Table 1-1.

Table 1-1. *Sample Cross-Reference List*

Package Identification	*Date Collected*	*Client ID*	*Laboratory ID*	*Analysis Requested*
F5D220296:	4/18/05	P-103-EB#1	F5D220296-001	Alpha, GFPC
	4/19/05	P-103-74	F5D220296-002	Alpha, GFPC
	4/19/05	P-103-84.5	F5D220296-003	Alpha, GFPC
F5E060294:	5/2/05	P108-74.15	F5E060294-001	Alpha, GFPC
	5/2/05	P108-84.15	F5E060294-002	Alpha, GFPC
	5/3/05	P108-DUP1	F5E060294-003	Alpha, GFPC
F5E200169:	5/16/05	P107-74.30	F5E200169-003	Alpha, GFPC
	5/16/05	P107-84.30	F5E200169-005	Alpha, GFPC
F5F240341	5/17/05	P107-94.30	F5F240341-001	Alpha
	5/17/05	P107-104.3	F5F240341-002	Alpha

Notes:
Alpha indicates Alpha Spectrometry of thorium (isotopic) and uranium (isotopic).
GFPC indicates Gas Proportional Counting for gross alpha, radium 226 and radium 228.

1.2. General Considerations

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Although the term is frequently used in discussing methodologies, it applies to all aspects of the analytical system and especially to samples, their measurements, and the actual data output. Accordingly, for the samples and analyses addressed herein, this report outlines deviations from the applicable QC criteria outlined in the following documents:

- URS Corporation *GTE Operations Support Incorporated. (GTEOSI). Groundwater Investigation Work Plan, Former Sylvania Electric Products Facility, Hicksville, New York,* QAPP: Appendix C. September 2002.

- United States Department of Energy (USDOE). 1997. *Environmental Measurements Laboratory (EML) Procedures Manual, 28th Edition, Volume 1.* (HASL-300) New York, New York.

Deviations from the QA/QC criteria were qualified based on guidance provided in the following documents:

- Science Applications International Corporation (SAIC). 2000. *Laboratory Data Validation Guidelines for Evaluating Radionuclide Analyzes*, 143-ARCS-00.08, Revision 06. Oak Ridge, Tennessee.

- USDOE. October 4, 1995. *Guidance for Radiochemical Data Validation*, Draft RD4. Gaithersburg, Maryland.

1.3. Analytical Methods

The environmental samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri for radiochemistry analyses including alpha spectrometry (thorium-228, thorium-230, thorium-232, uranium-234, uranium-235, and uranium-238) using USDOE Methods and laboratory SOP's and gas proportional counting (gross alpha, radium 226 and radium 228) using USEPA SW-846 methods and laboratory SOP's. The methods used in this investigation are presented in Table 1-2.

Table 1-2. *Analytical Method References*

Parameter	***Method***	***Reference***
Alpha Spectrometry (Uranium-234, -235 and – 238)	NAS/DOE 3050 RP (DOE RP-725)*	1, 2
Alpha Spectrometry (Thorium-228, -230 and – 232)	NAS/DOE 3004/RP (DOE RP-725)*	1, 2
Radium-226 by GFPC	SW-846 9315 MOD	3
Radium-228 by GFPC	SW-846 9320 MOD	3

Notes:
* The Extraction Chromatography method used for analysis utilizes the same technology as the cited reference but includes proprietary techniques more selective in separation of uranium and thorium from the matrix. The reference is for background information only.
1. United States Department of Energy (USDOE). October 1994. DOE Method for Evaluating Environmental and Waste Management Samples.
2. National Academy of Science (NAS).
3. USEPA SW-846. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 3rd Edition, November 1986 and its updates.

The following sections of this document address distinct aspects of the validation process. Section 2 lists the data QA/QC protocols used to validate the sample data. Specific QA/QC deviations and qualifications performed on the sample data are discussed in Section 3. Data completeness and usability are discussed in Section 4. Section 5 presents the Data Usability Summary Report (DUSR) Summary Information. A copy of the validated electronic deliverable data is summarized in Attachment A.

2. Data Validation Protocols

2.1. Sample Analysis Parameters

The validation of analyses for this project used guidance presented in the QAPP (URS, 2002), the analytical methodology, and the data validation guidelines referenced in Section 1 herein.

The following QA/QC parameters were evaluated for the radiochemistry (alpha spectrometry and gas-flow proportional counting) analyses (where applicable):

- Holding times and sample preservation;
- Calibration;
- Blank analysis:
- Tracer recovery;
- Laboratory Control Sample (LCS);
- Matrix Spike Sample (MS)
- Duplicate analysis;
- Field duplicate analysis;
- Radionuclide quantitation and detection limit evaluation;
- Chemical separation specificity (alpha spectrometry);
- System performance; and
- Documentation completeness.

It should be noted that no Matrix Spike samples were associated with these data. The field blind duplicate associated with these data is P108-84.15 associated with P108-DUP1.

2.2. Data Validation Qualifiers

The following guidelines are used regarding the assignment of qualifiers and the use of qualified data:

- QA/QC exceedances which do not result in the qualification of an analyte, or which result in additional qualification of the analyte with the same qualifier, are not discussed.

- The use of estimated analytical data for quantitative uses is consistent with the guidance presented in the *USEPA Risk Assessment Guidance for Superfund* (USEPA 1992).

The following qualifiers may have been used in this data validation.

"J" The associated numerical value is an estimated quantity, due to a QC or statistical exceedance.

"UJ" The associated non-detect value is an estimated quantity, due to a QC or statistical exceedance.

"R" The associated non-detect or numerical value is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

2.3. Data Usability Summary Report Questions

The DUSR determines whether or not the data meets site-specific criteria for data quality and use. It was developed by reviewing and evaluating the analytical data packages. During the course of this review the following questions were addressed (where applicable):

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

2. Have all holding times been met?

3. Do all the QC data (where applicable): blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?

4. Have all of the data been generated using established and agreed upon analytical protocols?

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

6. Have the correct data qualifiers been used?

The answers to the questions presented by the DUSR are presented in the following sections of the report and in the DUSR Summary Information Section, Section 5.

3. Data Quality Evaluation

3.1. Summary

This section summarizes which QA/QC parameters specified in Section 2.1 met validation criteria, and which QA/QC parameters did not meet validation criteria. Samples requiring qualification are described in the following sections, and are identified by the description documented on the sample chain-of-custody records.

3.2. Alpha Spectrometry Analyses

3.2.1. Criteria

The QA/QC parameters presented in Section 2.1 for radiochemistry were applied to the environmental samples listed in Table 1-1. The following QA/QC parameters were found to meet validation criteria:

- Holding times and sample preservation;
- Calibration;
- Tracer recovery;
- Laboratory Control Sample (LCS);
- Radionuclide quantitation and detection limit evaluation;
- Chemical separation specificity (alpha spectrometry);
- System performance; and
- Documentation completeness.

Only those QA/QC parameters not meeting validation criteria are discussed in subsequent sections.

3.2.2. Blank Analysis

The field and laboratory blank results were evaluated using the following statistical approach: if the net blank result was not less than the associated uncertainty and if the sample result ± uncertainty was less than ten times the associated blank result ± uncertainty, the qualifier "J" was applied to the associated sample result. The statistical evaluation of the field and laboratory blank results is summarized in Table 3-1.

Table 3-1. *Blank Evaluation for Thorium/Uranium Analyses.*

Blank ID	*Radionuclide*	*Blank Concentration ± Uncertainty (pCi/L)*	*Affected Samples*	*Action*
P-103-EB#1	Th-230	0.15 ±0.12	P-103-74 P-103-84.5 P-107-84.3	J

Note:
pCi/L indicates picocuries per liter
Uncertainty indicates total propagated uncertainty, which includes counting error and non-counting error.

3.2.3. Duplicate Analysis

If the Duplicate Error Ratio (DER) is greater than one (1) when comparing laboratory or field duplicate samples then the qualifier of "J" was applied to the associated sample results, as summarized in table 3-2 .

Table 3-2. *Evaluation of Duplicate Analysis*

Sample ID	*Affected Radionuclide Results*	*Action*
F5E060294:		
P-108-84.15 P-108-DUP-1	Uranium-234	J
F5E200169:		
P107-74.30 P107-84.30	Uranium-234	J
F5F240341:		
P107-94.30 P107-104.3	Uranium-234	J

3.2.6. Radionuclide Quantitation and Detection Limits

If the net positive results are less than their uncertainties and the uncertainty multiplied by 1.65 is greater than the MDC, this would indicate that the sample counts were less than the critical values or less than 95% confidence of positive detection, therefore the sample results were qualified as estimated "J", as summarized in Table 3-3. It the net negative result has an uncertainty smaller than their absolute value, this is an indication of improper blank subtraction and the sample results were rejected "R".

Table 3-3. *Evaluation of Positive Results versus Uncertainties for Alpha Spectrometry Analyses*

Sample ID	*Affected Radionuclide Results*	*Sample Concentration ± Uncertainty (pCi/L)*	*Action*
F5F240341:			
P-107-104.3	Uranium-235	0.36 ± 0.48	J

3.3. Gas Proportional Counting

3.3.1. Criteria

The QA/QC parameters presented in Section 2.1 were applied to the environmental samples listed in Table 1-1. All of the following QA/QC parameters were found to meet validation criteria:

- Holding times and sample preservation;
- Calibration;
- Blank analysis:
- Laboratory Control Sample (LCS);

- Duplicate analysis;
- Field duplicate analysis;
- Radionuclide quantitation and detection limit evaluation;
- System performance; and
- Documentation completeness.

4. Summary and Data Usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. Overall, 100 percent of the radiochemistry data were determined to be usable for qualitative and quantitative purposes. Those sample results qualified as estimated (J) due to data validation QA/QC exceedances should be considered conditionally usable.

The samples collected from the Site in Hicksville, New York were evaluated based on QA/QC criteria established by methods as listed in Section 1.3, by the data validation guidelines listed in Section 1.2, and by the QAPP (URS, 2002) established for this project. Major deficiencies in the data generation process would have resulted in data being rejected, indicating that the data are considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process resulted in some sample data being characterized as approximate or estimated. Identification of a data point as approximate indicates uncertainty in the reported concentration of the radionuclide, but not its assigned identity.

The following paragraphs present the adherence of the data to the precision, accuracy, representativeness, comparability, completeness, and sensitivity (PSARCC) parameters.

Precision is measured through the evaluation of field duplicate samples and laboratory duplicate samples. For the radiochemistry analyses, none of the data were rejected due to precision non-conformances.

LCS recoveries indicate the accuracy of the data. For the radiochemistry analyses, none of the data were rejected due to accuracy non-conformances.

Holding times, sample preservation, blank analysis, and analyte identification and quantification are indicators of the representativeness of the analytical data. For the radiochemistry analyses, none of the data were rejected due to accuracy non-conformances.

Comparability is not compromised, provided that the analytical methods do not change over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures were consistently used by the laboratory, the comparability criteria for the analytical data were met.

Sensitivity is established by reported detection limits that represent measurable concentrations of radionuclidesthat can be determined with a designated level of confidence. Sensitivity requirements were met for the sample data in this project. None of the radiochemistry data were rejected due to the sensitivity non-conformances.

5. Data Usability Summary Report Summary Information

The DUSR was performed to determine whether or not the data meets site-specific criteria for data quality and use. The DUSR is developed by reviewing and evaluating the analytical data package. The following questions were addressed:

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

The QAPP required that USEPA Level III deliverables be provided by the laboratory for each data package. This requirement was met as it applies to the methods used by the laboratory for sample analysis. The evaluation of the sample data was completed using the information provided in the data packages provided by the laboratory.

2. Have all holding times been met?

The holding times were met for the radiochemistry analyses.

3. Do all the QC data: blanks, standards, spike recoveries, replicate analyses, and sample data fall within the protocol-required limits and specifications?

The laboratory used the laboratory control limits during the analyses performed for this sampling event. QA/QC deviations and qualifications performed on the sample data are discussed in Chapter 3. Major non-conformances were not detected for the radiochemistry data.

4. Have all of the data been generated using established and agreed upon analytical protocols?

The QAPP required that USDOE methods are used in the analysis of samples collected for this sampling event. The laboratory used the required method protocols (with some minor modifications) for the analyses performed for this sampling event, which met data user and client needs.

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

The evaluation of selected raw data confirmed information provided in the data packages.

6. Have the correct data qualifiers been used?

The laboratory applied the correct qualifiers to the sample data. The validation qualifiers were applied as required by validation guidelines as listed in Section 1

References

O'Brien & Gere Engineers, Inc. 2000. *Supplement to the Approved Work Plan (QAPP – Appendix C), Former Sylvania Electric Products Incorporated Facility Cantiague Rock Road, Hicksville, New York.* Syracuse, New York.

Science Applications International Corporation (SAIC). 1992. *Laboratory Data Validation Guidelines for Evaluating Radionuclide Analyzes*, 143-ARCS-00.08, Revision 06. Oak Ridge, Tennessee.

United States Department of Energy (USDOE).1997. *Environmental Measurements Laboratory (EML) Procedures Manual (HASL-300),* 28th Edition, Volume 1. New York, New York.

United States Department of Energy (USDOE) 1995. *Guidance for Radiochemical Data Validation*, Draft RD4, Gaithersburg, Maryland.

United States Environmental Protection Agency (USEPA). 1992. *USEPA Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A),* 540/1-891002. Washington D.C.

URS Corporation *GTE Operations Support Incorporated. (GTEOSI). Groundwater Investigation Work Plan, Former Sylvania Electric Products Facility, Hicksville, New York,* QAPP: Appendix C. September 2002.

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Executive Summary

This report addresses data quality for groundwater samples collected at the former Sylvania Electric Products Incorporated Facility in Hicksville, New York (the Site). This report pertains to "metals" samples collected by Malcolm Pirnie, Inc. (Malcolm Pirnie) from April 18, 2005 through May 25, 2005.

The environmental samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri, for metals analyses using United States Environmental Protection Agency (USEPA) guidance methods. A total of 97 samples[1] were submitted, which resulted in 138 nickel results[2]. Of this number, 135 of them are results[3] of actual samples and the remainders are field quality assurance/quality control (QA/QC) indicators[4] of these samples. The quality of the analytical data generated for this investigation were evaluated by Malcolm Pirnie using the QA/QC criteria established in the methods and USEPA guidelines. Non-conformances from the QA/QC criteria were qualified based on guidance provided in the following references:

- New York State Department of Environmental Conservation. *Analytical Services Protocol.* Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.
- United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* EPA 540-R-01-008, July 2002.
- United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.
- United States Environmental Protection Agency, Region 2. *Validation of Metals for the Contract Laboratory Program based on SOW ILM05.3.* SOP No. HW-2, Revision 13. September 2006.
- URS Corporation, GTE Operations Support Incorporated (GTEOSI). *Groundwater Investigation Work Plan (QAPP: Appendix C), Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* URS, September 2002.

In circumstances where the quality of the data or the accuracy of the results is suspect, the project's Quality Assurance Project Plan (QAPP) and professional judgment[5] were also used to consider if results should be qualified as estimated ("J" or "UJ"). Since the individual guidance documents used (as a source of reference for the validation) differ somewhat in the type of qualification applied to data, Malcolm Pirnie applied qualifiers generally with an err to caution. All instrument calibration analyses, laboratory control sample analyses, serial dilution analyses, and interference check sample analyses were acceptable.

There were some laboratory initial calibration blanks, continuing calibration blanks, and method blanks, that contained low concentrations of nickel. The presence of nickel in specific blanks affected many project samples. Qualification of associated results was performed to show the relationship between the laboratory contamination and the uncertainty of the actual project sample results.

[1] Each sample may have been analyzed for total recoverable and/or dissolved fractions.
[2] This is the number of results reported by the laboratory on their Sample Results reporting form (Form 1).
[3] This is the total number of well data points, which may include total recoverable and dissolved fractions including duplicate sample results.
[4] These indicators do not include Matrix Spike/Matrix Spike Duplicate or other internal laboratory QA/QC indicators.
[5] Professional judgment is performed by a USEPA certified data validator with over a decade of environmental laboratory experience.

Equipment/field blanks and matrix spike samples were not performed for all sample batches; however, they were performed for each of the groundwater profiler locations. The relative percent differences (RPD) between eight (8) field duplicate pair results were performed and assessed (five for dissolved nickel and three for total nickel). This is equivalent to a field duplicate sample collection rate of 6.3 percent[6]. Based on the QAPP, the rate should have been 10 percent. With 127 discrete field sample data values[7], 13 field duplicate data should have been performed. Therefore, evaluation of precision could not be evaluated adequately.

None of the exceedances of method non-conformances were significant enough to jeopardize the usability of the data. Overall, 100 percent[8] of the metals data were determined to be usable and/or conditionally usable for qualitative and quantitative purposes. Some results were qualified as non-detects ("U"). Other results, which were qualified as estimated ("J" and "UJ") due to quality control (QC) exceedances should be considered conditionally usable. The completeness percentage of all the analyses requested is 98.4[9]. Therefore, the completeness objective of 90 percent, as stated in the QAPP, has been met for the metals database.

[6] Value = (8 duplicate data / (135 – 8) discrete field sample data) X 100.
[7] This number represents 135 (non-field blank/equipment blank) total data points minus 8 duplicate sample data points.
[8] Value = ((127 discrete field data points – 0 unusable data points) / 127 discrete field data points) X 100.
[9] Value = (127 discrete data points /(127 discrete data points + 2 missing data points)) X 100.

1. Introduction

1.1. Sample Identification

This report addresses the results of a data quality evaluation for groundwater samples collected at the Site for metals (nickel) collected by Malcolm Pirnie from April 18, 2005 through May 25, 2005.

The sample delivery group (SDG) number (laboratory package identification number), field identification, and corresponding laboratory identification of the samples that were submitted for data validation are presented in Table 1-1.

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F5D220296	P-103-EB#1	F5D220296001	Ni Dissolved
	P-103-74 (also MS/MSD for Total)	F5D220296002	Ni Dissolved, Ni Total
	P-103-84.5	F5D220296003	Ni Dissolved
	P-103-94.5	F5D220296004	Ni Dissolved
	P-103-104.5	F5D220296005	Ni Dissolved
	P-103-114.5	F5D220296006	Ni Dissolved, Ni Total
	P-103-124.5	F5D220296007	Ni Dissolved
	P-103-134.5	F5D220296008	Ni Dissolved
	P-103-144.5	F5D220296009	Ni Dissolved, Ni Total
	P-103-154.5	F5D220296010	Ni Dissolved
	P-103-164.5	F5D220296011	Ni Dissolved
	P-103-174.5	F5D220296012	Ni Dissolved
	P-103-184.2	F5D220296013	Ni Dissolved
	P-103-194.2	F5D220296014	Ni Dissolved, Ni Total
	P-103-204.2	F5D220296015	Ni Dissolved
	P-103-214.2 (also MS/MSD)	F5D220296016	Ni Dissolved
	P-103-224.2	F5D220296017	Ni Dissolved
	P-103-234.2	F5D220296018	Ni Dissolved
F5D290261	P-103-244.2	F5D290261001, 002	Ni Dissolved, Ni Total
	P-103-253.3	F5D290261003	Ni Dissolved
	P-103-264.2	F5D290261004	Ni Dissolved
	P-103-274.2	F5D290261005, 006	Ni Dissolved, Ni Total
	P-103-284.25	F5D290261007	Ni Dissolved
	P-103-294.25	F5D290261008	Ni Dissolved
	P-103-303.25	F5D290261009, 010	Ni Dissolved, Ni Total
	P-103-333.4	F5D290261011, 012	Ni Dissolved, Ni Total

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
	P-103-344.2	F5D290261013, 014	Ni Dissolved
	P-103-354.2	F5D290261015	Ni Dissolved
	P-103-376.1	F5D290261016	Ni Dissolved
	P-103-384.2	F5D290261017	Ni Dissolved
	P-103-394.2	F5D290261018	Ni Dissolved
	P-103-404.2	F5D290261019	Ni Dissolved
F5E060294	P-108-74.15 (also MS/MSD)	F5E060294001	Ni Dissolved
	P-108-84.15	F5E060294002	Ni Dissolved
	P-108-DUP1 (P-108-84.15)	F5E060294003	Ni Dissolved
	P-108-94.15	F5E060294004	Ni Dissolved
	P-108-104.15	F5E060294005	Ni Dissolved
	P-108-114.15	F5E060294006	Ni Dissolved
	P-108-124.15	F5E060294007	Ni Dissolved
	P-108-134.15	F5E060294009, 008	Ni Dissolved, Ni Total
	P-108-144.15	F5E060294010	Ni Dissolved
	P-108-154.15	F5E060294011	Ni Dissolved
	P-108-164.15	F5E060294013, 012	Ni Dissolved, Ni Total
	P-108-174.15	F5E060294015, 014	Ni Dissolved, Ni Total
	P-108-184.15	F5E060294017, 016	Ni Dissolved, Ni Total
	P-108-192.80	F5E060294019, 018	Ni Dissolved, Ni Total
	P-108-DUP2 (P-108-192.80) (also MS/MSD for Dissolved)	F5E060294021, 020	Ni Dissolved, Ni Total
	P-108-EB1	F5E060294022	Ni Dissolved
	P-108-204.60	F5E060294024	Ni Dissolved
	P-108-214.60	F5E060294026, 025	Ni Dissolved, Ni Total
	P-108-224.60	F5E060294027	Ni Total
F5E130246	P-108-234.60	F3E130246001	Ni Dissolved
	P-108-244.60 (also MS/MSD for Total)	F3E130246002, 003	Ni Dissolved, Ni Total
	P-108-254.60	F3E130246004, 005	Ni Dissolved, Ni Total
	P-108-264.60	F3E130246006, 007	Ni Dissolved, Ni Total
	P-108-293.40	F3E130246008, 009	Ni Dissolved, Ni Total
	P-108-324.35	F3E130246010, 011	Ni Dissolved, Ni Total
	P-108-334.35	F3E130246012	Ni Dissolved
	P-108-347.65	F3E130246013	Ni Dissolved
	P-108-359.30	F3E130246014	Ni Dissolved

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
	P-108-384.30	F3E130246015, 016	Ni Dissolved, Ni Total
	P-108-DUP3 (P-108-384.30)	F3E130246017, 018	Ni Dissolved, Ni Total
F5E200169	P-108-394.30 (also MS/MSD)	F5E200169001	Ni Dissolved
	P-107-EB1	F5E200169002	Ni Dissolved
	P-107-74.30	F5E200169003, 004	Ni Dissolved, Ni Total
	P-107-84.30	F5E200169005, 006	Ni Dissolved, Ni Total
	P-107-94.30	F5E200169007	Ni Dissolved
	P-107-104.30	F5E200169008	Ni Dissolved
	P-107-114.30	F5E200169009	Ni Dissolved
	P-107-DUP1 (P-107-114.30)	F5E200169010	Ni Dissolved
	P-107-124.30	F5E200169011, 012	Ni Dissolved, Ni Total
	P-107-134.30	F5E200169013, 014	Ni Dissolved, Ni Total
	P-107-144.30	F5E200169015	Ni Dissolved
	P-107-154.30	F5E200169016, 017	Ni Dissolved, Ni Total
	P-107-164.30	F5E200169018, 019	Ni Dissolved, Ni Total
	P-107-174.30 (also MS/MSD for Total)	F5E200169020, 021	Ni Dissolved, Ni Total
	P-107-184.30	F5E200169022, 023	Ni Dissolved, Ni Total
	P-107-194.30	F5E200169024	Ni Dissolved
	P-107-204.20	F5E200169025, 026	Ni Dissolved, Ni Total
	P-107-214.20	F5E200169027, 028	Ni Dissolved, Ni Total
	P-107-224.20	F5E200169029, 030	Ni Dissolved, Ni Total
	P-107-DUP2 (P-107-224.20 for Dissolved)	F5E200169031, 032	Ni Dissolved, Ni Total
	P-107-234.20	F5E200169033, 034	Ni Dissolved, Ni Total
	P-107-244.20	F5E200169035, 036	Ni Dissolved, Ni Total
	P-107-254.20	F5E200169038	Ni Dissolved
	P-107-264.20	F5E200169039, 040	Ni Dissolved, Ni Total
	P-107-274.20	F5E200169041	Ni Dissolved
	P-107-285.80 (also MS/MSD)	F5E200169042	Ni Dissolved
F5E270218	P-107-294.2 (also MS/MSD for Total)	F5E270218001, 005	Ni Dissolved, Ni Total
	P-107-316.4	F5E270218006	Ni Dissolved
	P-107-324.1	F5E270218007	Ni Dissolved
	P-107-334.1	F5E270218008	Ni Dissolved
	P-107-350.2	F5E270218002, 009	Ni Dissolved, Ni Total
	P-107-359.3	F5E270218010	Ni Dissolved
	P-107-371.6	F5E270218011	Ni Dissolved
	P-107-378.4	F5E270218003, 012	Ni Dissolved, Ni Total
	P-107-391.5	F5E270218004, 013	Ni Dissolved, Ni Total

1.2. General Considerations

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Although the term is frequently used in discussing methodologies, it applies to all aspects of the analytical system and especially to samples, their measurements, and the actual data output. Accordingly, for the samples and analyses addressed herein, this report summarizes the findings of the review and outlines any deviations from the applicable quality control (QC) criteria referenced in the following documents:

- New York State Department of Environmental Conservation. *Analytical Services Protocol.* Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.
- United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* EPA 540-R-01-008, July 2002.
- United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.
- United States Environmental Protection Agency, Region 2. *Validation of Metals for the Contract Laboratory Program based on SOW ILM05.3.* SOP No. HW-2, Revision 13. September 2006.
- URS Corporation, GTE Operations Support Incorporated (GTEOSI). *Groundwater Investigation Work Plan (QAPP: Appendix C), Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* URS, September 2002.

1.3. Analytical Methods

The environmental samples presented in this report were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri, for selected metals, including nickel, analyses. The laboratory used the following USEPA guidance methods for the analyses:

- SW-846 Method 3010A: Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by FLAA or ICP Spectroscopy
- SW-846 Method 6010B: Inductively Coupled Plasma-Atomic Emission Spectrometry

The laboratory assigned an SDG number to a group of samples during their sample log-in process. The SDG number is the means by which the laboratory tracks samples and QC analyses. A total of 97 samples in a total of six SDGs are included in this data validation report. Of the 97 total number of samples, 42 were analyzed for total nickel and 96 for dissolved nickel[10]. The SDG, field identification, and corresponding laboratory identification for each sample are summarized in Table 1-1.

The following sections of this document address distinct aspects of the validation process. Section 2 lists the data QA/QC protocols used to validate the sample data. Section 3 presents a summary of the findings associated with the validation and a discussion of the specific QA/QC deviations and qualifications performed on the sample data. Section 4 presents a discussion of data completeness and usability. Section 5 presents the Data Usability Summary Report (DUSR) summary information.

[10] Each sample may included total recoverable and/or dissolved fractions.

2. Data Validation Protocols

2.1. Sample Analysis Parameters

The validation of analyses for this project used guidance presented in the QAPP (GTEOSI, 2002), the analytical methodologies, the data validation guidelines referenced in Section 1, and professional judgment[11]. Malcolm Pirnie performed a data review of all analytical results to assess data quality. The data review included an assessment of sample handling protocols and supporting laboratory and field QC parameters. The following is a list of specific analytical information evaluated during the validation:

- Data package completeness review – per the NYSDEC ASP Category B or USEPA CLP deliverables requirements
- Analytical methods performed and test method references
- Sample condition - review of log-in records for cooler temperature, chemical preservation, etc.
- Holding times - comparison of collection, preparation, and analysis dates
- Analytical results - units, values, significant figures
- Sample traceability to raw data
- Initial calibration – comparison to technical guideline criteria
- Continuing calibration – comparison to technical guideline criteria
- Initial and continuing calibration blanks
- Method blank results and laboratory contamination
- Laboratory control sample (LCS) results and comparison to laboratory control limits
- Matrix spike/matrix spike duplicate (MS/MSD) results and comparison to laboratory control limits
- Field replicate/duplicate results and comparison to technical guideline criteria
- Field QC sample (i.e., equipment blanks and field blanks)
- Reporting limits and Dilutions
- Electronic Data Deliverables (EDDs) – comparison to the hardcopy analytical report

The analytical reports were reviewed for completeness and the accompanying QC data were reviewed for acceptable performance. When QC results indicated poor performance, Malcolm Pirnie applied data qualifiers to the results to inform the data user of the possible performance problem. These qualifiers are

[11] See footnote 5.

in addition to or a revision of the qualifiers provided by the laboratory. A summary of the data qualifiers used for this review is presented in Section 2.2.

2.2. Data Qualifiers

The following qualifiers have been used by the laboratory for metals analyses:

"U" Non-detect result at the method (or instrument) detection limit.

"B" Indicates an estimated value or a value below the established reporting limit but above the method detection limit.

Laboratory qualifiers defined above, are retained in the final database unless revised during the data validation process to one of the following qualifiers:

"U" The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

"J" The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

"UJ" The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

"R" The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

2.3. Data Usability Summary Report Questions

The DUSR determines whether or not the data meets Site-specific criteria for data quality and use. It was developed to review and evaluate the analytical data packages. During the course of this review the following questions were addressed (where applicable):

1. *Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?*

2. *Have all holding times been met?*

3. *Do all the QC data: blanks, calibration standards, calibration verifications, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?*

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

6. *Have the correct data qualifiers been used?*

The answers to the questions presented by the DUSR are presented in the following sections of the report and in the DUSR Summary Information Section, Section 5.

3. Data Quality Evaluation

3.1. Summary

This section summarizes whether QA/QC parameters reported, which were specified in Section 2.1, met validation criteria. Summary of the individual components of the review are described in the following sub-sections.

3.2. Review of Validation Criteria

3.2.1. Completeness Review

The laboratory provided the analytical report using formats based on the Contract Laboratory Program (CLP). With the exception of noted items detailed in Section 3.2.5, all necessary documents were included in the report packages including a case narrative summarizing the QC issues associated with the project analyses.

3.2.2. Test Methods

The laboratory performed the analyses using the analytical test methods listed in Section 1.3. They included USEPA SW-846 Method 3010 (digestion of aqueous samples) followed by Method 6010B (ICP) for metals analysis. No method anomalies were noted.

3.2.3. Sample Receipt

The laboratory received 97 aqueous samples[12] for metals analysis between April 22, 2005 and May 27, 2005. Samples collected for different analytical fractions from the same boring at the same depth are defined as the same sample within this data validation report. The sample temperatures at the time of receipt by the laboratory were within the recommended temperature range of 4°C ± 2°C for all SDGs. Field and laboratory personnel completed the chain-of-custody (COC) documents recording the signature, date, and time of custody transfer. The laboratory recorded the condition of the samples at the time of receipt on a "Condition Upon Receipt Form." This form identifies whether the containers were received undamaged, within the proper temperature range, at the proper pH, in a container that is sealed with a custody seal on the exterior, and with a completed COC enclosed to identify all samples submitted to the laboratory.

The following problems with sample receipt were found:

- SDG F5D220296: the sample bottle labeled P-103-184.15 was labeled P-103-184.2 on the COC. The COC ID will be used in this validation.

There were no custody seals attached to individual sample containers. No qualification is necessary because the exterior of the shipment coolers had intact custody seals.

3.2.4. Holding Times

The laboratory performed all nickel analyses within the EPA-recommended holding time of 180 days from date of collection for acid preserved samples.

[12] Each sample may include total recoverable and/or dissolved fractions.

3.2.5. Analytical Results

For each sample tested, the laboratory provided the analytical test information using the laboratory's standardized format, which shows critical information pertaining to the analyses performed. The information provided includes the following: the laboratory name; the project name; the analysis type; the laboratory sample ID; matrix; date sampled; date received; preparation batch ID; the result; the reporting limit; the units of measure; the laboratory method; dilution factor; analysis time; preparation date; analysis date; work order number, and laboratory qualifiers (if any). The laboratory provided all the appropriate forms for the requested methods with the following exceptions.

- SDG F5E060294: for sample P-108-224.60, the COC had requested for dissolved nickel; however, the laboratory had analyzed for total nickel.

- SDG F5E200169: for sample P-107-144.30, the COC had requested for both dissolved and total nickel; however, only the dissolved fraction was reported by the laboratory.

A review of dissolved vs. total concentrations is performed and detailed in Section 3.2.15, subsequent to modifications, if any, to the results performed in the following sections prior to that section.

3.2.6. Traceability to Raw Data

Traceability of the metals analyses is established by the digestion (preparation) logs. These forms list the project samples analyzed per laboratory batch processed and the corresponding QC samples (e.g., preparation blank and laboratory control sample) performed with the project samples. All project samples analyzed, for all SDGs, were included on the applicable forms.

3.2.7. Initial Calibration

The laboratory prepared an initial calibration (ICAL) curve for each analyte in accordance with method criteria. Initial calibration verification (ICV) standards were analyzed immediately after each ICAL, with recoveries all within ± 10% of the true values for all analytes. All ICVs are acceptable.

3.2.8. Continuing Calibration Verification

The continuing calibration verification (CCV) standards were analyzed after the ICALs and after every 10 project samples as required by the reference test method. The percent recoveries were all within ± 10% of the true values for all analytes. All CCVs are acceptable.

3.2.9. Initial and Continuing Calibration Blanks

The initial calibration blank (ICB) and continuing calibration blanks (CCB) were analyzed after the ICALs and after every 10 project samples as required by the reference test method. In general, initial and continuing calibration blank results should all have been less than the laboratory reporting limit (a.k.a., practical quantitation limit (PQL)), but in a few cases the blank results were greater than the laboratory MDL (or -MDL). For these cases, if an analyte in the associated field samples was detected at a concentration greater than the MDL but less than the PQL, the validation process qualified the result to account for the potential contamination associated with the analysis system. A summary of the samples and analytes that were revised due to laboratory contamination are presented in Table 3-1.

Table 3-1. *Evaluation of Laboratory Initial and Continuing Calibration Blanks*

Package Identification	*Sample ID*	*Analyte*	*Action*
F5D220296			None
F5D290261			None

Table 3-1. *Evaluation of Laboratory Initial and Continuing Calibration Blanks*

Package Identification	***Sample ID***	***Analyte***	***Action***
F5E060294	P-108-74.15 Dissolved P-108-94.15 Dissolved P-108-104.15 Dissolved P-108-114.15 Dissolved P-108-134.15 Total P-108-134.15 Dissolved P-108-144.15 Dissolved P-108-154.15 Dissolved P-108-164.15 Total P-108-164.15 Dissolved P-108-174.15 Total P-108-174.15 Dissolved P-108-184.15 Total P-108-184.15 Dissolved P-108-192.80 Total P-108-192.80 Dissolved P-108-DUP2 Total P-108-DUP2 Dissolved P-108-204.60 Dissolved P-108-214.60 Total P-108-214.60 Dissolved P-108-224.60 Total	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL.
F5E130246	P-108-234.60 Dissolved P-108-244.60 Dissolved P-108-244.60 Total P-108-254.60 Dissolved P-108-254.60 Total P-108-264.60 Total P-108-293.40 Dissolved P-108-293.40 Total P-108-324.35 Dissolved P-108-324.35 Total P-108-334.35 Dissolved P-108-347.65 Dissolved P-108-359.30 Dissolved	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL.

Table 3-1. *Evaluation of Laboratory Initial and Continuing Calibration Blanks*

Package Identification	***Sample ID***	***Analyte***	***Action***
F5E200169	P-107-74.30 Dissolved P-107-74.30 Total P-107-84.30 Dissolved P-107-84.30 Total P-107-94.30 Dissolved P-107-114.30 Dissolved P-107-124.30 Dissolved P-107-124.30 Total P-107-134.30 Total P-107-154.30 Total P-107-164.30 Dissolved P-107-164.30 Total P-107-174.30 Dissolved P-107-174.30 Total P-107-184.30 Dissolved P-107-184.30 Total P-107-214.20 Dissolved P-107-214.20 Total P-107-224.20 Dissolved P-107-224.20 Total P-107-DUP2 Dissolved P-107-DUP2 Total P-107-234.20 Dissolved P-107-234.20 Total P-107-244.20 Dissolved P-107-244.20 Total P-107-254.20 Dissolved P-107-264.20 Dissolved P-107-264.20 Total P-107-274.20 Dissolved P-107-285.80 Dissolved	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL (blanks were < (-MDL)).
F5E270218	P-107-294.2 Dissolved P-107-294.2 Total P-107-378.4 Total	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL.

3.2.10. Laboratory Method Blanks (Preparation Blanks)

There were nickel contaminations detected in several preparation blanks. When contamination is detected, the corresponding project sample results for the identified contaminants are revised to non-detect if the associated sample results were less than five times the method blank results in accordance with the QAPP (GTEOSI, 2002). A summary of the samples and analytes that were revised due to laboratory contamination are presented in Table 3-2.

Table 3-2. *Evaluation of Laboratory Method Blanks*

Package Identification	*Sample ID*	*Analyte*	*Action*
F5D220296			None
F5D290261			None
F5E060294			None
F5E130246	P-108-234.60 Dissolved * P-108-244.60 Dissolved * P-108-244.60 Total * P-108-254.60 Dissolved * P-108-254.60 Total * P-108-264.60 Total * P-108-293.40 Dissolved * P-108-293.40 Total * P-108-324.35 Dissolved * P-108-324.35 Total * P-108-334.35 Dissolved * P-108-347.65 Dissolved * P-108-359.30 Dissolved *	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL
F5E200169	P-107-74.30 Dissolved * P-107-74.30 Total * P-107-84.30 Dissolved * P-107-84.30 Total * P-107-94.30 Dissolved * P-107-114.30 Dissolved * P-107-124.30 Dissolved * P-107-124.30 Total * P-107-134.30 Total * P-107-154.30 Total * P-107-164.30 Dissolved * P-107-164.30 Total * P-107-174.30 Dissolved * P-107-285.80 Dissolved *	Nickel	Revise to "U" non-detect at PQL, for all detects < PQL (blanks were < (-MDL)).
F5E270218			None

* - Also qualified due to other types of blank contamination

3.2.11. Laboratory Control Sample Results

The laboratory analyzed an LCS for each QC batch. The percent recoveries were within laboratory control limits for all QC batches.

3.2.12. Matrix Spike Analyses

Samples for Matrix Spike / Matrix Spike Duplicate (MS/MSD) analysis were chosen by the laboratory. The MS/MSD sample analysis is designed to provide information about the effect of sample matrix on the sample preparation procedures and the measurement methodology. Data precision is also measured. All

percent recoveries (%R) and relative percent differences (RPD) were within criteria ($75 \leq \%R \leq 125$; $RPD \leq 20\%$) - no qualifications were required.

Table 1-1 specifies the samples that were also performed for MS/MSD.

For the following, matrix effect of the samples for accuracy and precision was not evaluated:

- For SDGs F5D290261, an MS/MSD was only performed on samples from other clients of the laboratory.

Of the 127 discrete nickel data values (non-QA/QC values), nine of them had corresponding MS/MSD results. This represented a frequency of 7.1 percent, which exceeds the QAPP's minimum required goal of 5 percent.

3.2.13. Field Duplicate Analyses

Five project samples were submitted as blind field duplicates. This represents eight duplicate data points (five for dissolved nickel and three for total nickel). By design, the laboratory was never made aware of which field samples the blind field duplicates were associated with. An evaluation of the precision of the field sampling procedure (as well as the laboratory analysis procedure) was made based on RPD calculated between the original and duplicate sample results. Blind field duplicate samples were collected and analyzed to assess the overall sampling and analytical precision. Evaluation calculations were made only when both results were above the PQL. The RPD values for most duplicates were within the criterion of $\leq 30\%$ with the following exceptions:

- There were no field duplicates performed for SDGs F5D220296, F5D290261, and F5E270218.

It should be noted that QAPP requirements (GTEOSI, 2002) specified that a field duplicate sample be collected at a rate of one sample for every ten samples (collection rate of 10%). Thirteen (13) field duplicates data points were required to be collected for the project since a total of 127[13] project sample fractions were submitted (not including other field QC samples collected) for analysis. The actual collection rate performed is equivalent to 6.3 percent[14]. Since an adequate number of field duplicate samples were not collected, the precision objective for the project is not in compliance. Table 3-3 shows the evaluation of field duplicate samples submitted.

Table 3-3. *Evaluation of Field Duplicate Samples*

Package Identification	***Sample ID***	***Analytes***	***Action***
F5E060294	P-108-84.15 Dissolved	Nickel	None
	P-108-192.80 Dissolved	Nickel	None
	P-108-192.80 Total	Nickel	None
F5E130246	P-27-99.75 Dissolved	Nickel	None
	P-27-99.75 Total	Nickel	None
F5E200169	P-107-114.30 Dissolved	Nickel	None
	P-107-224.20 Dissolved	Nickel	None

[13] This number represents 135 (non-field blank/equipment blank) total data points minus 8 duplicate sample data points.
[14] Value = (8 duplicate data / 127 discrete sample data points) X 100.

3.2.14. Field Blanks and Equipment Blanks

A total of 0 field blanks and 3 equipment blank data points were performed as part of the samples submitted for this data validation report. Although this limited number of blanks is in compliance with the QAPP, it is slightly insufficient to fully evaluate field contaminations (false positives). An appropriate frequency of blank collections should have been at a 5 percent rate. Based on the 5 percent rate, 7[15] field blanks and/or equipment blank data points should been performed. The actual rate performed is 2.4 percent[16]. However, field blank collection for each time the sampling equipment was cleaned is also acceptable. This appears to have been the procedure.

There were no field blanks or equipment blanks submitted with SDGs F5D290261, F5E130246, and F5E270218. However, at least one equipment blank was submitted for each groundwater profiler location. Equipment blanks were evaluated against the groundwater profiler location samples. The following list summarized whether and which equipment blank had contamination:

Equipment Blank	Contamination?	Concentration (ug/L)
P-103-EB1	No	4 ug/L U
P-108-EB1	Yes	4.3 ug/L J
P-107-EB1	No	4 ug/L U

If an analyte was detected in the field blank or equipment blank, the associated field sample results are revised to non-detect if they were less than 10 times the blank result (when blank result > PQL), or to non-detect at the PQL value (when blank result < PQL). A summary of the samples and analytes that were revised due to field sampling contamination are presented in Table 3-4.

Table 3-4. *Evaluation of Field Blank and Equipment Blank Results*

Package Identification	***Sample ID***	***Analyte***	***Action***
F5D220296			None
F5D290261			None

[15] Value = (135 (non-field blank/equipment blank) total data points minus 8 duplicate sample data points) X 0.05.
[16] Value = 3 / (135 (non-field blank/equipment blank) total data points minus 8 duplicate sample data points) X 100.

Table 3-4. *Evaluation of Field Blank and Equipment Blank Results*

Package Identification	***Sample ID***	***Analyte***	***Action***
F5E060294	P-108-74.15 Dissolved * P-108-94.15 Dissolved * P-108-104.15 Dissolved * P-108-114.15 Dissolved * P-108-134.15 Total * P-108-134.15 Dissolved * P-108-144.15 Dissolved * P-108-154.15 Dissolved * P-108-164.15 Total * P-108-164.15 Dissolved * P-108-174.15 Total * P-108-174.15 Dissolved * P-108-184.15 Total * P-108-184.15 Dissolved * P-108-192.80 Total * P-108-192.80 Dissolved * P-108-DUP2 Total * P-108-DUP2 Dissolved * P-108-204.60 Dissolved * P-108-214.60 Total * P-108-214.60 Dissolved * P-108-224.60 Total *	Nickel	Revised to "U" (non-detect)
F5E130246	P-108-234.60 Dissolved * P-108-244.60 Dissolved * P-108-244.60 Total * P-108-254.60 Dissolved * P-108-254.60 Total * P-108-264.60 Total * P-108-293.40 Dissolved * P-108-293.40 Total * P-108-324.35 Dissolved * P-108-324.35 Total * P-108-334.35 Dissolved * P-108-347.65 Dissolved * P-108-359.30 Dissolved *	Nickel	Revised to "U" (non-detect)
F5E200169			None
F5E270218			None

* - Also qualified due to other types of blank contamination

3.2.15. Quantitation of Results

The reporting limits for nickel was in accordance with the NYSDEC requirements (i.e., reporting at the PQL specified in the QAPP). The laboratory reported estimated data below the PQL but above the MDL, and qualified the estimated data with a "B" qualifier. The validation process revised the "B" qualifier to a "J" qualifier to provide consistency for others in review of the validated database.

When dissolved and total nickel are performed on the same sample, the dissolved concentration should not be greater than the total concentration if the dissolved concentration is greater than or equal to 5x its MDL. If it is, and if the dissolved concentration is greater than the total concentration by more than 20%, both dissolved and total concentrations are to be qualified as estimated, "J." If the difference is greater than 50%, both concentrations are to be qualified as unusable, "R." Therefore, the dissolved and total nickel concentrations for the following samples are qualified as estimated: P103-303.25, P107-134.30, P107-135.30, and P107-204.20. There were no differences greater than 50%.

3.2.16. Electronic Data Deliverables

The results in electronic database matched results listed on the hardcopy analytical report including laboratory qualifiers. The qualifiers and results were revised based on quality control issues, and foundation for changes are detailed in previous sections of this DUSR. The qualifiers were also placed onto the hardcopy reporting forms located near the beginning of each deliverable package (i.e., SDG package).

4. Summary and Data Usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. Overall, 100 percent[17] of the nickel data were determined to be usable. However, those sample results qualified as estimated, "J" and "UJ," due to data validation QC exceedances should be considered conditionally usable for qualitative and quantitative purposes. There were two samples which were not analyzed as specified in the COC and are discussed in Section 3.2.5. The completeness percentage, with the two missing data points taken into consideration is 98.4%[18].

The samples collected from the site in Hicksville, New York were evaluated based on QA/QC criteria established by methods as listed in Section 1.3, in the data validation guidelines listed in Section 1.2, in the QAPP (GTEOSI, 2002) established for this project, and by professional judgment. There were no major deficiencies, which would have resulted in unusable data for either quantitative or qualitative purposes. However, there were some minor deficiencies in the data generation process, which resulted in some sample data being characterized as estimated and/or non-detects. Identification of a data point as estimated indicates uncertainty in the reported concentration of the analyte, but not its assigned identity.

The following paragraphs present the adherence of the data to the precision, accuracy, representativeness, comparability, completeness, and sensitivity (PSARCC) parameters. Completeness has been discussed above.

Precision is measured through the evaluation of field duplicate samples and matrix spike duplicate samples. For the metals analyses, none of the data were rejected due to precision non-conformances. However, the frequency of duplicate sample collection was insufficient, and therefore, evaluation of this criteria may not be adequate.

LCS, MS, and MSD recoveries indicate the accuracy of the data. For the nickel analyses, none of the data were rejected due to accuracy non-conformances.

Holding times, sample preservation, blank analysis, and analyte quantification are indicators of the representativeness of the analytical data. There were some nickel contamination detected in the blanks resulting in many detects being qualified as non-detects.

Comparability is not compromised, provided that the analytical methods do not change over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures were consistently used by the laboratory, the comparability criteria for the analytical data were met.

Sensitivity is established by reported detection limits that represent measurable concentrations of analytes that can be determined with a designated level of confidence. None of the metals data were rejected due to sensitivity non-conformances.

[17] Value = ((127 discrete field data points – 0 unusable data points) / 127 discrete field data points) X 100.
[18] Value = (127 discrete data points /(127 discrete data points + 2 missing data points)) X 100.

5. Data Usability Summary Report Summary Information

The DUSR was performed to determine whether or not the data meets Site-specific criteria for data quality and use. The DUSR is developed by reviewing and evaluating the analytical data package. The following questions were addressed:

1. *Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?*

   The QAPP required that USEPA Level III deliverables be provided by the laboratory for each data package. This requirement was met with the exception of two missing analyses as discussed in Section 3.2.5. The evaluation of the sample data was completed using the information provided in the data packages provided by the laboratory.

2. *Have all holding times been met?*

   The holding times were met for all analyses.

3. *Do all the QC data: blanks, standards, spike recoveries, replicate analyses, and sample data fall within the protocol-required limits and specifications?*

   The laboratory used laboratory control limits. QA/QC deviations and qualifications performed on the sample data are discussed in Chapter 3. Major non-conformances were not detected for the data. However, the low frequency of replicate (duplicate) analyses was not in compliance with the QAPP.

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

   The QAPP required that USEPA guidance methods be used in the analysis of the samples. The laboratory used the required method protocols for the analyses performed for this sampling event, which met data user and client needs.

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

   The evaluation of selected raw data confirmed the information provided in the data packages.

6. *Have the correct data qualifiers been used?*

   The laboratory applied the correct qualifiers to the sample data. The laboratory qualifiers were revised and/or new qualifiers applied as required by the validation guidelines listed in Section 1. The validation guideline qualifier definitions are listed in Section 2.2.

References

New York State Department of Environmental Conservation. *Analytical Services Protocol.* Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.

United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* EPA 540-R-01-008, July 2002.

United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.

United States Environmental Protection Agency, Region 2. *Validation of Metals for the Contract Laboratory Program based on SOW ILM05.3.* SOP No. HW-2, Revision 13. September 2006.

URS Corporation, GTE Operations Support Incorporated (GTEOSI). *Groundwater Investigation Work Plan (QAPP: Appendix C), Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* URS, September 2002.

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Executive Summary

This report addresses data quality for groundwater samples collected south of the former Sylvania Electric Products Incorporated facility in Hicksville, New York. Sample collection activities were conducted by Malcolm Pirnie, Inc. of Fairlawn, NJ between 02/01/07 and 03/18/07.

The environmental samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, MO for Target Compound List Volatile Organic Compound (TCL VOC) analyses using United States Environmental Protection Agency (USEPA) guidance methods. The analytical data generated for this investigation were evaluated by Data Validation Services (DVS) using the quality assurance/quality control (QA/QC) criteria established in the methods as guidance. Non-conformances from the QA/QC criteria were qualified based on guidance provided in the following references:

- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* (SW846) USEPA, Final Update IIIA, April 1998;
- *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review*, EPA 540-R-99-008, October 1999;
- *Analytical Services Protocol (ASP), New York State Department of Environmental Conservation* (NYSDEC). Guidance documents including Exhibits A, B, C, D, E, F, G, H, and I. (June 2000), and
- *United States Environmental Protection Agency Region II Contract Laboratory Program (CLP) Organics Data Review*, SOP No. HW-6, Revision #11 (USEPA 1996a)

Professional judgment can be used to qualify results as estimated (J or UJ) in instances when so indicated by the overall quality of data.

Method non-conformances included exceedances of the percent differences of the continuing calibration standards, the recoveries of the system monitoring compounds, and matrix spike/matrix spike duplicate analyte recoveries. Most of the equipment and trip blanks contained low level contamination of up to four target compounds. The presence of these contaminants in those blanks indicate that some of the low level sample detections of these same analytes are to be considered as resulting from external contamination.

Also included in the data validation process is the replacement of results determined from responses that exceeded the laboratory calibration range (i.e., qualified with an "E" by the laboratory) with those reflecting responses (from dilution analyses) within the calibration range.

None of the exceedances of method non-conformances were significant enough to jeopardize the usability of the data. The reported sample results are usable based on the findings listed in this Data Usability Summary Report (DUSR).

Overall, 100 percent of the VOC data reported in the laboratory data packages were determined to be usable for qualitative and quantitative purposes. Those sample results qualified as estimated ("J" and "UJ") due to data validation QA/QC exceedances should be considered conditionally usable. Therefore, the completeness objective of 90 percent, as stated in the quality assurance project plan (QAPP), was met.

1. Introduction

1.1. Sample Identification

This report addresses the results of a data quality evaluation for groundwater samples collected south of the former Sylvania Electric Products Incorporated facility in Hicksville, New York (the Site). Sample collection activities were conducted between 02/01/07 and 03/18/07 by Malcolm Pirnie, Inc. of Fairlawn, NJ.

The laboratory Sample Delivery Group (SDG) (unique data package number), field identification, and laboratory identification number of the samples that were submitted for data validation are presented in Table 1-1.

Table 1-1: Sample Cross-Reference List

SDG	Client ID	Laboratory ID	Analysis Requested
F7B070312	EB-P-102-2-1-07 *Equipment Blank*	F7B070312-001	VOCs by USEPA 8260B
	P-102-75.45	F7B070312-002	VOCs by USEPA 8260B
	P-102-138.05	F7B070312-003	VOCs by USEPA 8260B
	P-102-DUP1 *Field Duplicate of P-102-170.45*	F7B070312-004	VOCs by USEPA 8260B
	P-102-170.45	F7B070312-005	VOCs by USEPA 8260B
	TB-01-29-02-06 *Trip Blank*	F7B070312-006	VOCs by USEPA 8260B
F7B210119	P-102-309.40	F7B210119-001	VOCs by USEPA 8260B
	P-102-320.3	F7B210119-002	VOCs by USEPA 8260B
	TB02140220 *Trip Blank*	F2B210119-003	VOCs by USEPA 8260B
F7C070289	P-104-EB	F7C070289-001	VOCs by USEPA 8260B
	TB-02280306 *Trip Blank*	F7C070289-002	VOCs by USEPA 8260B
	P-104-DUP1 *Field Duplicate of P-104-245.00*	F7C070289-003	VOCs by USEPA 8260B
	P-104-245.00	F7C070289-004	VOCs by USEPA 8260B
	P-104-235.00	F7C070289-005	VOCs by USEPA 8260B
F7C210209	P-104-377.35	F7C210209-001	VOCs by USEPA 8260B
	P-104-385.00	F7C210209-002	VOCs by USEPA 8260B
	P-104-427.9	F7C210209-003	VOCs by USEPA 8260B
	P-104-461.65	F7C210209-004	VOCs by USEPA 8260B
	TB-03130322 *Trip Blank*	F7C210209-005	VOCs by USEPA 8260B

1.2. General Considerations

The data validation review process is designed to evaluate the specific technical aspects of the analytical laboratory processing and the sample matrix, to verify that the final data reported for the field samples accurately reflect sample constituency, and to inform the end-user of the limitation of the data in the event that they do not. This report summarizes the findings of the review and outlines any deviations from the applicable QC criteria outlined in the following documents:

- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* (SW846) USEPA, Final Update IIIA, April 1998.
- *Analytical Services Protocol (ASP), New York State Department of Environmental Conservation* (NYSDEC). Guidance documents including Exhibits A, B, C, D, E, F, G, H, and I. (June 2000)
- *United States Environmental Protection Agency Region II Contract Laboratory Program (CLP) Organics Data Review*, SOP No. HW-6, Revision #11 (USEPA 1996a); and
- *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review*, EPA 540-R-99-008, October 1999.

1.3. Analytical Methods

The environmental samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri for volatile organic compound (VOC) analyses. The laboratory used the following USEPA guidance methods for the analyses:

- SW846 Method 5030B Purge/Trap Analysis
- SW846 Method 8260B Gas Chromatography/Mass Spectrometry

Each data package represents a sample delivery group (SDG), a collection of specific samples assigned during the sample log-in process. The SDG number is the means by which the laboratory tracks samples and controls QC analyses. A total of four SDGs, each containing between two and four groundwater samples (and accompanying field QC), were created and processed for this project scope. The SDG, field identification and laboratory identification for each sample are summarized in Table 1-1.

The following sections of this document address distinct aspects of the validation process. Section 2 lists the data QA/QC protocols used to validate the sample data. A summary of the findings associated with the validation and the specific QA/QC deviations and qualifications performed on the sample data are discussed in Section 3. Data completeness and usability are discussed in Section 4. Section 5 presents the Data Usability Summary Report (DUSR) Summary Information.

2. Data Validation Protocols

2.1. Sample Analysis Parameters

Validation of the data was performed using guidance from the project QAPP (GTEOSI, 2002), the analytical methodology, and the data validation guidelines referenced in Section 1.

DVS performed a data review of all analytical results to assess data quality. A data review includes an assessment of sample handling protocols, supporting laboratory quality control (QC) parameters, and field QC.

The following is a list of specific analytical information evaluated during the validation:

- Data package completeness review – per the NYSDEC ASP Category B
- Analytical methods performed and test method references
- Sample condition - review of log-in records for cooler temperature, presence of headspace, chemical preservation, etc.
- Holding times (comparison of collection and analysis dates)
- Analytical results (units, values, significant figures, reporting limits, calculation algorithms
- Sample traceability and comparison to raw data
- Instrument tuning
- Initial calibration standards
- Continuing calibration standards
- Method blank results and laboratory contamination
- Laboratory control sample (LCS/MSB) results and comparison to laboratory and NYSASP control limits
- Matrix spike/matrix spike duplicate (MS/MSD) results and comparison to laboratory control limits
- Field duplicate results and comparison to data review criteria
- Surrogate recoveries and comparison to laboratory control limits
- Internal Standards and comparison to method and validation criteria
- Field QC sample (e.g., trip blanks, equipment blanks, etc.);
- Reporting Limits and dilutions

Review was performed on the laboratory analytical reports to determine completeness of the data packages and the acceptability of the accompanying QC data. When QC results fell outside recommended or required QC limits, validation data qualifiers were applied to the results in order to reflect the potential compromise in the integrity of the originally reported result. These qualifiers are in addition to, or a revision of, the qualifiers provided by the laboratory. A summary of the data qualifiers used for this review is presented in Section 2.2.

2.2. Data Qualifiers

The following qualifiers have been used by the laboratory:

"U"/ "ND"
: Non-detected result at the required QAPP reporting limit--- the laboratory utilizes "U" within the full data package, and "ND" in the summary package report Forms I equivalents.

"B"
: Associated with a result if the compound was identified in the corresponding method blank.

"J"
: Indicates an estimated value or a value below the established reporting limit but above the method detection limit.

"E"
: This flag identifies compounds whose concentrations exceed the calibration range of the instrument for the specific analysis; data qualified with an "E" are qualitative only and not useable for quantitative purposes. All results qualified with an "E" were required to be re-analyzed using an applicable dilution and re-reported.

Laboratory qualifiers defined above, are retained in the final database unless revised during the data validation process to one of the following qualifiers:

"U" The analyte was not detected at the indicated reporting limit.

"J" Estimated concentration because the result was below the sample reporting limit or quality control criteria were not met.

"UJ" The chemical was not detected at or above the indicated reporting limit. However, the reporting limit is approximate and may or may not represent the actual limit of reporting necessary to accurately and precisely measure the analyte in the sample.

2.3. Data Usability Summary Report Questions

The DUSR determines whether or not the data meets site-specific criteria for data quality and use. It was developed by reviewing and evaluating the analytical data packages. During the course of this review the following questions were addressed (where applicable):

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

2. Have all holding times been met?

3. Do all the QC data: blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?

4. Have all of the data been generated using established and agreed upon analytical protocols?

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

6. Have the correct data qualifiers been used?

The answers to the questions presented by the DUSR are presented in the following sections of the report and in the DUSR Summary Information Section, Section 5.

3. Data Quality Evaluation

3.1. Summary

This section summarizes the review evaluation and subsequent usability of the data generated for this sampling event, as indicated by results of quality control parameters associated with the project samples. Laboratory compliance with required deliverables and processing was also assessed.

3.2. Validation Review

3.2.1. Completeness Review

The laboratory data packages were generated to include summary forms and raw data as specified in the New York State Department of Environmental Conservation (NYSDEC) Category B format. All

summary form and raw data required for full validation review were provided. No resubmissions were requested of the laboratory.

3.2.2. Test Methods

The laboratory performed the analyses using the analytical test methods listed in Section 1.3. These included SW846 Method 5030B (aqueous sample purge/trap analysis) followed by Method 8260B (gas chromatography/mass spectrometry). The samples were analyzed using a 25-mL purge volume, thus providing lower reporting limits for each compound.

3.2.3. Sample Receipt

Nineteen aqueous samples were submitted for VOC analysis between February 1, 2007 and March 18, 2007. This included eleven field samples, two field duplicates, two field blanks, and four trip blanks.

The sample temperatures at the time of receipt were within the recommended temperature range of 4°C±2°C for all SDGs. Field and laboratory personnel completed the Chain-of-Custody (COC) documents correctly recording the signature, date, and time of custody transfer.
The laboratory recorded the condition of the samples at the time of receipt on a "Conditions Upon Receipt Form." This Form identifies whether the containers were received undamaged, within the proper temperature range, at the proper pH, in a container that is sealed with a custody seal on the exterior, and with a completed COC enclosed to identify all samples submitted to the laboratory.

3.2.4. Holding Times

The technical and contractual holding times between sample collection and laboratory analyses meet method and QAPP requirements of 14-days for acid preserved samples.

3.2.5. Analytical Results

The laboratory provided a Form I equivalent with the reported analytical results for the requested analyses. The Form I format that was submitted is not strictly in compliance with USEPA CLP requirements as regards the inclusion of laboratory name and code. The forms do show the client sample identification, the laboratory sample identification, the file identification, the matrix, the date and time the sample was collected, the date the sample was received, the date and time the sample was analyzed, the dilution factor, the preparation batch identification number, the chemical abstract service (CAS) number for each analyte, the units of measure; and the laboratory qualifier (if any). Additional CLP forms were provided (e.g., II, III, etc.) to report applicable QC information for the analyses performed. The laboratory provided all the necessary forms for the VOC method.

3.2.6. Traceability to Raw Data

The traceability of the sample results to the raw data was easily accomplished by the use of the information on the summary forms and laboratory analysis logs.

3.2.7. Instrument Tuning

The GC/MS system performance was shown to produce acceptable mass identifications and sensitivity with the evaluation of the instrument tuning compound bromofluorobenzene (BFB). All requirements for mass fragmentation and resolution were met. The instrument performance was checked prior to calibration and once every 12-hour shift for all analytical QC batches.

3.2.8. Initial Calibration

Calibration standards are analyzed at required frequency and concentration in order to show that the instrumentation is performing consistently and to establish the linear range of response.

All linearity relative standard deviations (%RSD) met analytical and validation guidelines. Continuing calibration standards produced percent difference (%D) values that meet analysis protocol and validation requirements. Relative response factors (RRFs) were within method protocol requirements. However, responses for up to three compounds in the calibration standards show RRFs typical for this methodology, but below the validation limit of 0.05. Acceptance of these data is based upon the linearity and consistency of standard responses, the recoveries of these analytes in the spiked QC, and the quality of mass spectra for acetone (which can be directly correlated to those for other ketones). Data for the affected chemicals in the associated samples are qualified as estimated. Table 3-1 shows the samples and indicated qualifications:

Table 3-1. *Evaluation of Initial Calibration Results*

Package Identification	*Sample ID*	*Compounds**	*Action*
F7B070312	EB-P-102-2-1-07 *Equipment Blank*	RRF<0.05: acetone, 2-butanone, 2-hexanone	UJ – all non-detect results J – all positive results above the laboratory reporting limit
	P-102-75.45		
	P-102-138.05		
	P-102-DUP1 *Field Duplicate of P-102-170.45*		
	P-102-170.45		
	TB-01-29-02-06 *Trip Blank*		
F7B210119	P-102-309.40	RRF<0.05: acetone, 2-butanone, 2-hexanone	UJ – all non-detect results J – all positive results above the laboratory reporting limit
	P-102-320.3		
	TB02140220 *Trip Blank*		
F7C070289	P-104-EB	RRF<0.05: acetone, 2-butanone, 2-hexanone	UJ – all non-detect results J – all positive results above the laboratory reporting limit
	TB-02280306 *Trip Blank*		
	P-104-DUP1 *Field Duplicate of P-104-245.00*		
	P-104-245.00		
	P-104-235.00		
F7C210209	P-104-377.35	RRF<0.05: acetone	UJ – all non-detect results J – all positive results above the laboratory reporting limit
	P-104-385.00		
	P-104-427.9		
	P-104-461.65		
	TB-03130322 *Trip Blank*		

3.2.9. Continuing Calibration

The continuing calibration standards (CCAL) were performed with a mid-level standard immediately following the tuning check at the beginning of each 12-hour analytical sequence. The CCAL verification analyses met method criteria (i.e., RRFs were >0.05 for the SPCCs, and the percent differences (%Ds) from the avgRRF were < 20% for the CCCs) for all analytical QC batches, with the exception of low RRFs for the compounds noted above in the ICAL discussion.

For the target compounds, the %Ds were greater than 20% for two compounds. Although method criteria were met, as a conservative approach the results associated with a CCAL that exceeded 20%D were qualified as estimated ("J" or "UJ"). Table 3-2 shows a summary of the samples and qualified parameters.

Table 3-2. *Evaluation of Continuing Calibration Results*

Package Identification	***Sample ID***	***Compounds***	***Action***
F7C070289	P-104-EB	%D > 20% carbon disulfide 2-butanone	UJ – all non-detect results J – all positive results above the laboratory reporting limit
	TB-02280306 *Trip Blank*		
	P-104-DUP1 *Field Duplicate of P-104-245.00*		
	P-104-245.00		
	P-104-235.00		

3.2.10. Laboratory Method Blanks

Blanks are processed to evaluate the potential for external contamination at sample collection, transport, and analysis.

Method blanks are clean water samples that are processed as part of the analytical sequence, and whenever contamination may be present in the analytical system.

Laboratory method blanks show no contamination, and no qualification or edit to the sample results is indicated.

3.2.11. Laboratory Control Sample Results

LCSs are fortified blanks that are spiked with known concentrations of specific analytes. The recoveries of these analytes confirm that laboratory processing and instrumentation are producing accurate and consistent results.

LCSs were processed at the correct frequency. All percent recoveries were within laboratory control limits and validation action levels with the exception of those for dibromochloromethane (81% and 80%, below 85%) in one of the LCSs. Results for this compound in the associated samples have been qualified as estimated ("J" or "UJ"), and may have a low bias. Table 3-3 shows the affected samples:

Table 3-3. *Evaluation of Laboratory Control Sample Results*			
Package Identification	***Client ID***	***Compound***	***Action***
F7C070289	P-104-DUP1	Dibromochloromethane	"UJ" (low recoveries)
	P-104-245.00		
	P-104-235.00		

Correlations of duplicate LCSs were evaluated and show acceptable precision.

3.2.12. Matrix Spike/Matrix Spike Duplicate Analyses

Target analyte compounds are added to defined project samples in order to monitor how well those analytes recover through the analytical process. Duplicate matrix spike or duplicate parent sample results are also compared to see how well they correlate to one another. Those recoveries indicate the accuracy and precision of sample reported results.

Project sample P-104-461.65 was submitted for MS/MSD analyses. One compound showed elevated recoveries (135% and 140%, above 133%). The detection in the parent sample is therefore qualified as being estimated in value. This is shown in Table 3-4.

Table 3-4. *Evaluation of Matrix Spike/Matrix Spike Duplicate Sample Results*			
Package Identification	***Client ID***	***Compound***	***Action***
F7C210209	P-104-461.65	Tetrachloroethene	"J" (due to elevated spike recoveries)

3.2.13. Field Duplicate Analyses

Two project samples, P-102-170.45 and P-104-245.00 were submitted with accompanying field duplicates. An evaluation of the precision of the field sampling procedure (as well as the laboratory analysis procedure) was made based on the relative percent difference (RPD) calculated for the original and duplicate sample results. RPD calculations were made only when both results were above the laboratory reporting limits. The RPD values for all compounds were less than 30% (aqueous data evaluation criteria).

3.2.14. Trip Blanks and Equipment Blanks

Blanks are processed to evaluate the potential for external contamination at sample collection, transport, and analysis.

- Equipment blanks are collected by pouring de-ionized water through decontaminated sampling equipment in order to verify that the decontamination process is performed completely.
- Trip blanks are sealed vials of clean water that are transported with the sample vials from the laboratory to the site prior to sample collection, and from the site to the laboratory with the collected samples. They are stored and processed with the project samples, thus reflecting potential contamination from external sources.

Four trip blanks and two equipment blanks were submitted with the groundwater samples. Three of the trip blanks and both equipment blanks show low-level detections of acetone, trichloroethene, tetrachloroethene, and/or toluene. Results for these specific analytes in associated field samples that were found at concentrations within the validation action limit have been edited to reflect that the sample detected values may be a result of external contamination. Edits to the affected target compounds were based on trip blank and equipment blank contamination, in accordance with practices described in the validation guidance documents listed in Sections 1.2 and 3.2.10 (method blank contamination). Table 3-5 shows the samples and compounds that were qualified as non-detect ("U").

Table 3-5. *Evaluation of Trip Blank and Equipment Blank Results*

Package Identification	*Sample ID*	*Compound*	*Action*
F7B070312	P-102-75.45 P-102-138.05 P-102-DUP1 P-102-170.45	Trichloroethene	Revised result to "U" (non-detect)
F7B210119	P-102-320.3	Trichloroethene	Revised result to "U" (non-detect)
F7C210209	P-104-427.9 P-104-461.65	Trichloroethene	Revised result to "U" (non-detect)

3.2.15. System Monitoring Compounds

System Monitoring Compounds (SMC) are surrogate standards that behave similarly to the target analytes during the analysis procedures, and serve to monitor system performance and potential sample matrix interference.

The three SMC evaluated in the TCL VOA analyses generally show acceptable recoveries in the field samples. This indicates that there are no significant sample matrix effects on the recoveries of target analytes, and aids in the confirmation of reported quantitative values. However, one of the samples exhibited a slightly low recovery for surrogate d8-toluene in the undiluted analysis (74%, below the 76% lower limit of the acceptance range). Therefore, results for all of the analytes in that sample except tetrachloroethene (which is derived from the dilution) are qualified as estimated ("J" or "UJ"), as shown in Table 3-6.

Table 3-6. *Evaluation of System Monitoring Compounds*

Package Identification	*Sample ID*	*Compound*	*Action*
F7C210209	P-104-385.00	All analytes except tetrachloroethene	UJ – all non-detect results J – all positive results above the laboratory reporting limit

It is noted that two of the method blanks exhibited elevated recovery for one SMC. Those blanks show no detection of target analytes, and therefore there is no effect on the reported results of those blanks or the associated project samples.

3.2.16. Internal Standards

System performance and sample matrix interferences are evaluated during the VOA analyses by the addition of internal standard compounds to all samples and associated QC.
All of the internal standard responses were within the required range of 50-200% of the associated calibration verification. The retention times of the internal standards fell within ± 30 seconds from that of the most recent calibration for all analyses.

3.2.17. Compound Identification and Quantitation of Results

The retention times and mass spectra of detected analytes meet protocol requirements for identification of the target analytes.

The retention times of detected analytes meet protocol requirements for identification.

Raw data were provided for review in the data package. Calculation algorithms, quantitative results, and reporting limit values have been confirmed during this review process.

Seven of the project samples were processed at secondary dilution in order to bring certain of the analyte detected responses into instrument calibration range. The results derived from the dilution analyses are used for those specific sample analyte results, as shown in Table 3-7.

Table 3-7. *Summary of Laboratory Re-Analyses*

Package Identification	***Client ID***	***Compound Reported From Dilution Analysis***
F7B210119	P-102-309.40	Tetrachloroethene at 1000 ug/L
	P-102-320.3	Tetrachloroethene at 94 ug/L
F7C070289	P-104-DUP1	Trichloroethene at 200 ug/L
		Tetrachloroethene at 1100 ug/L
	P-104-245.00	Trichloroethene at 170 ug/L
		Tetrachloroethene at 920 ug/L
	P-104-235.00	Trichloroethene at 110 ug/L
		Tetrachloroethene at 510 ug/L
F7C210209	P-104-377.35	Tetrachloroethene at 2900 ug/L
	P-104-385.00	Tetrachloroethene at 2300 ug/L

4. Summary and Data Usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. Overall, 100 percent of the VOC data were determined to be usable for qualitative and quantitative purposes. Those sample results qualified as estimated ("J" and "UJ") due to data validation QA/QC exceedances should be considered conditionally usable. No project data have been rejected.

The samples collected from the site in Hicksville, New York were evaluated based on QA/QC criteria established by methods as listed in Section 1.3, by the data validation guidelines listed in Section 1.2, and by the QAPP (GTEOSI, 2002) established for this project. Major deficiencies in the data generation process would have resulted in data being rejected, indicating that the data are considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process resulted in some sample data being characterized as approximate or estimated. Identification of a data point as approximate indicates uncertainty in the reported concentration or detection limit of the chemical, but not its assigned identity.

The following paragraphs present the adherence of the data to the precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS) parameters.

Precision is measured through the evaluation of field duplicate samples and laboratory duplicate samples, and LCS recoveries indicate the accuracy of the data.

Holding times, sample preservation, blank analysis, and analyte identification and quantification are indicators of the representativeness of the analytical data.

Comparability is not compromised, provided that the analytical methods do not change over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures were consistently used by the laboratory, the comparability criteria for the analytical data were met.

Sensitivity is established by reported detection limits that represent measurable concentrations of analytes that can be determined with a designated level of confidence.

5. Data Usability Summary Report Summary Information

The DUSR was performed to determine whether or not the data meets site-specific criteria for data quality and use. The DUSR is developed by reviewing and evaluating the analytical data package. The following questions were addressed:

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

The QAPP required that USEPA Level III deliverables be provided by the laboratory for each data package. This requirement was met as it applies to the methods used by the laboratory for sample analysis. Proper documentation was provided to enable a thorough validation review of the analytical data.

2. Have all holding times been met?

All holding times were met.

3. Do all the QC data: blanks, standards, spike recoveries, replicate analyses, and sample data fall within the protocol-required limits and specifications?

The laboratory used the laboratory control limits during the analyses performed for this sampling event. Only minor QA/QC deviations were observed, with subsequent minimal qualification to sample data.

4. Have all of the data been generated using established and agreed upon analytical protocols?

The QAPP required that USEPA guidance methods be used in the analysis of samples collected for this sampling event. The laboratory used the required method protocols (with some minor modifications) for the analyses performed for this sampling event, which met data user and client needs.

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

The raw data confirms the reported qualitative and quantitative results that were submitted by the laboratory in the data packages.

Have the correct data qualifiers been used?

The laboratory applied the correct qualifiers to the sample data (although "ND" was used for "U" on one set of forms. The validation qualifiers were applied as required by validation guidelines listed in Section 1

References

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, (SW846) USEPA, Final Update IIIA, April 1998;

USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, EPA 540-R-99-008, October 1999;

Analytical Services Protocol (ASP), New York State Department of Environmental Conservation (NYSDEC). Guidance documents including Exhibits A, B, C, D, E, F, G, H, and I. (June 2000), and

United States Environmental Protection Agency Region II Contract Laboratory Program (CLP) Organics Data Review, SOP No. HW-6, Revision #11 (USEPA 1996a)

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Executive Summary

This report addresses data quality for groundwater samples collected south of the former Sylvania Electric Products Incorporated facility in Hicksville, New York. Sample collection activities were conducted by Malcolm Pirnie, Inc. of Fairlawn, NJ between May 10, 2007 and July 17, 2007. The environmental samples collected for this investigation were submitted to Test America Laboratories, Inc. (aka Severn Trent Laboratories, Inc.) of Earth City, MO for Target Compound List Volatile Organic Compound (TCL VOC) analyses using United States Environmental Protection Agency (USEPA) guidance methods. The analytical data generated for this investigation were evaluated by Data Validation Services (DVS) using the quality assurance/quality control (QA/QC) criteria established in the methods as guidance. Non-conformances from the QA/QC criteria were qualified based on guidance provided in the following references:

- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* (SW846) USEPA, Final Update IIIA, April 1998;
- *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review*, EPA 540-R-99-008, October 1999;
- *Analytical Services Protocol (ASP), New York State Department of Environmental Conservation* (NYSDEC). Guidance documents including Exhibits A, B, C, D, E, F, G, H, and I. (June 2000), and
- *United States Environmental Protection Agency Region II Contract Laboratory Program (CLP) Organics Data Review*, SOP No. HW-6, Revision #11 (USEPA 1996a)

Professional judgment can be used to qualify results as estimated (J or UJ) in instances when so indicated by the overall quality of data.

Method non-conformances included exceedances for the calibration standard responses, the recovery of a system monitoring compound, and a Laboratory Control Sample (LCS) recovery. The equipment blanks contained low level contamination of either one or four target compounds. The presence of these contaminants in those blanks indicate that some of the low level sample detections of these same analytes are to be considered as resulting from external contamination.

Also included in the data validation process is the replacement of results determined from responses that exceeded the laboratory calibration range (i.e., qualified with an "E" by the laboratory) with those reflecting responses (from dilution analyses) within the calibration range.

None of the exceedances of method non-conformances were significant enough to jeopardize the usability of the data. The reported sample results are usable based on the findings listed in this Data Usability Summary Report (DUSR).

Overall, 100 percent of the VOC data reported in the laboratory data packages were determined to be usable for qualitative and quantitative purposes. Those sample results qualified as estimated ("J" and "UJ") due to data validation QA/QC exceedances should be considered conditionally usable. Therefore, the completeness objective of 90 percent, as stated in the quality assurance project plan (QAPP), was met.

1. Introduction

1.1. Sample Identification

This report addresses the results of a data quality evaluation for groundwater samples collected south of the former Sylvania Electric Products Incorporated facility in Hicksville, New York (the Site). Sample collection activities were conducted between 5/10/07 and 7/17/07 by Malcolm Pirnie, Inc. of Fairlawn, NJ. A total of twenty-nine groundwater samples, a field duplicate, four trip blanks, and two equipment blanks were processed.

The laboratory Sample Delivery Group (SDG) (unique data package number), field identification, and laboratory identification number of the samples that were submitted for data validation are presented in Table 1-1.

Table 1-1: Sample Cross-Reference List

SDG	*Client ID*	*Laboratory ID*	*Analysis Requested*
F7E230113	P-112-179-6	F7E230113-001	VOCs by USEPA 8260B
	P-112-190.2	F7E230113-001	VOCs by USEPA 8260B
	P-112-232.2	F7E230113-001	VOCs by USEPA 8260B
	P-112-240.2	F7E230113-001	VOCs by USEPA 8260B
	TB 05070522	F7E230113-001	VOCs by USEPA 8260B
F7F220256	P-110-190.15	F7F220256-002	VOCs by USEPA 8260B
	P-110-260.15	F7F220256-003	VOCs by USEPA 8260B
	P-110-269.80	F7F220256-004	VOCs by USEPA 8260B
	P-110-281.70	F7F220256-005	VOCs by USEPA 8260B
	P-110-290.15	F7F220256-006	VOCs by USEPA 8260B
	P-110-329.20	F7F220256-007	VOCs by USEPA 8260B
	P-110-350.15	F7F220256-008	VOCs by USEPA 8260B
	P-110-DUP1	F7F220256-009	VOCs by USEPA 8260B
	P-110-EB2	F7F220256-001	VOCs by USEPA 8260B
	TB061207062107	F7F220256-010	VOCs by USEPA 8260B
F7G030134	P-110-408.45	F7G030134-002	VOCs by USEPA 8260B
	P-110-421.15	F7G030134-001	VOCs by USEPA 8260B
	P-110-429.35	F7G030134-003	VOCs by USEPA 8260B
	P-110-439.25	F7G030134-004	VOCs by USEPA 8260B
	P-110-452.15	F7G030134-005	VOCs by USEPA 8260B

Table 1-1: Sample Cross-Reference List

SDG	Client ID	Laboratory ID	Analysis Requested
F7G030134	P-110-460.15	F7G030134-006	VOCs by USEPA 8260B
	P-110-470.05	F7G030134-007	VOCs by USEPA 8260B
	TB–062607	F7G030134-008	VOCs by USEPA 8260B
F7G190339	P-114-74.1	F7G190339-001	VOCs by USEPA 8260B
	P-114-84.8	F7G190339-002	VOCs by USEPA 8260B
	P-114-114.8	F7G190339-003	VOCs by USEPA 8260B
	P-114-124.8	F7G190339-004	VOCs by USEPA 8260B
	P-114-134.8	F7G190339-005	VOCs by USEPA 8260B
	P-114-143.8	F7G190339-006	VOCs by USEPA 8260B
	P-114-161.5	F7G190339-007	VOCs by USEPA 8260B
	P-114-193.8	F7G190339-008	VOCs by USEPA 8260B
	P-114-222.8	F7G190339-009	VOCs by USEPA 8260B
	P-114-271.9	F7G190339-010	VOCs by USEPA 8260B
	P-114-298.3	F7G190339-011	VOCs by USEPA 8260B
	EB2	F7G190339-012	VOCs by USEPA 8260B
	TB-70711	F7G190339-013	VOCs by USEPA 8260B

1.2. General Considerations

The data validation review process is designed to evaluate the specific technical aspects of the analytical laboratory processing and the sample matrix, to verify that the final data reported for the field samples accurately reflect sample constituency, and to inform the end-user of the limitation of the data in the event that they do not. This report summarizes the findings of the review and outlines any deviations from the applicable QC criteria outlined in the following documents:

- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* (SW846) USEPA, Final Update IIIA, April 1998.
- *Analytical Services Protocol (ASP), New York State Department of Environmental Conservation* (NYSDEC). Guidance documents including Exhibits A, B, C, D, E, F, G, H, and I. (June 2000)
- *United States Environmental Protection Agency Region II Contract Laboratory Program (CLP) Organics Data Review,* SOP No. HW-6, Revision #11 (USEPA 1996a); and
- *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review,* EPA 540-R-99-008, October 1999.

1.3. Analytical Methods

The environmental samples collected for this investigation were submitted to Severn Trent Laboratories, Inc. of Earth City, Missouri for volatile organic compound (VOC) analyses. The laboratory used the following USEPA guidance methods for the analyses:

- SW846 Method 5030B Purge/Trap Analysis
- SW846 Method 8260B Gas Chromatography/Mass Spectrometry

Each data package represents a sample delivery group (SDG), a collection of specific samples assigned during the sample log-in process. The SDG number is the means by which the laboratory tracks samples and controls QC analyses. A total of four SDGs, each containing between four and eleven groundwater samples (and accompanying field QC), were created and processed for this project scope. The SDG, field identification and laboratory identification for each sample are summarized in Table 1-1.

The following sections of this document address distinct aspects of the validation process. Section 2 lists the data QA/QC protocols used to validate the sample data. A summary of the findings associated with the validation and the specific QA/QC deviations and qualifications performed on the sample data are discussed in Section 3. Data completeness and usability are discussed in Section 4. Section 5 presents the Data Usability Summary Report (DUSR) Summary Information.

2. Data Validation Protocols

2.1. Sample Analysis Parameters

Validation of the data was performed using guidance from the project QAPP (GTEOSI, 2002), the analytical methodology, and the data validation guidelines referenced in Section 1.

DVS performed a data review of all analytical results to assess data quality. A data review includes an assessment of sample handling protocols, supporting laboratory quality control (QC) parameters, and field QC. The following is a list of specific analytical information evaluated during the validation:

- Data package completeness review – per the NYSDEC ASP Category B
- Analytical methods performed and test method references
- Sample condition - review of log-in records for cooler temperature, presence of headspace, chemical preservation, etc.
- Holding times -comparison of collection and analysis dates
- Analytical results -units, values, significant figures, reporting limits, calculation algorithms
- Sample traceability and comparison to raw data
- Instrument tuning
- Initial calibration standards
- Continuing calibration standards
- Method blank results and laboratory contamination
- Laboratory control sample (LCS/MSB) results and comparison to laboratory and NYSASP control limits
- Matrix spike/matrix spike duplicate (MS/MSD) results; comparison to laboratory control limits
- Field duplicate results and comparison to data review criteria
- Surrogate recoveries and comparison to laboratory control limits
- Internal Standards and comparison to method and validation criteria
- Field QC sample (e.g., trip blanks, equipment blanks, etc.) --external contamination;
- Reporting Limits and dilutions

Review was performed on the laboratory analytical reports to determine completeness of the data packages and the acceptability of the accompanying QC data. When QC results fell outside recommended or required QC limits, validation data qualifiers were applied to the results in order to reflect the potential compromise in the integrity of the originally reported result. These qualifiers are in addition to, or a revision of, the qualifiers provided by the laboratory. A summary of the data qualifiers used for this review is presented in Section 2.2.

2.2. Data Qualifiers

The following qualifiers have been used by the laboratory:

"U"/ "ND"
: Non-detected result at the required QAPP reporting limit— the laboratory utilizes "U" within the full data package, and "ND" in the summary package report Forms I equivalents.

"B"
: Associated with a result if the compound was identified in the corresponding method blank.

"J"
: Indicates an estimated value or a value below the established reporting limit but above the method detection limit.

"E"
: This flag identifies compounds whose concentrations exceed the calibration range of the instrument for the specific analysis; data qualified with an "E" are qualitative only and not useable for quantitative purposes. All results qualified with an "E" were required to be re-analyzed using an applicable dilution and re-reported.

Laboratory qualifiers defined above, are retained in the final database unless revised during the data validation process to one of the following qualifiers:

"U"/"ND"
: The analyte was not detected at the indicated reporting limit.

"J"
: Estimated concentration because the result was below the sample reporting limit or quality control criteria were not met.

"UJ"
: The chemical was not detected at or above the indicated reporting limit. However, the reporting limit is approximate and may or may not represent the actual limit of reporting necessary to accurately and precisely measure the analyte in the sample.

2.3. Data Usability Summary Report Questions

The DUSR determines whether or not the data meets site-specific criteria for data quality and use. It was developed by reviewing and evaluating the analytical data packages. During the course of this review the following questions were addressed (where applicable):

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

2. Have all holding times been met?

3. Do all the QC data: blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?

4. Have all of the data been generated using established and agreed upon analytical protocols?

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

6. Have the correct data qualifiers been used?

The answers to the questions presented by the DUSR are presented in the following sections of the report and in the DUSR Summary Information Section, Section 5.

3. Data Quality Evaluation

3.1. Summary

This section summarizes the review evaluation and subsequent usability of the data generated for this sampling event, as indicated by results of quality control parameters associated with the project samples. Laboratory compliance with required deliverables and processing was also assessed.

3.2. Validation Review

3.2.1. Completeness Review

The laboratory data packages were generated to include summary forms and raw data as specified in the New York State Department of Environmental Conservation (NYSDEC) Category B format. All summary form and raw data required for full validation review were provided. Custody and login forms pertaining to one of the data packages were provided on request.

3.2.2. Test Methods

The laboratory performed the analyses using the analytical test methods listed in Section 1.3. These included SW846 Method 5030B (aqueous sample purge/trap analysis) followed by Method 8260B (gas chromatography/mass spectrometry). The samples were analyzed using a 25-mL purge volume, thus providing lower reporting limits for each compound than those available with the unmodified method.

3.2.3. Sample Receipt

Thirty-six aqueous samples were submitted for VOC analysis between May 10, 2007 and July 17, 2007. This included twenty-nine field samples, one field duplicate, two equipment blanks, and four trip blanks.

The sample temperatures at the time of receipt were within the recommended temperature range of 4°C±2°C for all SDGs except that pertaining to samples collected in May. The temperature following overnight delivery was 10°C, just at the upper limit of the validation action range. No qualification is made to the data.

Field and laboratory personnel completed the Chain-of-Custody (COC) documents correctly recording the signature, date, and time of custody transfer. The custody forms for fifteen of the samples show sample IDs with one fewer significant figure than the vial label IDs. The sample IDs were reported by the laboratory per the custody forms.

The laboratory recorded the condition of the samples at the time of receipt on a "Conditions Upon Receipt Form." This Form identifies whether the containers were received undamaged, within the proper temperature range, at the proper pH, in a container that is sealed with a custody seal on the exterior, and with a completed COC enclosed to identify all samples submitted to the laboratory.

Both vials of P-112-190.15 were received with very small bubble headspace. Results for that sample are therefore qualified as estimated, with a potentially low bias to the reported values. Table 3-1 shows a summary of the sample and qualified parameters.

Table 3-1. *Evaluation of Sample Receipt*

Package Identification	*Sample IDs*	*Compounds*	*Action*
F7E230113	P-112-190.2	All	Qualify detections "J" Qualify non-detections "UJ"

3.2.4. Holding Times

The technical and contractual holding times between sample collection and laboratory analyses meet method and QAPP requirements of 14-days for acid preserved field samples.

The trip blank associated with the May shipment was received by the laboratory outside of analytical holding time from the date of filling. The results for that blank are therefore qualified as estimated, with a potentially low bias. This means that the potential for external contamination in those four associated project samples has not been thoroughly evaluated. Results for low-level detections in that sample should be used with that consideration. Table 3-1 shows a summary of that blank and qualified parameters.

Table 3-2. *Evaluation of Holding Times*

Package Identification	*Sample IDs*	*Compounds*	*Action*
F7E230113	TB 05070522	All	Qualify non-detections "UJ"

3.2.5. Analytical Results

The laboratory provided a Form I equivalent with the reported analytical results for the requested analyses. The Form I format that was submitted is not strictly in compliance with USEPA CLP requirements as regards the inclusion of laboratory name and code. The forms do show the client sample identification, the laboratory sample identification, the file identification, the matrix, the date and time the sample was collected, the date the sample was received, the date and time the sample was analyzed, the dilution factor, the preparation batch identification number, the chemical abstract service (CAS) number for each analyte, the units of measure; and the laboratory qualifier (if any). Additional CLP forms were provided (e.g., II, III, etc.) to report applicable QC information for the analyses performed. The laboratory provided all the necessary forms for the VOC method.

3.2.6. Traceability to Raw Data

The traceability of the sample results to the raw data was easily accomplished by the use of the information on the summary forms and laboratory analysis logs.

3.2.7. Instrument Tuning

The GC/MS system performance was shown to produce acceptable mass identifications and sensitivity with the evaluation of the instrument tuning compound bromofluorobenzene (BFB). All requirements for mass fragmentation and resolution were met. The instrument performance was checked prior to calibration and once every 12-hour shift for all analytical QC batches.

3.2.8. Initial Calibration

Calibration standards are analyzed at required frequency and concentration in order to show that the instrumentation is performing consistently and to establish the linear range of response.

All linearity relative standard deviations (%RSD) met analytical and validation guidelines.

Relative response factors (RRFs) were within method protocol requirements. However, responses for acetone and 2-butanone in the calibration standards show RRFs typical for this methodology, but below the validation limit of 0.05. Acceptance of these data is based upon the linearity and consistency of standard responses, the recoveries of these analytes in the spiked QC, and the quality of the mass spectra of acetone. Data for those compounds in all project samples and QC are qualified as estimated. Table 3-3 shows the samples and indicated qualifications:

Table 3-3. *Evaluation of Initial Calibration Results*

Package Identification	*Sample IDs*	*Compounds**	*Action*
F7E230113 F7F220256 F7G030134 F7G190339	All	Acetone and 2-butanone	Qualify detections "J" Qualify non-detections "UJ"

3.2.9. Continuing Calibration

The continuing calibration standards (CCAL) were performed with a mid-level standard immediately following the tuning check at the beginning of each 12-hour analytical sequence. The CCAL verification analyses met method criteria (i.e., RRFs were >0.05 for the SPCCs, and the percent differences (%Ds) from the avgRRF were < 20% for the CCCs) for all analytical QC batches. For the target compounds, the %Ds were greater than 20% for three compounds. Although method criteria were met, as a conservative approach the results associated with a CCAL that exceeded 20%D were qualified as estimated ("J" or "UJ"). Table 3-4 shows a summary of the samples and qualified parameters.

Table 3-4. *Evaluation of Continuing Calibration Results*

Package Identification	*Sample ID*	*Compounds*	*Action*
F7F220256	P-110-190.15, P-110-EB2, TB061207062107	Chloroethane and bromomethane	Qualify detections "J" Qualify non-detections "UJ"
	P110-260.15	Bromomethane	Qualify detections "J" Qualify non-detections "UJ"

Table 3-4. *Evaluation of Continuing Calibration Results*

Package Identification	*Sample ID*	*Compounds*	*Action*
F7G190339	P-114-74.1 P-114-84.8 P-114-114.8 P-114-124.8 P-114-134.8 P-114-143.8 P-114-161.5 P-114-193.8 P-114-222.8 P-114-271.9 P-114-298.3 TB-70711	Bromomethane	Qualify detections "J" Qualify non-detections "UJ"
	EB2	2-butanone	Qualify detections "J" Qualify non-detections "UJ"
F7G030134	P-110-408.45 P-110-421.15 P-110-429.35	Bromomethane acetone carbon tetrachloride	Qualify detections "J" Qualify non-detections "UJ"
	P-110-439.25 P-110-452.15 P-110-460.15 P-110-470.05 TB-062607	chloroethane	Qualify detections "J" Qualify non-detections "UJ"

3.2.10. Laboratory Method Blanks

Blanks are processed to evaluate the potential for external contamination at sample collection, transport, and analysis.

Method blanks are clean water samples that are processed as part of the analytical sequence, and whenever contamination may be present in the analytical system.

Laboratory method blanks show no contamination, with the exception of one in which bromomethane was detected at a low concentration. There were no detections of this compound in the field samples, and reported results are therefore unaffected.

3.2.11. Laboratory Control Sample Results

LCSs are fortified blanks that are spiked with known concentrations of specific analytes. The recoveries of these analytes confirm that laboratory processing and instrumentation are producing accurate and consistent results.

LCSs were processed at the correct frequency. All percent recoveries were within laboratory control limits and validation action levels with the exception of those for carbon tetrachloride (70% and 70%, below 73%) in one pair of the LCSs. Results for this compound in the associated samples have been qualified as estimated ("UJ"), and may have a low bias. Table 3-5 shows the affected samples:

Table 3-5. *Evaluation of Laboratory Control Sample Results*			
Package Identification	***Client ID***	***Compound***	***Action***
F7G030134	P-110-408.45 P-110-421.15 P-110-429.35	Carbon tetrachloride	Qualify non-detections "UJ"

Correlations of duplicate LCSs were evaluated and show acceptable precision.

3.2.12. Matrix Spike/Matrix Spike Duplicate Analyses

Target analyte compounds are added to defined project samples in order to monitor how well those analytes recover through the analytical process. Duplicate matrix spike or duplicate parent sample results are also compared to see how well they correlate to one another. Those recoveries indicate the accuracy and precision of sample reported results.

Project sample P-110-439.25 was submitted for MS/MSD analyses. All recoveries and duplicate correlations are within guidelines.

3.2.13. Field Duplicate Analyses

P-110-350.15 was submitted with an accompanying field duplicate. An evaluation of the precision of the field sampling procedure (as well as the laboratory analysis procedure) was made based on the relative percent difference (RPD) calculated for the original and duplicate sample results. RPD calculations were made only when both results were above the laboratory reporting limits. The RPD values for all compounds were less than 30% (aqueous data evaluation criteria).

3.2.14. Trip Blanks and Equipment Blanks

Blanks are processed to evaluate the potential for external contamination at sample collection, transport, and analysis.

- Equipment blanks are collected by pouring de-ionized water through decontaminated sampling equipment in order to verify that the decontamination process is performed completely.

- Trip blanks are sealed vials of clean water that are transported with the sample vials from the laboratory to the site prior to sample collection, and from the site to the laboratory with the collected samples. They are stored and processed with the project samples, thus reflecting potential contamination from external sources.

Four trip blanks and two equipment blanks were submitted with the groundwater samples. The trip blanks show no contamination. One of the equipment blanks shows low-level detections of acetone, trichloroethene, bromomethane, and carbon disulfide. The other shows a low level of carbon disulfide. Results for these specific analytes in associated field samples that were found at concentrations within the validation action limit have been edited to reflect that the sample detected values may be a result of external contamination. Edits to the affected target compounds were based on equipment blank contamination, in accordance with practices described in the validation guidance documents listed in Sections 1.2 and 3.2.10 (method blank contamination). Table 3-6 shows the samples and compounds that were qualified as non-detect ("U").

Table 3-6. *Evaluation of Trip Blank and Equipment Blank Results*

Package Identification	Sample ID	Compound	Action
F7F220256	P-110-190.15 P-110-260.15 P-110-269.80 P-110-281.70 P-110-290.15	Carbon disulfide (0.38 ug/L)	Edit to "U"
F7G190339	P-114-124.8 P-114-134.8 P-114-143.8 P-114-161.5 P-114-222.8 P-114-271.9 P-114-298.3	Carbon disulfide (0.73 ug/L)	Edit to "U"
	P-114-74.1	Acetone (1.9 ug/L)	Edit to "U"

3.2.15. System Monitoring Compounds

System Monitoring Compounds (SMC) are surrogate standards that behave similarly to the target analytes during the analysis procedures, and serve to monitor system performance and potential sample matrix interference.

The three SMC evaluated in the TCL VOA analyses generally show acceptable recoveries in the field samples. This indicates that there are no significant sample matrix effects on the recoveries of target analytes, and aids in the confirmation of reported quantitative values. However, one of the samples exhibited a slightly low recovery for surrogate d8-toluene in the undiluted analysis (74%, below the 76% lower limit of the acceptance range). Therefore, results for all of the analytes in that sample except trichloroethene and tetrachloroethene (which is derived from the dilution) are qualified as estimated ("J" or "UJ"), as shown in Table 3-7.

Table 3-7. *Evaluation of System Monitoring Compounds*

Package Identification	Sample ID	Compounds	Action
F7G030134	P-110-408.45	All except trichloroethene and tetrachloroethene	UJ – all non-detect results J – all positive results above the laboratory reporting limit

3.2.16. Internal Standards

System performance and sample matrix interferences are evaluated during the VOA analyses by the addition of internal standard compounds to all samples and associated QC.

Although several samples initially showed low internal standard responses, acceptable responses (within the required range of 50-200% of the associated calibration verification) were observed on the reanalyses. Included in the initially outlying analyses was a trip blank, further indicating instrumentation, rather than matrix, as the probable cause for the suppression. The re-analyses results were within holding time, and

are used without qualification. The retention times of the internal standards fell within ± 30 seconds from that of the most recent calibration for all analyses.

3.2.17. Compound Identification and Quantitation of Results

The retention times and mass spectra of detected analytes meet protocol requirements for identification of the target analytes.

The retention times of detected analytes meet protocol requirements for identification.

Raw data were provided for review in the data package. Calculation algorithms, quantitative results, and reporting limit values have been confirmed during this review process.

Eighteen of the project samples were processed at secondary dilution in order to bring certain of the analyte detected responses into instrument calibration range. The results derived from the dilution analyses are used for those specific sample analyte results, as shown in Table 3-8.

Table 3-8. *Summary of Laboratory Re-Analyses*

Package Identification	*Client ID*	*Compound Reported From Dilution Analysis*
F7G030134	P-110-408.45	trichloroethene tetrachloroethene
	P-110-421.15	tetrachloroethene
	P-110-429.35	tetrachloroethene
	P-110-439.25	tetrachloroethene
	P-110-460.15	tetrachloroethene
F7G190339	P-114-114.8	trichloroethene
	P-114-124.8	tetrachloroethene
		trichloroethene
	P-114-134.8	trichloroethene
		cis-1,2-dichloroethene
	P-114-143.8	trichloroethene
		cis-1,2-dichloroethene
	P-114-161.5	trichloroethene
		cis-1,2-dichloroethene
	P-114-193.8	trichloroethene
		cis-1,2-dichloroethene
	P-114-222.8	trichloroethene
	P-114-271.9	trichloroethene
	P-114-298.3	trichloroethene

Table 3-8. *Summary of Laboratory Re-Analyses*

Package Identification	Client ID	Compound Reported From Dilution Analysis
F7F220256	P-110-350.15	trichloroethene
	P-110-DUP1	trichloroethene
F7E230113	P-112-232.2	tetrachloroethene
	P-112-240.2	tetrachloroethene

The result for tetrachloroethene in sample P-110-452.15 was derived from the undiluted analysis due to the fact that the dilution analysis showed two outlying internal standard responses and one elevated surrogate recovery. The result for that compound is then qualified as estimated because the response is above the established linear range of the instrument.

4. Summary and Data Usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. Overall, 100 percent of the VOC data were determined to be usable for qualitative and quantitative purposes. Those sample results qualified as estimated ("J" and "UJ") due to data validation QA/QC exceedances should be considered conditionally usable. No project data have been rejected.

The samples collected from the site in Hicksville, New York were evaluated based on QA/QC criteria established by methods as listed in Section 1.3, by the data validation guidelines listed in Section 1.2, and by the QAPP (GTEOSI, 2002) established for this project. Major deficiencies in the data generation process would have resulted in data being rejected, indicating that the data are considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process resulted in some sample data being characterized as approximate or estimated. Identification of a data point as approximate indicates uncertainty in the reported concentration or detection limit of the chemical, but not its assigned identity.

The following paragraphs present the adherence of the data to the precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS) parameters.

Precision is measured through the evaluation of field duplicate samples and laboratory duplicate samples, and LCS recoveries indicate the accuracy of the data.

Holding times, sample preservation, blank analysis, and analyte identification and quantification are indicators of the representativeness of the analytical data.

Comparability is not compromised, provided that the analytical methods do not change over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures were consistently used by the laboratory, the comparability criteria for the analytical data were met.

Sensitivity is established by reported detection limits that represent measurable concentrations of analytes that can be determined with a designated level of confidence.

5. Data Usability Summary Report Summary Information

The DUSR was performed to determine whether or not the data meets site-specific criteria for data quality and use. The DUSR is developed by reviewing and evaluating the analytical data package. The following questions were addressed:

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

The QAPP required that USEPA Level III deliverables be provided by the laboratory for each data package. This requirement was met as it applies to the methods used by the laboratory for sample analysis. Proper documentation was provided to enable a thorough validation review of the analytical data.

2. Have all holding times been met?

All holding times were met.

3. Do all the QC data: blanks, standards, spike recoveries, replicate analyses, and sample data fall within the protocol-required limits and specifications?

The laboratory used the laboratory control limits during the analyses performed for this sampling event. Only minor QA/QC deviations were observed, with subsequent minimal qualification to sample data.

4. Have all of the data been generated using established and agreed upon analytical protocols?

The QAPP required that USEPA guidance methods be used in the analysis of samples collected for this sampling event. The laboratory used the required method protocols (with some minor modifications) for the analyses performed for this sampling event, which met data user and client needs.

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

The raw data confirms the reported qualitative and quantitative results that were submitted by the laboratory in the data packages.

Have the correct data qualifiers been used?

The laboratory applied the correct qualifiers to the sample data (although "ND" was used for "U" on the sample results report forms. The validation qualifiers were applied as required by validation guidelines listed in Section 1

References

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, (SW846) USEPA, Final Update IIIA, April 1998;

USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review, EPA 540-R-99-008, October 1999;

Analytical Services Protocol (ASP), New York State Department of Environmental Conservation (NYSDEC). Guidance documents including Exhibits A, B, C, D, E, F, G, H, and I. (June 2000), and

United States Environmental Protection Agency Region II Contract Laboratory Program (CLP) Organics Data Review, SOP No. HW-6, Revision #11 (USEPA 1996a)

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Executive Summary

This report addresses data quality for groundwater samples collected south of the former Sylvania Electric Products Incorporated facility in Hicksville, New York. Sample collection activities were conducted by Malcolm Pirnie, Inc. between October 30, 2007 and November 14, 2007. The environmental samples collected for this investigation were submitted to TestAmerica Laboratories, Inc. (formerly Severn Trent Laboratories, Inc.) of Earth City, MO for Target Compound List Volatile Organic Compound (TCL VOC) analyses using United States Environmental Protection Agency (USEPA) guidance methods. The analytical data generated for this investigation were evaluated by Data Validation Services (DVS) using the quality assurance/quality control (QA/QC) criteria established in the methods as guidance. Non-conformances from the QA/QC criteria were qualified based on guidance provided in the following references:

- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* (SW846) USEPA, Final Update IIIA, April 1998;
- *United States Environmental Protection Agency Contract Laboratory Program National Functional Guidelines for Organic Data Review,* EPA 540-R-99-008, October 1999;
- *Analytical Services Protocol (ASP), New York State Department of Environmental Conservation* (NYSDEC). Guidance documents including Exhibits A, B, C, D, E, F, G, H, and I. (June 2000), and
- *United States Environmental Protection Agency Region II Contract Laboratory Program Organics Data Review,* SOP No. HW-6, Revision #11 (USEPA 1996a)

Professional judgment can be used to qualify results as estimated (J or UJ) in instances when so indicated by the overall quality of data.

A method non-conformance was observed with Laboratory Control Sample (LCS) recoveries, regarding which there was no significant effect on sample reported results. The equipment and trip blanks contained low level contamination of between one and three target compounds. The presence of these contaminants in those blanks indicate that some of the low level sample detections of these same analytes are to be considered as resulting from external contamination.

Also included in the data validation process is the replacement of results determined from responses that exceeded the laboratory calibration range (i.e., qualified with an "E" by the laboratory) with those reflecting responses (from dilution analyses) within the calibration range.

None of the exceedances or method non-conformance were significant enough to jeopardize the usability of the data. The reported sample results are usable based on the findings listed in this Data Usability Summary Report (DUSR).

Overall, 100 percent of the VOC data reported in the laboratory data packages were determined to be usable for qualitative and quantitative purposes. Those sample results qualified as estimated ("J" and "UJ") due to data validation QA/QC exceedances should be considered conditionally usable. Therefore, the completeness objective of 90 percent, as stated in the quality assurance project plan (QAPP), was met.

1. Introduction

1.1. Sample Identification

This report addresses the results of a data quality evaluation for groundwater samples collected south of the former Sylvania Electric Products Incorporated facility in Hicksville, New York (the Site). Sample collection activities were conducted between October 30, 2007 and November 14, 2007 by Malcolm Pirnie, Inc. A total of ten groundwater samples, two field duplicates, two trip blanks, and two equipment blanks were processed.

The laboratory Sample Delivery Group (SDG) (unique data package number), field identification, and laboratory identification number of the samples that were submitted for data validation are presented in Table 1-1.

Table 1-1: Sample Cross-Reference List

SDG	*Client ID*	*Laboratory ID*	*Analysis Requested*
F7K090121	P-118-361.55	F7K090121-001	VOCs by USEPA 8260B
	P-118-389.85	F7K090121-002	VOCs by USEPA 8260B
	P-118-426.40	F7K090121-003	VOCs by USEPA 8260B
	P-118-Dup#2	F7K090121-004	VOCs by USEPA 8260B
	Equipment Blank #6	F7K090121-005	VOCs by USEPA 8260B
	Trip Blank 10231108	F7K090121-006	VOCs by USEPA 8260B
F7K160121	MWP-114-170	F7K160121-001	VOCs by USEPA 8260B
	MWP-110-440	F7K160121-002	VOCs by USEPA 8260B
	MWP-110-355	F7K160121-003	VOCs by USEPA 8260B
	MWP-114-290	F7K160121-004	VOCs by USEPA 8260B
	P-118-450	F7K160121-007	VOCs by USEPA 8260B
	P-118-531.5	F7K160121-008	VOCs by USEPA 8260B
	P-118-537.4	F7K160121-009	VOCs by USEPA 8260B
	MWP-DUP-1	F7K160121-005	VOCs by USEPA 8260B
	MWP-EB-1	F7K160121-006	VOCs by USEPA 8260B
	TB11091115	F7K160121-010	VOCs by USEPA 8260B

1.2. General Considerations

The data validation review process is designed to evaluate the specific technical aspects of the analytical laboratory processing and the sample matrix, to verify that the final data reported for the field samples accurately reflect sample constituency, and to inform the end-user of the limitation of the data in the event

that they do not. This report summarizes the findings of the review and outlines any deviations from the applicable QC criteria outlined in the following documents:

- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* (SW846) USEPA, Final Update IIIA, April 1998.
- *USEPA CLP National Functional Guidelines for Organic Data Review,* EPA 540-R-99-008, October 1999.
- *Analytical Services Protocol (ASP), New York State Department of Environmental Conservation* (NYSDEC). Guidance documents including Exhibits A, B, C, D, E, F, G, H, and I. (June 2000)
- *USEPA Region II CLP Organics Data Review,* SOP No. HW-6, Revision #11 (USEPA 1996a); and

1.3. Analytical Methods

The environmental samples collected for this investigation were submitted to TestAmerica Laboratories, Inc. of Earth City, Missouri for volatile organic compound (VOC) analyses. The laboratory used the following USEPA guidance methods for the analyses:

- SW846 Method 5030B Purge/Trap Analysis
- SW846 Method 8260B Gas Chromatography/Mass Spectrometry

Each data package represents a sample delivery group (SDG), a collection of specific samples assigned during the sample log-in process. The SDG number is the means by which the laboratory tracks samples and controls QC analyses. A total of two SDGs, each containing between three and seven groundwater samples (and accompanying field QC), were created and processed for this project scope. The SDG, field identification and laboratory identification for each sample are summarized in Table 1-1.

The following sections of this document address distinct aspects of the validation process. Section 2 lists the data QA/QC protocols used to validate the sample data. A summary of the findings associated with the validation and the specific QA/QC deviations and qualifications performed on the sample data are discussed in Section 3. Data completeness and usability are discussed in Section 4. Section 5 presents the DUSR Summary Information.

2. Data Validation Protocols

2.1. Sample Analysis Parameters

Validation of the data was performed using guidance from the project QAPP (GTEOSI, 2002), the analytical methodology, and the data validation guidelines referenced in Section 1.

DVS performed a data review of all analytical results to assess data quality. A data review includes an assessment of sample handling protocols, supporting laboratory quality control (QC) parameters, and field QC. The following is a list of specific analytical information evaluated during the validation:

- Data package completeness review – per the NYSDEC ASP Category B
- Analytical methods performed and test method references
- Sample condition - review of log-in records for cooler temperature, presence of headspace, chemical preservation, etc.
- Holding times -comparison of collection and analysis dates

- Analytical results -units, values, significant figures, reporting limits, calculation algorithms
- Sample traceability and comparison to raw data
- Instrument tuning
- Initial calibration standards
- Continuing calibration standards
- Method blank results and laboratory contamination
- Laboratory control sample (LCS/MSB) results and comparison to laboratory and NYSASP control limits
- Matrix spike/matrix spike duplicate (MS/MSD) results; comparison to laboratory control limits
- Field duplicate results and comparison to data review criteria
- Surrogate recoveries and comparison to laboratory control limits
- Internal Standards and comparison to method and validation criteria
- Field QC sample (e.g., trip blanks, equipment blanks, etc.) --external contamination;
- Reporting Limits and dilutions

Review was performed on the laboratory analytical reports to determine completeness of the data packages and the acceptability of the accompanying QC data. When QC results fell outside recommended or required QC limits, validation data qualifiers were applied to the results in order to reflect the potential compromise in the integrity of the originally reported result. These qualifiers are in addition to, or a revision of, the qualifiers provided by the laboratory. A summary of the data qualifiers used for this review is presented in Section 2.2.

2.2. Data Qualifiers

The following qualifiers have been used by the laboratory:

"U"/ "ND"
: Non-detected result at the required QAPP reporting limit--- the laboratory utilizes "U" within the full data package, and "ND" in the summary package report Forms I equivalents.

"B"
: Associated with a result if the compound was identified in the corresponding method blank.

"J"
: Indicates an estimated value or a value below the established reporting limit but above the method detection limit.

"E"
: This flag identifies compounds whose concentrations exceed the calibration range of the instrument for the specific analysis; data qualified with an "E" are qualitative only and not useable for quantitative purposes. All results qualified with an "E" were required to be re-analyzed using an applicable dilution and re-reported.

Laboratory qualifiers defined above, are retained in the final database unless revised during the data validation process to one of the following qualifiers:

"U"/"ND"
: The analyte was not detected at the indicated reporting limit.

"J"
: Estimated concentration because the result was below the sample reporting limit or quality control criteria were not met.

"UJ" The chemical was not detected at or above the indicated reporting limit. However, the reporting limit is approximate and may or may not represent the actual limit of reporting necessary to accurately and precisely measure the analyte in the sample.

2.3. Data Usability Summary Report Questions

The DUSR determines whether or not the data meets site-specific criteria for data quality and use. It was developed by reviewing and evaluating the analytical data packages. During the course of this review the following questions were addressed (where applicable):

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

2. Have all holding times been met?

3. Do all the QC data: blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?

4. Have all of the data been generated using established and agreed upon analytical protocols?

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

6. Have the correct data qualifiers been used?

The answers to the questions presented by the DUSR are presented in the following sections of the report and in the DUSR Summary Information Section, Section 5.

3. Data Quality Evaluation

3.1. Summary

This section summarizes the review evaluation and subsequent usability of the data generated for this sampling event, as indicated by results of quality control parameters associated with the project samples. Laboratory compliance with required deliverables and processing was also assessed.

3.2. Validation Review

3.2.1. Completeness Review

The laboratory data packages were generated to include summary forms and raw data as specified in the New York State Department of Environmental Conservation (NYSDEC) Category B format. All summary form and raw data required for full validation review were provided. Custody and login forms pertaining to one of the data packages were provided on request.

3.2.2. Test Methods

The laboratory performed the analyses using the analytical test methods listed in Section 1.3. These included SW846 Method 5030B (aqueous sample purge/trap analysis) followed by Method 8260B (gas chromatography/mass spectrometry). The samples were analyzed using a 25-mL purge volume, thus providing lower reporting limits for each compound than those available with the unmodified method.

3.2.3. Sample Receipt

Sixteen aqueous samples were submitted for VOC analysis between October 30, 2007 and November 14, 2007. This included ten field samples, two field duplicates, two equipment blanks, and two trip blanks.

The sample temperatures at the time of receipt were within the recommended temperature range of 4°C±2°C for all deliveries.

Field and laboratory personnel completed the Chain-of-Custody (COC) documents correctly recording the signature, date, and time of custody transfer.

The laboratory recorded the condition of the samples at the time of receipt on a "Conditions Upon Receipt Form." This Form identifies whether the containers were received undamaged, within the proper temperature range, at the proper pH, in a container that is sealed with a custody seal on the exterior, and with a completed COC enclosed to identify all samples submitted to the laboratory.

Discrepancies between label information and custody form entries were observed, relating to collection times and sample identifications of two samples. Custody form entries were utilized.

A hand-edit was made to one sample ID entry on the custody, from "MWP-114-120" to "MWP-114-170". That edit should have been dated and initialed when made.

3.2.4. Holding Times

The technical and contractual holding times between sample collection and laboratory analyses meet method and QAPP requirements of 14-days for acid preserved field samples.
The trip blank associated with the 11/08/07 shipment was received by the laboratory outside of analytical holding time from the date of filling. The results for that blank are therefore qualified as estimated, with a potentially low bias. This means that the potential for external contamination in those three associated project samples (and the field duplicate) has not been thoroughly evaluated. Results for low-level detections in those samples should be used with that consideration. Table 3-1 shows a summary of that blank and qualified parameters.

Table 3-1. *Evaluation of Holding Times*

Package Identification	*Sample IDs*	*Compounds*	*Action*
F7K090121	Trip Blank 10231108	All	Qualify non-detections "UJ" Qualify detections "J"

3.2.5. Analytical Results

The laboratory provided a Form I equivalent with the reported analytical results for the requested analyses. The Form I format that was submitted is not strictly in compliance with USEPA CLP requirements as regards the inclusion of laboratory name and code. The forms do show the client sample identification, the laboratory sample identification, the file identification, the matrix, the date and time the sample was collected, the date the sample was received, the date and time the sample was analyzed, the dilution factor, the preparation batch identification number, the chemical abstract service (CAS) number for each analyte, the units of measure; and the laboratory qualifier (if any). Additional CLP forms were provided (e.g., II, III, etc.) to report applicable QC information for the analyses performed. The laboratory provided all the necessary forms for the VOC method.

3.2.6. Traceability to Raw Data

The traceability of the sample results to the raw data was easily accomplished by the use of the information on the summary forms and laboratory analysis logs.

3.2.7. Instrument Tuning

The GC/MS system performance was shown to produce acceptable mass identifications and sensitivity with the evaluation of the instrument tuning compound bromofluorobenzene (BFB). All requirements for mass fragmentation and resolution were met. The instrument performance was checked prior to calibration and once every 12-hour shift for all analytical QC batches.

3.2.8. Initial Calibration

Calibration standards are analyzed at required frequency and concentration in order to show that the instrumentation is performing consistently and to establish the linear range of response.

All linearity relative standard deviations (%RSD) met analytical and validation guidelines.

Relative response factors (RRFs) were within method protocol requirements. However, responses for acetone and 2-butanone in the calibration standards show RRFs typical for this methodology, but below the validation limit of 0.05 noted in the guidance documents cited earlier in this narrative. The acetone and 2-butanone RRFs observed with this project are considered acceptable (above 0.01) in the updated USEPA Region II low level volatile analysis validation SOP (HW-33), further supporting judgment that the data are usable. Acceptance of these data is based upon the linearity and consistency of standard responses, the recoveries of these analytes in the spiked QC, and the quality of the mass spectra of acetone. Data for those compounds in all project samples and QC are qualified as estimated. Table 3-2 shows the samples and indicated qualifications:

Table 3-2. *Evaluation of Initial Calibration Results*

Package Identification	*Sample IDs*	*Compounds**	*Action*
F7K090121 F7K160121	All	Acetone and 2-butanone	Qualify detections "J" Qualify non-detections "UJ"

3.2.9. Continuing Calibration

The continuing calibration standards (CCAL) were performed with a mid-level standard immediately following the tuning check at the beginning of each 12-hour analytical sequence. The CCAL verification analyses met method criteria (i.e., RRFs were >0.05 for the SPCCs, and the percent differences (%Ds) from the avgRRF were < 20% for the CCCs) for all analytical QC batches. For the target compounds, the %Ds were greater than 20% for three compounds. Although method criteria were met, as a conservative approach the results associated with a CCAL that exceeded 20%D were qualified as estimated ("J" or "UJ"). Table 3-3 shows a summary of the samples and qualified parameters.

Table 3-3. *Evaluation of Continuing Calibration Results*

Package Identification	*Sample ID*	*Compound (%D)*	*Action*
F7K090121	P-118-361.55 P-118-389.85 P-118-426.40 P-118-DUP#2 Equipment Blank #6 Trip Blank 10231108	Carbon tetrachloride (31%D)	Qualify detections "J" Qualify non-detections "UJ"

3.2.10. Laboratory Method Blanks

Blanks are processed to evaluate the potential for external contamination at sample collection, transport, and analysis.

Method blanks are clean water samples that are processed as part of the analytical sequence, and whenever contamination may be present in the analytical system.

Laboratory method blanks showed no contamination, with the exception of one in which bromomethane was detected at a low concentration. There were no detections of this compound in the field samples, and reported results are therefore unaffected.

3.2.11. Laboratory Control Sample Results

LCSs are fortified blanks that are spiked with known concentrations of specific analytes. The recoveries of these analytes confirm that laboratory processing and instrumentation are producing accurate and consistent results.

LCSs were processed at the correct frequency, and in duplicate, thus providing evaluation for precision as well as accuracy. All percent recoveries were within laboratory control limits and validation action levels with the exception of those for bromomethane (215% and 224%, above 140%) in one pair of the LCSs. Bromomethane was not detected in associated samples and results are therefore not affected.

Acetone showed an elevated duplicate correlation (22%RPD, above 20%RPD) in that same set. Two of the samples show acetone detections, and are therefore qualified as estimated in value. Table 3-4 shows the affected samples:

Table 3-4. *Evaluation of Laboratory Control Sample Results*			
Package Identification	***Client ID***	***Compound***	***Action***
F7K160121	P-118-531.5 P-118-537.4	Acetone	Qualify detections "J"

3.2.12. Matrix Spike/Matrix Spike Duplicate Analyses

Target analyte compounds are added to defined project samples in order to monitor how well those analytes recover through the analytical process. Duplicate matrix spike or duplicate parent sample results are also compared to see how well they correlate to one another. Those recoveries indicate the accuracy and precision of sample reported results.

No project samples were submitted or processed for MS/MSD evaluations. Non-project batch QC accuracy and precision data were provided, and show several analytes with either outlying recoveries or elevated duplicate correlations. No qualification is made to the samples in this project due to matrix effects of other project samples.

3.2.13. Field Duplicate Analyses

P-118-426.40 and P-114-290 were submitted with accompanying field duplicates. An evaluation of the precision of the field sampling procedure (as well as the laboratory analysis procedure) was made based on the relative percent difference (RPD) calculated for the original and duplicate sample results. RPD calculations were made only when both results were above the laboratory reporting limits. The RPD values for all compounds were less than 30% (aqueous data evaluation criteria).

3.2.14. Trip Blanks and Equipment Blanks

Blanks are processed to evaluate the potential for external contamination at sample collection, transport, and analysis.

- Equipment blanks are collected by pouring de-ionized water through decontaminated sampling equipment in order to verify that the decontamination process is performed completely.

- Trip blanks are sealed vials of clean water that are transported with the sample vials from the mobile laboratory to the site prior to sample collection, and from the site to the laboratory with the collected samples. They are stored and processed with the project samples, thus reflecting potential contamination from external sources.

Two trip blanks and two equipment blanks were submitted with the groundwater samples. One trip blank showed low-level contamination of trichloroethene, and the other trip blank showed low-level contamination of chloromethane, chloroethane, and trichloroethene. One of the equipment blanks showed no contamination, and the other showed low-level detections of carbon tetrachloride and trichloroethene. Results for these specific analytes in associated field samples that were found at concentrations below the validation action limit have been edited to reflect the fact that the sample detected values may be a result of external contamination. Edits to the affected target compounds were based on trip and equipment blank contamination, in accordance with practices described in the validation guidance documents listed in Sections 1.2. Table 3-5 shows the samples and compounds that were qualified as non-detect ("U").

Table 3-5. *Evaluation of Trip Blank and Equipment Blank Results*

Package Identification	***Sample ID***	***Compound*** (Blank concentration)	***Action***
F7K090121	P-118-361.55	Carbon tetrachloride (0.13 ug/L)	Edit to "U" or "ND"
	P-118-361.55 P-118-389.85 P-118-426.40 P-118-DUP#2	Chloromethane (0.67 ug/L)	Edit to "U" or "ND"
	P-118-361.55	Trichloroethene (0.19 ug/L)	Edit to "U" or "ND"

3.2.15. System Monitoring Compounds

System Monitoring Compounds (SMC) are surrogate standards that behave similarly to the target analytes during the analysis procedures, and serve to monitor system performance and potential sample matrix interference.

The three SMC evaluated in the TCL VOA analyses show acceptable recoveries in the field samples. This indicates that there are no significant sample matrix effects on the recoveries of target analytes, and aids in the confirmation of reported quantitative values.

3.2.16. Internal Standards

System performance and sample matrix interferences are evaluated during the VOA analyses by the addition of internal standard compounds to all samples and associated QC.

All samples show internal standards within the required range. The retention times of the internal standards fell within ± 30 seconds from that of the most recent calibration for all analyses.

3.2.17. Compound Identification and Quantitation of Results

The retention times and mass spectra of detected analytes meet protocol requirements for identification of the target analytes.

The retention times of detected analytes meet protocol requirements for identification.

Raw data were provided for review in the data package. Calculation algorithms, quantitative results, and reporting limit values have been confirmed during this review process.

Ten of the project samples were processed at secondary dilution in order to bring certain of the analyte detected responses into instrument calibration range. The results derived from the dilution analyses are used for those specific sample analyte results, as shown in Table 3-6.

Table 3-6. *Summary of Laboratory Re-Analyses*

Package Identification	Client ID	Compound Reported From Dilution Analysis
F7K090121	P-118-426.40	Tetrachloroethene Trichloroethene
	P-118-DUP#2	Tetrachloroethene Trichloroethene
F7160121	MWP-114-170	cis-1,2-Dichloroethene Trichloroethene
	MWP-110-440	Tetrachloroethene
	MWP-110-355	Trichloroethene
	MWP-114-290	Trichloroethene
	MWP-DUP-1	Trichloroethene
	P-118-450	Tetrachloroethene Trichloroethene Carbon Tetrachloride
	P-118-531.5	Tetrachloroethene Trichloroethene
	P-118-537.4	Tetrachloroethene Trichloroethene

4. Summary and Data Usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. Overall, 100 percent of the VOC data were determined to be usable for qualitative and quantitative purposes. Those sample results qualified as estimated ("J" and "UJ") due to data validation QA/QC exceedances should be considered conditionally usable. No project data have been rejected.

The samples collected from the site in Hicksville, New York were evaluated based on QA/QC criteria established by methods as listed in Section 1.3, by the data validation guidelines listed in Section 1.2, and by the QAPP (GTEOSI, 2002) established for this project. Major deficiencies in the data generation process would have resulted in data being rejected, indicating that the data are considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process resulted in some sample data being characterized as approximate or estimated. Identification of a data point as approximate indicates uncertainty in the reported concentration or detection limit of the chemical, but not its assigned identity.

The following paragraphs present the adherence of the data to the precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS) parameters.

Precision is measured through the evaluation of field duplicate samples and laboratory duplicate samples, and LCS recoveries indicate the accuracy of the data.

Holding times, sample preservation, blank analysis, and analyte identification and quantification are indicators of the representativeness of the analytical data.

Comparability is not compromised, provided that the analytical methods do not change over time. A major component of comparability is the use of standard reference materials for calibration and QC.

These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures were consistently used by the laboratory, the comparability criteria for the analytical data were met.

Sensitivity is established by reported detection limits that represent measurable concentrations of analytes that can be determined with a designated level of confidence.

5. Data Usability Summary Report Summary Information

The DUSR was performed to determine whether or not the data meets site-specific criteria for data quality and use. The DUSR is developed by reviewing and evaluating the analytical data package. The following questions were addressed:

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

The QAPP required that USEPA Level III deliverables be provided by the laboratory for each data package. This requirement was met as it applies to the methods used by the laboratory for sample analysis. Proper documentation was provided to enable a thorough validation review of the analytical data.

2. Have all holding times been met?

All field sample holding times were met.

3. Do all the QC data: blanks, standards, spike recoveries, replicate analyses, and sample data fall within the protocol-required limits and specifications?

The laboratory used the laboratory control limits during the analyses performed for this sampling event. Only minor QA/QC deviations were observed, with subsequent minimal qualification to sample data.

4. Have all of the data been generated using established and agreed upon analytical protocols?

The QAPP required that USEPA guidance methods be used in the analysis of samples collected for this sampling event. The laboratory used the required method protocols (with some minor modifications) for the analyses performed for this sampling event, which met data user and client needs.

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

The raw data confirm the reported qualitative and quantitative results that were submitted by the laboratory in the data packages.

Have the correct data qualifiers been used?

The laboratory applied the correct qualifiers to the sample data (although "ND" was used for "U" on the sample results report forms. The validation qualifiers were applied as required by validation guidelines listed in Section 1

References

URS Corporation, *Groundwater Investigation Work Plan, Former Sylvania Electric Products Facility, Hicksville, New York,* QAPP: Appendix C. September 2002.

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, (SW846) USEPA, Final Update IIIA, April 1998;

United States Environmental Protection Agency Contract Laboratory Program National Functional Guidelines for Organic Data Review, EPA 540-R-99-008, October 1999;

Analytical Services Protocol (ASP), New York State Department of Environmental Conservation (NYSDEC). Guidance documents including Exhibits A, B, C, D, E, F, G, H, and I. (June 2000), and

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Executive Summary

This report addresses data quality for groundwater profile samples collected at points south and east of the former Sylvania Electric Products Incorporated Facility in Hicksville, New York. The groundwater profile samples were collected by Malcolm Pirnie, Inc. (Malcolm Pirnie) from April 1, 2009 through May 5, 2009.

The environmental samples collected for this investigation were submitted to TestAmerica, Inc. of Earth City, Missouri, for volatile organic compound (VOC) analysis and to TestAmerica, Inc. of Phoenix, Arizona for 1,4-dioxane analysis using United States Environmental Protection Agency (USEPA) SW-846 guidance methods. A total of 37 samples[1] were submitted, which resulted in 745 VOCs and 18 semivolatile organic compound (SVOC) results[2]. Of this number, 525 of them are actual sample results[3] and the remainder are field quality assurance/quality control (QA/QC) indicators[4] of the samples. The analytical data generated for this investigation were evaluated by Malcolm Pirnie using the QA/QC criteria established in the methods and USEPA guidelines. Non-conformances from the QA/QC criteria were qualified based on guidance provided in the following references:

- United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review.* EPA 540-R-08-01. June 2008.
- United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IV. January 2008.
- United States Environmental Protection Agency, Region 2. *Validating Semivolatile Organic Compound by Gas Chromatography/Mass Spectrometry SW-846 Method 8270D.* SOP No. HW-22, Revision #3. October 2006.
- United States Environmental Protection Agency, Region 2. *Validating Volatile Organic Compound by Gas Chromatography/Mass Spectrometry SW-846 Method 8260B.* SOP No. HW-24, Revision #2. October 2006.

In circumstances where the quality of the data or the accuracy of the results is suspect, the project's Quality Assurance Project Plan (QAPP) and professional judgment[5] were also used to consider if results should be qualified as estimated ("J" or "UJ"). Since individual guidance documents used (as a source of reference for the validation) may differ slightly in the type of qualification applied to data, Malcolm Pirnie applied qualifiers generally with an err to caution. Method non-conformances included exceedances of the relative percent standard deviation for the initial calibrations, the percent differences of the continuing calibrations, and the excessively low response factors in both the initial and continuing calibrations. Results rejected were due to initial and continuing calibration response factor non-conformances and to extremely poor surrogate recoveries.

[1] Total number of samples includes field samples, field duplicates, trip blanks, and equipment blanks. For this evaluation, samples with the same sample ID for VOCs and for 1,4-dioxane are considered separate samples.
[2] Total number of results includes 759 results for targeted compounds and 4 results for tentatively identified compounds. This number includes some results that were rejected by the validation process.
[3] This is the total number of results minus trip blank, equipment blank, and field duplicates results.
[4] These indicators do not include Matrix Spike/Matrix Spike Duplicate or other internal laboratory QA/QC indicators.
[5] Professional judgment is performed by a USEPA trained data validator with over a decade of environmental laboratory experience.

Additionally, most laboratory VOC method blanks contained low level contamination from common laboratory contaminants, including acetone and methylene chloride. The presence of these contaminants affected some project samples. Qualification of associated results was performed to show the relationship between the laboratory contamination and the uncertainty of the final sample result. In many cases, the project trip blanks and equipment blank contained low-levels of the same contaminants as were seen in the laboratory method blanks, in addition to other contaminants due to cross-contamination during field sampling activities. Malcolm Pirnie qualified the affected data to show the potential impact on the final sample results.

Other quality issues requiring data validation qualification included replacement of results which exceeded the laboratory calibration range (i.e., qualified with an "E" by the laboratory) with re-analysis results, and qualification of all tentatively identified compounds (TIC). TIC results are qualitative only, and not considered usable for quantitative assessments, in particular risk screening evaluations.

Overall, 97.2 percent[6] of the results retained in the data set as final data were determined to be usable for qualitative and quantitative purposes. The other 2.8 percent were qualified as unusable, "R," – the presence or absence of the compounds cannot be verified. Sample results qualified as estimated, "J" and "UJ," due to quality control (QC) deficiencies should be considered conditionally usable. Therefore, the completeness objective of 90 percent, as presented in the QAPP, was met for the data set.

[6] Value = (763 total data points - 21 rejected data points) / 763 X 100

1. Introduction

1.1. Sample Identification

This report presents the results of a data quality evaluation for groundwater profile samples collected from profile locations P-119 and P-120 (see Figure 1) by Malcolm Pirnie from April 1, 2009 through May 5, 2009. The samples were collected for the analysis of volatile organic compounds (VOCs) via USEPA Method 8260B and/or for 1,4-dioxane via USEPA Method 8270C.

Cross-references of the sample delivery group (SDG) number (laboratory package identification number), date of sample collection, field sample identification, corresponding laboratory identification, and analytical method utilized are presented in Tables 1-1 and 1-2.

Table 1-1. VOC Sample Cross-Reference List

Package Identification	Sample Collection Date	Sample ID	Laboratory ID	Analytical Method
F9D090153	4/01/09	P-119-124.85	F9D090153-001	8260B
	4/02/09	P-119-144.95	F9D090153-002	8260B
	4/03/09	P-119-217.80	F9D090153-003	8260B
	4/03/09	P-119-224.80	F9D090153-004	8260B
	4/06/09	P-119-304.25	F9D090153-005	8260B
	4/06/09	FD-003-040609 (P119-304.25)	F9D090153-006	8260B
	4/08/09	TB-1-33140809	F9D090153-007	8260B
F9D240242	4/18/09	TB-0418042309	F9D240242-001	8260B
	4/19/09	P-120-103.50	F9D240242-002	8260B
	4/22/09	P-120-220	F9D240242-003	8260B
	4/23/09	P-120-230	F9D240242-004	8260B
F9E060254	5/01/09	P-120-361.50	F9E060254-001	8260B
	5/02/09	P-120-381.7	F9E060254-002	8260B
	5/04/09	P-120-424.80	F9E060254-003	8260B
	4/30/09	P-120-335.00	F9E060254-004	8260B
	4/30/09	P-120-345.00	F9E060254-005	8260B
	5/01/09	P-120-FD2 (P-120-361.50)	F9E060254-006	8260B
	4/28/09	TB042809	F9E060254-007	8260B
	5/05/09	P-120-EB-12	F9E060254-008	8260B

Table 1-2. 1,4-Dioxane Sample Cross-Reference List

Package Identification	Sample Collection Date	Sample ID	Laboratory ID	Analytical Method
PSD0559	4/04/09	P-119-244.25	PSD0559-01	8270C Modified
	4/04/09	P-119-263.00	PSD0559-02	8270C Modified
	4/06/09	P-119-294.70	PSD0559-03	8270C Modified
	4/06/09	P-119-304.25	PSD0559-04	8270C Modified
	4/07/09	P-119-324.8	PSD0559-05	8270C Modified
	4/06/09	FD-003-040609 (P-119-304.25)	PSD0559-06	8270C Modified
	4/08/09	P-119-354.95	PSD0559-07	8270C Modified
PSD1403	4/22/09	P-120-200	PSD1403-01	8270C Modified
	4/23/09	P-120-220	PSD1403-02	8270C Modified
	4/23/09	P-120-239.30	PSD1403-03	8270C Modified
PSE0020	4/28/09	P-120-263.50	PSE0020-01	8270C Modified
	4/30/09	P-120-326.65	PSE0020-02	8270C Modified
	4/29/09	EB-006-042909	PSE0020-03	8270C Modified
	4/30/09	P-120-335.00	PSE0020-04	8270C Modified
	4/30/09	P-120-345.00	PSE0020-05	8270C Modified
PSE0254	5/01/09	P-120-361.50	PSE0254-01	8270C Modified
	5/04/09	P-120-404.05	PSE0254-02	8270C Modified
	5/01/09	P-120-FD2 (P-120-361.50)	PSE0254-03	8270C Modified

1.2. General Considerations

Data validation is a process of determining the suitability of a measurement system for providing useful analytical results. Although the term is frequently used in discussing methodologies, it applies to all aspects of the analytical system, especially to samples, their measurements, and the actual data output. Accordingly, for the samples and analyses addressed herein, this report summarizes the findings of the review and outlines deviations from applicable quality control (QC) criteria referenced in the following documents:

- United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review.* EPA 540-R-08-01. June 2008.
- United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IV. January 2008.
- United States Environmental Protection Agency, Region 2. *Validating Semivolatile Organic Compound by Gas Chromatography/Mass Spectrometry SW-846 Method 8270D.* SOP No. HW-22, Revision #3. October 2006.
- United States Environmental Protection Agency, Region 2. *Validating Volatile Organic Compound by Gas Chromatography/Mass Spectrometry SW-846 Method 8260B.* SOP No. HW-24, Revision #2. October 2006.
- URS Corporation. *GTE Operations Support Incorporated - Groundwater Investigation Work Plan, Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* QAPP: Appendix C. September 2002.

1.3. Analytical Methods

The environmental samples presented in this report were collected in Hicksville, New York and submitted to TestAmerica Laboratories, Inc. located in Earth City, Missouri (St. Louis) for VOC analysis and in Phoenix, Arizona (Phoenix) for 1,4-dioxane analysis. The laboratories used the following USEPA guidance methods to conduct the analyses:

- SW-846 Method 5030B: Purge-and-Trap for Aqueous Samples
- SW-846 Method 8260B: Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)
- SW-846 3520C: Continuous Liquid-Liquid Extraction
- SW-846 8270C (modified): Semivolatile Organic Compounds (SVOC) by Gas Chromatography/Mass Spectrometry (GC/MS)

The laboratory assigned an SDG number to a group of samples during the sample log-in process. The SDG number is the means by which the laboratory tracks samples and QC analyses. A total of 37 samples, in a total of seven SDGs, are included in this data validation report. The SDG, collection date, field identification, laboratory identification, and analytical method used for each sample are summarized in Table 1-1 for TestAmerica St. Louis analyses and in Table 1-2 for TestAmerica Phoenix analyses.

The following sections of this report address distinct aspects of the validation process. Section 2 lists the data QA/QC elements and protocols used to validate the sample data. Section 3 presents a summary of the findings associated with the validation and a discussion of the specific QA/QC deviations and qualifications performed on the sample data. Section 4 presents a discussion of data completeness and usability. Section 5 presents the Data Usability Summary Report (DUSR) summary information.

TestAmerica St. Louis is a New York State Department of Health accredited laboratory with laboratory ID number 13715. They are approved to conduct drinking water and wastewater analyses. TestAmerica Phoenix is a New York State Department of Health accredited laboratory with laboratory ID number 11898. NYSDOH does not offer accreditation for the analysis of 1,4-dioxane via modified method 8270C. TestAmerica Phoenix is an accredited testing laboratory for drinking water and/or wastewater analysis for many other states (e.g., Arizona, California, Nevada, and Oregon).

2. Data Validation Protocols

2.1. Sample Analysis Parameters

The data validation of analyses for this project used guidances presented in the QAPP (GTEOSI, 2002), the analytical methodologies, the data validation guidelines referenced in Section 1, and professional judgment[7]. Malcolm Pirnie performed a data review of all analytical results to assess data quality. The data review included an assessment of sample handling protocols and supporting laboratory and field QC parameters. The following is a list of specific analytical information evaluated during the data validation:

- Data package completeness review – sufficient to fully conduct data validation
- Analytical methods performed and test method references
- Sample condition - review of log-in records for cooler temperature, absence of headspace, chemical preservation, etc.
- Holding times - comparison of collection, preparation, and analysis dates
- Analytical results - units, values, significant figures
- Sample traceability to raw data
- Instrument tuning
- Initial calibration – comparison to technical guideline criteria
- Continuing calibration – comparison to technical guideline criteria
- Method blank results and laboratory contamination
- Laboratory control sample (LCS) results and comparison to laboratory control limits
- Matrix spike/matrix spike duplicate (MS/MSD) results and comparison to laboratory control limits
- Field replicate/duplicate results and comparison to technical guideline criteria
- Field QC sample (i.e., trip blanks, field blanks, equipment blanks)
- Surrogate standard recoveries and comparison to laboratory control limits
- Internal standards and comparison to technical guideline criteria
- Compound identifications, quantitations, dilutions, and reporting limits
- Tentatively Identified Compounds (TICs)
- Electronic Data Deliverables (EDDs) – comparison to the hardcopy analytical

The analytical reports were reviewed for completeness and the accompanying QC data were reviewed for acceptable performance. When QC results indicated poor performance, Malcolm Pirnie applied data qualifiers to the results to inform the data user of the possible performance problem. These qualifiers are in addition to or a revision of the qualifiers provided by the laboratory. A summary of the data qualifiers used for this review is presented in Section 2.2.

[7] Professional judgment is performed by a USEPA trained data validator with over a decade of environmental laboratory experience.

2.2. Data Qualifiers

The following qualifiers have been used by the laboratory for organic analyses:

"U" Non-detect result at the laboratory established reporting limit.

"B" Associated with a result if the compound was also identified in the corresponding method blank.

"J" Indicates an estimated value or a value below the laboratory established reporting limit but above the method detection limit.

"E" This flag identifies compounds whose concentrations exceed the calibration range of the instrument for the specific analysis; data qualified with an "E" are qualitative only and not useable for quantitative purposes. All results qualified with an "E" were required to be re-analyzed using an applicable dilution and re-reported.

"D" This flag identifies compounds whose concentration is from a secondary dilution analysis.

During the data validation process, the laboratory qualifiers are retained, amended, or removed and/or new qualifiers are added based on the data validation findings. If any laboratory qualifiers are retained after the data validation process, they are considered data validation qualifiers. The following are data validation qualifiers and are the only qualifiers, if any, associated with this report's validated results.

"U" The compound was analyzed for, but was not detected above the reported quantitation limit.

"J" The compound was positively identified; the associated numerical value is the approximate concentration of the compound in the sample.

"N" The an ndicates the presence of a compound for which there is presumptive evidence to make ve identification".

"NJ" T. dicates the presence of a compound that has been "tentatively identified" and the as. merical value represents its approximate concentration.

"UJ" The compound was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of sary to accurately and precisely measure the compound in the sample.

"R" The sults are rejected due to serious deficiencies in the ability to analyze the sample and meet ntrol criteria. The presence or absence of the compound cannot be verified.

2.3. Data Usability Summary Report Questions

The DUSR determines whether or not the data meets project specific criteria for data quality and use. It was developed to review and evaluate the analytical data packages. During the course of this review the following questions were addressed (where applicable):

1. *Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?*

2. *Have all holding times been met?*

3. *Do all the QC data: blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?*

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

6. *Have the correct data qualifiers been used?*

The answers to the questions presented by the DUSR are presented in the following sections of the report and in the DUSR summary information section, Section 5.

3. Data Quality Evaluation

This section summarizes the evaluation of QA/QC parameters that were specified in Section 2.1, and whether they met validation criteria. The evaluation of VOCs is presented in Section 3.1 and the evaluation of 1,4-dioxane is presented in Section 3.2. Summaries of the individual components of the evaluation are described in their respective subsections.

3.1. Data Quality Evaluation for VOCs

3.1.1. Completeness Review

The laboratory provided the analytical results using formats based on the Contract Laboratory Program (CLP). Most documents were included in the report packages including a case narrative summarizing the QC issues associated with the project analyses. It should be noted that although the case narratives were included in each SDG, they were indiscriminately written and contains information that are not relevant to the data reported for this project. They were not relied upon in this data validation.

3.1.2. Test Methods

The laboratory performed the analyses using the analytical test methods listed in Section 1.3. They included USEPA SW-846 Method 5030B (purge and trap sample introduction) followed by Method 8260B (gas chromatography/mass spectrometry sample analysis). All samples were analyzed using a 25 mL (common volume used is 5 mL) purge volume, which offered lower reporting limits for each compound.

3.1.3. Sample Receipt

The laboratory received 19 water samples for VOC analysis between April 9, 2009 and May 6, 2009. The temperatures within all VOC sample shipment coolers at the time of laboratory receipt were within the recommended temperature range of 4°C ± 2°C. Field and laboratory personnel completed the Chain-of-Custody (COC) documents recording the signature, date, and time of custody transfer. The laboratory recorded the condition of the samples at the time of receipt on a "Conditions Upon Receipt Form." This form identifies whether the containers were received undamaged, within the proper temperature range, in a container that is sealed with a custody seal on the exterior, and with a completed COC enclosed to identify all samples submitted to the laboratory.

There were no custody seals attached to individual sample bottles. No qualification is necessary because the exterior of the shipment coolers had intact custody seals.

3.1.4. Holding Times

The maximum technical holding time for VOC samples that are preserved with HCl to a pH of ≤ 2 is 14 days from date of sample collection. The maximum technical holding time for VOC samples that are not preserved to a pH of ≤ 2 is 7 days. All samples were preserved in the field and the pH is check at the laboratory immediately prior to sample analysis when the sample bottle is opened.

The following problem with holding time was found:

- SDG F9D090153: when the pH of sample P-119-217.80 was checked immediately prior to sample analysis, the pH value was not ≤ 2, and since it was on the 10th day from the date of sample collection, the applicable 7 day maximum holding time has been exceeded. Therefore, all detect concentrations for sample P-119-217.80 will be qualified as estimated, "J", biased low, and based on professional judgment, all non-detect reporting limits will also be qualified as estimated values, "UJ", biased low.
- SDG F9D240242: no problems found
- SDG F9E060254: no problems found

3.1.5. Analytical Results

For each sample tested, the laboratory provided the analytical test information using formats based on the CLP program. This format requires the use of stylized forms to present critical information pertaining to the analyses performed. For all analytical results, the laboratory provided a "Form I" with the reported analytical results for the requested analyses. The Form I format shows the following information for organic analyses: laboratory name; laboratory sample identification; sample matrix; field sample identification; date the sample was received; date the sample was analyzed; dilution factor; chemical abstract service (CAS) number; unit of measurement; and laboratory qualifier (if any).

3.1.6. Traceability to Raw Data

Traceability of the VOC analyses is established by Form V (Instrument Performance Check). These forms were all supplied and list the project samples analyzed per laboratory batch processed and the corresponding QC samples performed with the project samples.

3.1.7. Instrument Tuning

The GC/MS instrument performance (i.e., "tuning data," or a check of mass spectral ion intensities using bromofluorobenzene [BFB]) met method criteria. The instrument performance was checked prior to calibration and once every 12-hour shift for all analytical batches. There were no deficiencies found.

- SDG F9D090153: tuning results acceptable
- SDG F9D240242: tuning results acceptable
- SDG F9E060254: tuning results acceptable

3.1.8. Initial Calibration

Initial Calibrations (ICALs) were performed at multiple concentration levels with most compound concentrations from 0.5 ug/L to 40 ug/L. The initial calibration for SDG F9D090153 was calibrated at seven concentration levels and the initial calibration for SDG F9D240242 was calibrated at eight concentration levels. The average relative response factors (RRFs) were all evaluated with respect to the acceptance criterion of ≥ 0.05 (or ≥ 0.10 for chloromethane, 1,1-dichloroethane, and bromoform, or ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane) to determine acceptable detection sensitivity. All compound response factors were also evaluated for linearity over the calibration range. A percent relative standard deviation (%RSD) ≤ 20.0 indicates linearity through the origin and an average RF would be used). For some chemicals with elevated %RSD, the laboratory had employed a linear regression equation to determine the calibration curve. Since the %RSDs were not presented by the laboratory for these chemicals, an acceptable calibration must have a coefficient of the determination (COD) greater than or equal to 0.99 (SW-846 8000B criterion).

Some compounds in the ICALs did not meet data validation criteria (i.e., average RRFs < 0.05 and/or the %RSDs > 20%). Table 3.1-1 shows a summary of the samples and compounds qualified as estimated, "J," or not usable, "R," due to ICAL deficiencies.

Table 3.1-1. Evaluation of VOC Initial Calibration Results

Package Identification	Initial Calibration Date	Sample ID	Compounds	Action
F9D090153	03/31/09, 11:21	P-119-124.85 P-119-144.95 P-119-217.80 P-119-224.80 P-119-304.25 FD-003-040609 TB-1-33140809	RRF: None %RSD: None	RRF < 0.05 None %RSD > 20% None
F9D240242	04/30/09, 11:23	TB-0418042309 P-120-103.50 P-120-220 P-120-230	RRF: 2-Butanone 1,4-Dioxane %RSD: None	RRF < 0.05 R – all non-detect results %RSD > 20% None
F9E060254	05/05/09, 15:02	P-120-361.50 P-120-381.7 P-120-424.80 P-120-335.00 P-120-345.00 P-120-FD2 TB042809 P-120-EB-12	RRF: Acetone 1,4-Dioxane %RSD: None	RRF < 0.05 R – all non-detect results J – all positive results %RSD > 20% None

3.1.9. Continuing Calibration

The continuing calibration verification (CCV) analyses were performed with a mid-level standard immediately following the tuning check at the beginning of each 12-hour analytical sequence. All RRFs were evaluated with respect to the acceptance criterion of ≥ 0.05 (or ≥ 0.10 for chloromethane, 1,1-dichloroethane, and bromoform, or ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane) to determine continued acceptable detection sensitivity. All compound responses were also evaluated for continued agreement with the initial calibration - a percent difference (%D) criterion of ≤ 20% for the RRF or calculated amount must be met (USEPA HW-24 criterion).

Some compounds in the CCV analyses did not meet data validation criteria (i.e., RRFs < 0.05, and/or the %Ds > 20%). Table 3.1-2 shows a summary of the samples and compounds qualified as estimated, "J," or not usable, "R," due to CCV deficiencies.

Table 3.1-2. Evaluation of VOC Continuing Calibration Results

Package Identification	CCV Date	Sample ID	Compounds	Action
F9D090153	04/13/09, 9:35	P-119-124.85 P-119-144.95 P-119-217.80 P-119-224.80 FD-003-040609 TB-1-33140809	RRF: None % D: 1,4-Dioxane	RRF < 0.05 None %D > 20% UJ – all non-detect results

Table 3.1-2. Evaluation of VOC Continuing Calibration Results

Package Identification	CCV Date	Sample ID	Compounds	Action
	04/14/09, 11:26	P-119-217.80 DL P-119-224.80 DL P-119-304.25	RRF: None % D: Chloromethane Chloroethane Acetone	RRF < 0.05 None %D > 20% UJ – all non-detect results J – all positive results
F9D240242	05/01/09, 08:38	TB-0418042309 P-120-103.50 P-120-220 P-120-230 P-120-230 DL	RRF: 2-Butanone 1,4-Dioxane % D: None	RRF < 0.05 R – all non-detect results %D > 20% None
F9E060254	05/11/09, 10:22	P-120-361.50 P-120-381.7	RRF: Acetone 1,4-Dioxane % D: Chloroethane Methylene chloride 2-Hexanone	RRF < 0.05 R – all non-detect results J – all positive results %D > 20% UJ – all non-detect results
	05/12/05, 09:25	P-120-424.80 P-120-335.00 P-120-345.00 P-120-FD2 TB042809 P-120-EB-12 P-120-361.50 DL P-120-381.7 DL P-120-335.00 DL P-120-345.00 DL P-120-FD2 DL P-120-361.50 DLDL	RRF: Acetone 1,4-Dioxane % D: Chloroethane	RRF < 0.05 R – all non-detect results J – all positive results %D > 20% UJ – all non-detect results J – all positive results

Note:
DL Suffix – Indicates a secondary diluted sample reanalysis
DLDL Suffix – Indicates a tertiary diluted sample reanalysis

3.1.10. Laboratory Method Blanks

There were minor contaminations detected in several of the method blanks. In general, most laboratory method blanks contained trace levels of one or more common laboratory contaminants. The following contaminants were detected in the following method blanks:

- SDG F9D090153: 4/13/09 none; 4/14/09- none
- SDG F9D240242: 5/01/09- methylene chloride, styrene
- SDG F9E060254: 5/11/09- benzene, bromomethane; 5/12/09- acetone, styrene, tetrachloroethene

The corresponding sample results for the identified contaminants were revised to non-detect results if these results were "less than five times" (< 5 X) the method blank results for laboratory contaminants in accordance with the QAPP (GTEOSI, 2002). However, per National Functional Guidelines (EPA 540-R-99-008), common laboratory contaminants (methylene chloride, acetone, and 2-butanone) criterion is "< 10 X" the method blank results. The National Functional Guidelines' criterion was also used. Most

samples were affected by these qualification guidelines. A summary of the samples and compounds that were revised due to laboratory contamination are presented in Table 3.1-3.

Table 3.1-3. Evaluation of VOC Laboratory Method Blank Results

Package Identification	Blank Date/Time	Sample Affected	Compounds	Action
F9D090153	4/13/09 12:12	None	None	None
	4/14/09 14:10	None	None	None
F9D240242	5/01/09 10:22	P-120-230	Methylene chloride	Revise "B" qualifier to "U" to indicate non-detect result
		None	Styrene	None
F9E060254	5/11/09 12:25	P-120-361.50 P-120-381.7 P-120-335.00 P-120-345.00 P-120-FD2	Benzene	Revised result to "U" (non-detect)
	5/12/09 11:09	TB042809 P-120-EB-12	Acetone Tetrachloroethene	Removed "B" qualifier. No need to qualify TB or EB with MB
		P-120-424.80	Tetrachloroethene	Removed "B" qualifier. Blank concentration < 5X of sample

In addition to the above, the following actions were also performed.

- SDG F9D240242: although not detected in the same day's method blank (5/12/09), based on professional judgment, samples P-120-335.00, P-120-345.00, P-120-FD2 were qualified for benzene with the previous day's method blank (5/11/09) as non-detects.

3.1.11. Laboratory Control Sample Results

The laboratory analyzed a laboratory control sample (LCS) for each day of sample analysis. Most LCS percent recoveries were within the laboratory control limits for each of the batches. Generally, for recoveries exceeding laboratory control limits substantially, the associated data would be qualified as estimated ("J" or "UJ") using the following validation guidance: 1) if the percent recovery was greater than the upper control limit, positive results are qualified as estimated; non-detects are not qualified; 2) if the percent recovery was below the lower control limit, both positive and non-detect results are qualified as estimated. For compounds that were slightly out, but were within the method default range of 70% to 130%, they were not qualified based on professional judgment. Table 3.1-4 shows the evaluation of LCS samples.

Table 3.1-4. Evaluation of VOC Laboratory Control Sample Results

Package Identification	LCS Date	Compound(s) Out	Affected Samples	Action
F9D090153	04/13/09	Acetone	None	None (high %R but not detected in samples)
	04/14/09	None	None	None
F9D240242	05/01/09	None	None	None

Table 3.1-4. Evaluation of VOC Laboratory Control Sample Results				
Package Identification	**LCS Date**	**Compound(s) Out**	**Affected Samples**	**Action**
F9E060254	05/11/09	None	None	None
	05/12/09	None	None	None

3.1.12. Matrix Spike/Matrix Spike Duplicate Analyses

MS/MSD analyses are designed to provide information about the effect of sample matrix on the sample preparation procedures and the measurement methodology. Data precision from field sampling and analytical techniques can also be assessed.

Only the associated non-spiked MS/MSD samples were evaluated for qualification (unless a trend can be determined for all other samples within the SDG). Where recoveries exceeded laboratory control limits, the associated data are qualified as estimated ("J" or "UJ") using the following validation guidance: 1) if the percent recovery was greater than the upper control limit, positive results are qualified as estimated; 2) if the percent recovery was below the lower control limit, both positive and non-detect results are qualified as estimated. No qualification of data is required when percent recoveries are above the upper control limit and the VOC results are non-detect. However, there were no MS/MSDs submitted that were relevant to the samples of this project.

- SDGs F9D090153, F9D240242, and F9E060254: MS/MSDs were not performed or were performed on samples from other clients of the laboratory. Matrix effect of the samples for accuracy and precision was not evaluated because those MS/MSDs offer no pertinent information on matrix effects of field samples from this project.

Table 3.1-5 shows the samples and compounds that were qualified as estimated due to MS/MSD percent recoveries exceeding criteria.

Table 3.1-5. Evaluation of VOC Matrix Spike/Matrix Spike Duplicate Sample Results			
Package Identification	**Sample ID**	**Compounds**	**Action**
Not Evaluated			None

Since no project samples were analyzed for MS/MSD, sample matrix effects were not evaluated for this project.

3.1.13. Field Duplicate Analyses

Blind field duplicate samples were collected and analyzed to assess the overall sampling and analytical technique's precision. And by design, the laboratory was never made aware of which field samples the blind duplicates were associated with. The following samples were analyzed for field duplicate:

- SDG F9D090153: sample FD-003-040609 is a blind field duplicate of sample P119-304.25
- SDG F9E060254: sample P-120-FD2 is a blind field duplicate of sample P-120-361.50

An evaluation on the precision of the field sample collection procedure (as well as the laboratory analysis procedure) was made based on the relative percent difference (RPD) calculated for the original and duplicate sample results. RPD calculations were made only when the results were above the laboratory

reporting limits. The RPD values for all compounds were less than 30% (aqueous data evaluation criteria) with the following exception:

- SDG F9E060254: the RPD for tetrachloroethene is 40.0%, for the P-120-FD2 duplicate pair. This may be due to the high dilution needed (200x and 100x) to bring the elevated tetrachloroethene concentration within the calibration range. Therefore, all samples where the dilution of 100x or above was conducted for tetrachloroethene are qualified as estimated values, "J". The only affected samples are the duplicate samples, P-120-361.50 and P-120-FD2.

There were no field duplicates submitted with SDG F9D240242. It should be noted that QAPP requirements (GTEOSI, 2002) specified that a field duplicate sample be collected at a rate of one sample for every ten samples (collection rate of 10%). There were 2 field duplicates collected for the 13 field samples submitted (not including blank samples collected as QCs) for analysis. Therefore, the frequency is satisfied and field precision is considered to have been evaluated to the QAPP's requirements.

3.1.14. Trip Blanks, Field Blanks, and Equipment Blanks

Three trip blanks, no field blanks, and one equipment blank were submitted for analysis. Many of the trip blanks that were submitted contained some contaminants. Edits made on the affected target compound results, which were based on trip blank and equipment blank contamination, were in accordance with practices described in the validation guidance documents listed in Sections 1.2 and on professional judgment. For all common contaminants (methylene chloride, 2-butanone, and acetone) that are greater than the reporting limit, positive sample results at less than 10x the highest blank concentration will be considered false positives (based on professional judgment) and qualified as non-detects "U". For all other contaminants that are greater than the reporting limit, positive sample results at less than 5x the highest blank concentration will be considered false positives (based on professional judgment) and qualified as non-detects "U". There were no field blanks submitted with any of the SDGs. The only equipment blank submitted was in SDG F9E060254, which was used for evaluating all SDG groundwater profiler location samples in the project. It should be noted that the results for the trip blanks and the equipment blank themselves were not revised with respect to the method blank's contamination; but the original results were retained to show data users the presence and concentrations of contamination that was used to qualify the project sample results. Any laboratory "B" qualifiers in the trip blanks and the equipment blank would be removed. The contamination in the trip blanks, like the project samples, is potentially attributable to cross-contamination from samples during shipment or contamination during the preparation and analysis of samples (including QC samples) at the laboratory. Contaminations detected in the equipment blank can also be used to identify contaminants introduced during the sample collection activities. Table 3.1-6 shows the samples and compounds that were qualified as non-detect "U" due to the presence trip blank and/or equipment blank contamination.

Table 3.1-6. Evaluation of VOC Trip Blank, Field Blank, and Equipment Blank Results

Package Identification	Sample Affected	Compound	Action
F9D090153	P-119-124.85 P-119-144.95	Tetrachloroethene Trichloroethene	Revised result to "U" (non-detect)
	P119-304.25 FD-033-040609 P-120-220 P-120-230	Trichloroethene	
F9D240242	None	Toluene o-Xylene	None, no sample detections
F9E060254	P-120-361.50 P-120-381.7	Acetone	Revised result to "U" (non-detect)

Table 3.1-6. Evaluation of VOC Trip Blank, Field Blank, and Equipment Blank Results			
Package Identification	**Sample Affected**	**Compound**	**Action**
	P-120-424.80	Trichloroethene	Revised result to "U" (non-detect)

For clarification, it should be noted that the following actions were performed.

- SDG F9D240242: although not detected in this SDG's trip blank, the trichloroethene sample concentrations in samples P-120-220 (2.3 ug/L) and P-120-230 (2.9 ug/L) were similar to that of the trip blank concentration from SDG F9D090153 (3.5 ug/L). Therefore, based on professional judgment, trichloroethene is qualified as a non-detect, "U", for samples P-120-220 and P-120-230 at the SDG F9D090153 trip blank level of 3.5 ug/L

3.1.15. System Monitoring Compounds

All percent recoveries for the VOC surrogates in all primary sample analyses were within laboratory control limits. However, there were three secondary or tertiary re-analyses with 4-bromofluorobenzene recoveries slightly below the laboratory's recovery range but greater than 70% recovery. The re-analyses were for the VOCs of tetrachloroethene and/or trichloroethene. The affected samples are P-120-361.50, P-120-381.7, and P-120-FD2 from SDG F9E060254. Since the surrogate 4-bromofluorobenzene is not associated with these two VOCs, no qualification actions are necessary.

- SDG F9D090153: no qualification actions performed
- SDG F9D240242: no qualification actions performed
- SDG F9E060254: no qualification actions performed

3.1.16. Internal Standards

All internal standard retention times were within ± 0.5 minutes from that of the associated calibration for all analyses. The responses (area counts) of all internal standards were within the range of 50-200% of the associated calibration verification for all samples. There were no deficiencies found.

- SDG F9D090153: all internal standards were acceptable
- SDG F9D240242: all internal standards were acceptable
- SDG F9E060254: all internal standards were acceptable

3.1.17. Compound Identification and Quantitation of Results / Dilutions

The laboratory's evaluations of the gas chromatograms and mass spectra for the identified compounds were acceptable with the exception.

- SDG F9D090153: no deficiencies found
- SDG F9D240242: Sample TB-0418042309 – o-xylene was positively detected and the concentration given in the quantitation report was 0.16 ug/L. The laboratory did not report the concentration, probably, because the concentration was low. The result for total-xylene will be

changed from non-detect to 0.16 J ug/L. The qualifier "J" is to denote that the concentration is below the reporting limit and, therefore, it is an estimated value.

- SDG F9E060254: Samples TB042809 and P-120-EB-12 – o-xylene was positively detected and the concentration given in the quantitation report was 0.19 ug/L and 0.10 ug/L, respectively. The laboratory did not report the concentration, probably, because the concentration was low. The result for total-xylene will be changed from non-detect to 0.19 J ug/L and 0.10 J ug/L, respectively. The qualifier "J" is to denote that the concentration is below the reporting limit and, therefore, it is an estimated value.

Some samples contained elevated concentrations of target compounds that exceeded the calibration range for the VOC analysis. The laboratory reported and qualified these results with an "E" qualifier. As part of the laboratory's corrective action, the affected samples were reanalyzed at a dilution to obtain usable results within the established calibration curve range. As part of this validation, specific compound results, which exceeded the calibration range in the original analysis, were replaced with the compound results from the secondary dilution analysis. The sample results, in effect, are made whole when the initial and secondary analyses are "hybridized," into one. A list of the re-analyzed samples and the affected compounds is presented in Table 3.1-7.

Table 3.1-7. Summary of VOC Laboratory Re-Analyses

Package Identification	Sample ID	Compound Reported From Re-Analysis
F9D090153	P-119-217.80 P-119-224.80	Tetrachloroethene
F9D240242	P-120-230	Tetrachloroethene
F9E060254	P-120-361.50 P-120-381-7 P-120-335.00 P-120-345.00 P-120-FD2	Tetrachloroethene Trichloroethene

Table 3.1-8. Summary of VOC Samples Analyzed Diluted Without an Undiluted Analysis

Package Identification	Sample ID	Initial Dilution
Not applicable		

3.1.18. Tentatively Identified Compounds (TICs)

The laboratory was required to perform library searches for TICs present in the samples and QC matrices for the VOC analyses. Since the TIC evaluation provides only the identity of a possible compound in the matrix and an estimated concentration of a compound, all TIC data should be considered tentatively qualitative and quantitative. The "N" qualifier was added to all TIC results to indicate to the data user that the compound identifications are tentative. The "J" qualifier was added to all TIC results to indicate to the data user that the values are estimated.

- TICs were only detected in SDG F9E060254. They were all the same TIC (1,1,2-trichloro-1,2-ethane) detected in samples P-120-361.50, P-120-335.00, P-120-345.00, and P-120-FD2. They were not detected in any of the blanks. There were no other TICs detected.

3.1.19. Electronic Data Deliverables

The results in the electronic data set matched results listed on the hardcopy analytical report including laboratory qualifiers. The qualifiers and results were revised based on quality control issues; and foundation for changes are listed in previous sections of this data validation report. The qualifiers were also placed onto the reporting forms located near the beginning of each hardcopy deliverable package (i.e., SDG package).

3.2. Data Quality Evaluation for 1,4-Dioxane

3.2.1. Completeness Review

The laboratory provided the analytical results in a Level IV data package. The package was not presented in a USEPA CLP format. Most documents were included in the report packages including a case narrative summarizing the QC issues associated with the project analyses. It should be noted that although the case narratives were included in each SDG, they do not necessarily contains information that are relevant to the data reported for this project. The case narratives were not relied upon in this data validation.

3.2.2. Test Methods

The laboratory performed the analyses using the analytical test methods listed in Section 1.3. They included USEPA SW-846 Method 3520C (continuous liquid-liquid extraction) followed by modified Method 8270C (SVOCs by GC/MS). All samples were prepared using an initial sample volume of 1 L, extracted down to a final volume of 1 mL. In the modification of the method, deuterated 1,4-dioxane (1,4-dioxane-d8) was added to the samples during sample extraction to be used as a surrogate standard to evaluate the extraction procedure and also used as an internal standard to quantify 1,4-dioxane in the samples (isotope dilution). The laboratory had quantitated each analytical run twice, first to ensure that the run meets Method 8270C analytical criteria, then again to determine the concentration of 1,4-dioxane, if detected, via 1,4-dioxane-d8.

3.2.3. Sample Receipt

The laboratory received 19 water samples for VOC analysis between April 9, 2009 and May 6, 2009. The temperatures within all SVOC sample shipment coolers at the time of laboratory receipt were within the recommended temperature range of 4°C ± 2°C, with the exception of samples of SDG PSD1403 at 8°C. However, the laboratory noted that the sample was "on ice" and therefore, no qualifications are necessary. Field and laboratory personnel completed the Chain-of-Custody (COC) documents recording the signature, date, and time of custody transfer.

3.2.4. Holding Times

The maximum technical holding time for SVOC samples from date of sample collection to date of sample extraction is 7 days, and from date of sample extraction to date of sample analysis is 40 days.

The following problems with holding time were found:

- SDG PSD0559: Due to poor surrogate standard recoveries with samples P-119-304.35, P-119-324.8, and FD-003-040609, the samples were re-extracted outside of holding time by 9 days, 8 days, and 9 days, respectively. Therefore, based on the poor surrogate standard recoveries of the initial analysis and the exceedance of holding time on the second analysis, the following actions are taken:

  Sample P-119-304.35: qualify 1,4-dioxane as an estimated non-detect

  Sample P-119-324.8: qualify 1,4-dioxane as an estimated non-detect

  Sample FD-003-040609: qualify 1,4-dioxane as an estimated non-detect

- SDG PSD1403: no problems found
- SDG PSE0020: Due to poor surrogate recoveries with the method blank and the detection of 1,4-dioxane in samples P-120-326.65, P-120-335.00, and P-120-345.00, these samples were re-extracted. However, these samples were re-extracted outside of the holding time by 11 days.

Since the equipment blank surrogates in the original extraction batch was acceptable and because the surrogates in method blank in the re-extracted batch was still poor, the results from the re-extracted batch will not be used. The original extraction batch, with acceptable holding time and acceptable equipment blank (in place of the method blank) will be used.

- SDG PSE0254: no problems found

3.2.5. Analytical Results

For each sample tested, the laboratory provided the analytical test information using their own formats into full data package (Level IV Data Package). For all analytical results, the laboratory provided a summary results form per SDG. The form format shows the following information for the analyses: laboratory name; laboratory sample identification; field sample identification, sample matrix; reporting unit; analytical method, sample preparation batch identification, reporting limit, sample result, dilution factor, date of sample extraction, date of sample analysis, and data qualifier (if any). Also included were surrogate recoveries.

3.2.6. Traceability to Raw Data

Traceability of the SVOC analyses is established by the Extraction Record sheets and the GCMS Run Logbook sheets. These sheets were all supplied and list the project samples analyzed per laboratory batch processed and the corresponding QC samples performed with the project samples.

3.2.7. Instrument Tuning

The GC/MS instrument performance (i.e., "tuning data," or a check of mass spectral ion intensities using decafluorotriphenylphosphine [DFTPP]) met method criteria. The instrument performance was checked prior to calibration and once every 12-hour shift for all analytical batches. There were no deficiencies found.

- SDG PSD0599: tuning results acceptable
- SDG PSD1403: tuning results acceptable
- SDG PSE0020: tuning results acceptable
- SDG PSE0254: tuning results acceptable

3.2.8. Initial Calibration

Initial Calibrations (ICALs) were performed at eight levels with concentrations from 1 ug/L to 100 ug/L. A deuterated 1,4-dioxane (1,4-dioxane-d8) was used as the internal standard for 1,4-dioxane. Based on the response factors of nearly unity, they behave chromatographically similar. The average relative response factors (RRFs) were all evaluated with respect to the acceptance criterion of ≥ 0.05. All compound response factors were also evaluated for linearity over the calibration range. A percent relative standard deviation (%RSD) ≤ 15.0 indicates linearity through the origin and an average RF would be used.

1,4-Dioxane in all ICALs met data validation criteria (i.e., average RRFs < 0.05 and/or the %RSDs > 15%). Table 3.2-1 shows a summary of the samples and compounds qualified as estimated, "J," or not usable, "R," due to ICAL deficiencies, if any.

Table 3.2-1. Evaluation of 1,4-Dioxane Initial Calibration Results				
Package Identification	**Initial Calibration Date**	**Sample ID**	**Compounds**	**Action**
PSD0559	04/07/09, 18:02	P-119-244.25 P-119-263.00 P-119-294.70 P-119-304.25 P-119-324.8 FD-003-040609 P-119-354.95	RRF: None %RSD: None	RRF < 0.05 None %RSD > 15% None
PSD1403	04/07/09, 18:02	P-120-200 P-120-220 P-120-239.30	RRF: None %RSD: None	RRF < 0.05 None %RSD > 15% None
PSE0020	05/08/09, 00:32	P-120-263.50 P-120-326.65 EB-006-042909 P-120-335.00 P-120-345.00	RRF: None %RSD: None	RRF < 0.05 None %RSD > 15% None
PSE0254	05/08/09, 00:32	P-120-361.50 P-120-404.05 P-120-FD2	RRF: None %RSD: None	RRF < 0.05 None %RSD > 15% None

3.2.9. Continuing Calibration

The continuing calibration verification (CCV) analyses were performed with a mid-level standard immediately following the tuning check at the beginning of each 12-hour analytical sequence. All RRFs were evaluated with respect to the acceptance criterion of ≥ 0.05 to determine continued acceptable detection sensitivity. All compound responses were also evaluated for continued agreement with the initial calibration - a percent difference (%D) criterion of $\leq 20\%$ for the RRF or calculated amount must be met (USEPA HW-22 criterion).

1,4-Dioxane in all CCV analyses met data validation criteria (i.e., RRFs < 0.05, and/or the %Ds > 20%). Table 3.2-2 shows a summary of the samples and compounds qualified as estimated, "J," or not usable, "R," due to CCV deficiencies, if any.

Table 3.2-2. Evaluation of 1,4-Dioxane Continuing Calibration Results				
Package Identification	**CCV Date**	**Sample ID**	**Compounds**	**Action**
PSD0559	04/14/09, 13:10	P-119-244.25 P-119-263.00 P-119-294.70 P-119-304.25 P-119-324.8 FD-003-040609 P-119-354.95	RRF: None % D: None	RRF < 0.05 None %D > 20% None
	04/16/09, 12:00	P-119-304.25 RE P-119-324.8 RE FD-003-040609 RE	RRF: None % D: None	RRF < 0.05 None %D > 20% None

Table 3.2-2. Evaluation of 1,4-Dioxane Continuing Calibration Results				
Package Identification	**CCV Date**	**Sample ID**	**Compounds**	**Action**
PSD1403	05/01/09, 17:26	P-120-200 P-120-220 P-120-239.30	RRF: None % D: None	RRF < 0.05 None %D > 20% None
PSE0020	05/08/09, 01:20	P-120-263.50 P-120-326.65 EB-006-042909 P-120-335.00 P-120-345.00	RRF: None % D: None	RRF < 0.05 None %D > 20% None
PSE0254	05/12/09, 11:29	P-120-361.50 P-120-404.05 P-120-FD2	RRF: None % D: None	RRF < 0.05 None %D > 20% None

Note:
RE Suffix – Indicates a reanalyzed sample

3.2.10. Laboratory Method Blanks

There were no 1,4-dioxane contamination detected in any of the method blanks. The following contaminants were detected in the following method blanks:

- SDG PSD0559: 4/10/09 - none; 4/15/09- none
- SDG PSD1403: 5/01/09 - none
- SDG PSE0020: 5/04/09 - none
- SDG PSE0254: 5/07/09 - none

A summary of the samples and compounds that were revised due to laboratory contamination are presented in Table 3.2-3.

Table 3.2-3. Evaluation of 1,4-Dioxane Laboratory Method Blank Results				
Package Identification	**Blank: Date Extracted**	**Sample Affected**	**Compounds**	**Action**
PSD0559	4/10/09	None	None	None
	4/15/09	None	None	None
PSD1403	4/29/09	None	None	None
PSE0020	5/04/09	None	None	None
PSE0254	5/07/09	None	None	None

In addition to the above, the following actions were also performed.

- SDG PSD0559: although there was no 1,4-dioxane detected in both method blanks, both method blanks have poor 1,4-dioxane-d8 recoveries. Since, it is not known if contamination was

detectable, based on professional judgment, positive sample results are consequently qualified as estimated "J".

- SDG PDE0020: the surrogate recoveries of the method were poor (1,4-dioxane-d8 = 7%, nitrobenzene-d5 = 23%). Therefore, it cannot be certain if the detections of 1,4-dioxane in the associated samples are or are not from contamination that would otherwise show up in the method blank. However, since an equipment blank sample was extracted with the batch and its surrogate recoveries were acceptable, the equipment blank will be used in place of the method blank. A re-extracted batch (5/20/09), also with poor method blank surrogate recoveries, will not be used. There was no contamination of 1,4-dioxane detected in the equipment blank.

3.2.11. Laboratory Control Sample Results

The laboratory analyzed a laboratory control sample (LCS) for each extraction batch. All LCS percent recoveries were within the laboratory control limits for each of the batches. No qualification actions are necessary. Table 3.2-4 shows the evaluation of LCS samples.

Table 3.2-4. Evaluation of 1,4-Dioxane Laboratory Control Sample Results

Package Identification	LCS: Date Extracted	Compound(s) Out	Affected Samples	Action
PSD0559	4/10/09	None	None	None
	4/15/09	None	None	None
PSD1403	04/29/09	None	None	None
PSE0020	05/04/09	None	None	None
PSE0254	05/0709	None	None	None

3.2.12. Matrix Spike/Matrix Spike Duplicate Analyses

MS/MSD analyses are designed to provide information about the effect of sample matrix on the sample preparation procedures and the measurement methodology. Data precision from field sampling and analytical techniques can also be assessed.

Only the associated non-spiked MS/MSD samples were evaluated for qualification (unless a trend can be determined for all other samples within the SDG). Where recoveries exceeded laboratory control limits, the associated data are qualified as estimated ("J" or "UJ") using the following validation guidance: 1) if the percent recovery was greater than the upper control limit, positive results are qualified as estimated; 2) if the percent recovery was below the lower control limit, both positive and non-detect results are qualified as estimated. No qualification of data is required when percent recoveries are above the upper control limit and the SVOC results are non-detect. The following MS/MSD results were found:

- SDG PSD1403: an MS/MSD set was analyzed for sample P-120-239.30. The recoveries were acceptable at 101% and 105%. The relative percentage difference was acceptable at 4% (≤20%). There were no sample matrix effected detected.

- SDGs PSD0559, PEE0020, and PSE0254: MS/MSDs were not performed or were performed on samples from other clients of the laboratory. Matrix effect of the samples for accuracy and

precision was not evaluated because those MS/MSDs offer no pertinent information on matrix effects of field samples from this project.

Table 3.2-5 shows the samples and compounds that were qualified as estimated due to MS/MSD percent recoveries exceeding criteria.

Table 3.2-5. Evaluation of 1,4-Dioxane Matrix Spike/Matrix Spike Duplicate Sample Results			
Package Identification	**Sample ID**	**Compounds**	**Action**
PSD1403	P-120-239.30	1,4-Dioxane	None

3.2.13. Field Duplicate Analyses

Blind field duplicate samples were collected and analyzed to assess the overall sampling and analytical technique's precision. And by design, the laboratory was never made aware of which field samples the blind duplicates were associated with. The following samples were analyzed for field duplicate:

- SDG PSD0559: sample FD-003-040609 is a blind field duplicate of sample P119-304.25
- SDG PSE0254: sample P-120-FD2 is a blind field duplicate of sample P-120-361.50

An evaluation on the precision of the field sample collection procedure (as well as the laboratory analysis procedure) was made based on the relative percent difference (RPD) calculated for the original and duplicate sample results. RPD calculations were made only when the results were above the laboratory reporting limits. The RPD values for 1,4-dioxane were less than 30%. No qualification actions are necessary.

There were no field duplicates submitted with SDGs PSD1403 or PSD0020. It should be noted that QAPP requirements (GTEOSI, 2002) specified that a field duplicate sample be collected at a rate of one sample for every ten samples (collection rate of 10%). There were 2 field duplicates collected for the 15 field samples submitted (not including blank samples collected as QCs) for analysis. Therefore, the frequency is satisfied and field precision is considered to have been evaluated to the QAPP's requirements.

3.2.14. Field Blanks and Equipment Blanks

There were no field blanks submitted with any of the SDGs. The only equipment blank submitted was in SDG PSE0020, which was used for evaluating all SDG groundwater profiler location samples in the project. There was no contamination (1,4-dioxane) detected in the equipment blank. Table 3.2-6 shows the samples and compounds that were qualified as non-detect "U". There were no qualifications necessary.

Table 3.2-6. Evaluation of 1,4-Dioxane Equipment Blank Results			
Package Identification	**Sample Affected**	**Compound**	**Action**
PSD0559	None	None	None
PSD1403	None	None	None
PSE0020	None	None	None
PSE0254	None	None	None

3.2.15. System Monitoring Compounds

A deuterated 1,4-dioxane (1,4-dioxand-d8) was extracted with the samples and evaluated as a surrogate standard along with nitrobenzene-d5. There were sample recovery results that did not meet the laboratory's acceptance ranges. It appears that the poor recoveries are related to poor extraction practices because several method blanks and laboratory control samples were also affected in addition to some samples. This deficiency appears to be random and does not appear to be related to sample matrix interferences. Below is a summary of the surrogate recovery findings and qualification actions taken.

- SDG PSD0559: Due to poor surrogate recoveries below the laboratory's acceptance range (1,4-dioxane acceptance range 38.6 % to 88.3%) with samples P-119-304.35, P-119-324.8, and FD-003-040609, the samples were re-extracted. Unfortunately, the re-extracted surrogate recoveries were also below the laboratory's acceptance range. Therefore, the results for these samples are qualified as estimated. However, the result for sample P-119-324.8 is qualified as unusable (R) because the recovery for 1,4-dioxane in the original analysis was only 5% and because the re-extracted sample was extracted 8 days past holding time of 7 days.
- SDG PSD1403: poor recoveries in the LCS and LCSD; no qualification actions performed
- SDG PSE0020: poor recoveries in the method blanks; no qualification actions performed
- SDG PSE0254: all recoveries were acceptable; no qualification actions performed

3.2.16. Internal Standards

All internal standard retention times were within ± 0.5 minutes from that of the associated calibration for all analyses. The responses (area counts) of all internal standards were within the range of 50-200% of the associated calibration verification for all samples. There were no deficiencies found.

- SDG PSD0559: all internal standards were acceptable
- SDG PSD1403: all internal standards were acceptable
- SDG PSE0020: all internal standards were acceptable
- SDG PSE0254: all internal standards were acceptable

3.2.17. Compound Identification and Quantitation of Results / Dilutions

The laboratory's evaluations of the gas chromatograms and mass spectra for the identified compounds were acceptable with the exception.

- SDG PSD0559: Sample P-119-244.24 – 1,4-dioxane was detected at a concentration of 0.37 ug/L. The laboratory did not report the concentration because the concentration was below the calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.37 J ug/L. The qualifier "J" is to denote that the concentration is below the reporting limit and, therefore, it is an estimated value.
- SDG PSD1403: Samples P-120-220 and P-120-239.30 – 1,4-dioxane was detected at concentrations of 0.28 ug/L and 0.60 ug/L, respectively. The laboratory did not report the concentrations because the concentration was below the calibration range. The results for 1,4-dioxane will be changed from non-detects to 0.28 J ug/L and 0.60 J ug/L, respectively. The qualifiers "J" is to denote that the concentrations are below the reporting limit and, therefore, it are estimated values.

- SDG PSE0254: Sample P-120-404.05 – 1,4-dioxane was detected at a concentration of 0.84 ug/L. The laboratory did not report the concentration because the concentration was below the calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.84 J ug/L. The qualifier "J" is to denote that the concentration is below the reporting limit and, therefore, it is an estimated value.
- SDG PSE0020: Sample P-120-263.50 – 1,4-dioxane was detected at a concentration of 0.90 ug/L. The laboratory did not report the concentration because the concentration was below the calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.90 J ug/L. The qualifier "J" is to denote that the concentration is below the reporting limit and, therefore, it is an estimated value.

There were no samples that contained elevated concentrations of 1,4-dioxane that exceeded the calibration range. A list of the re-analyzed samples due to elevated concentrations and the affected compounds is presented in Table 3.2-7.

Table 3.2-7. Summary of 1,4-Dioxane Laboratory Re-Analyses Due to Need for Dilution

Package Identification	Sample ID	Compound Reported From Re-Analysis
PSD0559	None	None
PSD1403	None	None
PSE0020	None	None
PSE0254	None	None

Table 3.2-8. Summary of 1,4-Dioxane Samples Analyzed Diluted Without an Undiluted Analysis

Package Identification	Sample ID	Initial Dilution
Not applicable		

3.2.18. Tentatively Identified Compounds (TICs)

The search for TICs is not required in the analysis for 1,4-dioxane. However, it should be noted that there are TICs detected in many of the sample chromatograms.

3.2.19. Electronic Data Deliverables

The results in the electronic data set matched results listed on the hardcopy analytical report including laboratory qualifiers. The qualifiers and results were revised based on quality control issues; and foundation for changes are listed in previous sections of this data validation report. The qualifiers were also placed onto the reporting forms located near the beginning of each hardcopy deliverable package (i.e., SDG package).

4. Summary and Data Usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. Overall, 97.2 percent[8] of the data (individual compound results) were determined to be usable for qualitative and quantitative purposes. The other 2.8 percent were qualified as unusable – the presence or absence of the compounds cannot be verified. Those sample results qualified as estimated, "J" and "UJ," due to QC deficiencies should be considered conditionally usable. TIC identifications are only presumptive evidence of the compound's presence, and are qualified with "N."

The samples collected from profile locations P-119 and P-120 were evaluated based on QA/QC criteria established by methods as listed in Section 1.3, in the data validation guidelines listed in Section 1.2, on the QAPP (GTEOSI, 2002) established for the Sylvania Electric Products Incorporated Facility project, and by professional judgment[9]. Major deficiencies in the data generation process have resulted in some sample data being rejected, indicating that the data are considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process have resulted in some sample data being characterized as approximate or estimated results. Identification of a data point as approximate, "J," indicates uncertainty in the reported concentration or detection limit of the chemical, but not its assigned identity.

The following paragraphs present the adherence of the data to the precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS) parameters. Completeness has been discussed above.

Precision is measured through the evaluation of field duplicate samples. For the analyses, none of the data were rejected due to precision non-conformances. The frequency of duplicates analysis is 15.4 percent for VOCs and 13.3 percent for 1,4-dioxane, which is above the QAPP's minimum requirement of 10 percent.

LCS, MS, and MSD recoveries indicate the accuracy of the data. For the analyses, none of the data were rejected due to LCS deficiencies. There were no 1,4-dioxane data rejected due to MS/MSD recoveries. However, MS/MSD recoveries were not evaluated for the VOC analyses because there were no MS/MSD data that were relevant to this project. Therefore, accuracy of the VOC data was not evaluated.

Holding times, sample preservation, blank analysis, and analyte identification and quantification are indicators of the representativeness of the analytical data. There were some data qualified as unusable due to holding time exceedances and to poor blank surrogate recoveries. There were some data qualified as false-positives due to field and/or laboratory contamination. And there were some data qualified as false-negatives due to detected concentrations that are below the calibration range. Details are summarized within Section 3.

Comparability is not compromised, provided that the analytical methods do not change over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures were consistently used by the laboratories, the comparability criteria for the analytical data were met.

Sensitivity is established by reported detection limits that represent measurable concentrations of analytes that can be determined with a designated level of confidence. Sensitivity requirements were not met for several compounds in several project samples due to excessively poor compound responses in the initial

[8] Value = (763 total data points - 21 rejected data points) / 763 X 100

[9] Professional judgment is performed by a USEPA trained data validator with over a decade of environmental laboratory experience.

and continuing calibrations performed. Many of the rejected data were due to this sensitivity non-conformance.

5. Data Usability Summary Report Summary Information

The DUSR was performed to determine whether or not the data meets project specific criteria for data quality and use. The DUSR is developed by reviewing and evaluating the analytical data packages. The following questions were addressed:

1. *Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?*

   The QAPP required that USEPA Level III deliverables be provided by the laboratory for each data package. This requirement was met as it applies to the methods used by the laboratory for sample analysis. Full CLP deliverable packages were received for the VOC analyses and Level IV deliverables were received for the 1,4-dioxane analyses. The evaluation of the sample data was completed using the information provided in the data packages provided by the laboratory.

2. *Have all holding times been met?*

   The holding times was not met for one VOC sample due to deficient sample pH preservation. The holding times was not met for many 1,4-dioxane sample due to the need for re-extraction as a result deficient surrogate recoveries either in the associated method blanks or the samples.

3. *Do all the QC data: blanks, standards, spike recoveries, replicate analyses, and sample data fall within the protocol-required limits and specifications?*

   The laboratory used the laboratory control limits during the analyses performed for this sampling event. QA/QC deviations and qualifications performed on the sample data are discussed in Chapter 3. Major non-conformances were observed with the initial and continuing calibrations performed and with surrogate recoveries – 2.8 percent of all data were qualified as not usable.

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

   USEPA guidance and modified methods were used in the analysis of the samples. The laboratory used the method specified. Some samples had results which were somewhat over diluted.

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

   The evaluation of selected raw data confirmed all information provided in the data packages with minor errors. There were several occasions where individual xylene compounds were identified in the raw data but the laboratory neglected to manually convert them to total-xylene, and therefore not reported. There were also some compounds that were detected but not reported due to concentrations being below the calibration range. These situations were corrected in the data validation process.

6. *Have the correct data qualifiers been used?*

   The laboratory applied the correct qualifiers to the sample data. The validation qualifiers were applied as required by validation guidelines listed in Section 1. The laboratory and validation qualifier definitions are listed in Section 2.2.

References

United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review.* EPA 540-R-08-01. June 2008.

United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IV. January 2008.

United States Environmental Protection Agency, Region 2. *Validating Semivolatile Organic Compound by Gas Chromatography/Mass Spectrometry SW-846 Method 8270D.* SOP No. HW-22, Revision #3. October 2006.

United States Environmental Protection Agency, Region 2. *Validating Volatile Organic Compound by Gas Chromatography/Mass Spectrometry SW-846 Method 8260B.* SOP No. HW-24, Revision #2. October 2006.

URS Corporation. *GTE Operations Support Incorporated - Groundwater Investigation Work Plan, Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* QAPP: Appendix C. September 2002.

2010 Groundwater Sampling

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Executive Summary

This report addresses data quality for groundwater samples collected in and at the vicinity of the former Sylvania Electric Products Incorporated Facility in Hicksville, New York. The groundwater samples were collected by Malcolm Pirnie, Inc. (Malcolm Pirnie) from March 22, 2010 through May 23, 2010. The groundwater samples collected for this investigation, for volatile organic compound (VOC) analysis and for 1,4-dioxane analysis [by semivolatile organic compound (SVOC) analysis], were submitted to TestAmerica, Inc. of North Canton, Ohio (North Canton) via TestAmerica, Inc. of Earth City, Missouri (St. Louis) and to TestAmerica, Inc. of Phoenix, Arizona (Phoenix), respectively. The analyses at the laboratories were conducted using United States Environmental Protection Agency (USEPA) SW-846 methods 8260B and 8270C, respectively.

A total of 182 VOC samples[1] were submitted for analysis, which resulted in 7,098 "targeted compound" VOC results[2] (each VOC sample has 39 targeted compound VOC results). However, 32 of the 182 VOC samples were field quality assurance/quality control (QA/QC) samples. By eliminating the QA/QC results when counting the number of VOC sample results, and eliminating 95 1,4-dioxane VOC results that were also analyzed by the SVOC method, there would be left a total of 5,755 actual targeted compound VOC field sample results[3].

In addition, a total of 104 SVOC samples[4] were submitted for analysis, which resulted in 104 1,4-dioxane SVOC results. Nine (9) of the 104 SVOC samples were field QA/QC samples. By eliminating the QA/QC results when counting the number of SVOC sample results, there would be left a total of 95 actual field sample 1,4-dioxane SVOC results[5].

The analytical data generated for this investigation were evaluated by Malcolm Pirnie using the QA/QC criteria established in the methods and USEPA data validation guidelines. Non-conformances from the QA/QC criteria were qualified based on guidance provided in the following references:

- United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review.* USEPA-540-R-08-01. June 2008.
- United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IV. February 2007.
- United States Environmental Protection Agency, Region 2. *Validating Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry SW-846 Method 8270D.* SOP # HW-22, Revision # 4. August 2008.
- United States Environmental Protection Agency, Region 2. *Validating Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry SW-846 Method 8260B.* SOP # HW-24, Revision # 2. August 2008.

[1] Total number of VOC samples includes field samples and field QA/QC samples (field duplicates, trip blanks, equipment blanks, matrix spikes, and matrix spike duplicates).

[2] 182 samples x 39 compounds per sample = 7,098. This does not include "tentatively identified compounds" (TICs) that were detected and reported in the samples.

[3] ((182 samples – 32 QA/QC samples) x 39 compounds per sample) – 95 1,4-dioxane by method 8270C = 5,755. This number includes some results that were rejected by the validation process, but does not include QA/QC nor TIC results.

[4] Total number of 1,4-dioxane samples includes field samples and field QA/QC samples (field duplicates and equipment blanks).

[5] 104 samples – 9 QA/QC samples = 95. This number does not include QA/QC results.

In addition, the project's Quality Assurance Project Plan (QAPP) and professional judgment[6] were also used in determining whether the results were generated within the project's acceptance goals. Since individual guidance documents (used as a source of reference for the validation) may differ slightly in the type of qualification applied to data, Malcolm Pirnie applied qualifiers generally with an err to caution. Method non-conformances included exceedances of the percent differences of the continuing calibrations and some excessively low response factors in both the initial and continuing calibrations. Results rejected were due to initial and continuing calibration response factor non-conformances.

Additionally, some VOC blanks (method blanks, trip blanks, and equipment blanks) contained low level contamination from common and non-common laboratory contaminants, including acetone and methylene chloride. The presence of these contaminants affected 48 project samples. Qualification of associated results was performed to show the relationship between the laboratory contamination and the uncertainty of the final sample result. Malcolm Pirnie qualified the affected data to show the potential impact on the final sample results.

Other quality issues requiring data validation qualification included replacement of results, which exceeded the laboratory calibration range (i.e., qualified with an "E" by the laboratory) with re-analysis results, and qualification of all tentatively identified compounds (TIC). TIC results are qualitative only, and not considered usable for quantitative assessments, in particular risk screening evaluations.

Overall, 98.2 percent[7] of the results retained in the dataset as final results were determined to be usable for qualitative and quantitative purposes. The other 1.8 percent were qualified as unusable, "R," – the presence or absence of those compounds cannot be verified. All rejected results were in the VOC analyses; 54 of the rejected results were 1,4-dioxane results that were not also analyzed by SVOC methodology. Rejections of 1,4-dioxane in the VOC analyses, that were also analyzed by the SVOC analysis, were not counted because they were unnecessary/redundant analyses. Sample results qualified as estimated, "J" and "UJ," due to quality control (QC) deficiencies should be considered conditionally usable. Therefore, the completeness objective of 90 percent, as presented in the QAPP, was met for the organics dataset.

[6] Professional judgment is performed by a USEPA trained data validator with over a decade of environmental laboratory experience and another decade of data validation experience.

[7] Value = ((5,755 VOC results + 95 SVOC results) - 108 total rejected results) / (5,755 VOC results + 95 SVOC results) X 100

1. Introduction

1.1. Sample Identification

This report presents the findings of a data quality evaluation for groundwater samples collected from monitoring and groundwater wells by Malcolm Pirnie from March 22, 2010 through May 23, 2010. The samples were collected for the analysis of volatile organic compounds (VOCs) via USEPA Method 8260B and for 1,4-dioxane via USEPA Method 8270C.

Cross-references of the sample delivery group (SDG) laboratory data package identification, date of sample collection, field sample identification, corresponding laboratory identification, and analytical method utilized are presented in Tables 1-1 and 1-2, for VOC samples and 1,4-dioxane samples, respectively.

Table 1-1. VOC Sample Cross-Reference List

SDG Package Identification	Sample Collection Date	Sample ID	Laboratory ID	Analytical Method
F0C260528	3/22/10	MW-14S	F0C260528-001	8260B
	3/22/10	MW-14DD	F0C260528-002	8260B
	3/23/10	MW-29S	F0C260528-003	8260B
	3/23/10	MW-15S	F0C260528-004	8260B
	3/23/10	MW-14D	F0C260528-005	8260B
	3/23/10	MW-32D	F0C260528-006	8260B
	3/23/10	MW-15D	F0C260528-007	8260B
	3/23/10	MW-15DD	F0C260528-008	8260B
	3/23/10	MW-17S	F0C260528-009	8260B
	3/24/10	MW-13S	F0C260528-010	8260B
	3/24/10	MW-39S	F0C260528-011	8260B
	3/24/10	DUPL-01	F0C260528-012	8260B
	3/24/10	MW-21S	F0C260528-013	8260B
	3/24/10	MW-21I	F0C260528-014	8260B
	3/24/10	MW-21D	F0C260528-015	8260B
	3/24/10	MW-19S	F0C260528-016	8260B
	3/24/10	TB-03220324	F0C260528-017	8260B
F0D020516	3/29/10	MW-23S	F0D020516-001	8260B
	3/29/10	MW-23I	F0D020516-002	8260B
	3/29/10	MW-26D	F0D020516-003	8260B
	3/31/10	MW-22S	F0D020516-004	8260B
	3/31/10	MW-18I	F0D020516-005	8260B
	3/31/10	MW-19D	F0D020516-006	8260B
	3/31/10	MW-23D	F0D020516-007	8260B
	3/31/10	MW-24S	F0D020516-008	8260B
	3/31/10	MW-24D	F0D020516-009	8260B
	3/31/10	MW-25S	F0D020516-010	8260B
	3/31/10	MW-25I	F0D020516-011	8260B
	3/31/10	MW-25D	F0D020516-012	8260B
	3/31/10	MW-26I	F0D020516-013	8260B
	3/31/10	MW-28S	F0D020516-014	8260B
	3/31/10	MW-28I	F0D020516-015	8260B
	3/31/10	MW-28D	F0D020516-031	8260B
	3/31/10	MW-41S	F0D020516-016	8260B
	3/31/10	MW-49S	F0D020516-017	8260B
	3/31/10	MW-50S	F0D020516-018	8260B
	3/31/10	DUPL#2	F0D020516-019	8260B
	4/01/10	MW-18S	F0D020516-020	8260B
	4/01/10	MW-42I	F0D020516-021	8260B
	4/01/10	MW-20S	F0D020516-022	8260B

Table 1-1. VOC Sample Cross-Reference List

SDG Package Identification	Sample Collection Date	Sample ID	Laboratory ID	Analytical Method
	4/01/10	MW-43S	F0D020516-023	8260B
	4/01/10	MW-20I	F0D020516-024	8260B
	4/01/10	MW-22I	F0D020516-025	8260B
	4/01/10	MW-22D	F0D020516-026	8260B
	4/01/10	MW-44S	F0D020516-027	8260B
	4/01/10	MW-51I	F0D020516-028	8260B
	4/01/10	MW-30S	F0D020516-029	8260B
	4/01/10	MW-31D	F0D020516-030	8260B
	4/01/10	TB-03290402	F0D020516-032	8260B
F0D090534	4/01/10	MW-30D	F0D090534-001	8260B
	4/01/10	MW-31I	F0D090534-002	8260B
	4/02/10	MW-33D	F0D090534-003	8260B
	4/02/10	MW-30I	F0D090534-004	8260B
	4/02/10	MW-27D	F0D090534-005	8260B
	4/02/10	MW-22I	F0D090534-006	8260B
	4/02/10	MW-33S	F0D090534-007	8260B
	4/02/10	MW-13D	F0D090534-008	8260B
	4/05/10	MW-34D	F0D090534-009	8260B
	4/05/10	MW-34S	F0D090534-010	8260B
	4/05/10	MW-53S	F0D090534-011	8260B
	4/05/10	MW-20D	F0D090534-012	8260B
	4/05/10	MW-52D	F0D090534-013	8260B
	4/06/10	EQ-11854	F0D090534-014	8260B
	4/06/10	MW-3	F0D090534-015	8260B
	4/06/10	MW-8	F0D090534-016	8260B
	4/07/10	MW-16D	F0D090534-017	8260B
	4/07/10	MW-04	F0D090534-018	8260B
	4/07/10	MW-16S	F0D090534-019	8260B
	4/07/10	MW-11	F0D090534-020	8260B
	4/07/10	MW-12 (and MS/MSD)	F0D090534-021	8260B
	4/07/10	DUPL-3	F0D090534-022	8260B
	4/07/10	MW-27S	F0D090534-023	8260B
	4/07/10	MW-55S	F0D090534-024	8260B
	4/08/10	MW-9	F0D090534-025	8260B
	4/08/10	MW-10	F0D090534-026	8260B
	4/08/10	TRIP BLANK 04010408	F0D090534-027	8260B
F0D160564	4/08/10	MW-P-114-170R	F0D160564-001	8260B
	4/09/10	MW-P114-290	F0D160564-002	8260B
	4/12/10	EQ-14932	F0D160564-003	8260B
	4/12/10	PW-03-05	F0D160564-004	8260B
	4/12/10	MW-P110-355	F0D160564-005	8260B
	4/13/10	PW-3-4	F0D160564-006	8260B
	4/13/10	MW-P110-440	F0D160564-007	8260B
	4/13/10	PW-3-2	F0D160564-008	8260B
	4/14/10	PW-3-3	F0D160564-009	8260B
	4/14/10	PW-3-7	F0D160564-010	8260B
	4/15/10	PW-2-2	F0D160564-011	8260B
	4/15/10	TB-412415	F0D160564-012	8260B
F0D210536	4/15/10	PW-02-01	F0D210536-002	8260B
	4/16/10	PW-02-03	F0D210536-004	8260B
	4/16/10	PW-3-6	F0D210536-006	8260B
	4/16/10	PW-3-1	F0D210536-008	8260B
	4/19/10	W-03-112	F0D210536-010	8260B
	4/19/10	W-03-72	F0D210536-012	8260B
	4/19/10	W-01-120	F0D210536-014	8260B
	4/19/10	W-14-150	F0D210536-016	8260B
	4/19/10	W-08-71	F0D210536-018	8260B

Table 1-1. VOC Sample Cross-Reference List				
SDG Package Identification	**Sample Collection Date**	**Sample ID**	**Laboratory ID**	**Analytical Method**
	4/19/10	W-01-75	F0D210536-020	8260B
	4/20/10	W-32-110	F0D210536-022	8260B
	4/20/10	W-02-70	F0D210536-024	8260B
	4/20/10	W-10-71	F0D210536-026	8260B
	4/20/10	W-10-120	F0D210536-028	8260B
	4/20/10	W-05-78	F0D210536-030	8260B
	4/20/10	TB-415420	F0D210536-032	8260B
F0D230473	4/20/10	W-6-79	F0D230473-021	8260B
	4/21/10	W-22-95	F0D230473-022	8260B
	4/21/10	W-11-70	F0D230473-023	8260B
	4/21/10	W-31-95	F0D230473-024	8260B
	4/21/10	W-12-120	F0D230473-025	8260B
	4/21/10	W-12-70	F0D230473-026	8260B
	4/21/10	DUPL-4	F0D230473-027	8260B
	4/22/10	W-16-148	F0D230473-028	8260B
	4/22/10	W-19-110	F0D230473-029	8260B
	4/22/10	W-19-150	F0D230473-030	8260B
	4/22/10	TB-420422	F0D230473-033	8260B
F0D280431	4/22/10	W-23-110	F0D280431-001	8260B
	4/23/10	W-20-120	F0D280431-002	8260B
	4/23/10	W-20-160	F0D280431-003	8260B
	4/27/10	W-25-150	F0D280431-004	8260B
	4/27/10	W-25-188	F0D280431-005	8260B
	4/27/10	TB-422427	F0D280431-006	8260B
	4/27/10	W-24-260	F0D280431-007	8260B
F0D300521	4/28/10	EQ-9990	F0D300521-001	8260B
	4/27/10	W-26-270	F0D300521-002	8260B
	4/29/10	W-37-385	F0D300521-003	8260B
	4/28/10	W-30-285	F0D300521-004	8260B
	4/29/10	W-37-325 (and MS/MSD)	F0D300521-005	8260B
	4/28/10	W-27-285	F0D300521-006	8260B
	4/28/10	W-27-240	F0D300521-007	8260B
	4/28/10	DUPL-5	F0D300521-008	8260B
	4/29/10	W-36-448	F0D300521-009	8260B
	4/29/10	W-36-390	F0D300521-010	8260B
	4/29/10	TB-427429	F0D300521-011	8260B
F0E050497	5/03/10	PW-02-04	F0E050497-001	8260B
	5/03/10	PW-02-05	F0E050497-002	8260B
	5/04/10	TB-503504	F0E050497-003	8260B
	5/04/10	S-1-450	F0E050497-004	8260B
	5/04/10	S-1-325	F0E050497-005	8260B
	5/04/10	PW-02-06	F0E050497-006	8260B
F0E070471	5/04/10	PW-05-03	F0E070471-001	8260B
	5/05/10	PW-02-07	F0E070471-002	8260B
	5/05/10	PE-05-05	F0E070471-003	8260B
	5/05/10	PW-05-02	F0E070471-004	8260B
	5/05/10	PW-05-04	F0E070471-005	8260B
	5/05/10	DUPL-6	F0E070471-006	8260B
	5/06/10	PW-05-07	F0E070471-007	8260B
	5/06/10	PW-04-04 (and MS/MSD)	F0E070471-008	8260B
	5/06/10	PW-04-02	F0E070471-009	8260B
	5/06/10	TB-05040506	F0E070471-010	8260B
F0E120451	5/06/10	PW-04-03	F0E120451-001	8260B
	5/07/10	PW-04-01	F0E120451-002	8260B
	5/07/10	PW-04-05	F0E120451-003	8260B
	5/07/10	PW-04-06	F0E120451-004	8260B

Table 1-1. VOC Sample Cross-Reference List

SDG Package Identification	Sample Collection Date	Sample ID	Laboratory ID	Analytical Method
F0E140521	5/10/10	PW-04-07	F0E120451-005	8260B
	5/10/10	PW-07-02	F0E120451-006	8260B
	5/10/10	PW-07-03	F0E120451-007	8260B
	5/11/10	PW-07-07	F0E120451-008	8260B
	5/11/10	PW-07-04	F0E120451-009	8260B
	5/11/10	TB-506511	F0E120451-010	8260B
	5/12/10	PW-05-06	F0E140521-001	8260B
	5/12/10	PW-07-01	F0E140521-002	8260B
	5/12/10	PW-05-01	F0E140521-003	8260B
	5/12/10	PW-07-05	F0E140521-004	8260B
	5/13/10	EB-MP140	F0E140521-005	8260B
	5/13/10	TB-512513	F0E140521-006	8260B
	5/13/10	PW-07-06 (and MS/MSD)	F0E140521-007	8260B
	5/13/10	DUPL-7	F0E140521-008	8260B
F0E250512	5/22/10	PW-06-02	F0E250512-001	8260B
	5/22/10	PW-06-04	F0E250512-002	8260B
	5/22/10	PW-06-06	F0E250512-003	8260B
	5/22/10	PW-06-07	F0E250512-004	8260B
	5/23/10	PW-06-05	F0E250512-005	8260B
	5/23/10	PW-06-03	F0E250512-006	8260B
	5/23/10	TB-522523	F0E250512-013	8260B

Table 1-2. 1,4-Dioxane Sample Cross-Reference List

SDG Package Identification	Sample Collection Date	Sample ID	Laboratory ID	Analytical Method
PTD0139	3/31/10	MW-22S	PTD0139-01	8270C Modified
	3/31/10	MW-28S	PTD0139-02	8270C Modified
	4/01/10	MW-18S	PTD0139-03	8270C Modified
	4/01/10	MW-42I	PTD0139-04	8270C Modified
	4/01/10	MW-20S	PTD0139-05	8270C Modified
PTD0335	4/01/10	MW-43S	PTD0335-01	8270C Modified
	4/06/10	EQ-11854	PTD0335-02	8270C Modified
	4/02/10	MW-33S	PTD0335-03	8270C Modified
	4/06/10	MW-3	PTD0335-04	8270C Modified
	4/06/10	MW-8	PTD0335-05	8270C Modified
PTD0542	4/07/10	MW-04	PTD0542-01	8270C Modified
	4/07/10	MW-11	PTD0542-02	8270C Modified
	4/07/10	MW-12	PTD0542-03	8270C Modified
	4/07/10	DUPL-3	PTD0542-04	8270C Modified
	4/08/10	MW-9	PTD0542-05	8270C Modified
	4/08/10	MW-10	PTD0542-06	8270C Modified
PTD0795	4/08/10	MW-P114-170R	PTD0795-01	8270C Modified
	4/09/10	MW-P114-290	PTD0795-02	8270C Modified
	4/12/10	EQ-14932	PTD0795-03	8270C Modified
	4/12/10	PW-3-5	PTD0795-04	8270C Modified
	4/12/10	MW-P110-355	PTD0795-05	8270C Modified
	4/13/10	PW-3-4	PTD0795-06	8270C Modified
	4/13/10	MW-P110-440	PTD0795-07	8270C Modified
	4/13/10	PW-3-2	PTD0795-08	8270C Modified
PTD0954	4/14/10	PW-3-7	PTD0954-01	8270C Modified
	4/14/10	PW-3-3	PTD0954-02	8270C Modified
	4/15/10	PW-2-2	PTD0954-03	8270C Modified
	4/15/10	PW-02-01	PTD1196-01	8270C Modified

Table 1-2. 1,4-Dioxane Sample Cross-Reference List				
SDG Package Identification	**Sample Collection Date**	**Sample ID**	**Laboratory ID**	**Analytical Method**
PTD1196	4/16/10	PW-02-03	PTD1196-02	8270C Modified
	4/16/10	PW-3-6	PTD1196-03	8270C Modified
	4/16/10	PW-3-1	PTD1196-04	8270C Modified
	4/19/10	W-03-112	PTD1196-05	8270C Modified
	4/19/10	W-03-72	PTD1196-06	8270C Modified
	4/19/10	W-01-120	PTD1196-07	8270C Modified
	4/19/10	W-14-150	PTD1196-08	8270C Modified
	4/19/10	W-08-71	PTD1196-09	8270C Modified
	4/19/10	W-01-75	PTD1196-10	8270C Modified
	4/20/10	W-32-110	PTD1196-11	8270C Modified
	4/20/10	W-02-70	PTD1196-12	8270C Modified
PTD1363	4/20/10	W-10-120	PTD1363-01	8270C Modified
	4/20/10	W-10-71	PTD1363-02	8270C Modified
	4/20/10	W-05-78	PTD1363-03	8270C Modified
	4/20/10	W-6-79	PTD1363-04	8270C Modified
	4/21/10	W-22-95	PTD1363-05	8270C Modified
	4/21/10	W-11-70	PTD1363-06	8270C Modified
	4/21/10	W-31-95	PTD1363-07	8270C Modified
	4/21/10	W-12-120	PTD1363-08	8270C Modified
	4/21/10	W-12-70	PTD1363-09	8270C Modified
	4/21/10	DUPL-4	PTD1363-10	8270C Modified
	4/22/10	W-16-148	PTD1363-11	8270C Modified
	4/22/10	W-19-110	PTD1363-12	8270C Modified
	4/22/10	W-19-150	PTD1363-13	8270C Modified
PTD1568	4/22/10	W-23-110	PTD1568-01	8270C Modified
	4/23/10	W-20-120	PTD1568-02	8270C Modified
	[illegible]/10	W-20-160	PTD1568-03	8270C Modified
	[illegible]/10	W-25-150	PTD1568-04	8270C Modified
	[illegible]/10	W-25-188	PTD1568-05	8270C Modified
	[illegible]/10	W-24-260	PTD1699-01	8270C Modified
	[illegible]/10	EQ-9990	PTD1699-02	8270C Modified
	[illegible]/10	W-26-270	PTD1699-03	8270C Modified
	[illegible]/10	W-37-385	PTD1699-04	8270C Modified
	4/28/10	W-30-285	PTD1699-05	8270C Modified
	4/29/10	W-37-325	PTD1699-06	8270C Modified
	4/28/10	W-27-285	PTD1699-07	8270C Modified
	[illegible]/10	W-27-240	PTD1699-08	8270C Modified
	[illegible]/10	DUPL-5	PTD1699-09	8270C Modified
	[illegible]/10	W-36-448	PTD1699-10	8270C Modified
	[illegible]/10	W-36-390	PTD1699-11	8270C Modified
PTE0256	[illegible]/10	PW-02-04	PTE0256-01	8270C Modified
	[illegible]/10	PW-02-05	PTE0256-02	8270C Modified
	[illegible]/10	S-1-450	PTE0256-03	8270C Modified
	[illegible]/10	S-1-325	PTE0256-04	8270C Modified
	[illegible]/10	PW-02-06	PTE0256-05	8270C Modified
	[illegible]/10	PW-05-03	PTE0429-01	8270C Modified
	[illegible]/10	PW-02-07	PTE0429-02	8270C Modified
	[illegible]/10	PW-05-05	PTE0429-03	8270C Modified
	5/ 5/10	PW-05-02	PTE0429-04	8270C Modified
	5/05/10	PW-05-04	PTE0429-05	8270C Modified
	5/05/10	DUPL-6	PTE0429-06	8270C Modified
	5/06/10	PW-05-07	PTE0429-07	8270C Modified
	5/06/10	PW-04-04	PTE0429-08	8270C Modified
	5/06/10	PW-04-02	PTE0429-09	8270C Modified
PTE0643	5/06/10	PW-04-03	PTE0643-01	8270C Modified
	5/07/10	PW-04-01	PTE0643-02	8270C Modified
	5/07/10	PW-04-05	PTE0643-03	8270C Modified

Table 1-2. 1,4-Dioxane Sample Cross-Reference List

SDG Package Identification	Sample Collection Date	Sample ID	Laboratory ID	Analytical Method
	5/07/10	PW-04-06	PTE0643-04	8270C Modified
	5/10/10	PW-04-07	PTE0643-05	8270C Modified
	5/10/10	PW-07-02	PTE0643-06	8270C Modified
	5/10/10	PW-07-03	PTE0643-07	8270C Modified
	5/11/10	PW-07-07	PTE0643-08	8270C Modified
	5/11/10	PW-07-04	PTE0643-09	8270C Modified
PTE0864	5/12/10	PW-05-06	PTE0864-01	8270C Modified
	5/12/10	PW-07-01	PTE0864-02	8270C Modified
	5/12/10	PW-05-01	PTE0864-03	8270C Modified
	5/12/10	PW-07-05	PTE0864-04	8270C Modified
	5/13/10	EB-MP140	PTE0864-05	8270C Modified
	5/13/10	PW-07-06	PTE0864-06	8270C Modified
	5/13/10	DUPL-7	PTE0864-07	8270C Modified
PTF0033	5/22/10	PW-06-02	PTF0033-01	8270C Modified
	5/22/10	PW-06-04	PTF0033-02	8270C Modified
	5/22/10	PW-06-06	PTF0033-03	8270C Modified
	5/22/10	PW-06-07	PTF0033-04	8270C Modified
	5/23/10	PW-06-05	PTF0033-05	8270C Modified
	5/23/10	PW-06-03	PTF0033-06	8270C Modified

1.2. General Considerations

Data validation is a process of determining the suitability of a measurement system for providing useful analytical results. Although the term is frequently used in discussing methodologies, it applies to all aspects of the analytical system, especially to samples, their measurements, and the actual data output. Accordingly, for the samples and analyses addressed herein, this report summarizes the findings of the review and outlines deviations from applicable quality control (QC) criteria referenced in the following documents:

- United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review.* USEPA-540-R-08-01. June 2008.
- United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IV. February 2007.
- United States Environmental Protection Agency, Region 2. *Validating Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry SW-846 Method 8270D.* SOP # HW-22, Revision # 4. August 2008.
- United States Environmental Protection Agency, Region 2. *Validating Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry SW-846 Method 8260B.* SOP # HW-24, Revision # 2. August 2008.
- URS Corporation. *GTE Operations Support Incorporated - Groundwater Investigation Work Plan, Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* QAPP: Appendix C. September 2002.

1.3. Analytical Methods

The environmental samples presented in this report were collected in Hicksville, New York and submitted to TestAmerica Laboratories, Inc. located in Earth City, Missouri (St. Louis) for VOC analysis and to Phoenix, Arizona (Phoenix) for 1,4-dioxane analysis. The laboratory in St. Louis subsequently shipped the VOC samples to their TestAmerica laboratory located in North Canton, Ohio (North Canton) for the actual analysis. The laboratories used the following USEPA guidance methods to conduct the analyses:

- SW-846 Method 5030B: Purge-and-Trap for Aqueous Samples
- SW-846 Method 8260B: Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)
- SW-846 3520C: Continuous Liquid-Liquid Extraction
- SW-846 8270C (modified): Semivolatile Organic Compounds (SVOC) by Gas Chromatography/Mass Spectrometry (GC/MS)

The laboratory assigned an SDG number to a group of samples during the sample log-in process. The SDG number is the means by which the laboratory tracks samples and associated QC analyses. A total of 182 samples in a total of 13 SDGs for VOCs and a total of 104 samples in a total of 14 SDGs for 1,4-dioxane, were received by the laboratories and are included in this data validation report. The SDG, collection date, field identification, laboratory identification, and analytical method used for each sample are summarized in Table 1-1 for TestAmerica North Canton analyses and in Table 1-2 for TestAmerica Phoenix analyses.

The following sections of this report address distinct aspects of the validation process. Section 2 lists the data QA/QC elements and protocols used to validate the sample data. Section 3 presents a summary of the findings associated with the validation and a discussion of the specific QA/QC deviations and qualifications performed on the sample data. Section 4 presents a discussion of data completeness and usability. Section 5 presents the Data Usability Summary Report (DUSR) summary information.

TestAmerica St. Louis is a New York State Department of Health (NYSDOH) accredited laboratory with laboratory ID number 13715. They are approved to conduct potable and non-potable water analyses. TestAmerica North Canton is a NYSDOH accredited laboratory with laboratory ID number 10975. They are approved to conduct non-potable water analysis. TestAmerica Phoenix is a NYSDOH accredited laboratory for air and emissions analyses with laboratory ID number 11898. NYSDOH does not offer accreditation for the analysis of 1,4-dioxane via modified method 8270C. TestAmerica Phoenix is an accredited testing laboratory for drinking water and wastewater analyses for many other states (e.g., Arizona, California, Nevada, and Oregon).

2. Data Validation Protocols

2.1. Sample Analysis Parameters

The data validation of laboratory analytical results for this project used guidances presented in the QAPP (GTEOSI, 2002), the analytical methodologies, the data validation guidelines referenced in Section 1, and professional judgment[8]. Malcolm Pirnie evaluated all analytical results and available raw data to assess data quality. The evaluation included a review of sample handling protocols and supporting laboratory and field QC parameters. The following is a list of specific analytical information evaluated during the data validation:

- Data package completeness review – sufficient to fully conduct data validation
- Analytical methods performed and test method references
- Sample condition - review of log-in records for cooler temperature, absence of headspace, chemical preservation, etc.
- Holding times - evaluation of sample collection, preparation, and analysis dates
- Analytical results - units, values, reporting limits, significant figures
- Sample traceability to raw data
- Instrument tuning – optimization of mass spectrometer detector
- Initial calibration – comparison to technical guideline criteria
- Continuing calibration verification – comparison to technical guideline criteria
- Method blank results and intra-laboratory cross-contaminants
- Laboratory control sample (LCS) results and comparison to control limits
- Matrix spike/matrix spike duplicate (MS/MSD) results and comparison to control limits
- Field replicate/duplicate results and comparison to technical guideline criteria
- Field sample blanks (i.e., trip blanks and equipment blanks)
- Surrogate standard recoveries and comparison to laboratory control limits
- Internal standards and comparison to technical guideline criteria
- Compound identifications, quantitations, dilutions, and reporting limits
- Tentatively Identified Compounds (TICs)
- Electronic Data Deliverables (EDDs) – comparison to the hardcopy analytical

The analytical reports were reviewed for completeness and the accompanying QC and raw data were reviewed for acceptable performance. When QC results and raw data indicated poor performance, Malcolm Pirnie applied data qualifiers to the results to inform the data user of the likely performance problem. These qualifiers are in addition to or a revision of the qualifiers provided by the laboratory. A summary of the data qualifiers used for this review is presented in Section 2.2.

[8] Professional judgment is performed by a USEPA trained data validator with over a decade of environmental laboratory experience and another decade of data validation experience.

2.2. Data Qualifiers

The following qualifiers have been used by the laboratory for organic analyses:

"ND" Non-detect result at the laboratory established reporting limit.

"B" Associated with a result if the compound was also identified in the corresponding method blank.

"J" Indicates an estimated value or a value below the laboratory established reporting limit.

"E" This flag identifies compounds whose concentrations exceed the calibration range of the instrument for the specific analysis; data qualified with an "E" are qualitative only and not reliable for quantitative purposes. All results qualified with an "E" were required to be re-analyzed using an applicable dilution and re-reported.

"D" This flag identifies compounds whose concentration is from a secondary dilution analysis.

During the data validation process, the laboratory qualifiers are retained, amended, or removed and/or new qualifiers are added based on the data validation findings. If any laboratory qualifiers are retained after the data validation process, they are considered data validation qualifiers. The following are data validation qualifiers and are the only qualifiers, if any, associated with this report's validated results.

"U" The compound was analyzed for, but was not detected above the reporting limit. This qualifier is interchangeable with the laboratories' "ND" qualifier.

"J" The compound was positively identified; the associated numerical value is the approximate concentration of the compound in the sample.

"N" The analysis indicates the presence of a compound for which there is presumptive evidence to make a "tentative identification".

"NJ" The analysis indicates the presence of a compound that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

"UJ" The compound was not detected above the reporting limit. However, the reporting limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the compound in the sample.

"R" The sample result is "rejected" due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The result is unusable. The presence or absence of the compound cannot be verified.

2.3. Data Usability Summary Report Questions

The DUSR determines whether or not the data meets Site-specific criteria for data quality and use. It was developed to review and evaluate the analytical data packages. During the course of this review the following questions were addressed (where applicable):

1. *Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?*

2. *Have all holding times been met?*

3. *Do all the QC data: blanks, instrument tunings, calibration standards, calibration verifications, surrogate recoveries, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?*

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

6. *Have the correct data qualifiers been used?*

The answers to the questions presented by the DUSR are presented in the following sections of the report and in the DUSR summary information section, Section 5.

3. Data Quality Evaluation

This section summarizes the evaluation of QA/QC parameters specified in Section 2.1, and whether they met validation criteria. The evaluation of VOCs is presented in Section 3.1 and the evaluation of 1,4-dioxane is presented in Section 3.2. Summaries of the individual components of the evaluation are described in their respective subsections.

3.1. Data Quality Evaluation of VOCs Analysis

3.1.1. Completeness Review

The laboratory provided the analytical results using formats based on the Contract Laboratory Program (CLP). The extensive documents provided by the laboratory in their report packages included case narratives summarizing the QC issues associated with the analyses. It should be noted that although the case narratives were included in each SDG, they may contain information that are not relevant to the data reported for this project. They were not relied upon in this data validation. On occasions, the laboratories were contacted for missing raw data, when they should be available, to properly conduct the data validation.

3.1.2. Test Methods

The laboratory performed the analyses using the analytical test methods listed in Section 1.3. They included USEPA SW-846 Methods 5030B (purge and trap sample introduction) and 8260B (gas chromatography/mass spectrometry sample analysis). Depending on the specific instrument used at the laboratory, samples for some SDGs were analyzed using a 5 milliliter (mL) purge volume while others used a 25 mL purging volume. Actual sample volumes were lower than these volumes when samples were diluted.

3.1.3. Sample Receipt

The laboratory received a total of 182 water samples in a total of 13 SDGs for VOC analysis between March 26, 2010 and May 25, 2010. They were collected between March 22, 2010 and May 23, 2010. The temperatures within all VOC sample shipment coolers at the time of laboratory receipt were within the acceptance-criterion temperature range of 4°C ± 2°C. Field and laboratory personnel completed the Chain-of-Custody (COC) documents recording the signature, date, and time of custody transfer. The laboratory recorded the condition of the samples at the time of receipt on a "Conditions Upon Receipt Form." This form identifies whether the containers were received undamaged, within the proper temperature range, in a container that is sealed with a custody seal on the exterior, and with a completed COC enclosed to identify all samples submitted to the laboratory. The follow findings for sample receipt are noted for each SDG.

- SDG F0C260528: no problems noted
- SDG F0D020516: one of the two sample bottles for sample MW-26D was broken at the laboratory. Since there was another sample bottle, no qualification actions are necessary.
- SDG F0D090534: no problems noted
- SDG F0D160564: based on the COC, one of the 12 samples, PW-3-4, was not preserved with HCl. Sample PW-03-05 was transcribed from the COC to the report erroneously as PIN-03-05.
- SDG F0D210536: no problems noted
- SDG F0D230473: no problems noted
- SDG F0D280431: no problems noted
- SDG F0D300521: no problems noted

- SDG F0E050497: since the laboratory did not immediately contact Malcolm Pirnie, it will be assumed that the cooler containing the VOC samples was received at the laboratory within the acceptance criterion at 3°C and not ambient as was probably erroneously indicated on the Condition Upon Receipt Form. The ambient temperature was probably for the cooler containing the RAD samples. No qualification actions are taken.
- SDG F0E070471: no problems noted
- SDG F0E120451: no problems noted
- SDG F0E140521: no problems noted
- SDG F0E250512: no problems noted

There were no custody seals attached to individual sample bottles. Based on professional judgment, no qualification actions are necessary because the exterior of the shipment coolers had intact custody seals.

3.1.4. Holding Times

The maximum technical holding time for aqueous VOC samples that are preserved with HCl to a pH of ≤ 2 is 14 days from date of sample collection. The maximum technical holding time for VOC samples that are not preserved to a pH of ≤ 2 is 7 days. All, except for one, samples were preserved in the field and the pH subsequently checked at the laboratory immediately prior to sample analysis when the sample bottle was opened. The follow findings for holding time are noted for each SDG.

- SDG F0C260528: no problems found
- SDG F0D020516: no problems found
- SDG F0D090534: no problems found
- SDG F0D160564: since sample PW-3-4 was not preserved with HCl, its maximum holding time for aromatic hydrocarbon analysis in only 7 days. Since it was analyzed on the 11th day from the day of sample receipt, all aromatic hydrocarbon detects are qualified as estimated, "J," biased low, and all aromatic hydrocarbon non-detects are qualified as unusable, "R." It is presumed that the pH was erroneously checked as acceptable when the bottle was opened for analysis.
- SDG F0D210536: no problems found
- SDG F0D230473: no problems found
- SDG F0D280431: Sample W-20-120 was reanalyzed diluted for tetrachloroethene and sample W-20-160 was reanalyzed diluted for 1,2-dichlorobenzene and tetrachloroethene. However, they were reanalyzed three days past the maximum holding time. Therefore, these reanalyzed results are qualified as estimates, "J," with a possible low bias. Samples W-25-150 and TB-422427 were reanalyzed for tetrachloroethene. However, they were reanalyzed one day past the maximum holding time. Therefore, these reanalyzed results are qualified as estimates, "J," with a possible low bias.
- SDG F0D300521: no problems found
- SDG F0E050497: no problems found
- SDG F0E070471: no problems found
- SDG F0E120451: no problems found
- SDG F0E140521: no problems found
- SDG F0E250512: no problems found

3.1.5. Analytical Results

For each sample tested, the laboratory provided the analytical test information using formats similar to the USEPA CLP and NYSDEC ASP programs. This format utilized stylized forms to present critical information pertaining to the analyses performed. For all analytical results, the laboratory provided a "Form 1" with the reported analytical results for the requested analyses. The Form 1 format shows the following information for organic analyses: laboratory name; laboratory sample identification; sample

matrix; field sample identification; date the sample was received; date the sample was analyzed; dilution factor; and laboratory qualifier (if any).

It should be noted that some SDGs had reported the reanalysis results in its entirety while others only reported the compounds that required the reanalysis. This data validation ultimately merged (hybridized) the reanalyzed compounds that required the reanalysis into the original analysis for the final result.

3.1.6. Traceability to Raw Data

Traceability of the VOC analyses is established by Form V (Instrument Performance Check or Instrument Tuning). These forms were all supplied and list the project samples analyzed per laboratory batch processed and the corresponding QC samples performed with the project samples.

3.1.7. Instrument Tuning

The GC/MS mass spectrometer detector performance (i.e., "tuning data," or a check of mass spectral ion intensities using bromofluorobenzene [BFB]) met method criteria. The detector performance was checked prior to calibration and once every 12-hour shift for all analytical batches. The follow findings for instrument tuning are noted for each SDG.

- SDG F0C260528: all tuning results were acceptable
- SDG F0D020516: all tuning results were acceptable
- SDG F0D090534: all tuning results were acceptable
- SDG F0D160564: all tuning results were acceptable
- SDG F0D210536: all tuning results were acceptable
- SDG F0D230473: all tuning results were acceptable
- SDG F0D280431: all tuning results were acceptable
- SDG F0D300521: although all tuning results were acceptable, sample W-36-448 was analyzed pass the DFTPP 12-hour analytical shift on 05/04/10. Therefore, all sample concentrations for this sample analyzed on this date, based on professional judgment, are qualified as estimated values, "J" or "UJ," biased low.
- SDG F0E050497: all tuning results were acceptable
- SDG F0E070471: all tuning results were acceptable
- SDG F0E120451: all tuning results were acceptable
- SDG F0E140521: all tuning results were acceptable
- SDG F0E250512: all tuning results were acceptable

3.1.8. Initial Calibration

Initial Calibrations (ICALs) were performed at either six or seven concentration levels with most compound concentrations from 1.0 µg/L to 40 µg/L (5 ng to 200 ng on column mass utilizing 5 mL standard solution purging volumes) or 0.5 µg/L to 40 µg/L. The average relative response factors (RRFs) were all evaluated with respect to the acceptance criterion of ≥ 0.05 (or ≥ 0.10 for chloromethane, 1,1-dichloroethane, and bromoform, or ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane) to determine acceptable detection sensitivity. All RRFs were also evaluated for linearity over the calibration range. A percent relative standard deviation (%RSD) ≤ 20.0 indicates linearity through the origin and an average RF would be used). For some chemicals with elevated %RSD, the laboratory had employed a linear regression equation to determine the calibration curve. For such chemicals, an acceptable calibration must have a coefficient of the determination (COD) greater than or equal to 0.99 (SW-846 8000B criterion).

Some compounds in the ICALs did not meet data validation criteria (i.e., average RRFs < 0.05 and/or the %RSDs > 20%). Table 3.1-1 shows a summary of the samples and compounds qualified as estimated, "J," or not usable, "R," due to ICAL deficiencies.

Table 3.1-1. Evaluation of VOC Initial Calibration Results

SDG Package Identification	Initial Calibration Date/Time	Sample ID	Compounds	Action
F0C260528	03/11/10, 12:15 (MSV a3ux16)	MW-14S MW-14DD	RRF: 1,4-Dioxane %RSD: None	RRF < 0.05 R – all non-detect results %RSD > 20% None
	03/08/10, 13:54 (MSV)	MW-29S MW-15S MW-14D MW-32D MW-15D MW-15DD MW-17S MW-13S MW-39S DUPL-01 (MW-19S) MW-21S MW-21I MW-21D MW-19S TB-03220324	RRF: 1,4-Dioxane %RSD: None	RRF < 0.05 R – all non-detect results %RSD > 20% None
F0D020516	03/26/10, 14:45 (MSV a3ux11)	MW-23S MW-23I MW-26D MW-22S MW-18I MW-19D MW-23D MW-24S MW-24D MW-25S MW-25I MW-25D MW-26I MW-28S MW-28I MW-41S MW-49S MW-50S DUPL#2 (MW-28I) MW-18S MW-42I MW-20S MW-43S MW-20I	RRF: 1,4-Dioxane %RSD: None	RRF < 0.05 R – all non-detect results %RSD > 20% None
	, 12:20 ux15)	MW-28D MW-22I MW-22D MW-44S MW-51I MW-30S MW-31D TB-03290402	RRF: 1,4-Dioxane %RSD: None	RRF < 0.05 R – all non-detect results J – all positive results %RSD > 20% None

Table 3.1-1. Evaluation of VOC Initial Calibration Results

SDG Package Identification	Initial Calibration Date/Time	Sample ID	Compounds	Action
F0D090534	03/11/10, 12:15 (MSV a3ux16)	MW-30D MW-31I MW-33D MW-30I MW-27D MW-22I MW-33S MW-13D MW-34D MW-34S MW-53S MW-20D MW-52D EQ-11854 MW-3 MW-8 MW-16D MW-04 MW-16S MW-11 MW-12 DUPL-3 (MW-11) MW-27S MW-55S MW-9 MW-10 TB-4010408	RRF: 1,4-Dioxane %RSD: None	RRF < 0.05 R – all non-detect results %RSD > 20% None
F0D160564	03/26/10, 14:45 (MSV a3ux11)	MW-P-114-170R MW-P114-290 EQ-14932 PW-03-05 MW-P110-355 PW-3-4 MW-P110-440 PW-3-2 PW-3-3 PW-3-7 PW-2-2 TB-412415	RRF: 1,4-Dioxane %RSD: None	RRF < 0.05 R – all non-detect results %RSD > 20% None
F0D210536	04/19/10. 12:45 (MSV a3ux10)	PW-02-01 PW-02-03	RRF: 1,4-Dioxane %RSD: None	RRF < 0.05 R – all non-detect results %RSD > 20% None
	03/26/10, 14:45 (MSV a3ux11)	PW-3-6 PW-3-1 W-03-112 W-03-72 W-01-120 W-14-150 W-08-71 W-01-75 W-32-110 W-02-70 W-10-71 W-10-120 W-05-78 TB-415420	RRF: 1,4-Dioxane %RSD: None	RRF < 0.05 R – all non-detect results %RSD > 20% None

Table 3.1-1. Evaluation of VOC Initial Calibration Results

SDG Package Identification	Initial Calibration Date/Time	Sample ID	Compounds	Action
F0D230473	04/23/10, 11:04 (MSN)	W-6-79 W-22-95 W-11-70 W-31-95 W-12-120 W-12-70 DUPL-4 (W-12-70) W-16-148 W-19-110 W-19-150 TB-420422	RRF: 2-Butanone 1,4-Dioxane %RSD: None	RRF < 0.05 R – all non-detect results J – all positive results %RSD > 20% None
F0D280431	04/26/10, 14:12 (MSZ)	W-23-110 W-20-120 W-20-160 W-25-150 W-25-188 TB-422427 W-24-260	RRF: 2-Butanone 1,4-Dioxane %RSD: None	RRF < 0.05 R – all non-detect results %RSD > 20% None
F0D300521	04/23/10, 11:04 (MSN)	EQ-9990 W-26-270 W-37-385 W-30-285 W-37-325 W-27-285 W-27-240 DUPL-5 (W-30-285) W-36-448 W-36-390 TB-427429	RRF: 2-Butanone 1,4-Dioxane %RSD: None	RRF < 0.05 R – all non-detect results J – all positive results %RSD > 20% None
	04/26/10, 14:12 (MSZ)	W-36-390 DLDL	RRF: 2-Butanone 1,4-Dioxane %RSD: None	RRF < 0.05 R – all non-detect results %RSD > 20% None
F0E050497	04/23/10, 11:04 (MSN)	PW-02-04 PW-02-05 TB-503504 S-1-450 S-1-325 PW-02-06	RRF: 2-Butanone 1,4-Dioxane %RSD: None	RRF < 0.05 R – all non-detect results %RSD > 20% None
	04/26/10, 14:12 (MSZ)	S-1-450 DL	RRF: 2-Butanone 1,4-Dioxane %RSD: None	RRF < 0.05 R – all non-detect results %RSD > 20% None
F0E070471	04/26/10, 14:12 (MSZ)	PW-05-03 PW-02-07 PE-05-05 PW-05-02 PW-05-04 DUPL-6 (PW-05-04) PW-05-07 PW-04-04 PW-04-02 TB-05040506	RRF: 2-Butanone 1,4-Dioxane %RSD: None	RRF < 0.05 R – all non-detect results J – all positive results %RSD > 20% None

Table 3.1-1. Evaluation of VOC Initial Calibration Results

SDG Package Identification	Initial Calibration Date/Time	Sample ID	Compounds	Action
F0E120451	04/26/10, 14:12 (MSZ)	PW-04-03 PW-04-01 PW-04-05 PW-04-06 PW-04-07 PW-07-02 PW-07-03 PW-07-07 PW-07-04 TB-506511	RRF: 2-Butanone 1,4-Dioxane %RSD: None	RRF < 0.05 R – all non-detect results %RSD > 20% None
F0E140521	04/23/10, 11:04 (MSN)	PW-05-06 PW-07-01 PW-05-01 PW-07-05 EB-MP140 TB-512513 PW-07-06 DUPL-7 (PW-07-06)	RRF: 2-Butanone 1,4-Dioxane %RSD: None	RRF < 0.05 R – all non-detect results J – all positive results %RSD > 20% None
F0E250512	05/17/10, 10:19 (MSV a3ux15)	PW-06-02 PW-06-04 PW-06-06 PW-06-07 PW-06-05 PW-06-03 TB-522523	RRF: 1,4-Dioxane %RSD: None	RRF < 0.05 R – all non-detect results J – all positive results %RSD > 20% None

Note:
DL Suffix – Indicates a secondary diluted sample reanalysis
DLDL Suffix – Indicates a tertiary diluted sample reanalysis

Note that SDGs F0D230473, F0D280431, F0D300521, F0E050497, F0E070471, and F0E140521 had its lowest initial calibration point conducted at 0.5 µg/L instead of 1.0 µg/L. Therefore, the reporting limits for samples analyzed in these SDGs should be half of what was reported by the laboratory. This data validation has not made such modifications because there were too many non-detected and low-detected results to be modified. Should the data user choose to make such modifications, note that some detected results would no longer be qualified as estimated results when the concentration is no longer less than the new reporting limit. However, it should also be noted that the original estimated qualifications may have also been present due to other QC deficiencies. Caution is advised for such modifications.

3.1.9. Continuing Calibration Verification

The continuing calibration verification (CCV) analyses were performed with a mid-level standard immediately following the tuning check at the beginning of each 12-hour analytical sequence. All RRFs were evaluated with respect to the acceptance criterion of ≥ 0.05 (or ≥ 0.10 for chloromethane, 1,1-dichloroethane, and bromoform, or ≥ 0.30 for chlorobenzene and 1,1,2,2-tetrachloroethane) to determine continued acceptable detection sensitivity. All compound responses were also evaluated for continued agreement with the initial calibration - a percent difference (%D) criterion of ≤ 20% for the RRF or calculated amount must be met (USEPA HW-24 criterion).

Some compounds in the CCV analyses did not meet data validation criteria (i.e., RRFs < 0.05, and/or the %Ds > 20%). Table 3.1-2 shows a summary of the samples and compounds qualified as estimated, "J," or not usable, "R," due to CCV deficiencies.

Table 3.1-2. Evaluation of VOC Continuing Calibration Results

SDG Package Identification	CCV Date/Time	Sample ID	Compounds	Action
F0C260528	04/02/10, 11:56 (MSV)	MW-14S MW-14DD	RRF: 1,4-Dioxane % D: Carbon tetrachloride 1,4-Dioxane	RRF < 0.05 R – all non-detect results %D > 20% UJ – all non-detect results
	04/05/10, 12:13 (MSV)	MW-29S MW-15S MW-14D MW-32D MW-15D MW-15DD MW-17S MW-13S MW-39S DUPL-01 (MW-19S)	RRF: 1,4-Dioxane % D: Chloromethane Chloroethane	RRF < 0.05 R – all non-detect results %D > 20% UJ – all non-detect results
	04/06/10, 10:30 (MSV)	MW-21S MW-21I MW-21D MW-19S TB-03220324	RRF: 1,4-Dioxane % D: Chloroethane	RRF < 0.05 R – all non-detect results %D > 20% UJ – all non-detect results
F0D020516	04/07/10, 09:56 (MSV a3ux11)	MW-23S MW-23I MW-26D MW-22S MW-18I MW-19D	RRF: 1,4-Dioxane % D: 1,4-Dioxane Bromoform	RRF < 0.05 R – all non-detect results %D > 20% UJ – all non-detect results
	04/08/10, 11:15 (MSV a3ux11)	MW-23D MW-24S MW-24D MW-25S MW-25I MW-25D MW-26I MW-28S MW-28I MW-41S MW-49S MW-50S DUPL#2 (MW-28I) MW-18S MW-42I MW-20S MW-43S MW-20I	RRF: 1,4-Dioxane % D: Bromomethane Chloroethane Acetone Bromoform	RRF < 0.05 R – all non-detect results %D > 20% UJ – all non-detect results
	04/08/10, 10:29 (MSV a3ux15)	MW-28D MW-22I MW-22D MW-44S MW-51I MW-30S MW-31D TB-03290402	RRF: 1,4-Dioxane % D: Chloromethane Chloroethane	RRF < 0.05 R – all non-detect results J – all positive results %D > 20% UJ – all non-detect results J – all positive results

Table 3.1-2. Evaluation of VOC Continuing Calibration Results

SDG Package Identification	CCV Date/Time	Sample ID	Compounds	Action
F0D090534	04/14/10, 09:26 (MSV a3ux16)	MW-30D MW-31I MW-33D MW-30I MW-27D MW-22I MW-33S MW-13D MW-34D MW-34S MW-53S MW-20D MW-52D EQ-11854 MW-3 MW-8 MW-16D MW-04	RRF: 1,4-Dioxane % D: 1,4-Dioxane Carbon tetrachloride	RRF < 0.05 R – all non-detect results %D > 20% UJ – all non-detect results
	04/15/10, 11:08 (MSV a3ux16)	MW-16S MW-11 MW-12 DUPL-3 (MW-11) MW-27S MW-55S MW-9 MW-10 TB-4010408	RRF: 1,4-Dioxane % D: 1,4-Dioxane Carbon tetrachloride	RRF < 0.05 R – all non-detect results %D > 20% UJ – all non-detect results
F0D160564	04/22/10, 9:37 (MSV)	MW-P-114-170R MW-P114-290	RRF: 1,4-Dioxane % D: Bromoform	RRF < 0.05 R – all non-detect results %D > 20% UJ – all non-detect results
	04/23/10, 22:31 (MSV)	EQ-14932 PW-03-05 MW-P110-355 PW-3-4 MW-P110-440 PW-3-2 PW-3-3 PW-3-7 PW-2-2 TB-412415	RRF: 1,4-Dioxane % D: cis-1,3-Dichloropropene Bromoform	RRF < 0.05 R – all non-detect results %D > 20% UJ – all non-detect results
F0D210536	04/26/10, 22:25 (MSV a3ux10)	PW-02-01 PW-02-03	RRF: 1,4-Dioxane % D: 2-Butanone	RRF < 0.05 R – all non-detect results %D > 20% UJ – all non-detect results
	04/28/10, 08:41 (MSV a3ux11)	PW-3-6 PW-3-1 W-03-112 W-03-72 W-01-120 W-14-150 W-08-71 W-01-75 W-32-110 W-02-70 W-10-71 W-10-120	RRF: 1,4-Dioxane % D: Bromomethane Carbon disulfide Bromoform	RRF < 0.05 R – all non-detect results %D > 20% UJ – all non-detect results

Table 3.1-2. Evaluation of VOC Continuing Calibration Results

SDG Package Identification	CCV Date/Time	Sample ID	Compounds	Action
	04/29/10, 09:35 (MSV a3ux11)	W-05-78 TB-415420	RRF: 1,4-Dioxane % D: Bromomethane Carbon disulfide Bromoform	RRF < 0.05 R – all non-detect results %D > 20% UJ – all non-detect results
F0D230473	05/03/10, 07:31 (MSN)	W-6-79 W-22-95 W-22-95 DL W-11-70 W-31-95 W-12-120 W-12-70 DUPL-4 (W-12-70) W-16-148 W-19-110 W-19-150 TB-420422	RRF: 1,4-Dioxane % D: Vinyl chloride Chloroethane Carbon disulfide	RRF < 0.05 R – all non-detect results %D > 20% UJ – all non-detect results
	05/04/10, 11:18 (MSN)	W-16-148 DL W-19-150 DL	RRF: 1,4-Dioxane % D: Carbon disulfide	RRF < 0.05 R – all non-detect results %D > 20% UJ – all non-detect results
F0D280431	05/05/10, 10:10 (MSZ)	W-23-110 W-20-120 W-20-160 W-25-150 W-25-188 TB-422427 W-24-260	RRF: 2-Butanone 1,4-Dioxane % D: 1,4-Dioxane Tetrachloroethene	RRF < 0.05 R – all non-detect results %D > 20% UJ – all non-detect results
	05/10/10, 10:17 (MSZ)	W-20-120 DL W-20-160 DL W-24-260 DL	RRF: 2-Butanone 1,4-Dioxane % D: Acetone	RRF < 0.05 R – all non-detect results %D > 20% UJ – all non-detect results
	05/12/10, 10:03 (MSZ)	W-25-150 RE TB-422427 RE	RRF: 2-Butanone 1,4-Dioxane % D: None	RRF < 0.05 R – all non-detect results %D > 20% None
F0D300521	05/04/10, 11:18 (MSN)	EQ-9990 W-26-270 W-37-385 W-37-325 W-27-285 W-27-240 W-36-448	RRF: 1,4-Dioxane % D: Carbon disulfide	RRF < 0.05 R – all non-detect results J – all positive results %D > 20% UJ – all non-detect results

Table 3.1-2. Evaluation of VOC Continuing Calibration Results				
SDG Package Identification	**CCV Date/Time**	**Sample ID**	**Compounds**	**Action**
	05/06/10, 07:55 (MSN)	W-30-285 DUPL-5 (W-30-285) W-37-385 DL W-36-390 W-37-325 DL W-37-325 DLDL W-27-285 DL W-36-390 DL W-27-240 DL W-36-448 DL TB-427429	RRF: 2-Butanone 1,4-Dioxane % D: Carbon disulfide 2-Hexanone	RRF < 0.05 R – all non-detect results J – all positive results %D > 20% UJ – all non-detect results
	05/12/10, 10:03 (MSZ)	W-36-390 DLDL	RRF: 2-Butanone 1,4-Dioxane % D: None	RRF < 0.05 R – all non-detect results %D > 20% None
F0E050497	05/06/10, 07:55 (MSN)	PW-02-04 PW-02-05 TB-503504 S-1-450 S-1-325 PW-02-06	RRF: 2-Butanone 1,4-Dioxane % D: Carbon disulfide 2-Hexanone	RRF < 0.05 R – all non-detect results %D > 20% UJ – all non-detect results
	05/12/10, 10:03 (MSZ)	S-1-450 DL	RRF: 2-Butanone 1,4-Dioxane % D: None	RRF < 0.05 R – all non-detect results %D > 20% None
F0E070471	05/11/10, 09:15 (MSZ)	PW-05-03 PW-02-07 PE-05-05 PW-05-02 PW-05-04 DUPL-6 (PW-05-04) PW-05-07 PW-04-04 PW-04-02 TB-05040506	RRF: 2-Butanone 1,4-Dioxane % D: Tetrachloroethene	RRF < 0.05 R – all non-detect results J – all positive results %D > 20% UJ – all non-detect results J – all positive results
	05/12/10, 10:03 (MSZ)	PW-02-07 DL	RRF: 2-Butanone 1,4-Dioxane % D: None	RRF < 0.05 R – all non-detect results %D > 20% None
	05/13/10, 09:27 (MSZ)	PW-05-03 RE PE-05-05 RE PW-05-02 RE PW-05-04 RE DUPL-6 RE (PW-05-04) PW-05-07 RE PW-04-04 RE PW-04-02 RE TB-05040506 RE	RRF: 2-Butanone 1,4-Dioxane % D: None	RRF < 0.05 R – all non-detect results %D > 20% None

Table 3.1-2. Evaluation of VOC Continuing Calibration Results

SDG Package Identification	CCV Date/Time	Sample ID	Compounds	Action
F0E120451	05/14/10, 09:37 (MSZ)	PW-04-03 PW-04-01 PW-04-05 PW-04-06 PW-04-07 PW-07-02 PW-07-03 PW-07-07	RRF: 2-Butanone 1,4-Dioxane % D: None	RRF < 0.05 R – all non-detect results %D > 20% None
	05/17/10, 08:49 (MSZ)	PW-07-04 TB-506511	RRF: 2-Butanone 1,4-Dioxane % D: Acetone 1,4-Dioxane	RRF < 0.05 R – all non-detect results %D > 20% UJ – all non-detect results
F0E140521	05/21/10, 07:59 (MSN)	PW-05-06 PW-07-01 PW-05-01 PW-07-05 EB-MP140 TB-512513 PW-07-06 DUPL-7 (PW-07-06)	RRF: 2-Butanone 1,4-Dioxane % D: Bromomethane	RRF < 0.05 R – all non-detect results J – all positive results %D > 20% UJ – all non-detect results
F0E250512	05/28/10, 13:46 (MSV a3ux15)	PW-06-02 PW-06-04 PW-06-06 PW-06-07 PW-06-05 PW-06-03 TB-522523	RRF: 1,4-Dioxane % D: 1,4-Dioxane trans-1,3-Dichloropropene Bromoform	RRF < 0.05 R – all non-detect results %D > 20% UJ – all non-detect results

Note:
DL Suffix – Indicates a secondary diluted sample reanalysis
DLDL Suffix – Indicates a tertiary diluted sample reanalysis
RE Suffix – Indicates a reanalysis at the same dilution as the original analysis due to QC deficiencies

3.1.10. Laboratory Method Blanks

There were minor contaminations detected in several of the method blanks. In general, most laboratory method blanks contained trace levels or no common laboratory contaminants. The following contaminants were detected in the following method blanks:

- SDG F0C260528: 4/02/10 – no target compound list (TCL) compounds but some tentatively identified compounds (TICs); 4/05/10 – no TCLs but some TICs; 4/06/10 – no TCLs but some TICs
- SDG F0D020516: 4/07/10 – acetone and 3 targeted compound (TC) TICs; 04/08/10 – acetone and 4 (TC) TICs; 4/08/10 – none. TCs are defined here as compounds that were included in the laboratory's calibration list but not included in this project's TCL and therefore treated as TICs since its calibrations were not fully evaluated in this data validation process.
- SDG F0D090534: 4/14/10 – no TCL but some TC TICs; 4/15/10 - no TCL but some TC TICs
- SDG F0D160564: 4/22/10 - none; 4/24/10 - none
- SDG F0D210536: 4/26/10 – acetone, methylene chloride, xylenes, and 8 TC TICs; 4/28/10 – acetone and 5 TC TICs; 4/29/10 – acetone and 6 TC TICs
- SDG F0D230473: 5/03/10 –none; 5/04/10 - none
- SDG F0D280431: 5/05/10 – none; 5/10/10 – none; 5/12/10 - none
- SDG F0D300521: 5/04/10 – none; 5/06/10 – none; 5/12/10 - none

- SDG F0E050497: 5/06/10 – none; 5/12/10 – none
- SDG F0E070471: 5/11/10 – none; 5/12/10 – none; 5/13/10 - none
- SDG F0E120451: 5/14/10 – none; 5/17/10 – 1 TIC
- SDG F0E140521: 5/21/10 – none
- SDG F0E250512: 5/28/10 – methylene chloride

The corresponding sample results for the identified contaminants were revised to non-detect results if these results were "less than five times" (< 5x) the method blank results for laboratory contaminants in accordance with the QAPP (GTEOSI, 2002). However, per National Functional Guidelines (EPA 540-R-99-008), common laboratory contaminants (methylene chloride, acetone, and 2-butanone) criterion is "< 10x" the method blank results. The National Functional Guidelines' criterion was also used. A summary of the samples and compounds that were revised due to laboratory contamination are presented in Table 3.1-3.

Table 3.1-3. Evaluation of VOC Laboratory Method Blank Results

SDG Package Identification	Blank Date/Time	Sample Affected	Compounds	Action
F0C260528	04/02/10 13:22	None	None	None
	04/05/10 13:10	None	None	None
	04/06/10 11:57	None	None	None
F0D020516	04/07/10 11:31 and 04/08/10 12:03	MW-23I MW-22S MW-23D MW-49S MW-30S	Acetone	Revised result to "U" (non-detect)
	04/08/10 11:59	None	None	None
F0D090534	04/14/10 10:52	None	None	None
	04/15/10 12:35	None	None	None
F0D160564	4/22/10 11:12	None	None	None
	4/24/10 00:06	None	None	None
FOD210536	04/26/10 23:51	PW-02-01	Xylenes	Revised result to "U" (non-detect)
	04/28/10 10:39	None	None	None
	04/29/10 11:10	None	None	None
F0D230473	05/03/10 10:40	None	None	None
	05/04/10 13:56	None	None	None
F0D280431	05/05/10 12:05	None	None	None
	05/10/10 13:36	None	None	None
	05/12/10 12:21	None	None	None
F0D300521	05/04/10 13:56	None	None	None
	05/06/10 09:40	None	None	None

Table 3.1-3. Evaluation of VOC Laboratory Method Blank Results

SDG Package Identification	Blank Date/Time	Sample Affected	Compounds	Action
	05/12/10 12:21	None	None	None
F0E050497	5/06/10 09:40	None	None	None
	05/12/10 12:21	None	None	None
F0E070471	05/11/10 12:11	None	None	None
	05/12/10 12:21	None	None	None
	05/13/10 11:18	None	None	None
F0E120451	05/14/10 11:28	None	None	None
	05/17/10 11:15	None	None	None
F0E140521	05/21/10 09:39	None	None	None
F0E250512	05/28/10 15:25	PW-06-07	Methylene chloride	Revised result to "U" (non-detect)

3.1.11. Laboratory Control Sample Results

The laboratory analyzed a laboratory control sample (LCS, a.k.a., blank spike) for each 12-hour batch of sample analysis. A laboratory control sample duplicate (LCSD) was also analyzed but will not be assessed in this data validation because an LCSD is not a regulatory-recognized QC analysis. Most LCS percent recoveries were within the laboratory control limits for each of the batches. Generally, for recoveries exceeding laboratory control limits substantially, the associated data would be qualified as estimated ("J" or "UJ") using the following validation guidance: 1) if the percent recovery was greater than the upper control limit, positive results are qualified as estimated; non-detects are not qualified; 2) if the percent recovery was below the lower control limit, both positive and non-detect results are qualified as estimated. For compounds that were slightly out, but were within the method default range of 70% to 130%, they were not qualified based on professional judgment. Table 3.1-4 shows the evaluation of LCS samples.

Table 3.1-4. Evaluation of VOC Laboratory Control Sample Results

SDG Package Identification	LCS Date	Compound(s) Out	Affected Samples	Action
F0C260528	04/01/10	None	None	None
	04/05/10	None	None	None
	04/06/10	None	None	None
F0D020516	04/07/10	Bromoform	MW-23S MW-23I MW-26D MW-22S MW-18I MW-19D	UJ – all non-detect results

Table 3.1-4. Evaluation of VOC Laboratory Control Sample Results				
SDG Package Identification	**LCS Date**	**Compound(s) Out**	**Affected Samples**	**Action**
	04/08/10 (MSV a3ux11)	Bromoform	MW-23D MW-24S MW-24D MW-25S MW-25I MW-25D MW-26I MW-28S MW-28I MW-41S MW-49S MW-50S DUPL#2 MW-18S MW-42I MW-20S MW-43S MW-20I	UJ – all non-detect results J – all positive results
	04/08/10 (MSV a3ux15)	None	None	None
F0D090534	4/14/10	None	None	None
	4/15/10	None	None	None
F0D160564	04/22/10	Bromoform	MW-P-114-170R MW-P114-290	UJ – all non-detect results J – all positive results
	04/23/10	Bromoform	EQ-14932 PW-03-05 MW-P110-355 PW-3-4 MW-P110-440 PW-3-2 PW-3-3 PW-3-7 PW-2-2 TB-412415	UJ – all non-detect results J – all positive results
F0D210536	04/26/10	None	None	None
	04/28/10	Chloroethane Bromoform	PW-3-6 PW-3-1 W-03-112 W-03-72 W-01-120 W-14-150 W-08-71 W-01-75 W-32-110 W-02-70 W-10-71 W-10-120	UJ – all non-detect results
	04/29/10	Chloroethane Bromoform	W-05-78 TB-415420	UJ – all non-detect results

Table 3.1-4. Evaluation of VOC Laboratory Control Sample Results				
SDG Package Identification	**LCS Date**	**Compound(s) Out**	**Affected Samples**	**Action**
F0D230473	05/03/10	Bromomethane Carbon disulfide	W-6-79 W-22-95 W-22-95 DL W-11-70 W-31-95 W-12-120 W-12-70 DUPL-4 (W-12-70) W-16-148 W-19-110 W-19-150 TB-420422	UJ – all non-detect results
	05/04/10	None	None	None
F0D280431	05/05/10	None	None	None
	05/10/10	None	None	None
	05/12/10	None	None	None
F0D300521	05/04/10	Bromomethane	None	None
	05/06/10	Bromomethane	None	None
	05/12/10	None	None	None
F0E050497	05/06/10	Bromomethane	PW-02-04 PW-02-05 TB-503504 S-1-450 S-1-325 PW-02-06	UJ – all non-detect results
	05/12/10	None	None	None
F0E070471	05/11/10	None	None	None
	05/12/10	None	None	None
	05/13/10	None	None	None
F0E120451	05/14/10	None	None	None
	05/17/10	None	None	None
F0E140521	05/21/10	Bromomethane	None	None (high %R but not detected in samples)
F0E250512	05/28/10	Bromomethane	None	None (high %R but not detected in samples)
		Bromoform	PW-06-02 PW-06-04 PW-06-06 PW-06-07 PW-06-05 PW-06-03 TB-522523	UJ – all non-detect results

3.1.12. Matrix Spike/Matrix Spike Duplicate Analyses

MS/MSD analyses are designed to provide information about the effect of the project sample's matrix on the sample preparation procedures and the measurement methodology. Data precision from field sampling and analytical techniques is also assessed.

Sample MW-28S was analyzed for MS/MSD in SDG F0D020516; samples MW-53S and MW-12 were analyzed for MS/MSDs in SDG F0D090534; sample MW-P110-355 was analyzed for MS/MSD in SDG F0D160564; sample MW-37-325 was analyzed for MS/MSD in SDG F0D300521; sample PW-04-04 was analyzed for MS/MSD in SDG F0E070471; and sample PW-07-06 was analyzed for MS/MSD in SDG F0E140521. Only the associated non-spiked MS/MSD samples were evaluated for qualification (unless a trend can be determined for all other samples within the SDG). Where recoveries exceeded laboratory control limits, the associated data are qualified as estimated ("J" or "UJ") using the following data validation guidance: 1) if the percent recovery was greater than the upper control limit, positive results are qualified as estimated; 2) if the percent recovery was below the lower control limit, both positive and non-detect results are qualified as estimated. No qualification of data is required when percent recoveries are above the upper control limit and the VOC results are non-detect. For compounds that were slightly out, but were within a default range of 70% to 130%, they were not qualified based on professional judgment.

Table 3.1-5 shows the sample results that are qualified as estimated values due to MS/MSD percent recoveries exceeding criteria. RPDs (relative percent differences) were also evaluated for the criteria compliance of < 20% for all spiked compounds – no qualification actions were necessary.

Table 3.1-5. Evaluation of VOC Matrix Spike/Matrix Spike Duplicate Sample Results

SDG Package Identification	Sample ID	Compounds	Action
F0D020516	MW-28S	Tetrachloroethene	None: sample was diluted 11.11x due to elevated concentration of this compounds
F0D090534	MW-53S	None	None
	MW-12	Tetrachloroethene	"J" (low %R in MSD) (result is estimated and biased low)
F0D160564	MW-P110-355	Trichloroethene Tetrachloroethene	None: sample was diluted 10x due to elevated concentration of these compounds
F0D300521	MW-37-325	Trichloroethene	"J" (low %R) (result is estimated and biased low)
F0E070471	PW-04-04	Acetone 1,1,2,2-Tetrachloroethane	None – compounds were not detected
		1,4-Dioxane	None- compound was already qualified as unusable, "R"
F0E140521	PW-07-06	Bromomethane	None – compound was not detected

There were no MS/MSD analyzed with SDGs F0C260528, F0E050497, F0D210536, F0D230473, F0D280431, F0E120451, and F0E250512 or MS/MSD were performed on samples from other SDGs or from other clients of the laboratory. Therefore, matrix effects on accuracy and precision of the SDG samples could not be evaluated. However, it should be noted that a 5% frequency goal of MS/MSD analysis (1 in 20 samples) for this project was successfully satisfied.

3.1.13. Field Duplicate Analyses

Blind field duplicate samples were collected and analyzed to assess the overall sampling and analytical technique's precision. And by design, the laboratory was never made aware of which field samples the blind duplicates were associated with.

An evaluation on precision of the field sample collection procedure (as well as the laboratory analysis procedure) was made based on the relative percent difference (RPD) calculated between the original and duplicate sample results. RPD calculations were made only when the results were above the laboratory reporting limits. The RPD values for all compounds were less than 30% (aqueous data evaluation criterion) with the following notes:

- SDG F0C260528: DUPL-01 was a blind field duplicate of sample MW-19S (all RPDs acceptable)
- SDG F0D020516: DUPL-02 was a blind field duplicate of sample MW-28I (all RPDs acceptable)
- SDG F0D090534: DUPL-03 was a blind field duplicate of sample MW-11 (all RPDs acceptable)
- SDG F0D160564: no field duplicates analyzed
- SDG F0D210536: no field duplicates analyzed
- SDG F0D230473: DUPL-4 was a blind field duplicate of sample W-12-70 (all RPDs acceptable)
- SDG F0D280431: no field duplicates analyzed
- SDG F0D300521: DUPL-5 was a blind field duplicate of sample W-30-285 (all RPDs acceptable)
- SDG F0E050497: no field duplicates analyzed
- SDG F0E070471: DUPL-6 was a blind field duplicate of sample PW-05-04 (all RPDs acceptable)
- SDG F0E120451: no field duplicates analyzed
- SDG F0E140521: DUPL-7 was a blind field duplicate of sample PW-07-06 (all RPDs acceptable)
- SDG F0E250512: no field duplicates analyzed

It should be noted that QAPP requirements (GTEOSI, 2002) specified that a field duplicate sample be collected at a rate of one sample for every ten samples (collection rate of 10%). There were 7 field duplicates collected for the 150 field samples submitted (not including QC samples) for analysis. Therefore, the 10% frequency goal was not satisfied at 5% and field precision was not satisfied to the QAPP's requirements. However, it should also be noted that field precision were acceptable for all field duplicates that were collected.

3.1.14. Trip Blanks, Field Blanks, and Equipment Blanks

Thirteen trip blanks, no field blanks, and four equipment blanks were submitted for analysis. Many of the trip blanks that were submitted contained some contaminants. Edits made on the affected target compound results, which were based on trip blank and equipment blank contamination, were in accordance with practices described in the validation guidance documents listed in Sections 1.2 and on professional judgment. For all common contaminants (methylene chloride, 2-butanone, and acetone) that are greater than the reporting limit, positive sample results at less than 10x the highest blank concentration will be considered false positives and qualified as non-detects "U". For all other contaminants that are greater than the reporting limit, positive sample results at less than 5x the highest blank concentration will be considered false positives and qualified as non-detects "U."

There were no field blanks submitted with any of the SDGs. Each trip blank was associated with its own SDG. Since there were only four equipment blanks, each equipment blank was evaluated for its own SDG and subsequent or previous SDGs that have no equipment blanks of its own. Some SDGs that do not have their own equipment blanks may have overlapping equipment blank coverage during evaluation, based on professional judgment. It should be noted that the results for the trip blanks and the equipment blank themselves were not revised with respect to the method blank's contamination; but the original results were retained to show data users the presence and concentrations of contamination that was used

to qualify the project sample results. Any laboratory "B" qualifiers in the trip blanks and the equipment blank would be removed. The contamination in the trip blanks, like the project samples, is potentially attributable to cross-contamination from samples during shipment or contamination during the preparation and analysis of samples (including QC samples) at the laboratory. Contaminations detected in the equipment blank are also used to identify contaminants introduced during the sample collection activities. Table 3.1-6 shows the samples and compounds that were qualified as non-detect "U" due to the presence trip blank and/or equipment blank contamination.

Table 3.1-6. Evaluation of VOC Trip Blank, Field Blank, and Equipment Blank Results

SDG Package Identification	Sample Affected	Compound, Highest Blank Concentration	Action
F0C260528	MW-32D	Methylene chloride, 0.52J µg/L	Revised result to "U" (non-detect)
F0D020516	None	Methylene chloride, 0.65J µg/L	None
F0D090534	None	None	None
F0D160564	MW-P114-290 PW-3-3	Chloroform, 4.4 µg/L 1,2-dichloroethane, 0.66 J µg/L	Revised detected result to "U" (non-detect)
F0D210536	None	*Chloroform, 4.4 µg/L *1,2-dichloroethane, 0.66 J µg/L	None
F0D230473	W-16-148 W-19-150	*Chloroform, 4.4 µg/L *1,2-dichloroethane, 0.66 J µg/L	Revised detected result to "U" (non-detect)
F0D280431	W-23-110 W-24-260	1,2-Dichlorobenzene, 0.13 J µg/L * *Chloromethane, 0.35 J µg/L * *Methylene chloride, 15 µg/L * *Acetone, 0.89 J µg/L * Chloroform, 5.3 µg/L * 1,2-Dichloroethane, 0.71 J µg/L	Revised detected result to "U" (non-detect)
F0D300521	W-26-270 W-37-385 W-37-325 W-27-285 W-27-240 W-36-448 W-30-285 DUPL-5 W-36-390	Trichloroethene, 0.42 J µg/L Chloromethane, 0.35 J µg/L Methylene chloride, 15 µg/L Acetone, 0.89 J µg/L Chloroform, 5.3 µg/L 1,2-Dichloroethane, 0.71 J µg/L	Revised detected result to "U" (non-detect)
F0E050497	PW-02-04 PW-02-05 S-1-450 S-1-325 PW-02-06	Trichloroethene, 0.30 J µg/L * *Chloromethane, 0.35 J µg/L * *Methylene chloride, 15 µg/L * *Acetone, 0.89 J µg/L * Chloroform, 5.3 µg/L * 1,2-Dichloroethane, 0.71 J µg/L	Revised detected result to "U" (non-detect)
F0E070471	PW-05-03 PW-02-07 PW-05-02 PW-05-04 DUPL-6 PW-05-07 PW-04-04 PW-04-02	Carbon disulfide, 0.17 J µg/L * *Chloromethane, 0.35 J µg/L * *Methylene chloride, 15 µg/L * *Acetone, 0.89 J µg/L * *Chloroform, 5.3 µg/L * *1,2-Dichloroethane, 0.71 J µg/L	Revised detected result to "U" (non-detect)

Table 3.1-6. Evaluation of VOC Trip Blank, Field Blank, and Equipment Blank Results

SDG Package Identification	Sample Affected	Compound, Highest Blank Concentration	Action
F0E120451	PW-04-03 PW-04-01 PW-04-05 PW-04-06 PW-04-07 PW-07-02 PW-07-03 PW-07-07 PW-07-04	* *Chloromethane, 0.35 J µg/L * *Methylene chloride, 15 µg/L * *Acetone, 0.89 J µg/L * *Chloroform, 5.3 µg/L * *1,2-Dichloroethane, 0.71 J µg/L	Revised detected result to "U" (non-detect)
F0E140521	PW-05-06 PW-07-01 PW-05-01 PW-07-05 PW-07-06 DUPL-7	* *Chloromethane, 0.35 J µg/L * *Methylene chloride, 15 µg/L * *Acetone, 0.89 J µg/L * *Chloroform, 5.3 µg/L * *1,2-Dichloroethane, 0.71 J µg/L	Revised detected result to "U" (non-detect)
F0E250512	None	* *Chloromethane, 0.35 J µg/L * *Methylene chloride, 15 µg/L * *Acetone, 0.89 J µg/L * *Chloroform, 5.3 µg/L * *1,2-Dichloroethane, 0.71 J µg/L	None, no sample detections

* Contaminants from EQ-14932 of SDG F0D160564 that are also applied to this SDG
** Contaminants from EQ-9990 of SDG F0D300521 that are also applied to this SDG

For clarification, it should be noted that the following actions were performed.

- SDGs F0C260528 and F0D020516: since there was no equipment blank submitted with these SDGs, the contaminants detected in the equipment blank, EQ-11854 collected in SDG F0D090534, are also used to evaluate these SDGs. There were no compounds detected in EQ-11854.
- SDGs F0D210536 and 0D230473: since there was no equipment blank submitted with these SDGs, the contaminants detected in the equipment blank, EQ-14932 collected in SDG F0D160564, are also used to evaluate these SDGs. These are the compounds denoted with a single asterisk in the table above.
- SDGs F0D280431, F0E050497, F0E070471, and F0E120451: since there was no equipment blank submitted with these SDGs, the contaminants detected in the equipment blank, EQ-9990 collected in SDG F0D300521, are also used to evaluate these SDGs. These are the compounds denoted with two asterisks in the table above.
- SDG F0E250512: since there was no equipment blank submitted with this SDG, the contaminants detected in the equipment blank, EB-MP140 collected in SDG F0E140521, are also used to evaluate this SDG.
- SDGs F0E140521 and F0E250512: will also be evaluated to the equipment blank, EQ-9990 collected in SDG F0D300521, since it appears that that equipment blank was still applicable. These are the compounds denoted with two asterisks in the table above.

3.1.15. System Monitoring Compounds

All percent recoveries for VOC surrogates were within laboratory control limits with the exceptions below. Most percent recoveries for the VOC system monitoring compounds (a.k.a., surrogate standards). The following is a summary of the surrogate recovery findings and qualification actions taken.

- SDG F0C260528: all surrogate recoveries were acceptable
- SDG F0D020516: all surrogate recoveries were acceptable

- SDG F0D090534: all surrogate recoveries were acceptable
- SDG F0D160564: all surrogate recoveries were acceptable
- SDG F0D210536: surrogate 4-bromofluorobenzene recoveries for samples PW-02-01 and PW-02-03 were low at 73% and 72%, respectively, which were slightly below the control limit range of 74% to 116%. No qualification actions were performed based on professional judgment.
- SDG F0D230473: all surrogate recoveries were acceptable
- SDG F0D280431: surrogate dibromofluoromethane recovery for samples W-21-110 was low at 74%, which is slightly below the control limit range of 75% to 121%. No qualification actions were performed based on professional judgment. Surrogates toluene-d8 and 4-bromofluorobenzene for the reanalysis of sample W-25-150 were high at 121% and 119%, respectively, which are slightly above the control limits of 68% to 118% and 77% to 113%, respectively. No qualification actions were performed based on professional judgment.
- SDG F0D300521: all surrogate recoveries were acceptable
- SDG F0E050497: all surrogate recoveries were acceptable
- SDG F0E070471: (1) the reanalysis of samples PW-05-05, PW-05-02, PW-05-04, DUPL-6, and PW-05-07 was for the reanalysis of the compound tetrachloroethene. However, either one of both surrogates bracketing this compound had recoveries that were above the acceptance limits. Therefore, positive detections for tetrachloroethene are to be qualified as estimated values, "J," biased high. No qualification actions are necessary for non-detects. As a result, tetrachloroethene was qualified for samples PW-05-02, PW-05-05 and PW-05-07. (2) The surrogate, 4-bromofluorobenzene, recovery for the initial analysis of sample PW-04-02 was at 115%, which is slightly above the control limits of 73% to 113%. No qualification actions were performed based on professional judgment.
- SDG F0E120451: surrogates toluene-d8 and 4-bromobenzene recoveries for samples PW-04-01 and PW-07-07 were above their acceptance limits. Therefore, all detected results in these samples are qualified as estimated, "J," with a high bias. The compounds qualified for sample PW-04-01 are 1,1-dichloroethane and 1,1,1-trichloroethane. The compounds qualified for sample PW-07-07 are tetrachloroethene, toluene, and trichloroethene.
- SDG F0E140521: all surrogate recoveries were acceptable
- SDG F0E250512: all surrogate recoveries were acceptable

3.1.16. Internal Standards

Internal standard retention times for all samples were within ± 0.5 minutes from that of the associated calibration for all analyses. The responses (area counts) of all internal standards were within the range of 50-200% of the associated calibration verification for all samples. There were no deficiencies found.

- SDG F0C260528: all internal standard retention time and area counts were acceptable
- SDG F0D020516: all internal standard retention time and area counts were acceptable
- SDG F0D090534: all internal standard retention time and area counts were acceptable
- SDG F0D160564: all internal standard retention time and area counts were acceptable
- SDG F0D210536: all internal standard retention time and area counts were acceptable
- SDG F0D230473: all internal standard retention time and area counts were acceptable
- SDG F0D280431: all internal standard retention time and area counts were acceptable
- SDG F0D300521: all internal standard retention time and area counts were acceptable
- SDG F0E050497: all internal standard retention time and area counts were acceptable
- SDG F0E070471: all internal standard retention time and area counts were acceptable
- SDG F0E120451: all internal standard retention time and area counts were acceptable
- SDG F0E140521: all internal standard retention time and area counts were acceptable
- SDG F0E250512: all internal standard retention time and area counts were acceptable

An internal standard for sample PW-07-03 of SDG F0E120451 was not integrated in the laboratory's data package. The laboratory was informed and this was subsequently corrected via an amended data package.

3.1.17. Compound Identification and Quantitation of Results / Dilutions

The laboratory's evaluations of quantitation reports, chromatograms, and mass spectra for compound detection, identification, and concentration were acceptable with the following exceptions or notes.

- SDG F0C260528: (1) sample MW-15S: tetrachloroethene was positively detected and the concentration given in the quantitation report was 0.20 µg/L (0.98 ng on-column). The laboratory did not report the concentration, probably, because the concentration was low. The result for tetrachloroethene will be changed from non-detect to 0.20 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. Note that the sample analyzed immediately prior to this sample had a relatively high concentration of tetrachloroethene (145 ng on-column), probably but not likely enough to cause carry-over into the next sample. However, there is a small possibility that the 0.20 µg/L concentration is due to such a carry-over. (2) Sample DUPL-01: tetrachloroethene was reported with a concentration of 0.62 J µg/L (3.1 ng on-column). Although tetrachloroethene was detected at a relatively high concentration in the sample that was analyzed immediately before it (130 ng on-column), the detection was not due to cross-contamination. Sample DUPL-01 is a duplicate of sample MW-19S, which also has a similar tetrachloroethene detected concentration at 0.61 J µg/L (3.0 ng on-column) and was analyzed on a different day. (3) Sample MW-21S: acetone was positively detected and the concentration given in the quantitation report was 0.74 µg/L. The laboratory did not report the concentration, probably, because the concentration was low. The result for acetone will be changed from non-detect to 0.74 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value.
- SDG F0D020516: (1) sample MW-23D: chloromethane was positively detected and the concentration given in the quantitation report was 0.17 µg/L. The laboratory did not report the concentration, probably, because the concentration was low. The result for chloromethane will be changed from non-detect to 0.17 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (2) Sample MW-24D: 1,2-dichloroethane was positively detected and the concentration given in the quantitation report was 0.21 µg/L. The laboratory did not report the concentration, probably, because the concentration was low. The result for 1,2-dichloroethane will be changed from non-detect to 0.21 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (3) Sample MW-25D: tetrachloroethene was positively detected and the concentration given in the quantitation report was 0.25 µg/L. The laboratory did not report the concentration, probably, because the concentration was low. The result for tetrachloroethene will be changed from non-detect to 0.25 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (4) Sample MW-26I: tetrachloroethene was positively detected and the concentration given in the quantitation report was 0.19 µg/L. The laboratory did not report the concentration, probably, because the concentration was low. The result for tetrachloroethene will be changed from non-detect to 0.19 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value.
- SDG F0D090534: (1) sample MW-20D: tetrachloroethene was positively detected and the concentration given in the quantitation report was 0.26 µg/L. The laboratory did not report the concentration, probably, because the concentration was low. The result for tetrachloroethene will be changed from non-detect to 0.26 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (2) Sample MW-16D: tetrachloroethene was positively detected and the concentration given in the quantitation report

was 0.23 µg/L. The laboratory did not report the concentration, probably, because the concentration was low. The result for tetrachloroethene will be changed from non-detect to 0.23 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value.

- SDG F0D160564: (1) sample MW-P-114-170R: 1,1-dichloroethene was positively detected and the concentration given in the quantitation report was 2.6 µg/L. The laboratory did not report the concentration, probably, because the concentration was low. The result for 1,1-dichloroethene will be changed from non-detect to 2.6 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (2) Sample PW-03-05: tetrachloroethene was positively detected and the concentration given in the quantitation report was 0.22 µg/L. The laboratory did not report the concentration, probably, because the concentration was low. The result for tetrachloroethene will be changed from non-detect to 0.22 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value.

- SDG F0D210536: (1) sample PW-3-6: tetrachloroethene was positively detected and the concentration given in the quantitation report was 0.24 µg/L. The laboratory did not report the concentration, probably, because the concentration was low. The result for total tetrachloroethene will be changed from non-detect to 0.24 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (2) Sample W-01-120: trans-1,2-dichloroethene was positively detected and the concentration given in the quantitation report was 0.46 µg/L. The laboratory did not report the concentration, probably, because the concentration was low. The result for trans-1,2-dichloroethene will be changed from non-detect to 0.46 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value.

- SDG F0D230473: No significant findings noted

- SDG F0D280431: 1,2-dichlorobenzene concentration of sample W-25-188 exceeded the calibration range. Unfortunately, there was not enough sample to conduct a reanalysis of the sample. Therefore, the concentration for 1,2-dichlorobenzene will be qualified as an estimated value, "J."

- SDG F0D300521: (1) sample W-27-240: carbon tetrachloride was positively detected as documented in the mass spectral search. However, it was not shown in the quantitation report, which indicates that it was removed from the quantitation report by the analyst, probably due to its low concentration. The compound was reported in the reporting form and will be reported as is. (2) Sample W-36-390 was analyzed at a tertiary dilution of 100x to bring the raw concentrations of cis-1,2-dichloroethene and trichloroethene within the calibration range. The concentrations of the tertiary analysis were much lower compared to the secondary analysis results indicating that there may have been compound concentration losses during storage at the laboratory after the sample bottles were opened for the two analyses. Since only two VOA bottles were submitted to the laboratory, and the samples were analyzed on three different days with the third analysis analyzed six days after the second analysis, compound concentration loss is suspected due to head-space in the sample bottle after the bottles were opened for the primary and secondary analyses. Therefore, the tertiary analysis will not be reported. The results for cis-1,2-dichloroethene and trichloroethene will be reported from the secondary analysis even though the concentrations exceeded the calibration ranges. The results are, therefore, qualified as estimated values, "J."

- SDG F0E050497: (1) sample S-1-325: benzene and m,p-xylenes were positively detected and the concentration given in the quantitation report were 0.05 µg/L and 0.12 µg/L, respectively. The laboratory did not report the concentrations, probably, because the concentrations were low. The result for benzene and total-xylenes will be changed from non-detect to 0.05 J µg/L and 0.12 J

µg/L, respectively. The qualifiers "J" denote that the concentrations are below the reporting limits and, therefore, they are estimated values. (2) Sample PW-02-06: m,p-xylenes and o-xylene were positively detected and the concentration given in the quantitation report were 0.20 µg/L and 0.07 µg/L, respectively. The laboratory did not report the concentrations, probably, because the concentrations were low. The result for total-xylenes will be changed from non-detect to 0.27 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value.

- SDG F0E070471: sample PW-05-02: tetrachloroethene was positively detected and the concentration given, both in the original analysis and in the reanalysis, in the quantitation reports were 0.12 µg/L. The laboratory did not report the concentration, probably, because the concentration was low. The result for tetrachloroethene will be changed from non-detect to 0.12 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value.

- SDG F0E120451: (1) sample PW-07-02: m,p-xylenes was positively detected and the concentration given in the quantitation report was 0.12 µg/L. The laboratory did not report the concentration, probably, because the concentration was low. The result for total-xylenes will be changed from non-detect to 0.12 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (2) Sample PW-07-07: m,p-xylenes was positively detected and the concentration given in the quantitation report was 0.19 µg/L. The laboratory did not report the concentration, probably, because the concentration was low. The result for total-xylenes will be changed from non-detect to 0.19 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value.

- SDG F0E140521: (1) sample PW-05-06: m,p-xylenes and o-xylene were positively detected and the concentrations given in the quantitation report were 0.13 µg/L and 0.06 µg/L, respectively. The laboratory did not report the concentration, probably, because the concentrations were low. The result for total-xylenes will be changed from non-detect to 0.19 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (2) Sample PW-07-01: toluene was positively detected and the concentration given in the quantitation report was 0.07 µg/L. The laboratory did not report the concentration, probably, because the concentration was low. The result for toluene will be changed from non-detect to 0.07 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (3) Sample PW-07-05: m,p-xylenes and o-xylene were positively detected and the concentrations given in the quantitation report were 0.14 µg/L and 0.05 µg/L, respectively. The laboratory did not report the concentration, probably, because the concentration was low. The result for total-xylenes will be changed from non-detect to 0.19 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (4) Sample PW-07-06: m,p-xylenes and o-xylene were positively detected and the concentrations given in the quantitation report were 0.183 µg/L and 0.073 µg/L, respectively. The laboratory did not report the concentration, probably, because the concentrations were low. The result for total-xylenes will be changed from non-detect to 0.26 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (5) Sample DUPL-7: m,p-xylenes and o-xylene were positively detected and the concentrations given in the quantitation report were 0.176 µg/L and 0.064 µg/L, respectively. The laboratory did not report the concentration, probably, because the concentrations were low. The result for total-xylenes will be changed from non-detect to 0.24 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value.

- SDG F0E250512: sample PW-06-02: tetrachloroethene was positively detected and the concentration given in the quantitation report was 0.20 µg/L. The laboratory did not report the concentration, probably, because the concentration was low. The result for tetrachloroethene will

be changed from non-detect to 0.20 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value.

Some samples contained elevated concentrations of target compounds that exceeded the calibration range for the VOC analysis. The laboratory reported and qualified these results with an "E" qualifier. As part of the laboratory's corrective action, the affected samples were reanalyzed at a dilution to obtain usable results within the established calibration curve range. As part of this validation, specific compound results, which exceeded the calibration range in the original analysis, were replaced with the compound results from the secondary dilution analysis. The sample results, in effect, are made whole when the initial and secondary analyses are "hybridized," into one. A list of the re-analyzed samples and the affected compounds is presented in Table 3.1-7.

Table 3.1-7. Summary of VOC Laboratory Re-Analyses

SDG Package Identification	Sample ID	Compound Reported From Re-Analysis
F0C260528	None	None
F0D020516	None	None
F0D090534	None	None
F0D160564	None	None
F0D210536	None	None
F0D230473	W-22-95 W-16-148 W-19-150	Tetrachloroethene at 5x dilution Tetrachloroethene at 5x dilution Tetrachloroethene at 10x dilution
F0D280431	W-20-120 W-20-160 W-25-150 TB-422427	Tetrachloroethene at 2x dilution 1,2-Dichlorobenzene and tetrachloroethene at10x dilution Tetrachloroethene at 1x Tetrachloroethene at 1x
F0D300521	W-37-385 W-37-325 W-27-285 W-27-240 W-36-448 W-36-390	Chloroform at 10X dilution 1,1-Dichloroethene at 10x dilution Tetrachloroethene at 10x dilution 1,1,1-Trichloroethene at 10x dilution Trichloroethene at 10X dilution Carbon tetrachloride at 25x dilution Chloroform at 25x dilution Tetrachloroethene at 25x dilution Trichloroethene at 50x dilution 1,2-Dichlorobenzene at 25x dilution cis-1,2-Dichloroethene at 25x dilution Tetrachloroethene at 25x dilution Trichloroethene at 25x dilution Vinyl chloride at 25x dilution cis-1,2-Dichloroethene at 5x dilution Trichloroethene at 5x dilution cis-1,2-Dichloroethene at 10x dilution Tetrachloroethene at 10x dilution Trichloroethene at 10x dilution Carbon tetrachloride at 25x dilution cis-1,2-Dichloroethene at 25x dilution Tetrachloroethene at 25x dilution Trichloroethene at 25x dilution
F0E050497	S-1-450	Trichloroethene at 5x dilution

Table 3.1-7. Summary of VOC Laboratory Re-Analyses		
SDG Package Identification	**Sample ID**	**Compound Reported From Re-Analysis**
F0E070471	PW-05-03 PW-02-07 PW-05-05 PW-05-02 PW-05-04 DUPL-6 PW-05-07 PW-04-04 PW-04-02 TB-05040506	Tetrachloroethene at 1x Tetrachloroethene at 5x dilution Tetrachloroethene at 1x Tetrachloroethene at 1x Tetrachloroethene at 1x Tetrachloroethene at 1x Tetrachloroethene at 1x Tetrachloroethene at 1x Tetrachloroethene at 1x Tetrachloroethene at 1x
F0E120451	None	None
F0E140521	None	None
F0E250512	None	None

Table 3.1-8. Summary of VOC Samples Analyzed Diluted Without an Undiluted Analysis		
SDG Package Identification	**Sample ID**	**Initial Dilution > 1x**
F0C260528	MW-29S MW-39S	11.11x 33.33x
F0D020516	MW-22S MW-24S MW-28S MW-31D	62.5x 1.43x 11.11x 1.43x
F0D090534	MW-33D MW-30I MW-33S MW-53S MW-52D MW-04 MW-11 MW-12 DUPL-3 MW-9 MW-10	2.5x 2.22x 3.33x 25x 2.5x 9.09x 11.11x 4x 12.5x 11.11x 40x
F0D160564	MW-P-114-170R MW-P114-290 MW-P110-355 MW-P110-440	14.29x 1.67x 10x 40x
F0D210536	W-3-112 W-03-72 W-01-120 W-08-71 W-01-75 W-32-110 W-10-71	3.33x 1.67x 2.5x 1.43x 10x 5.71x 2x
F0D230473	None	None
F0D280431	W-23-110 W-25-188	2x 5x
F0D300521	None	None
F0E050497	None	None
F0E070471	None	None
F0E120451	None	None
F0E140521	None	None
F0E250512	PW-06-07	2.5x

3.1.18. Tentatively Identified Compounds (TICs)

The laboratory was required to perform library searches for TICs present in the samples and blanks for the VOC analyses. Since the TIC evaluation provides only the identity of a possible compound in the matrix and an estimated concentration of a compound, TIC data should be considered tentatively qualitative and tentatively quantitative. The "N" qualifier was added to TIC results to indicate to the data user that the compound identifications are tentative. The "J" qualifier was added to TIC results to indicate to the data user that the concentration values are estimated.

- SDG F0C260528: some TICs detected
- SDG F0D020516: some TICs detected
- SDG F0D090534: some TICs detected
- SDG F0D160564: no TICs detected
- SDG F0D210536: no TICs detected
- SDG F0D230473: no TICs detected
- SDG F0D280431: some TICs detected
- SDG F0D300521: no TICs detected
- SDG F0E050497: no TICs detected
- SDG F0E070471: no TICs detected
- SDG F0E120451: no TICs detected
- SDG F0E140521: no TICs detected
- SDG F0E250512: one TIC detected

In the analysis for targeted compounds, the laboratory has actually calibrated a larger number of compounds than the project's list of targeted compounds. In this data validation, compounds that were not in the targeted list were not evaluated. However, since some of these non-targeted compounds were detected and positively identified in the quantitation reports, this data validation process has included them as TICs. This is not to be confused with the normal TIC evaluations above. For these TICs, the results were qualified with "J" because their calibrations were not evaluated. They were not qualified with "N" because they were positively identified via retention times and mass spectrums. These TICs have been added to the laboratory's reporting forms. Note that most of these detects would not normally be included as TICs because of their low concentrations.

Also note that wherever tert-butyl-alcohol was identified as a TIC based on this data validation, it may actually have been a false-positive due to blank-related contamination, but was not detected in its respective blanks. Tert-butyl-alcohol may or may not actually be present in the sample identified.

3.1.19. Electronic Data Deliverables

The results in the electronic data set matched results listed on the hardcopy analytical report including laboratory qualifiers. There were instances where additional hardcopy documentations were requested from the laboratory. These documentations, obtained in PDF format are added to the electronic file deliverables. In the process of validating the data, qualifiers and results were revised based on quality control issues; and foundation for changes are listed in previous sections of this data validation report. The qualifiers were also placed onto the reporting forms located near the beginning of each hardcopy deliverable package (i.e., SDG package).

3.2. Data Quality Evaluation of 1,4-Dioxane Analysis

3.2.1. Completeness Review

The laboratory provided the analytical results, they indicated, as Level IV data packages. The packages were not presented in USEPA CLP or equivalent formats. Most documents were included in the report packages including a case narrative summarizing the QC issues associated with the project analyses. It should be noted that although the case narratives were included in each SDG, they do not necessarily contain information that were relevant to the data reported for this project. The case narratives were not relied upon in this data validation. With the exception of MS/MSDs, sufficient information was available to conduct a full data validation. Additional sample aliquots were not submitted to the laboratory to conduct MS/MSD analyses.

3.2.2. Test Methods

The laboratory performed the analyses using the analytical test methods listed in Section 1.3. They included USEPA SW-846 Methods 3520C (continuous liquid-liquid extraction) and 8270C (SVOCs by GC/MS). All samples were prepared using an initial sample volume of 1 liter (L) or thereabout, and extracted down to a final volume of 1 milliliter (mL). In the modification of the method, deuterated 1,4-dioxane (a.k.a., 1,4-dioxane-d8) was added to the samples during sample extraction to be used as a surrogate standard to evaluate the extraction procedure and also used as an internal standard to quantify 1,4-dioxane in the samples (isotope dilution). The laboratory had quantitated each analytical run twice, first to ensure that the run meets Method 8270C analytical criteria, then again to determine the concentration of 1,4-dioxane, if detected, via 1,4-dioxane-d8 as the internal standard.

3.2.3. Sample Receipt

The laboratory received a total of 104 water samples in a total of 14 SDGs for 1,4-dioxane analysis between April 4, 2010 and May 26, 2009. They were collected between March 31, 2010 and May 23, 2010. The temperatures within all sample shipment coolers at the time of laboratory receipt were within the recommended temperature range of 4°C ± 2°C, with the exception of samples of SDG PTF0033 as noted below. Field and laboratory personnel completed the Chain-of-Custody (COC) documents recording the signature, date, and time of custody transfer. The follow findings for sample receipt are noted for each SDG.

- SDG PTD0139: sample MW-43S listed on the COC was not submitted with this SDG. It was submitted with the next SDG.
- SDG PTD0335: sample MW-8 was misidentified as MW-4 on the COC. The laboratory made the necessary correction after contacting Malcolm Pirnie, Inc.
- SDG PTD0542: no problems identified
- SDG PTD0795: no problems identified
- SDG PTD0954: no problems identified
- SDG PTD1196: no problems identified
- SDG PTD1363: no problems identified
- SDG PTD1568: no problems identified
- SDG PTD1699: no problems identified
- SDG PTE0256: no problems identified
- SDG PTE0429: no problems identified
- SDG PTE0643: no problems identified
- SDG PTE0864: no problems identified
- SDG PTF0033: due to a delay of shipment delivery by FedEx, the sample cooler was received at the laboratory with ice all melted and the internal cooler temperature at 13.7 degrees Celsius (56.7 degrees Fahrenheit). Therefore, all detect concentrations are qualified as estimates, "J," and all non-detect reporting limit concentrations are qualified as non-detected estimates, "UJ."

3.2.4. Holding Times

The maximum technical holding time for SVOC samples from date of sample collection to date of sample extraction is 7 days, and from date of sample extraction to date of sample analysis is 40 days. The follow findings for holding times are noted for each SDG.

- SDG PTD0139: all samples were erroneously noted by the laboratory to have been extracted on 4/01/10, before the date of sample receipt. A review of the extraction log indicates that the samples were extracted on 4/05/10, within holding time. All samples were analyzed within holding time. No qualification actions are necessary.
- SDG PTD0335: no problems identified
- SDG PTD0542: no problems identified
- SDG PTD0795: no problems identified
- SDG PTD0954: no problems identified
- SDG PTD1196: no problems identified
- SDG PTD1363: sample W-22-95 was re-extracted due to poor surrogate recoveries. However, the re-extraction was conducted outside the maximum holding time. No calibration information was supplied within the data package for the re-extracted sample run. The re-extracted result will not be used due to the lack of documentation provided by the laboratory. Not using the re-extracted data does not impact the ultimate qualification of the result.
- SDG PTD1568: no problems identified
- SDG PTD1699: samples W-36-448 and W-36-390 were re-extracted due to poor surrogate recoveries. However, the re-extraction was conducted outside the maximum holding time. Documentation of re-extraction was provided in SDG PTE0429. The re-extracted result for W-36-390 was not provided by the laboratory. The re-extracted results will not be used. Not using the re-extracted data does not impact the ultimate qualification of the results.
- SDG PTE0256: no problems identified
- SDG PTE0429: no problems identified
- SDG PTE0643: no problems identified
- SDG PTE0864: no problems identified
- SDG PTF0033: all samples were extracted beyond the maximum holding time by three, four, or nine days. Therefore, all detect concentrations are qualified as estimates, "J," and all non-detect reporting limit concentrations are qualified as non-detected estimates, "UJ." The possible bias is low.

3.2.5. Analytical Results

For each sample tested, the laboratory provided the analytical test information using their own reporting formats into full data package. For all analytical results, the laboratory provided a summary results form per SDG. The form format shows the following information for the analyses: laboratory name; laboratory sample identification; field sample identification, sample matrix; reporting unit; analytical method, sample preparation batch identification, reporting limit, sample result, dilution factor, date of sample extraction, date of sample analysis, and data qualifier (if any). Also included were surrogate recoveries.

Based on this data validation, the following observations should be noted.

- Most sample chromatograms show unknown peaks and/or hydrocarbon humps. Since these unknowns do not interfere with the identification and integration of 1,4-dioxane, they are not a concern to this data validation process. It should be noted that some of these unknowns were also found in the blank chromatograms, indicating that there were contamination issues within the laboratory.
- SDG PTD1363: sample W-22-95 was re-extracted on a date that was not revealed by the laboratory. The method blank results were not supplies, nor were any other QC information such

as calibration information of the re-extracted sample, which was analyzed on 4/30/10 on instrument GCMS14. Since no QC information was supplied, the re-extraction and re-analysis will not be considered to have occurred. Not using the re-extracted data does not impact the ultimate qualification of the result.

- SDG PTD1699: (1) sample W-27-240 has two extremely large unknown peaks eluting relatively late in the sample run. It should also be noted that these peaks were not observed in the chromatogram of sample W-27-285. If needed, the laboratory may be contacted to obtain tentative identifications and estimated concentrations of these unknown peaks. (2) Samples W-36-448 and W-36-390 were re-extracted due to poor surrogate recoveries. The results of the re-extracted sample W-36-390 was not provided by the laboratory. Since limited QC information was supplied, the re-extracted analysis will not be considered. Not using the re-extracted data does not impact the ultimate qualification of the results.
- SDG PDF0033: sample PW-06-05 has a very large unknown peak eluting late in the sample run over a hydrocarbon hump. If needed, the laboratory may be contacted to obtain a tentative identification and estimated concentration of this unknown peak. This sample appears to have matrix effect interference during its initial run, but the problem may also be a non-sample related instrument issue.

3.2.6. Traceability to Raw Data

Traceability of the SVOC analyses is established by the "Extraction Record" sheets and the "GC/MS Run Logbook" sheets. These sheets were all supplied and list the project samples analyzed per laboratory batch processed and the corresponding QC samples performed with the project samples. "Standard Preparation Logs" were also submitted within each data package deliverable to trace the source and preparation of the standard solutions used.

3.2.7. Instrument Tuning

The GC/MS mass spectrometer detector performance (i.e., "tuning data," or a check of mass spectral ion intensities using decafluorotriphenylphosphine [DFTPP]) met method criteria. The detector performance was checked prior to calibration and once every 12-hour shift for all analytical batches. There were no deficiencies found. The follow findings for instrument tuning are noted for each SDG.

- SDG PTD0139: all tuning results were acceptable
- SDG PTD0335: all tuning results were acceptable
- SDG PTD0542: all tuning results were acceptable
- SDG PTD0795: all tuning results were acceptable
- SDG PTD0954: all tuning results were acceptable
- SDG PTD1196: all tuning results were acceptable
- SDG PTD1363: all tuning results were acceptable
- SDG PTD1568: all tuning results were acceptable
- SDG PTD1699: all tuning results were acceptable
- SDG PTE0256: all tuning results were acceptable
- SDG PTE0429: all tuning results were acceptable
- SDG PTE0643: all tuning results were acceptable
- SDG PTE0864: all tuning results were acceptable
- SDG PTF0033: all tuning results were acceptable

3.2.8. Initial Calibration

Most initial calibrations (ICALs) were performed at eight levels with concentrations from 1.0 µg/L to 100 µg/L. The ICAL analyzed for the last SDG of this sampling event was calibrated at nine levels from 0.5 µg/L to 100 µg/L. A deuterated 1,4-dioxane (1,4-dioxane-d8) was used as the internal standard for 1,4-dioxane. Based on the response factors of nearly unity, they behave chromatographically similar. The average relative response factors (RRFs) were all evaluated with respect to the acceptance criterion of ≥ 0.05. All compound response factors were also evaluated for linearity over the calibration range. A percent relative standard deviation (%RSD) ≤ 15.0 indicates linearity through the origin and an average RF would be used.

1,4-Dioxane in all ICALs met data validation criteria (i.e., average RRFs ≥ 0.05 and/or the %RSDs ≤ 15%). Table 3.2-1 shows a summary of the samples and compounds qualified as estimated, "J," or not usable, "R," due to ICAL deficiencies, if any.

Table 3.2-1. Evaluation of 1,4-Dioxane Initial Calibration Results

SDG Package Identification	Initial Calibration Date/Time	Sample ID	1,4-Dioxane	Action
PTD0139	04/05/10, 16:51 (GCMS12)	MW-22S MW-28S MW-18S MW-42I MW-20S	RRF: Acceptable %RSD: Acceptable	RRF < 0.05 None %RSD > 15% None
PTD0335	04/05/10, 16:51 (GCMS12)	MW-43S EQ-11854 MW-33S MW-3 MW-8	RRF: Acceptable %RSD: Acceptable	RRF < 0.05 None %RSD > 15% None
PTD0542	03/04/10, 20:28 (GCMS14)	MW-04 MW-11 MW-12 DUPL-3 (MW-11) MW-9 MW-10	RRF: Acceptable %RSD: Acceptable	RRF < 0.05 None %RSD > 15% None
PTD0795	03/04/10, 20:28 (GCMS14)	MW-P114-170R MW-P114-290 EQ-14932 PW-3-5 MW-P110-355 PW-3-4 MW-P110-440 PW-3-2	RRF: Acceptable %RSD: Acceptable	RRF < 0.05 None %RSD > 15% None
PTD0954	03/04/10, 20:28 (GCMS14)	PW-3-7 PW-3-3 PW-2-2	RRF: Acceptable %RSD: Acceptable	RRF < 0.05 None %RSD > 15% None
PTD1196	04/05/10, 16:51 (GCMS12)	PW-02-01 PW-02-03 PW-3-6 PW-3-1 W-03-112 W-03-72 W-01-120 W-14-150 W-08-71 W-01-75 W-32-110 W-02-70	RRF: Acceptable %RSD: Acceptable	RRF < 0.05 None %RSD > 15% None

Table 3.2-1. Evaluation of 1,4-Dioxane Initial Calibration Results

SDG Package Identification	Initial Calibration Date/Time	Sample ID	1,4-Dioxane	Action
PTD1363	04/05/10, 16:51 (GCMS12)	W-10-120 W-10-71 W-05-78 W-6-79 W-22-95 W-11-70 W-31-95 W-12-120 W-12-70 DUPL-4 (W-12-70) W-16-148 W-19-110 W-19-150	RRF: Acceptable %RSD: Acceptable	RRF < 0.05 None %RSD > 15% None
PTD1568	04/26/10, 20:26 (GCMS14)	W-23-110 W-20-120 W-20-160 W-25-150 W-25-188	RRF: Acceptable %RSD: Acceptable	RRF < 0.05 None %RSD > 15% None
PTD1699	04/26/10, 20:26 (GCMS14)	W-24-260 EQ-9990 W-26-270 W-37-385 W-30-285 W-37-325 W-27-285 W-27-240 DUPL-5 (W-30-285) W-36-448 W-36-390	RRF: Acceptable %RSD: Acceptable	RRF < 0.05 None %RSD > 15% None
PTE0256	04/26/10, 20:26 (GCMS14)	PW-02-04 PW-02-05 S-1-450 S-1-325 PW-02-06	RRF: Acceptable %RSD: Acceptable	RRF < 0.05 None %RSD > 15% None
PTE0429	04/26/10, 20:26 (GCMS14)	PW-05-03 PW-02-07 PW-05-05 PW-05-02 PW-05-04 DUPL-6 (PW-05-04) PW-05-07 PW-04-04 PW-04-02	RRF: Acceptable %RSD: Acceptable	RRF < 0.05 None %RSD > 15% None
PTE0643	04/26/10, 20:26 (GCMS14)	PW-04-03 PW-04-01 PW-04-05 PW-04-06 PW-04-07 PW-07-02 PW-07-03 PW-07-07 PW-07-04	RRF: Acceptable %RSD: Acceptable	RRF < 0.05 None %RSD > 15% None

Table 3.2-1. Evaluation of 1,4-Dioxane Initial Calibration Results				
SDG Package Identification	**Initial Calibration Date/Time**	**Sample ID**	**1,4-Dioxane**	**Action**
PTE0864	04/26/10, 20:26 (GCMS14)	PW-05-06 PW-07-01 PW-05-01 PW-07-05 EB-MP140 PW-07-06 DUPL-7 (PW-07-06)	RRF: Acceptable %RSD: Acceptable	RRF < 0.05 None %RSD > 15% None
PTF0033	05/25/10, 18:08 (GCMS14)	PW-06-02 PW-06-04 PW-06-06 PW-06-07 PW-06-05 PW-06-03	RRF: Acceptable %RSD: Acceptable	RRF < 0.05 None %RSD > 15% None

3.2.9. Continuing Calibration Verification

The continuing calibration verification (CCV) analyses were performed with a mid-level standard immediately following the tuning check at the beginning of each 12-hour analytical sequence. All RRFs were evaluated with respect to the acceptance criterion of ≥ 0.05 to determine continued acceptable detection sensitivity. All compound responses were also evaluated for continued agreement with the initial calibration - a percent difference (%D) criterion of $\leq 20\%$ for the RRF or calculated amount must be met (USEPA HW-22 criterion).

1,4-Dioxane in all CCV analyses met data validation criteria (i.e., RRFs ≥ 0.05, and/or the %Ds $\leq 20\%$). Table 3.2-2 shows a summary of the samples and compounds qualified as estimated, "J," or not usable, "R," due to CCV deficiencies, if any. There were no qualification actions.

Table 3.2-2. Evaluation of 1,4-Dioxane Continuing Calibration Results				
SDG Package Identification	**CCV Date/Time**	**Sample ID**	**1,4-Dioxane**	**Action**
PTD0139	04/06/10, 13:39	MW-22S MW-28S MW-18S MW-42I MW-20S	RRF: Acceptable % D: Acceptable	RRF < 0.05 None %D > 20% None
PTD0335	04/08/10, 14:51	MW-43S EQ-11854 MW-33S MW-3 MW-8	RRF: Acceptable % D: Acceptable	RRF < 0.05 None %D > 20% None
PTD0542	04/14/10, 12:38	MW-04 MW-11 MW-12 DUPL-3 (MW-11) MW-9 MW-10	RRF: Acceptable % D: Acceptable	RRF < 0.05 None %D > 20% None

Table 3.2-2. Evaluation of 1,4-Dioxane Continuing Calibration Results				
SDG Package Identification	**CCV Date/Time**	**Sample ID**	**1,4-Dioxane**	**Action**
PTD0795	04/19/10, 12:50	MW-P114-170R MW-P114-290 EQ-14932 PW-3-5 MW-P110-355 PW-3-4 MW-P110-440 PW-3-2	RRF: Acceptable % D: Acceptable	RRF < 0.05 None %D > 20% None
PTD0954	04/21/10, 14:26	PW-3-7 PW-3-3 PW-2-2	RRF: Acceptable % D: Acceptable	RRF < 0.05 None %D > 20% None
PTD1196	04/23/10, 14:31	PW-02-01 PW-02-03 PW-3-6 PW-3-1 W-03-112 W-03-72 W-01-120 W-14-150 W-08-71 W-01-75 W-32-110 W-02-70	RRF: Acceptable % D: Acceptable	RRF < 0.05 None %D > 20% None
PTD1363	04/27/10, 9:47 04/28/10, 15:14	W-10-120 W-10-71 W-05-78 W-6-79 W-22-95 W-11-70 W-31-95 W-12-120 W-12-70 DUPL-4 (W-12-70) W-16-148	RRF: Acceptable % D: Acceptable	RRF < 0.05 None %D > 20% None
	[illegible]/10, 17:11	W-19-110 W-19-150	RRF: Acceptable % D: Acceptable	RRF < 0.05 None %D > 20% None
PTD[illegible]	[illegible]0/10, 18:55	W-23-110 W-20-120 W-20-160 W-25-150 W-25-188	RRF: Acceptable % D: Acceptable	RRF < 0.05 None %D > 20% None
[illegible]TD1699	[illegible]5/06/10, 12:23	W-24-260 EQ-9990 W-26-270 W-37-385 W-30-285 W-37-325 W-27-285 DUPL-5 (W-30-285) W-36-390	RRF: Acceptable % D: Acceptable	RRF < 0.05 None %D > 20% None

Table 3.2-2. Evaluation of 1,4-Dioxane Continuing Calibration Results

SDG Package Identification	CCV Date/Time	Sample ID	1,4-Dioxane	Action
	05/07/10, 16:00	W-27-240	RRF: Acceptable % D: Acceptable	RRF < 0.05 None %D > 20% None
	05/11/10, 09:50	W-36-448	RRF: Acceptable % D: Acceptable	RRF < 0.05 None %D > 20% None
PTE0256	05/11/10, 09:50	PW-02-04 PW-02-05 S-1-450 S-1-325 PW-02-06	RRF: Acceptable % D: Acceptable	RRF < 0.05 None %D > 20% None
PTE0429	05/11/10, 09:50	PW-05-03 PW-02-07 PW-05-05 PW-05-02 PW-05-04 PW-05-07 PW-04-04 PW-04-02	RRF: Acceptable % D: Acceptable	RRF < 0.05 None %D > 20% None
	05/14/10, 15:42	DUPL-6 (PW-05-04)	RRF: Acceptable % D: Acceptable	RRF < 0.05 None %D > 20% None
PTE0643	05/14/10, 15:42	PW-04-03 PW-04-01 PW-04-05 PW-04-06 PW-04-07 PW-07-02 PW-07-03 PW-07-07 PW-07-04	RRF: Acceptable % D: Acceptable	RRF < 0.05 None %D > 20% None
PTE0864	05/19/10, 13:49	PW-05-06 PW-07-01 PW-05-01 PW-07-05 EB-MP140 PW-07-06 DUPL-7 (PW-07-06)	RRF: Acceptable % D: Acceptable	RRF < 0.05 None %D > 20% None
PTF0033	06/07/10, 10:07	PW-06-02 PW-06-04 PW-06-06 PW-06-07 PW-06-05	RRF: Acceptable % D: Acceptable	RRF < 0.05 None %D > 20% None
	06/09/10, 15:42	PW-06-03	RRF: Acceptable % D: Acceptable	RRF < 0.05 None %D > 20% None

3.2.10. Laboratory Method Blanks

There was no 1,4-dioxane contamination detected in any of the method blanks.

An evaluation of all method blanks was conducted. The method blanks for each SDG package and their extraction dates are presented in Table 3.2-3. As indicated, 1,4-dioxane was not detected in any of the method blanks, and therefore, no samples were affected and no qualification actions are necessary.

Table 3.2-3. Evaluation of 1,4-Dioxane Laboratory Method Blank Results

SDG Package Identification	Method Blank Date Extracted	1,4-Dioxane Detected	Sample Affected	Action
PTD0139	4/01/10	No	None	None
PTD0335	4/07/10	No	None	None
PTD0542	4/12/10	No	None	None
PTD0795	4/14/10	No	None	None
PTD0954	4/19/10	No	None	None
PTD1196	4/22/10	No	None	None
PTD1363	4/26/10	No	None	None
	4/27/10	No	None	None
PTD1568	4/28/10	No	None	None
PTD1699	4/30/10	No	None	None
PTE0256	5/06/10	No	None	None
PTE0429	5/10/10	No	None	None
	5/12/10	No	None	None
PTE0643	5/12/10	No	None	None
PTE0864	5/17/10	No	None	None
PTF0033	6/02/10	No	None	None
	6/08/10	No	None	None

In addition to the above, the following should be noted.

- SDG PSD1363: sample W-22-95 was re-extracted on a date that was not revealed by the laboratory. The method blank results were not supplied. Since no QC information was supplied, the re-extraction and re-analysis will not be considered to have occurred and are not evaluated.
- SDG PSD1699: samples W-36-448 and W-36-390 were re-extracted on a date that was not revealed by the laboratory. The method blank results were not supplied. Since no QC information was supplied, the re-extraction and re-analysis will not be considered to have occurred and are not evaluated.
- Most method blanks have a number of unknown peaks shown in their chromatograms, especially the method blank extracted on 4/26/10 and analyzed on 4/27/10, which has a large number of unknown peaks. These contamination problems were internal to the laboratory and should have been corrected. Fortunately, they do not appear to have affected the ability to detect 1,4-dioxane (as shown in the matrix spike blanks) nor were they 1,4-dioxane themselves.

3.2.11. Laboratory Control Sample Results

The laboratory analyzed a laboratory control sample (LCS) (a.k.a., blank spike, BS) for each extraction batch. All LCS percent recoveries were within the laboratory control limits for each of the batches. No qualification actions are necessary. Table 3.2-4 shows the evaluation of LCS samples.

Table 3.2-4. Evaluation of 1,4-Dioxane Laboratory Control Sample Results				
SDG Package Identification	**LCS: Date Extracted**	**Compound(s) Out**	**Affected Samples**	**Action**
PTD0139	4/01/10	None	None	None
PTD0335	4/07/10	None	None	None
PTD0542	4/12/10	None	None	None
PTD0795	4/14/10	None	None	None
PTD0954	4/19/10	None	None	None
PTD1196	4/22/10	None	None	None
PTD1363	4/26/10	None	None	None
	4/27/10	None	None	None
PTD1568	4/28/10	None	None	None
PTD1699	4/30/10	None	None	None
PTE0256	5/06/10	None	None	None
PTE0429	5/10/10	None	None	None
	5/12/10	None	None	None
PTE0643	5/12/10	None	None	None
PTE0864	5/17/10	None	None	None
PTF0033	6/02/10	None	None	None
	6/08/10	None	None	None

3.2.12. Matrix Spike/Matrix Spike Duplicate Analyses

MS/MSD analyses are designed to provide information about the effect of sample matrix on the sample preparation procedures and the measurement methodology. Data precision from field sampling and analytical techniques can also be assessed.

MS/MSDs were conducted on samples that were not relevant to this project. The laboratory had analyzed MS/MSDs with each analytical batch as required per laboratory certification requirements. However, since they were from other clients of the laboratory, the results have no relevance to samples of this project. Those MS/MSD data were submitted by the laboratory within the data packages, but they were not reviewed in this data validation.

There was no MS/MSD analysis on samples of this project. Therefore, the accuracy of the 1,4-dioxane results were not evaluated with respect to sample matrix interferences. It is not known whether the results may have been affected by the nature of the sample matrix. The field samplers should have specified samples on the COC for MS/MSD analysis at a rate of 5% (one set of MS/MSD for every 20 samples) and should have collected extra volume of samples for the laboratory to conduct the analysis. This was not performed.

It should also be noted that the laboratory had analyzed LCS/LCSDs (a.k.a., blank spike / blank spike duplicate or BS/BSD) with every batch. However, these analyses were performed on analyte-free water, and bear no information on matrix effects of field sample water. Therefore, LCS/LCSDs are not equivalent to MS/MSDs and were not evaluated for matrix effects.

Table 3.2-5 shows the samples and compounds that were qualified as estimated due to MS/MSD percent recoveries exceeding criteria.

Table 3.2-5. Evaluation of 1,4-Dioxane Matrix Spike/Matrix Spike Duplicate Sample Results			
SDG Package Identification	**Sample ID**	**Compounds**	**Action**
Not applicable			

3.2.13. Field Duplicate Analyses

Blind field duplicate samples were collected and analyzed to assess the overall sampling and analytical technique's precision. And by design, the laboratory was never made aware of which field samples the blind duplicates were associated with. The following samples were analyzed for field duplicate:

- SDG PTD0139: none analyzed
- SDG PTD0335: none analyzed
- SDG PTD0542: sample DUPL-3 was a blind field duplicate of sample MW-11 (all RPDs acceptable)
- SDG PTD0795: none analyzed
- SDG PTD0954: none analyzed
- SDG PTD1196: none analyzed
- SDG PTD1363: sample DUPL-4 was a blind field duplicate of sample W-12-70 (all RPDs acceptable)
- SDG PTD1568: none analyzed
- SDG PTD1699: sample DUPL-5 was a blind field duplicate of sample W-30-285 (all RPDs acceptable)
- SDG PTE0256: none analyzed
- SDG PTE0429: sample DUPL-6 was a blind field duplicate of sample PW-05-04 (all RPDs acceptable)
- SDG PTE0643: none analyzed
- SDG PTE0864: sample DUPL-7 was a blind field duplicate of sample PW-07-06 (all RPDs acceptable)
- SDG PTF0033: none analyzed

An evaluation on precision of the field sample collection procedure (as well as the laboratory analysis procedure) was made based on the relative percent difference (RPD) calculated between the original and duplicate sample results. RPD calculations were made only when the results were above the laboratory reporting limits. The RPD values for 1,4-dioxane were less than 30%. No qualification actions are necessary.

It should be noted that QAPP requirements (GTEOSI, 2002) specified that a field duplicate sample be collected at a rate of one for every ten samples (collection rate of 10%). There were 5 field duplicates collected for the 95 field samples submitted (not including QC samples) for analysis. Therefore, the 10% frequency goal was not satisfied at 5% and field precision is not satisfied to the QAPP's requirements. However, it should also be noted that field precision were acceptable for all field duplicates that were collected.

3.2.14. Field Blanks and Equipment Blanks

There were no field blanks submitted with any of the SDGs associated with the analysis of 1,4-dioxane. Of the 14 SDGs submitted, four of the SDGs had an equipment blank submitted. Consequently, for evaluation purposes, the four equipment blanks would have been evaluated together and the highest detected 1,4-dioxane concentration would have been used to assess all field samples in the project. However, 1,4-dioxane contamination was not detected in any of the equipment blanks.

An evaluation of all equipment blanks was conducted. The equipment blanks for the four SDG packages are presented in Table 3.2-6. As indicated, 1,4-dioxane was not detected in any of the equipment blanks, and therefore, no samples were affected and no qualification actions are necessary.

Table 3.2-6 Evaluation of 1,4-Dioxane Equipment Blank Results

SDG Package Identification	Equipment Blank Identification	1,4-Dioxane Detected	Sample Affected	Action
PTD0335	EQ-11854	No	None	None
PTD0795	EQ-14932	No	None	None
PTD1699	EQ-9990	No	None	None
PTE0864	EB-MP140	No	None	None

3.2.15. System Monitoring Compounds

A deuterated 1,4-dioxane (1,4-dioxane-d8) was extracted with the samples and evaluated as a surrogate standard along with nitrobenzene-d5. Below is a summary of the surrogate recovery findings and qualification actions taken.

- SDG PTD0139: all surrogate recoveries were acceptable
- SDG PTD0335: all surrogate recoveries were acceptable
- SDG PTD0542: all surrogate recoveries were acceptable
- SDG PTD0795: all surrogate recoveries were acceptable
- SDG PTD0954: all surrogate recoveries were acceptable
- SDG PTD1196: all surrogate recoveries were acceptable
- SDG PTD1363: sample W-22-95, both surrogate recoveries were below the laboratory's acceptance ranges but greater than 10%. Therefore, the non-detect value for 1,4-dioxane is qualified as an estimated value, "UJ." The sample was subsequently re-extracted, but the re-extraction was performed outside of the maximum holding time. The non-detection of 1,4-dioxane was confirmed, but the result will still be qualified as "UJ." The re-extracted sample result is not used.
- SDG PTD1568: all surrogate recoveries were acceptable
- SDG PTD1699: samples W-36-448 and W-36-390 have surrogate recoveries for 1,4-dioxane-d8 below the laboratory's acceptance ranges but greater than 10%. Sample W-36-390 also has surrogate recovery for nitrobenzene-d5 below the laboratory's acceptance ranges but greater than 10%. Therefore, the detect values for 1,4-dioxane are qualified as an estimated values, "J," possibly biased low. The samples were subsequently re-extracted, but the re-extractions were performed outside of the maximum holding time. The detections of 1,4-dioxane were confirmed, but the results will still be qualified as "J." The re-extracted sample results are not used.
- SDG PTE0256: all surrogate recoveries were acceptable
- SDG PTE0429: all surrogate recoveries were acceptable
- SDG PTE0643: all surrogate recoveries were acceptable
- SDG PTE0864: all surrogate recoveries were acceptable
- SDG PTF0033: all surrogate recoveries were acceptable

3.2.16. Internal Standard

Internal standard retention times for all samples were within ± 0.5 minutes from that of the associated calibration for all analyses. The responses (area counts) of all internal standards were within the range of

50-200% of the associated continuing calibration verification standard for all samples. There were no deficiencies found.

- SDG PTD0139: all internal standard retention and area counts were acceptable
- SDG PTD0335: all internal standard retention and area counts were acceptable
- SDG PTD0542: all internal standard retention and area counts were acceptable
- SDG PTD0795: all internal standard retention and area counts were acceptable
- SDG PTD0954: all internal standard retention and area counts were acceptable
- SDG PTD1196: all internal standard retention and area counts were acceptable
- SDG PTD1363: all internal standard retention and area counts were acceptable
- SDG PTD1568: all internal standard retention and area counts were acceptable
- SDG PTD1699: all internal standard retention and area counts were acceptable
- SDG PTE0256: all internal standard retention and area counts were acceptable
- SDG PTE0429: all internal standard retention and area counts were acceptable
- SDG PTE0643: all internal standard retention and area counts were acceptable
- SDG PTE0864: all internal standard retention and area counts were acceptable
- SDG PTF0033: sample PW-06-05 has the response of 1,4-dichlorobenzene-d4 area count below 50% of its continuing calibration count. The sample was subsequently re-run at a later date with a 2x dilution but without bringing up the internal standard's concentration back up to 10 µg/L. The internal standard area count at this lower concentration passed the acceptance criteria. This is abnormal procedure for evaluating internal standards, so the diluted sample will not be used. The initial run will be used. Although 1,4-dioxane was not detected, it's reporting limit will be qualified as an estimated value, "UJ," biased low.

3.2.17. Compound Identification and Quantitation of Results / Dilutions

The laboratory's evaluations of quantitation reports, chromatograms, and mass spectra for compound detection, identification, and concentration were acceptable with the following exceptions or notes.

- SDG PTD0139: Sample MW-42I: 1,4-dioxane was detected at a concentration of 0.22 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.22 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value.
- SDG PTD0335: Sample MW-8: 1,4-dioxane was detected at a concentration of 0.19 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.19 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value.
- SDG PTD0542: Sample MW-12: 1,4-dioxane was detected at a concentration of 0.18 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.18 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value.
- SDG PTD0795: (1) Sample MW-P114-170R detection for 1,4-dioxane was rounded to 5.1 µg/L from 5.0 µg/L that was reported by the laboratory. (2) Sample PW-3-4: 1,4-dioxane was detected at a concentration of 0.07 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.07 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (3) Sample PW-3-2: 1,4-dioxane was detected at a concentration of 0.10 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be

changed from non-detect to 0.10 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value.

- SDG PTD0954: (1) Sample PW-3-7: 1,4-dioxane was detected at a concentration of 0.32 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.32 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (2) Sample PW-3-3: 1,4-dioxane was detected at a concentration of 0.12 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.12 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (3) Sample PW-2-2: 1,4-dioxane was detected at a concentration of 0.44 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.44 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value.
- SDG PTD1196: Sample W-14-150: 1,4-dioxane was detected at a concentration of 0.72 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.72 J µg/L. The qualifier "J" is to denote that the concentration is below the reporting limit and, therefore, it is an estimated value.
- SDG PTD1363: Sample W-11-70 – 1,4-dioxane was detected at a concentration of 0.81 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.81 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value.
- SDG PTD1568: (1) Sample W-20-120: 1,4-dioxane was detected at a concentration of 0.79 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.79 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (2) Sample W-20-160: 1,4-dioxane was detected at a concentration of 0.44 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.44 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (3) Sample W-25-150: 1,4-dioxane was detected at a concentration of 0.41 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.41 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (4) Sample W-25-188: 1,4-dioxane was detected at a concentration of 0.65 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.65 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value.
- SDG PTD1699: (1) Sample W-26-270: 1,4-dioxane was detected at a concentration of 0.19 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.19 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (2) Sample W-30-285: 1,4-dioxane was detected at a concentration of 0.14 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.14 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (3) Sample DUPL-5: 1,4-dioxane was detected at a concentration of 0.13 µg/L.

The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.13 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value.

- SDG PTE0256: (1) Sample PW-02-04: 1,4-dioxane was detected at a concentration of 0.08 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.08 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (2) Sample S-1-450: 1,4-dioxane was detected at a concentration of 0.60 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.60 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value.
- SDG PTE0429: (1) Sample PW-05-03: 1,4-dioxane was detected at a concentration of 0.06 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.06 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (2) Sample PW-02-07: 1,4-dioxane was detected at a concentration of 0.34 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.34 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (3) Sample PW-05-05: 1,4-dioxane was detected at a concentration of 0.12 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.12 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (4) Sample PW-05-02: 1,4-dioxane was detected at a concentration of 0.16 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.16 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (5) Sample PW-05-04: 1,4-dioxane was detected at a concentration of 0.05 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.05 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (6) Sample DUPL-6: 1,4-dioxane was detected at a concentration of 0.04 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.04 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (7) Sample PW-05-07: 1,4-dioxane was detected at a concentration of 0.10 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.10 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (8) Sample PW-04-04: 1,4-dioxane was detected at a concentration of 0.03 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.03 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value.
- SDG PTE0643: (1) Sample PW-04-03: 1,4-dioxane was detected at a concentration of 0.32 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.32 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (2) Sample PW-07-02: 1,4-dioxane was detected at a concentration of 0.10 µg/L. The laboratory did not report the concentration because the concentration was below the initial

calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.10 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (3) Sample PW-07-03: 1,4-dioxane was detected at a concentration of 0.13 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.13 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (4) Sample PW-07-07: 1,4-dioxane was detected at a concentration of 0.06 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.06 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (5) The reporting limits for samples PW-04-03 and PW-07-04 both needed to be raised to 1.1 µg/L from 1.0 µg/L since the initial sample volumes used for extraction were 0.910 liters instead of 1.000 liters. The laboratory neglected to make the adjustment in this SDG.

- SDG PTE0864: The reporting limit for sample DUPL-7 needed to be raised to 1.1 µg/L from 1.0 µg/L since the initial sample volume used for extraction was 0.940 liter instead of 1.000 liter. The laboratory neglected to make the adjustment in this SDG.
- SDG PTF0033: (1) all reporting limits for this SDG are changed to 0.5 µg/L from of 1.0 µg/L since the lowest calibration point in the initial calibration, for this SDG, was conducted at 0.5 µg/L. The laboratory was contacted and agreed that the calibration and their MDL study can support this modification. (2) Sample PW-06-02: 1,4-dioxane was detected at a concentration of 0.39 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.39 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (3) Sample PW-06-06: 1,4-dioxane was detected at a concentration of 0.12 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.12 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value. (4) Sample PW-06-07: 1,4-dioxane was detected at a concentration of 0.22 µg/L. The laboratory did not report the concentration because the concentration was below the initial calibration range. The result for 1,4-dioxane will be changed from non-detect to 0.22 J µg/L. The qualifier "J" denotes that the concentration is below the reporting limit and, therefore, it is an estimated value.

There were no samples that contained elevated concentrations of 1,4-dioxane that exceeded the calibration range. A list of the re-analyzed samples due to elevated concentrations and the affected compounds is presented in Table 3.2-7. Samples that were analyzed at an elevated dilution without initially analyzing at an un-diluted level are presented in Table 3.2-8.

Table 3.2-7. Summary of 1,4-Dioxane Laboratory Re-Analyses Due to Need for Dilution

SDG Package Identification	Sample ID	Compound Reported From Re-Analysis
PTD0139	None	None
PTD0335	None	None
PTD0542	None	None
PTD0795	None	None
PTD0954	None	None
PTD1196	None	None
PTD1363	None	None
PTD1568	None	None
PTD1699	None	None
PTE0256	None	None

Table 3.2-7. Summary of 1,4-Dioxane Laboratory Re-Analyses Due to Need for Dilution		
SDG Package Identification	**Sample ID**	**Compound Reported From Re-Analysis**
PTE0429	None	None
PTE0643	None	None
PTE0864	None	None
PTF0033	None	None

Table 3.2-8. Summary of 1,4-Dioxane Samples Analyzed Diluted Without an Undiluted Analysis		
SDG Package Identification	**Sample ID**	**Initial Dilution**
Not applicable		

3.2.18. Tentatively Identified Compounds (TICs)

The search for TICs was not required in the analysis for 1,4-dioxane. However, it should be noted that there were TICs detected in many of the sample chromatograms.

3.2.19. Electronic Data Deliverables

The results in the electronic data set matched results listed on the hardcopy analytical report including laboratory qualifiers. The qualifiers and results were revised based on quality control issues; and foundation for changes are listed in previous subsections of this data validation report. The qualifiers were also placed onto the reporting forms located near the beginning of each hardcopy deliverable package.

4. Summary and Data Usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. Overall, 98.2 percent[9] of the data (individual compound results) were determined to be usable for qualitative and quantitative purposes. The other 1.8 percent were qualified as unusable – the presence or absence of the compounds cannot be verified. Those sample results qualified as estimated, "J" and "UJ," due to QC deficiencies should be considered conditionally usable. TIC identifications are only presumptive evidence of the compound's presence, and are qualified with "N."

These groundwater samples collected at and in the vicinity of the former Sylvania Electric Products Incorporated Facility in Hicksville were evaluated based on QA/QC criteria established in the data validation guidelines listed in Section 1.2, by methods as listed in Section 1.3, on the QAPP (GTEOSI, 2002) established for the Sylvania Electric Products Incorporated Facility project, and by professional judgment[10]. Major deficiencies in the data generation process have resulted in some sample data being rejected, indicating that the data are considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process have resulted in some sample data being characterized as approximate or estimated results. Identification of a data point as approximate, "J," indicates uncertainty in the reported concentration or detection limit of the chemical, but not its assigned identity.

The following paragraphs present the adherence of the data to the precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS) parameters. Completeness has been discussed above.

Precision is measured through the evaluation of field duplicate samples. For the analyses, none of the data were rejected due to precision non-conformances. The frequency of duplicates analysis was 4.7 percent for VOCs and 5.3 percent for 1,4-dioxane, which are below the QAPP's minimum requirement of 10 percent.

LCS, MS, and MSD recoveries indicate the accuracy of the data. For the analyses, none of the data were rejected due to LCS deficiencies. There were no VOC data rejected due to MS/MSD recoveries. However, MS/MSD recoveries were not evaluated for the 1,4-dioxane analyses because there were no MS/MSD data that were relevant to this project. Therefore, accuracy of the 1,4-dioxane data was not evaluated.

Holding times, sample preservation, blank analysis, and analyte identification and quantification are indicators of the representativeness of the analytical data. There were some VOC data qualified as unusable due to holding time exceedances as a result of sample preservation oversight. There were some VOC data qualified as false-positives due to field and/or laboratory contamination. And there were VOC and some 1,4-dioxane data qualified as false-negatives due to detected concentrations that are below the calibration range but positively detected. Details are summarized within Section 3.

Comparability is not compromised, provided that the analytical methods do not change over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures were consistently used by the laboratories, the comparability criteria for the analytical data were met.

[9] Value = ((5,755 VOC results + 95 SVOC results) - 108 total rejected results) / (5,755 VOC results + 95 SVOC results) X 100

[10] Professional judgment is performed by a USEPA trained data validator with over a decade of environmental laboratory experience.

Sensitivity is established by reported detection limits that represent measurable concentrations of analytes that can be determined with a designated level of confidence. Sensitivity requirements were not met for several VOC compounds in several project samples due to excessively poor compound responses in the initial and continuing calibrations performed. Many of the rejected data were due to this sensitivity non-conformance. It should also be noted that reporting limits for some VOC and/or 1,4-dioxane samples were or should be lower than others due to sample dilutions and/or the level of the lowest initial calibration standard used.

5. Data Usability Summary Report Summary Information

The DUSR was performed to determine whether or not the data meets Site-specific criteria for data quality and use. The DUSR was developed by reviewing and evaluating the analytical data packages. During the course of the review, the following questions were addressed:

1. *Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?*

   The QAPP required that USEPA Level III deliverables be provided by the laboratory for each data package. This requirement was met as it applies to the methods used by the laboratory for sample analysis. Full CLP-equivalent deliverable packages were received for the VOCs and 1,4-dioxane analyses. The evaluation of the sample data was conducted using information provided in the data packages provided by the laboratories. Where warranted, additional clarifications and documentation were requested from and provided by the laboratories.

2. *Have all holding times been met?*

   The holding time was not met for one VOC sample due to deficient sample pH preservation. Four other VOC samples exceeded their holding times when they were reanalyzed. These findings are presented in Section 3.1.4. All six samples for 1,4-dioxane in SDG PTF0033 were extracted beyond their holding times. In addition, three other 1,4-dioxane samples were re-extracted, due to poor surrogate recoveries, beyond their holding times. These findings are presented in Section 3.2.4.

3. *Do all the QC data: blanks, standards, spike recoveries, replicate analyses, and sample data fall within the protocol-required limits and specifications?*

   The laboratory used laboratory control limits during the analyses performed for this sampling event. QA/QC deficiencies and qualifications performed on the sample data are discussed in Section 3.1 for VOCs and Section 3.2 for 1,4-dioxane analyses. All major non-conformances occurred only with VOCs analyses and were observed with the initial and continuing calibrations performed and with exceedances of holding times – 1.8 percent of all data were qualified as not usable.

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

   USEPA guidances and methods were used in the analysis of the samples. The laboratories had used the methods specified. For greater detection sensitivity, the method used for the analysis of 1,4-dioxane was a modified USEPA SVOC method.

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

   The evaluation of selected raw data confirmed all information provided in the data packages with minor errors. There were occasions where individual compounds were not properly presented in the raw data, concentrations were not rounded to the proper values, and reporting limits neglected to properly incorporate appropriate dilution factors. There were also many compounds that were detected but not reported due to concentrations being below their calibration ranges. These situations were corrected in the data validation process and are presented in Section 3.1.17 for VOCs and Section 3.2.17 for 1,4-dioxane analyses.

6. *Have the correct data qualifiers been used?*

   The laboratory applied the correct qualifiers to the sample data. The validation qualifiers were applied as required by validation guidelines listed in Section 1.2. The laboratory and data validation qualifier definitions are presented in Section 2.2.

References

United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review.* USEPA-540-R-08-01. June 2008.

United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IV. February 2007.

United States Environmental Protection Agency, Region 2. *Validating Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry SW-846 Method 8270D.* SOP # HW-22, Revision #4. August 2008.

United States Environmental Protection Agency, Region 2. *Validating Volatile Organic Compound by Gas Chromatography/Mass Spectrometry SW-846 Method 8260B.* SOP # HW-24, Revision #2. August 2008.

URS Corporation. *GTE Operations Support Incorporated - Groundwater Investigation Work Plan, Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* QAPP: Appendix C. September 2002.

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Executive Summary

This report addresses data quality for groundwater samples collected at and in the vicinity of the former Sylvania Electric Products facility in Hicksville, New York. Sample collection activities were conducted by Malcolm Pirnie, Inc. (Malcolm Pirnie) from April 1 through May 22, 2010.

The environmental samples collected for this investigation were submitted to Test America Laboratories, Inc. of Earth City, Missouri for radiochemistry analyses including alpha spectrometry for isotopic thorium and isotopic uranium using United States Department of Energy (USDOE) Methods and laboratory standard operating procedures (SOP's) and gas proportional counting for radium-226 (Ra-226) and radium-228 (Ra-228) using USEPA Methods and laboratory SOP's. The analytical data generated for this investigation were evaluated by Malcolm Pirnie using the quality assurance/quality control (QA/QC) criteria established in the methods as guidance. Non-conformances from the QA/QC criteria were qualified based on guidance provided in the Science Applications International Corporation (SAIC) *Laboratory Data Validation Guidelines For Evaluating Radionuclide Analyses*, 143-ARCS-00.08, Revision 06, June 2000 and USDOE *Guidance For Radiochemical Data Validation*, Draft RD4, October 4, 1995.

Method non-conformances requiring data validation qualification "J" (as estimated) include method blank contamination, tracer recovery, laboratory duplicate analysis, radionuclide quantitation and detection limits and total versus dissolved percent difference. None of these non-conformances were significant enough to jeopardize the usability of the data, with the exception of Ra-228 in two samples and Ra-226 in two samples noted in the Data Quality Evaluation Section 3.1.

Overall, 99.6 percent of the radiochemistry data were determined to be usable for qualitative and quantitative purposes. Those sample results qualified "J" due to data validation QA/QC exceedances should be considered conditionally usable. Therefore, the completeness objective of 90 percent, as stated in the quality assurance project plan (QAPP), was met.

1. Introduction

1.1. Sample Identification

This report addresses the results of a data quality evaluation of groundwater samples with radionuclides collected at and in the vicinity of the former Sylvania Electric Products Incorporated Facility in Hicksville by Malcolm Pirnie from April 1 through May 22, 2010.

The quantity and types of samples that were submitted for data validation are presented in Table 1-1.

Table 1-1. *Sample Cross-Reference List*

Package Identification	***Date Collected***	***Sample ID***	***Laboratory ID***	***Analysis Requested***
F0D090534:	4/2/10	MW-33S	-007	Alpha, GFPC
	4/6/10	EQ-11854	-014	Alpha, GFPC
	4/6/10	MW-3	-015	Alpha, GFPC
	4/6/10	MW-8	-016	Alpha, GFPC
	4/7/10	MW-04	-018	Alpha, GFPC
	4/7/10	MW-11	-020	Alpha, GFPC
	4/7/10	MW-12	-021	Alpha, GFPC
	4/7/10	DUPL-3	-022	Alpha, GFPC
	4/8/10	MW-9	-025	Alpha, GFPC
	4/8/10	MW-10	-026	Alpha, GFPC
	4/6/10	MW-3 DISSOLVED	-036	Alpha, GFPC
	4/6/10	MW-8 DISSOLVED	-037	Alpha, GFPC
	4/7/10	MW-04 DISSOLVED	-038	Alpha, GFPC
	4/7/10	MW-11 DISSOLVED	-039	Alpha, GFPC
	4/7/10	MW-12 DISSOLVED	-040	Alpha, GFPC
	4/7/10	DUPL-3 DISSOLVED	-041	Alpha, GFPC
	4/8/10	MW-9 DISSOLVED	-042	Alpha, GFPC
	4/8/10	MW-10 DISSOLVED	-043	Alpha, GFPC
F0D210536:	4/19/10	W-03-112	-010	Alpha, GFPC
	4/19/10	W-03-112 DISSOLVED	-011	Alpha, GFPC
	4/19/10	W-03-72	-012	Alpha, GFPC
	4/19/10	W-03-72 DISSOLVED	-013	Alpha, GFPC

Table 1-1. *Sample Cross-Reference List*

Package Identification	*Date Collected*	*Sample ID*	*Laboratory ID*	*Analysis Requested*
	4/19/10	W-01-120 DISSOLVED	-015	Alpha, GFPC
	4/19/10	W-14-150	-016	Alpha, GFPC
	4/19/10	W-14-150 DISSOLVED	-017	Alpha, GFPC
	4/19/10	W-08-71	-018	Alpha, GFPC
	4/19/10	W-08-71 DISSOLVED	-019	Alpha, GFPC
	4/19/10	W-01-75	-020	Alpha, GFPC
	4/19/10	W-01-75 DISSOLVED	-021	Alpha, GFPC
	4/20/10	W-32-110	-022	Alpha, GFPC
	4/20/10	W-32-110 DISSOLVED	-023	Alpha, GFPC
	4/20/10	W-02-70	-024	Alpha, GFPC
	4/20/10	W-02-70 DISSOLVED	-025	Alpha, GFPC
	4/20/10	W-10-120	-028	Alpha, GFPC
	4/20/10	W-10-120 DISSOLVED	-029	Alpha, GFPC
F0D020516:	3/31/10	MW-22S	-004	Alpha, GFPC
	3/31/10	MW-28S	-014	Alpha, GFPC
	4/1/10	MW-18S	-020	Alpha, GFPC
	4/1/10	MW-42I	-021	Alpha, GFPC
	4/1/10	MW-20S	-022	Alpha, GFPC
	4/1/10	MW-43S	-023	Alpha, GFPC
F0D160564:	4/8/10	MW-P114-170R	-001	Alpha, GFPC
	4/8/10	MW-P114-170R DISSOLVED	-014	Alpha, GFPC
	4/9/10	MW-P114-290	-002	Alpha, GFPC
	4/9/10	MW-P114-290 DISSOLVED	-016	Alpha, GFPC
	4/12/10	EQ-14932	-003	Alpha, GFPC
	4/12/10	MW-P110-355	-005	Alpha, GFPC
	4/12/10	MW-P110-355 DISSOLVED	-019	Alpha, GFPC
	4/13/10	MW-P110-440	-007	Alpha, GFPC
	4/13/10	MW-P110-440 DISSOLVED	-021	Alpha, GFPC
	4/14/10	PW-3-7	-010	Alpha, GFPC

Table 1-1. *Sample Cross-Reference List*

Package Identification	***Date Collected***	***Sample ID***	***Laboratory ID***	***Analysis Requested***
	4/14/10	PW-3-7 DISSOLVED	-025	Alpha, GFPC
F0D300521:	4/28/10	EQ-9990	-001	Alpha, GFPC
	4/27/10	W-26-270	-002	Alpha, GFPC
	4/28/10	W-30-285	-003	Alpha, GFPC
	4/29/10	W-37-325 (MS/MSD)	-004	Alpha, GFPC
	4/28/10	W-27-285	-005	Alpha, GFPC
	4/28/10	W-27-240	-006	Alpha, GFPC
	4/28/10	DUPL-5	-007	Alpha, GFPC
	4/29/10	W-36-448	-008	Alpha, GFPC
	4/29/10	W-36-390	-009	Alpha, GFPC
	4/27/10	W-26-270 DISSOLVED	-010	Alpha, GFPC
	4/29/10	W-37-385 DISSOLVED	-011	Alpha, GFPC
	4/29/10	W-37-325 (MS/MSD) DISSOLVED	-012	Alpha, GFPC
	4/28/10	W-27-285 DISSOLVED	-013	Alpha, GFPC
	4/28/10	W-27-240 DISSOLVED	-014	Alpha, GFPC
	4/28/10	DUPL-5 DISSOLVED	-015	Alpha, GFPC
	4/29/10	W-36-448 DISSOLVED	-016	Alpha, GFPC
	4/29/10	W-36-390 DISSOLVED	+017	Alpha, GFPC
	4/28/10	W-30-285 DISSOLVED	-018	Alpha, GFPC
F0D280431:	4/22/10	W-23-110	.001	Alpha, GFPC
	4/23/10	W-20-160	.003	Alpha, GFPC
	4/27/10	W-25-150	.004	Alpha, GFPC
	4/27/10	W-25-188	.005	Alpha, GFPC
	4/27/10	W-24-260	.007	Alpha, GFPC
	4/22/10	W-23-110 DISSOLVED	.008	Alpha, GFPC
	4/23/10	W-20-120 DISSOLVED	.009	Alpha, GFPC
	4/23/10	W-20-160 DISSOLVED	.010	Alpha, GFPC
	4/27/10	W-25-150 DISSOLVED	.011	Alpha, GFPC
	4/27/10	W-25-188 DISSOLVED	.012	Alpha, GFPC

Table 1-1. *Sample Cross-Reference List*

Package Identification	*Date Collected*	*Sample ID*	*Laboratory ID*	*Analysis Requested*
	4/27/10	W-24-260 DISSOLVED	.013	Alpha, GFPC
F0D230473:	4/20/10	W-6-79 DISSOLVED	-011	Alpha, GFPC
	4/20/10	W-6-79	-021	Alpha, GFPC
	4/21/10	W-22-95 DISSOLVED	-012	Alpha, GFPC
	4/21/10	W-22-95	-022	Alpha, GFPC
	4/21/10	W-11-70 DISSOLVED	-013	Alpha, GFPC
	4/21/10	W-11-70	-023	Alpha, GFPC
	4/21/10	W-31-95 DISSOLVED	-014	Alpha, GFPC
	4/21/10	W-31-95	-024	Alpha, GFPC
	4/21/10	W-12-120 DISSOLVED	-015	Alpha, GFPC
	4/21/10	W-12-120	-025	Alpha, GFPC
	4/21/10	W-12-70 DISSOLVED	-016	Alpha, GFPC
	4/21/10	W-12-70	-026	Alpha, GFPC
	4/21/10	DUPL-4 DISSOLVED	-017	Alpha, GFPC
	4/21/10	DUPL-4	-027	Alpha, GFPC
	4/22/10	W-16-148 DISSOLVED	-018	Alpha, GFPC
	4/22/10	W-16-148	-028	Alpha, GFPC
	4/22/10	W-19-110 DISSOLVED	-019	Alpha, GFPC
	4/22/10	W-19-110	-029	Alpha, GFPC
	4/22/10	W-19-150 DISSOLVED	-020	Alpha, GFPC
	4/22/10	W-19-150	-030	Alpha, GFPC
	4/20/10	W-05-78 DISSOLVED	-034	Alpha, GFPC
	4/20/10	W-05-78	-031	Alpha, GFPC
	4/20/10	W-10-71 DISSOLVED	-035	Alpha, GFPC
	4/20/10	W-10-71	-032	Alpha, GFPC
F0E050497:	5/3/10	S-1-450	-004	Alpha, GFPC
	5/3/10	S-1-450 DISSOLVED	-009	Alpha, GFPC
	5/3/10	S-1-325	-005	Alpha, GFPC
	5/3/10	S-1-325 DISSOLVED	-010	Alpha, GFPC

Table 1-1. *Sample Cross-Reference List*

Package Identification	Date Collected	Sample ID	Laboratory ID	Analysis Requested
F0E120451:	5/10/10	PW-04-07	-005	Alpha, GFPC
	5/10/10	PW-04-07 DISSOLVED	-015	Alpha, GFPC
	5/11/10	PW-07-07	-008	Alpha, GFPC
	5/11/10	PW-07-07 DISSOLVED	-018	Alpha, GFPC
F0E070471:	5/5/10	PW-02-07	-002	Alpha, GFPC
	5/5/10	PW-02-07 DISSOLVED.	-012	Alpha, GFPC
	5/5/10	PW-05-07 DISSOLVED	-017	Alpha, GFPC
F0E250512:	5/22/10	PW-06-07 DISSOLVED	-010	Alpha, GFPC

Notes:
Alpha indicates Alpha Spectrometry of thorium (isotopic) and uranium (isotopic).
GFPC indicates Gas Proportional Counting for radium 226 and radium 228.

1.2. General Considerations

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Although the term is frequently used in discussing methodologies, it applies to all aspects of the analytical system and especially to samples, their measurements, and the actual data output. Accordingly, for the samples and analyses addressed herein, this report outlines deviations from the applicable QC criteria outlined in the following documents:

- URS Corporation *GTE Operations Support Incorporated. (GTEOSI). Groundwater Investigation Work Plan (QAPP: Appendix C), Former Sylvania Electric Products Facility, Hicksville, New York,* September 2002.

- United States Department of Energy (USDOE). 1997. *Environmental Measurements Laboratory (EML) Procedures Manual, 28th Edition, Volume 1.* (HASL-300) New York, New York.

Deviations from the QA/QC criteria were qualified based on guidance provided in the following documents:

- Science Applications International Corporation (SAIC). 2000. *Laboratory Data Validation Guidelines for Evaluating Radionuclide Analyses*, 143-ARCS-00.08, Revision 06. Oak Ridge, Tennessee.

- USDOE. October 4, 1995. *Guidance for Radiochemical Data Validation*, Draft RD4. Gaithersburg, Maryland.

1.3. Analytical Methods

The environmental samples collected for this investigation were submitted to Test America Laboratories, Inc. Earth City, Missouri for radiochemistry analyses including alpha spectrometry (thorium-228, thorium-230, thorium-232, uranium-234, uranium-235/236, and uranium-238-Th-228, Th-230, Th-232, U-234, U-235/236 and U-238 respectively using USDOE methods and laboratory SOP's and gas proportional counting (Ra-226 and Ra-228) using USEPA methods and laboratory SOP's. The methods used in this investigation are presented in Table 1-2.

Table 1-2. *Analytical Method References*

Parameter	***Method***	***Reference***
Alpha Spectrometry (U-234, -235/236 and –238)	EML A-01-R MOD	1
Alpha Spectrometry (Th-228, -230 and –232)	EML A-01-R MOD	1
Ra-226 by GFPC	SW-846 9315 MOD	2
Ra-228 by GFPC	SW-846 9320 MOD	2
Ra-226 by GFPC	EPA 903.0 MOD	3
Ra-228 by GFPC	EPA 904 MOD	3

Notes:
1. Environmental Measurements Laboratory Procedures Manual (EML), HASL-300, 28th Edition, Volume I and II, Department of Energy (DOE)
2. USEPA SW-846. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, 3rd Edition, November 1986 and its updates.
3. Eastern Environmental Radiation Facility Radiochemistry Procedures Manual, August 1984.

The following sections of this document address distinct aspects of the validation process. Section 2 lists the data QA/QC protocols used to validate the sample data. Specific QA/QC deviations and qualifications performed on the sample data are discussed in Section 3. Data completeness and usability are discussed in Section 4. Section 5 presents the Data Usability Summary Report (DUSR) Summary Information.

2. Data Validation Protocols

2.1. Sample Analysis Parameters

The validation of analyses for this project used guidance presented in the QAPP (URS, 2002), the analytical methodology, and the data validation guidelines referenced in Section 1 herein.

The following QA/QC parameters were evaluated for the radiochemistry (alpha spectrometry and gas-flow proportional counting) analyses (where applicable):

- Holding times and sample preservation;
- Calibration;
- Blank analysis:
- Tracer recovery (alpha spectrometry);
- Laboratory Control Sample (LCS);
- Matrix Spike Sample (MS) (alpha spectrometry);
- Duplicate (Laboratory and Field) analysis;
- Radionuclide quantitation and detection limit evaluation;
- Chemical separation specificity (alpha spectrometry);
- System performance; and
- Documentation completeness.

It should be noted that no Matrix Spike samples were associated with these data. The field blind duplicates associated with these data are MW-11 associated with DUPL-3; W-12-70 associated with DUPL-4 (total and dissolved); and W-30-285 associated with DUPL-5 (total and dissolved).

2.2. Data Validation Qualifiers

The following guidelines are used regarding the assignment of qualifiers and the use of qualified data:

- QA/QC exceedances which do not result in the qualification of an analyte, or which result in additional qualification of the analyte with the same qualifier, are not discussed.

- The use of estimated analytical data for quantitative uses is consistent with the guidance presented in the *USEPA Risk Assessment Guidance for Superfund* (USEPA 1992).

The following qualifiers may have been used in this data validation.

"J" The associated numerical value is an estimated quantity, due to a QC or statistical exceedance.

"UJ" The associated non-detect value is an estimated quantity, due to a QC or statistical exceedance.

"R" The associated non-detect or numerical value is rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

2.3. Data Usability Summary Report Questions

The DUSR determines whether or not the data meets site-specific criteria for data quality and use. It was developed by reviewing and evaluating the analytical data packages. During the course of this review the following questions were addressed (where applicable):

1. *Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?*

2. *Have all holding times been met?*

3. *Do all the QC data (where applicable): blanks, calibration standards, calibration verifications, surrogate recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?*

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

6. *Have the correct data qualifiers been used?*

The answers to the questions presented by the DUSR are presented in the following sections of the report and in the DUSR Summary Information Section, Section 5.

3. Data Quality Evaluation

3.1. Summary

This section summarizes which QA/QC parameters specified in Section 2.1 met validation criteria, and which QA/QC parameters did not meet validation criteria. Samples requiring qualification are described in the following sections, and are identified by the description documented on the sample chain-of-custody records.

When dissolved and total analyses (alpha spectrometry and gas proportional counting) are performed on the same sample, the dissolved concentration should not be greater than the total concentration if the dissolved concentration is greater than or equal to 5x its MDL. If it is, and if the dissolved concentration is greater than the total concentration by more than 20%, both dissolved and total concentrations are to be qualified as estimated, "J." If the difference is greater than 50%, both concentrations are to be qualified as unusable, "R" (rejected). Therefore, the dissolved and total concentrations for the following samples are unusable "R":

Package ID F0E050497 - Ra-226 in samples S-1-325 and S-1-325 DISSOLVED;
Package ID F0E070471 – Ra-228 in samples PW-02-07 and PW-02-07 DISSOLVED.

3.2. Alpha Spectrometry Analyses

3.2.1. Criteria

The QA/QC parameters presented in Section 2.1 for radiochemistry were applied to the environmental samples listed in Table 1-1. The following QA/QC parameters were found to meet validation criteria:

- Holding times and sample preservation;
- Calibration;
- Laboratory Control Sample (LCS);
- Chemical separation specificity (alpha spectrometry);
- System performance; and
- Documentation completeness.

Only those QA/QC parameters not meeting validation criteria are discussed in subsequent sections.

3.2.2. Blank Analysis

The field and laboratory blank results were evaluated using the following statistical approach: if the net blank result was not less than the associated uncertainty and if the sample result ± uncertainty was less than ten times the associated blank result ± uncertainty, the qualifier "J" was applied to the associated sample result. The statistical evaluation of the field and laboratory blank results is summarized in Table 3-1.

Table 3-1. *Blank Evaluation for Thorium/Uranium Analyses.*

Blank ID	*Radionuclide*	*Blank Concentration ± Uncertainty (pCi/L)*	*Affected Samples*	*Action*
F0D090534:				
Method Blank Batch 125030	Th-230	0.19 ±0.13	MW-3 DISSOLVED MW-8 DISSOLVED MW-11 DISSOLVED MW-12 DISSOLVED DUPL-3 DISSOLVED	J bias high
Method Blank Batch 0125027	Th-230	0.33 ±0.17	MW-33S MW-8 MW-11 MW-12 MW-9	J bias high
Method Blank Batch 0125032	U-234	0.30 ±0.19	MW-12 DISSOLVED	J bias high
Method Blank Batch 0100039	Ra-226	0.17 ±0.11	MW-33S MW-8 MW-11 DUPL-3 MW-10	J bias high
F0D210536:				
Method Blank Batch 0131139	Th-230	0.18 ±0.13	W-32-110 W-02-70	J bias high
F0D020516:	none	none	none	none
F0D160564:				
Method Blank Batch 0132356	Th-230	0.18 ±0.13	MW-P114-290 MW-P110-355 MW-P110-440 PW-3-7	J bias high
Method Blank Batch 0132339	Th-228	0.17 ±0.13	None	None, associated results ND
Equipment Blank EQ-14932	Th-230	0.37 ±0.19	MW-P114-290* MW-P110-355* MW-P110-440* PW-3-7*	J bias high
Equipment Blank EQ-14932	Th-232	0.15 ±0.12	MW-P114-170R MW-P114-290	J bias high
F0D300521:				
Method Blank Batch 0132339	Th-228	0.17 ±0.13	W-37-375 (MS/MSD) DISSOLVED W-27-285 DISSOLVED W-36-448 DISSOLVED W-36-390 DISSOLVED W-37-385 DISSOLVED	J bias high
Method Blank Batch 0132356	Th-230	0.18 ±0.13	W-26-270 W-30-285 W-37-325 (MS/MSD) W-27-285 W-27-240 DUPL-5 W-36-448 W-36-390	J bias high

Table 3-1. *Blank Evaluation for Thorium/Uranium Analyses.*

Blank ID	*Radionuclide*	*Blank Concentration ± Uncertainty (pCi/L)*	*Affected Samples*	*Action*
Equipment Blank EQ-9990	Th-230	0.38 ±0.20	W-26-270* W-26-270 DISSOLVED W-30-285* W-37-325 (MS/MSD)* W-27-285* W-27-285 DISSOLVED W-27-240* W-27-240 DISSOLVED DUPL-5* W-36-448* W-36-390* W-37-385 DISSOLVED	J bias high
F0D280431:				
Method Blank Batch 0137380	Th-230	0.096 ±0.095	W-25-188 W-24-260	J bias high
Method Blank Batch 0132058	Th-230	0.12 ±0.10	W-20-120 DISSOLVED W-20-160 DISSOLVED W-25-150 DISSOLVED W-25-188 DISSOLVED W-24-260 DISSOLVED	J bias high
F0D230473:				
Method Blank Batch 0131264	Th-230	0.087 ±0.087	W-6-79 W-12-120 W-12-70 W-19-110 W-05-78 W-10-71	J bias high
F0E050497:				
Method Blank Batch 0132339	Th-228	0.17 ±0.13	none	none
Method Blank Batch 0132356	Th-230	0.18 ±0.13	S-1-325	J bias high
F0E120451:	none	none	none	none
F0E070471:				
Method Blank Batch 0127338	Ra-226	0.16 ±0.10	PW-02-07	J bias high
F0E250512:				
Method blank Batch 0160289	Th-230	0.15 ±0.13	PW-06-07 DISSOLVED	J bias high

Note:
pCi/L indicates picocuries per liter
Uncertainty indicates total propagated uncertainty, which includes counting error and non-counting error.
* - Also qualified due to other types of blank contamination

3.2.3. Tracer Recovery

Tracer analysis was performed on each sample to determine radiochemical recovery (yield) for isotopic thorium and uranium analysis. If the Tracer Recovery is less than 50% or greater than 100% then the associated sample results were qualified. The samples that did not meet the above criteria were qualified, as summarized in table 3-2.

Table 3-2. *Tracer Recovery*		
Sample ID	***Radionuclide***	***Action***
F0D090534:	none	none
F0D210536:	none	none
F0D020516:		
MW-18S MW-20S	Uranium-234 Uranium-235/236 Uranium-238	J bias low
F0D160564:	none	none
F0D300521:	none	none
F0D280431:	none	none
F0D230473:	none	none
F0E050497:	none	none
F0E120451:	none	none
F0E070471:	none	none
F0E250512:	none	none

3.2.4. Duplicate Analysis

If the Duplicate Error Ratio (DER) is greater than one (1) when comparing laboratory or field duplicate samples then the qualifier of "J" was applied to the associated sample results, as summarized in table 3-3.

Table 3-3. *Evaluation of Duplicate Analysis*		
Sample ID	***Affected Radionuclide Results***	***Action***
F0D090534:		
Field Duplicates MW-11 vs. DUPL-3	none	none
Lab Duplicate	none	none
F0D210536:		
Field and Lab Duplicates	none	none
F0D020516:		
Field and Lab Duplicates	none	none
F0D160564:		
Field and Lab Duplicates	none	none

Table 3-3. *Evaluation of Duplicate Analysis*

Sample ID	***Affected Radionuclide Results***	***Action***
F0D300521:		
Field Duplicates W-30-285 vs. DUPL-5 (Total and Dissolved)	none	none
Lab Duplicate	none	none
F0D280431:		
Field and Lab Duplicates	none	none
F0D230473:		
Field Duplicates W-12-70 vs. DUPL-4 (Total and Dissolved)	none	none
Lab Duplicate	none	none
F0E050497:		
Field Duplicates	none	none
Lab Duplicate: S-1-325 S-1-450	Ra-226	J bias unknown
F0E120451:		
Field and Lab Duplicates	none	none
F0E070471:		
Field Duplicates	none	none
Lab Duplicate: PW-02-07*	Ra-228	J bias unknown
Lab Duplicate: PW-02-07 DISSOLVED PW-05-07 DISSOLVED	Ra-226	J bias unknown
F0D250512:		
Field and Lab Duplicates	none	none

* - Also rejected "R" due to total versus dissolved difference >50%.

3.2.5. Radionuclide Quantitation and Detection Limits

If the net positive results are less than their uncertainties and the uncertainty multiplied by 1.65 is greater than the MDC, this would indicate that the sample counts were less than the critical values or less than 95% confidence of positive detection, therefore the sample results were qualified as estimated "J", as summarized in Table 3-3. It the net negative result has an uncertainty smaller than their absolute value, this is an indication of improper blank subtraction and the sample results were rejected "R".

Table 3-4. *Evaluation of Positive Results versus Uncertainties for Alpha Spectrometry Analyses*

Sample ID	*Affected Radionuclide Results*	*Sample Concentration ± Uncertainty (pCi/L)*	*Action*
F0D090534:	none	none	none
F0D210536:	none	none	none
F0D020516:	none	none	none
F0D160564:	none	none	none
F0D300521:			
W-37-325 (MS/MSD) DISSOLVED	Th-228*	0.14 ± 0.16	J
W-27-285	Th-232	0.072 ± 0.084	J
W-27-240	Th-232	0.077 ± 0.090	J
DUPL-5	U-238	0.065 ± 0.075	J
F0D280431:	none	none	none
F0D230473:			
W-6-79	Th-228	0.066 ± 0.076	J
W-31-95	U-238	0.064 ± 0.074	J
DUPL-4 DISSOLVED	U-238	0.066 ± 0.076	J
F0E050497:	none	none	none
F0E120451:	none	none	none
F0E070471:	none	none	none
F0E250512:	none	none	none

* - Also qualified due to blank contamination

3.3. Gas Proportional Counting

3.3.1. Criteria

The QA/QC parameters presented in Section 2.1 were applied to the environmental samples listed in Table 1-1. All of the following QA/QC parameters were found to meet validation criteria:

- Holding times and sample preservation;
- Calibration;
- Blank analysis:
- Laboratory Control Sample (LCS);
- Duplicate analysis;
- Field duplicate analysis;
- Radionuclide quantitation and detection limit evaluation;

- System performance; and
- Documentation completeness.

4. Summary and Data Usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. Overall, 99.6 percent of the radiochemistry data were determined to be usable for qualitative and quantitative purposes. Those sample results qualified as estimated "J" due to data validation QA/QC exceedances should be considered conditionally usable.

The samples collected at and in the vicinity of the former Sylvania Electric Products Incorporated Facility in Hicksville were evaluated based on QA/QC criteria established by methods as listed in Section 1.3, by the data validation guidelines listed in Section 1.2, and by the QAPP (URS, 2002) established for this project. Major deficiencies in the data generation process would have resulted in data being rejected, indicating that the data are considered unusable for either quantitative or qualitative purposes. Minor deficiencies in the data generation process resulted in some sample data being characterized as approximate or estimated. Identification of a data point as approximate indicates uncertainty in the reported concentration of the radionuclide, but not its assigned identity.

The following paragraphs present the adherence of the data to the precision, accuracy, representativeness, comparability, completeness, and sensitivity (PSARCC) parameters.

Precision is measured through the evaluation of field duplicate samples and laboratory duplicate samples. For the radiochemistry analyses, none of the data were rejected due to precision non-conformances.

LCS recoveries indicate the accuracy of the data. For the radiochemistry analyses, none of the data were rejected due to accuracy non-conformances.

Holding times, sample preservation, blank analysis, and analyte identification and quantification are indicators of the representativeness of the analytical data. For the radiochemistry analyses, none of the data were rejected due to accuracy non-conformances.

Comparability is not compromised, provided that the analytical methods do not change over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures were consistently used by the laboratory, the comparability criteria for the analytical data were met.

Sensitivity is established by reported detection limits that represent measurable concentrations of radionuclides that can be determined with a designated level of confidence. Sensitivity requirements were met for the sample data in this project. None of the radiochemistry data were rejected due to the sensitivity non-conformances.

5. Data Usability Summary Report Summary Information

The DUSR was performed to determine whether or not the data meets site-specific criteria for data quality and use. The DUSR is developed by reviewing and evaluating the analytical data package. The following questions were addressed:

1. Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?

   The QAPP required that USEPA Level III deliverables be provided by the laboratory for each data package. This requirement was met as it applies to the methods used by the laboratory for sample analysis. The evaluation of the sample data was completed using the information provided in the data packages provided by the laboratory.

2. Have all holding times been met?

   The holding times were met for the radiochemistry analyses.

3. Do all the QC data: blanks, standards, spike recoveries, replicate analyses, and sample data fall within the protocol-required limits and specifications?

   The laboratory used the laboratory control limits during the analyses performed for this sampling event. QA/QC deviations and qualifications performed on the sample data are discussed in Chapter 3. Major non-conformances were not detected for the radiochemistry data.

4. Have all of the data been generated using established and agreed upon analytical protocols?

   The QAPP required that USDOE methods are used in the analysis of samples collected for this sampling event. The laboratory used the required method protocols (with some minor modifications) for the analyses performed for this sampling event, which met data user and client needs.

5. Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?

   The evaluation of selected raw data confirmed information provided in the data packages.

6. Have the correct data qualifiers been used?

   The laboratory applied the correct qualifiers to the sample data. The validation qualifiers were applied as required by validation guidelines as listed in Section 1

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United States Department of Energy (USDOE) 1995. *Guidance for Radiochemical Data Validation*, Draft RD4, Gaithersburg, Maryland.

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Executive Summary

This report addresses data quality for groundwater samples collected at and in the vicinity of the former Sylvania Electric Products Incorporated Facility in Hicksville, New York (the Site). This report pertains to samples collected by Malcolm Pirnie, Inc. (Malcolm Pirnie) from April 1, 2010 through May 22, 2010.

The environmental samples collected for this investigation were submitted to Test America Laboratories, Inc. of Earth City, Missouri, for total metals, dissolved metals and chloride analyses using United States Environmental Protection Agency (USEPA) guidance methods. A total of ~105 samples[1] were submitted, which resulted in 1932 total metals results, 2070 dissolved metals results and 96 chloride results[2]. Of this number, 1725 total metals, 1863 dissolved metals and 87 chloride are results[3] of actual samples and the remainders are field quality assurance/quality control (QA/QC) indicators[4], which include 4 equipment blanks and 5 field duplicatepairs. The quality of the analytical data generated for this investigation was evaluated by Malcolm Pirnie using the QA/QC criteria established in the methods and USEPA guidelines. Non-conformances from the QA/QC criteria were qualified based on guidance provided in the following references:

- New York State Department of Environmental Conservation. *Analytical Services Protocol.* Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.
- United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* EPA 540-R-01-008, July 2002.
- United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.
- United States Environmental Protection Agency, Region 2. *Validation of Metals for the Contract Laboratory Program based on SOW ILM05.3.* SOP No. HW-2, Revision 13. September 2006.
- URS Corporation, GTE Operations Support Incorporated (GTEOSI). *Groundwater Investigation Work Plan (QAPP: Appendix C), Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* URS, September 2002.

In circumstances where the quality of the data or the accuracy of the results is suspect, the project's Quality Assurance Project Plan (QAPP) and professional judgment[5] were also used to consider if results should be qualified as estimated ("J" or "UJ"). Since the individual guidance documents used (as a source of reference for the validation) differ somewhat in the type of qualification applied to data, Malcolm Pirnie applied qualifiers generally with an err to caution. All instrument calibration analyses, laboratory control sample analyses, serial dilution analyses, and interference check sample analyses were acceptable.

There were some laboratory initial calibration blanks, continuing calibration blanks, and method blanks, that contained low concentrations of various metals. The presence of these metals in specific blanks affected many project samples. Qualification of associated results was performed to show the relationship between the laboratory contamination and the variability of the actual project sample results.

[1] Each sample may have been analyzed for total recoverable and/or dissolved fractions.
[2] This is the number of results reported by the laboratory on their Sample Results reporting form (Form 1).
[3] This is the total number of well data points, which may include total recoverable and dissolved fractions including duplicate sample results.
[4] These indicators do not include Matrix Spike/Matrix Spike Duplicate or other internal laboratory QA/QC indicators.
[5] Professional judgment is performed by a USEPA certified data validator with over a decade of environmental laboratory experience.

Equipment/field blanks and matrix spike samples were not performed for all sample batches; however, they were performed for each of the groundwater profiler locations. The relative percent differences (RPD) between 5 field duplicate pair results were performed and assessed for total metals, dissolved metals and chloride. This is equivalent to a field duplicate sample collection rate of 7.1 percent for total metals, 6.6 percent for dissolved metals and 6.1 percent for chloride[6]. Based on the QAPP, the rate should have been 10 percent. With 1725 total metals, 1863 dissolved metals and 87 chloride discrete field sample data values[7], 8 field duplicate sample pairs should have been performed. Therefore, evaluation of precision could not be evaluated adequately.

None of the exceedances of method non-conformances were significant enough to jeopardize the usability of the data. Overall, 97.5 percent[8] of the total metals, dissolved metals and chloride data were determined to be usable and/or conditionally usable for qualitative and quantitative purposes. Some results were qualified as non-detects ("U"). Other results, which were qualified as estimated ("J" and "UJ") due to quality control (QC) exceedances should be considered conditionally usable. The completeness percentage of all the analyses requested is 92.5 percent for total metals, 100 percent for dissolved metals and 98.9 percent for chloride[9]. Therefore, the completeness objective of 90 percent, as stated in the QAPP, has been met for the metals database.

[6] Value = (duplicate data / (actual-5 duplicate data points) X 100.
[7] This number represents 105 total data points minus 5 duplicate sample data points and 4 equipment blanks blanks.
[8] Value = ((243 discrete field data points – 6 unusable data points) / 243 discrete field data points) X 100.
[9] Value = (discrete data points / (discrete data points +missing data points)) X 100.

1. Introduction

1.1. Sample Identification

This report addresses the results of a data quality evaluation for groundwater samples collected at and in the vicinity of the Site for total metals, dissolved metals and chloride collected by Malcolm Pirnie from April 1, 2010 through May 22, 2010.

The sample delivery group (SDG) number (laboratory package identification number), field identification, and corresponding laboratory identification of the samples that were submitted for data validation are presented in Table 1-1.

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F0D090534	MW-33S	-007	Total Metals (MS/MSD) Total Mercury Chloride (MS/MD)
	EQ-11854	-014	Total Metals Total Mercury Chloride
	MW-3	-015	Total Metals Total Mercury (MS/MSD) Chloride
	MW-8	-016	Total Metals Total Mercury Chloride
	MW-04	-018	Total Metals Total Mercury Chloride
	MW-11	-020	Total Metals Total Mercury Chloride
	MW-12 (MS/MSD)	-021	Total Metals Total Mercury Chloride
	DUPL-3	-022	Total Metals Total Mercury Chloride
	MW-9	-025	Total Metals Total Mercury Chloride
	MW-10	-026	Total Metals Total Mercury Chloride
	MW-3 DISSOLVED	-028	Dissolved Metals (MS/MSD) Dissolved Mercury
	MW-8 DISSOLVED	-029	Dissolved Metals Dissolved Mercury (MS/MSD)
	MW-04 DISSOLVED	-030	Dissolved Metals Dissolved Mercury
	MW-11 DISSOLVED	-031	Dissolved Metals Dissolved Mercury
	MW-12 DISSOLVED	-032	Dissolved Metals Dissolved Mercury
	DUPL-3 DISSOLVED	-033	Dissolved Metals Dissolved Mercury

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
	MW-9 DISSOLVED	-034	Dissolved Metals Dissolved Mercury
	MW-10 DISSOLVED	-035	Dissolved Metals Dissolved Mercury
F0D210536:	MW-P110-440	-001	Chloride (MS/MSD)
	PW-02-01	-002	Total Metals (MS/MSD) Total Mercury Chloride
	PW-02-01 DISSOLVED	-003	Dissolved Metals (MS/MSD) Dissolved Mercury (MS/MSD)
	PW-02-03	-004	Total Metals Total Mercury Chloride
	PW-02-03 DISSOLVED	-005	Dissolved Metals Dissolved Mercury
	PW-3-6	-006	Total Metals Total Mercury Chloride
	PW-3-6 DISSOLVED	-007	Dissolved Metals Dissolved Mercury
	PW-3-1	-008	Total Metals Total Mercury Chloride
	PW-3-1 DISSOLVED	-009	Dissolved Metals Dissolved Mercury
	W-03-112	-010	Total Metals Total Mercury Chloride
	W-03-112 DISSOLVED	-011	Dissolved Metals Dissolved Mercury
	W-03-72	-012	Total Metals Total Mercury Chloride
	W-03-72 DISSOLVED	-013	Dissolved Metals Dissolved Mercury
	W-01-120	-014	Chloride
	W-01-120 DISSOLVED	-015	Dissolved Metals Dissolved Mercury
	W-14-150	-016	Total Metals Total Mercury Chloride
	W-14-150 DISSOLVED	-017	Dissolved Metals Dissolved Mercury
	W-08-71	-018	Total Metals Total Mercury Chloride
	W-08-71 DISSOLVED	-019	Dissolved Metals Dissolved Mercury
	W-01-75	-020	Total Metals Total Mercury Chloride (MS/MSD)
	W-01-75 DISSOLVED	-021	Dissolved Metals Dissolved Mercury
	W-32-110	-022	Total Metals Total Mercury Chloride

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
	W-32-110 DISSOLVED	-023	Dissolved Metals Dissolved Mercury
	W-02-70	-024	Total Metals Total Mercury Chloride
	W-02-70 DISSOLVED	-025	Dissolved Metals Dissolved Mercury
	W-10-71	-026	Total Metals Total Mercury Chloride
	W-10-71 DISSOLVED	-027	Dissolved Metals Dissolved Mercury
	W-10-120	-028	Total Metals Total Mercury Chloride
	W-10-120 DISSOLVED	-029	Dissolved Metals Dissolved Mercury
	W-05-78	-030	Total Metals Total Mercury Chloride
	W-05-78 DISSOLVED	-031	Dissolved Metals Dissolved Mercury
F0D020516:	MW-22S	-004	Total Metals (MS/MSD) Total Mercury Chloride (MS/MD)
	MW-28S	-014	Total Metals Total Mercury Chloride
	MW-18S	-020	Total Metals Total Mercury Chloride
	MW-42I	-021	Total Metals Total Mercury Chloride (MS/MD)
	MW-20S	-022	Total Metals Total Mercury Chloride
	MW-43S	-023	Total Metals Total Mercury Chloride
F0D160564:	MW-P114-170R	-001	Total Metals Total Mercury Chloride (MS/MD)
	MW-P114-290	-002	Total Metals Total Mercury (MS/MSD) Chloride
	EQ-14932	-003	Total Metals Total Mercury (MS/MSD)
	PW-03-05	-004	Total Metals Total Mercury Chloride
	MW-P110-355	-005	Total Metals Total Mercury Chloride
	PW-3-4	-006	Chloride
	MW-P110-440	-007	Total Metals Total Mercury

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
	PW-3-2	-008	Total Metals Total Mercury Chloride
	PW-3-3	-009	Total Metals Total Mercury Chloride
	PW-3-7	-010	Total Metals Total Mercury Chloride
	PW-2-2	-011	Total Metals Total Mercury Chloride
	MW-P114-170R DISSOLVED	-013	Dissolved Metals Dissolved Mercury (MS/MSD)
	MW-P114-290 DISSOLVED	-015	Dissolved Metals Dissolved Mercury
	PW-03-05 DISSOLVED	-017	Dissolved Metals Dissolved Mercury(MS/MSD)
	MW-P110-355 DISSOLVED	-018	Dissolved Metals Dissolved Mercury
	MW-P110-440 DISSOLVED	-020	Dissolved Metals Dissolved Mercury
	PW-3-2 DISSOLVED	-022	Dissolved Metals Dissolved Mercury
	P-W-3-3 DISSOLVED	-023	Dissolved Metals Dissolved Mercury
	PW-3-7 DISSOLVED	-024	Dissolved Metals Dissolved Mercury
	PW-2-2 DISSOLVED	-025	Dissolved Metals Dissolved Mercury
	PW-3-4 DISSOLVED	-026	Dissolved Metals Dissolved Mercury
F0E140521:	PW-07-01	-002	Total Metals (MS/MSD) Total Mercury Chloride
	PW-07-01 DISSOLVED	-010	Dissolved Metals Dissolved Mercury
	PW-05-01	-003	Total Metals Total Mercury Chloride
	PW-05-01 DISSOLVED	-011	Dissolved Metals Dissolved Mercury
	PW-07-05	-004	Total Metals Total Mercury Chloride
	PW-07-05 DISSOLVED	-012	Dissolved Metals Dissolved Mercury
	EB-MP140	-005	Total Metals Total Mercury Chloride
	PW-07-06	-007	Total Metals Total Mercury Chloride
	PW-07-06 DISSOLVED	-013	Dissolved Metals Dissolved Mercury
	DUPL-7	-008	Total Metals Total Mercury Chloride

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
	DUPL-7 DISSOLVED	-014	Dissolved Metals Dissolved Mercury
	PW-05-06 DISSOLVED	-009	Dissolved Metals Dissolved Mercury
	PW-05-06	-001	Chloride (MS/MD)
F0E050497:	PW-02-04	-001	Total Metals (MS/MSD) Total Mercury Chloride (MS/MD)
	PW-02-04 DISSOLVED	-007	Dissolved Metals Dissolved Mercury
	PW-02-05	-002	Total Metals Total Mercury Chloride
	PW-02-05 DISSOLVED	-008	Dissolved Metals Dissolved Mercury
	S-1-450	-004	Total Metals Total Mercury Chloride
	S-1-450 DISSOLVED	-009	Dissolved Metals Dissolved Mercury
	S-1-325	-005	Total Metals Total Mercury Chloride
	S-1-325 DISSOLVED	-010	Dissolved Metals Dissolved Mercury
	PW-02-06	-006	Total Metals Total Mercury Chloride
	PW-02-06 DISSOLVED	-011	Dissolved Metals Dissolved Mercury
F0D300521:	EQ-9990	-001	Total Metals Total Mercury Chloride
	W-26-270	-002	Total Metals Total Mercury Chloride
	W-37-385	-003	Total Metals Total Mercury Chloride
	W-30-285	-004	Total Metals Total Mercury Chloride
	W-37-325 (MS/MSD)	-005	Total Metals (MS/MSD) Total Mercury (MS/MSD) Chloride (MS/MD)
	W-27-285	-006	Total Metals Total Mercury Chloride
	W-27-240	-007	Total Metals Total Mercury Chloride
	DUPL-5	-008	Total Metals Total Mercury Chloride
	W-36-448	-009	Total Metals Total Mercury Chloride

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
	W-36-390	-010	Total Metals Total Mercury Chloride
	W-26-270 DISSOLVED	-012	Dissolved Metals Dissolved Mercury
	W-37-385 DISSOLVED	-013	Dissolved Metals Dissolved Mercury
	W-37-325 (MS/MSD) DISSOLVED	-014	Dissolved Metals (MS/MSD) Dissolved Mercury (MS/MSD)
	W-27-285 DISSOLVED	-015	Dissolved Metals Dissolved Mercury
	W-27-240 DISSOLVED	-01	Dissolved Metals Dissolved Mercury
	DUPL-5 DISSOLVED	-017	Dissolved Metals Dissolved Mercury
	W-36-448 DISSOLVED	-018	Dissolved Metals Dissolved Mercury
	W-36-390 DISSOLVED	-019	Dissolved Metals Dissolved Mercury
	W-30-285 DISSOLVED	-020	Dissolved Metals Dissolved Mercury
F0D230473:	W-6-79	-021	Total Metals (MS/MSD) Total Mercury Chloride (MS/MD)
	W-6-79 DISSOLVED	-001	Dissolved Metals Dissolved Mercury
	W-22-95	-022	Total Metals Total Mercury Chloride
	W-22-95 DISSOLVED	-002	Dissolved Metals Dissolved Mercury
	W-11-70	-023	Total Metals Total Mercury Chloride
	W-11-70 DISSOLVED	-003	Dissolved Metals Dissolved Mercury
	W-31-95	-024	Total Metals Total Mercury Chloride
	W-31-95 DISSOLVED	-004	Dissolved Metals Dissolved Mercury
	W-12-120	-025	Total Metals Total Mercury Chloride
	W-12-120 DISSOLVED	-005	Dissolved Metals Dissolved Mercury
	W-12-70	-026	Total Metals Total Mercury Chloride
	W-12-70 DISSOLVED	-006	Dissolved Metals Dissolved Mercury
	DUPL-4	-027	Total Metals Total Mercury Chloride
	DUPL-4 DISSOLVED	-007	Dissolved Metals Dissolved Mercury

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
	W-16-148	-028	Total Metals Total Mercury Chloride
	W-16-148 DISSOLVED	-008	Dissolved Metals Dissolved Mercury
	W19-110	-029	Total Metals Total Mercury Chloride
	W19-110 DISSOLVED	-009	Dissolved Metals Dissolved Mercury
	W-19-150	-030	Total Metals Total Mercury Chloride
	W-19-150 DISSOLVED	-010	Dissolved Metals Dissolved Mercury
F0D280431:	W-23-110	-001	Total Metals Total Mercury Chloride (MS/MD)
	W-23-110 DISSOLVED	-008	Dissolved Metals Dissolved Mercury
	W-20-160	-003	Total Metals Total Mercury Chloride
	W-20-160 DISSOLVED	-010	Dissolved Metals Dissolved Mercury
	W-25-150	-004	Total Metals Total Mercury Chloride
	W-25-150 DISSOLVED	-011	Dissolved Metals Dissolved Mercury
	W-25-188	-005	Total Metals Total Mercury Chloride
	W-25-188 DISSOLVED	-012	Dissolved Metals Dissolved Mercury
	W-24-260	-007	Total Metals Total Mercury Chloride
	W-24-260 DISSOLVED	-013	Dissolved Metals Dissolved Mercury
	W-20-120 DISSOLVED	-009	Dissolved Metals Dissolved Mercury
	W-20-120	-002	Chloride
F0E070471	PW-05-03	-001	Total Metals (MS/MSD) Total Mercury Chloride
	PW-05-03 DISSOLVED	-011	Dissolved Metals Dissolved Mercury
	PW-02-07	-002	Total Metals Total Mercury Chloride
	PW-02-07 DISSOLVED	-012	Dissolved Metals Dissolved Mercury
	PW-05-05	-003	Total Metals Total Mercury Chloride
	PW-05-05 DISSOLVED	-013	Dissolved Metals Dissolved Mercury

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
	PW-05-02	-004	Total Metals Total Mercury Chloride
	PW-05-02 DISSOLVED	-014	Dissolved Metals Dissolved Mercury
	PW-05-04	-005	Total Metals Total Mercury Chloride
	PW-05-04 DISSOLVED	-015	Dissolved Metals Dissolved Mercury
	DUP1-6	-006	Total Metals Total Mercury Chloride (MS/MD)
	DUP1-6 DISSOLVED	-016	Dissolved Metals Dissolved Mercury
	PW-05-07 DISSOLVED	-017	Dissolved Metals Dissolved Mercury
	PW-04-04	-008	Total Metals Total Mercury Chloride
	PW-04-04 DISSOLVED	-018	Dissolved Metals Dissolved Mercury
	PW-04-02	-009	Total Metals Total Mercury Chloride
	PW-04-02 DISSOLVED	-019	Dissolved Metals Dissolved Mercury
	PW-05-07	-007	Chloride
F0E120451:	PW-04-03	-001	Total Metals (MS/MSD) Total Mercury Chloride (MS/MD)
	PW-04-03 DISSOLVED	-011	Dissolved Metals (MS/MSD) Dissolved Mercury
	PW-04-01	-002	Total Metals Total Mercury Chloride
	PW-04-01 DISSOLVED	-012	Dissolved Metals Dissolved Mercury (MS/MSD)
	PW-04-05	-003	Total Metals Total Mercury Chloride
	PW-04-05 DISSOLVED	-013	Dissolved Metals Dissolved Mercury
	PW-04-06	-004	Total Metals Total Mercury Chloride (MS/MD)
	PW-04-06 DISSOLVED	-014	Dissolved Metals Dissolved Mercury
	PW-04-07	-005	Total Metals Total Mercury Chloride
	PW-04-07 DISSOLVED	-015	Dissolved Metals Dissolved Mercury
	PW-07-02	-006	Total Metals Total Mercury Chloride
	PW-07-02 DISSOLVED	-016	Dissolved Metals Dissolved Mercury

Table 1-1: Sample Cross-Reference List

Package Identification	Sample ID	Laboratory ID	Analysis Performed
	PW-07-03	-007	Total Metals Total Mercury Chloride
	PW-07-03 DISSOLVED	-017	Dissolved Metals Dissolved Mercury
	PW-07-07	-008	Total Metals Total Mercury Chloride
	PW-07-07 DISSOLVED	-018	Dissolved Metals Dissolved Mercury
	PW-07-04	-009	Total Metals Total Mercury Chloride
	PW-07-04 DISSOLVED	-019	Dissolved Metals Dissolved Mercury
F0E250512:	PW-06-02	-001	Total Metals (MS/MSD) Total Mercury Chloride
	PW-06-02 DISSOLVED	-007	Dissolved Metals (MS/MSD) Dissolved Mercury (MS/MSD)
	PW-06-04	-002	Total Metals Total Mercury Chloride
	PW-06-04 DISSOLVED	-008	Dissolved Metals Dissolved Mercury
	PW-06-06	-003	Total Metals Total Mercury Chloride
	PW-06-06 DISSOLVED	-009	Dissolved Metals Dissolved Mercury
	PW-06-05	-005	Total Metals Total Mercury Chloride
	PW-06-05 DISSOLVED	-011	Dissolved Metals Dissolved Mercury
	PW-06-03	-006	Total Metals Total Mercury Chloride
	PW-06-03 DISSOLVED	-012	Dissolved Metals Dissolved Mercury
	PW-06-07 DISSOLVED	-014	Dissolved Metals Dissolved Mercury
	PW-06-07	-004	Chloride

1.2. General Considerations

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Although the term is frequently used in discussing methodologies, it applies to all aspects of the analytical system and especially to samples, their measurements, and the actual data output. Accordingly, for the samples and analyses addressed herein, this report summarizes the findings of the review and outlines any deviations from the applicable quality control (QC) criteria referenced in the following documents:

- New York State Department of Environmental Conservation. *Analytical Services Protocol.* Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.
- United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* EPA 540-R-01-008, July 2002.
- United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.
- United States Environmental Protection Agency, Region 2. *Validation of Metals for the Contract Laboratory Program based on SOW ILM05.3.* SOP No. HW-2, Revision 13. September 2006.
- URS Corporation, GTE Operations Support Incorporated (GTEOSI). *Groundwater Investigation Work Plan (QAPP: Appendix C), Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* URS, September 2002.

1.3. Analytical Methods

The environmental samples presented in this report were submitted to -Test America Laboratories, Inc. of Earth City, Missouri, for selected metals and chloride, analyses. The laboratory used the following USEPA guidance methods for the analyses:

- SW-846 Method 3010A: Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by FLAA or ICP Spectroscopy
- SW-846 Method 6010B: Inductively Coupled Plasma-Atomic Emission Spectrometry
- MCAWW 300.0A: Determination of Inorganic Anions by Ion Chromatography (Chloride)
- SW-846 Method 7470A: Mercury in Liquid Waste (Cold Vapor Technique)

The laboratory assigned an SDG number to a group of samples during their sample login process. The SDG number is the means by which the laboratory tracks samples and QC analyses. A total of 105 samples in a total of 12 SDGs are included in this data validation report. Of the 105 total number of samples, 84 were analyzed for total metals, 90 for dissolved metals and 96 for chloride[10]. The SDG, field identification, and corresponding laboratory identification for each sample are summarized in Table 1-1.

The following sections of this document address distinct aspects of the validation process. Section 2 lists the data QA/QC protocols used to validate the sample data. Section 3 presents a summary of the findings associated with the validation and a discussion of the specific QA/QC deviations and qualifications performed on the sample data. Section 4 presents a discussion of data completeness and usability. Section 5 presents the Data Usability Summary Report (DUSR) summary information.

[10] Each sample may include total recoverable and/or dissolved fractions.

2. Data Validation Protocols

2.1. Sample Analysis Parameters

The validation of analyses for this project used guidance presented in the QAPP (GTEOSI, 2002), the analytical methodologies, the data validation guidelines referenced in Section 1, and professional judgment[11]. Malcolm Pirnie performed a data review of all analytical results to assess data quality. The data review included an assessment of sample handling protocols and supporting laboratory and field QC parameters. The following is a list of specific analytical information evaluated during the validation:

- Data package completeness review – per the NYSDEC ASP Category B or USEPA CLP deliverables requirements
- Analytical methods performed and test method references
- Sample condition - review of log-in records for cooler temperature, chemical preservation, etc.
- Holding times - comparison of collection, preparation, and analysis dates
- Analytical results - units, values, significant figures
- Sample traceability to raw data
- Initial calibration – comparison to technical guideline criteria
- Continuing calibration – comparison to technical guideline criteria
- Initial and continuing calibration blanks
- Method blank results and laboratory contamination
- Laboratory control sample (LCS) results and comparison to laboratory control limits
- Matrix spike/matrix spike duplicate (MS/MSD) or Matrix Spike/Matrix Duplicate (MS/MD) results and comparison to laboratory control limits
- Field replicate/duplicate results and comparison to technical guideline criteria
- Field QC sample (i.e., equipment blanks and field blanks)
- Reporting limits and Dilutions
- Electronic Data Deliverables (EDDs) – comparison to the hardcopy analytical report

The analytical reports were reviewed for completeness and the accompanying QC data were reviewed for acceptable performance. When QC results indicated poor performance, Malcolm Pirnie applied data qualifiers to the results to inform the data user of the possible performance problem. These qualifiers are

[11] See footnote 5.

in addition to or a revision of the qualifiers provided by the laboratory. A summary of the data qualifiers used for this review is presented in Section 2.2.

2.2. Data Qualifiers

The following qualifiers have been used by the laboratory for metals analyses:

"U" Non-detect result at the method (or instrument) detection limit.

"B" Indicates an estimated value or a value below the established reporting limit but above the method detection limit.

Laboratory qualifiers defined above, are retained in the final database unless revised during the data validation process to one of the following qualifiers:

"U" The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

"J" The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

"UJ" The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

"R" The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

2.3. Data Usability Summary Report Questions

The DUSR determines whether or not the data meets Site-specific criteria for data quality and use. It was developed to review and evaluate the analytical data packages. During the course of this review the following questions were addressed (where applicable):

1. *Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?*

2. *Have all holding times been met?*

3. *Do all the QC data: blanks, calibration standards, calibration verifications, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?*

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

6. *Have the correct data qualifiers been used?*

The answers to the questions presented by the DUSR are presented in the following sections of the report and in the DUSR Summary Information Section, Section 5.

3. Data Quality Evaluation

3.1. Summary

This section summarizes whether the Sample Analysis Parameters specified in Section 2.1, met validation criteria. Summary of the individual components of the review are described in the following sub-sections.

3.2. Review of Validation Criteria

3.2.1. Completeness Review

The laboratory provided the analytical report using formats based on the Contract Laboratory Program (CLP). With the exception of noted items detailed in Section 3.2.5, all necessary documents were included in the report packages including a case narrative summarizing the QC issues associated with the project analyses.

3.2.2. Test Methods

The laboratory performed the analyses using the analytical test methods listed in Section 1.3. They included USEPA SW-846 Method 3010 (digestion of aqueous samples) followed by Method 6010B (ICP) for metals analysis, USEPA SW-846 Method 7470A for mercury analysis and MCAWW 300.0A for chloride analysis. No method anomalies were noted.

3.2.3. Sample Receipt

The laboratory received 105 aqueous samples[12] for total metals, dissolved metals and/or chloride analysis between April 1, 2010 and May 22, 2010. Samples collected for different analytical fractions from the same boring at the same depth are defined as the same sample within this data validation report. The sample temperatures at the time of receipt by the laboratory were within the recommended temperature range of 4°C ± 2°C for all SDGs. Field and laboratory personnel completed the chain-of-custody (COC) documents recording the signature, date, and time of custody transfer. The laboratory recorded the condition of the samples at the time of receipt on a "Condition Upon Receipt Form." This form identifies whether the containers were received undamaged, within the proper temperature range, at the proper pH, in a container that is sealed with a custody seal on the exterior, and with a completed COC enclosed to identify all samples submitted to the laboratory.

The following problems with sample receipt were found:

- SDG F0D090534: The 4 liter polyethylene sample bottle labeled MW-33S was received with a crack in it. The remaining 3 liters were transferred to a new container as per the clients' request. No further action was necessary.
- SDG F0D160564: There was no bottle received for chloride analysis of sample MW-P110-440 as stated on the COC.
- SDF F0D230473: Sample bottles for designated field duplicates DUPL-4 and W-12-70 were mislabeled. The laboratory contacted the client and the bottle labels were corrected. No further action was necessary.

There were no custody seals attached to individual sample containers. No qualification is necessary because the exterior of the shipment coolers had intact custody seals.

[12] Each sample may include total recoverable and/or dissolved fractions.

3.2.4. Holding Times

The laboratory performed all analyses within the EPA-recommended holding time of 180 days from date of collection for acid preserved samples and 28 days for the samples being analyzed for chloride.

3.2.5. Analytical Results

For each sample tested, the laboratory provided the analytical test information using the laboratory's standardized format, which shows critical information pertaining to the analyses performed. The information provided includes the following: the laboratory name; the project name; the analysis type; the laboratory sample ID; matrix; date sampled; date received; preparation batch ID; the result; the reporting limit; the units of measure; the laboratory method; dilution factor; analysis time; preparation date; analysis date; work order number, and laboratory qualifiers (if any). The laboratory provided all the appropriate forms for the requested methods with the following exceptions.

- SDG F0D160564: There was no bottle received for chloride analysis of sample MW-P110-440 as stated on the COC. No chloride analysis was performed for this sample.
- SDGF0D210536: Sample W-01-120 was not analyzed for Total Metals due to insufficient volume sent to the laboratory.
- SDGF0D160564: Sample PW-3-4 was not analyzed for Total Metals due to insufficient or no volume sent to the laboratory.
- SDGF0E140521: Sample PW-05-06 was not analyzed for Total Metals due to insufficient or no volume sent to the laboratory.
- SDGF0D280431: Sample W-20-120 was not analyzed for Total Metals due to insufficient or no volume sent to the laboratory.
- SDGF0E070471: Sample W-05-07 was not analyzed for Total Metals due to insufficient or no volume sent to the laboratory.
- SDGF0E250512: Sample PW-06-07 was not analyzed for Total Metals due to insufficient or no volume sent to the laboratory.

A review of dissolved vs. total concentrations was performed and detailed in Section 3.2.15, subsequent to modifications, if any, to the results performed in the following sections prior to that section.

3.2.6. Traceability to Raw Data

Traceability of the metals and chloride analyses is established by the digestion/preparation logs. These forms list the project samples analyzed per laboratory batch processed and the corresponding QC samples (e.g., preparation blank and laboratory control sample) performed with the project samples. All project samples analyzed, for all SDGs, were included on the applicable forms.

3.2.7. Initial Calibration

The laboratory prepared an initial calibration (ICAL) curve for metals and chloride in accordance with method criteria. Initial calibration verification (ICV) standards were analyzed immediately after each ICAL, with recoveries all within ± 10% of the true values for all analytes. All ICVs are acceptable.

3.2.8. Continuing Calibration Verification

The continuing calibration verification (CCV) standards were analyzed after the ICALs and after every 10 project samples for metals including mercury and every 20 project samples for chloride as required by the reference test method. The percent recoveries were all within ± 10% of the true values for all analytes. All CCVs are acceptable.

3.2.9. Initial and Continuing Calibration Blanks

The initial calibration blank (ICB) and continuing calibration blanks (CCB) were analyzed after the ICALs and after every 10 project samples for metals and mercury and every 20 project samples for chloride as required by the reference test method. In general, initial and continuing calibration blank results should all have been less than the laboratory reporting limit (a.k.a., practical quantitation limit (PQL)), but in a few cases the blank results were greater than the laboratory minimum detectable limit (MDL). For these cases, if an analyte in the associated field samples was detected at a concentration greater than the MDL but less than the PQL, the validation process qualified the result to account for the potential contamination associated with the analysis system, if the associated field sample result was greater than the PQL but less than five times the amount of the blank professional judgment was applied and the associated result was qualified. A summary of the samples and analytes that were revised due to laboratory contamination are presented in Table 3-1.

Table 3-1. *Evaluation of Laboratory Initial and Continuing Calibration Blanks*

Package Identification	***Sample ID***	***Analyte***	***Action***
F0D090534:	MW-3 MW-8 MW-04 MW-11 MW-12 MW-9 DUPL-3 MW-3 DISSOLVED MW-8 DISSOLVED MW-04 DISSOLVED MW-11 DISSOLVED MW-12 DISSOLVED	Potassium	Revise to "U" non-detect at PQL, for all detects < PQL.
	MW-3 MW-3 DISSOLVED DUPL-3 DISSOLVED	Arsenic	Revise to "U" non-detect at PQL, for all detects < PQL.
	MW-11 DISSOLVED MW-12 DISSOLVED MW-9 DISSOLVED	Aluminum	Revise to "U" non-detect at PQL, for all detects < PQL.
	MW-33S	Beryllium	Revise to "U" non-detect at PQL, for all detects < PQL
	MW-10	Cadmium	Revise to "U" non-detect at PQL, for all detects < PQL
	MW-33S DUPL-3 MW-3 DISSOLVED	Selenium	Revise to "U" non-detect at PQL, for all detects < PQL
F0D210536:	PW-02-01 DISSOLVED PW-02-03 DISSOLVED PW-3-6 DISSOLVED PW-3-1 DISSOLVED W-03-112 DISSOLVED W-03-72 DISSOLVED W-01-120 DISSOLVED W-08-71 DISSOLVED W-01-75 DISSOLVED W-32-110 DISSOLVED W-02-70 DISSOLVED W-10-71 DISSOLVED W-10-120 DISSOLVED W-05-78 DISSOLVED	Mercury	Revise to "U" non-detect at PQL, for all detects < PQL

Table 3-1. *Evaluation of Laboratory Initial and Continuing Calibration Blanks*

Package Identification	*Sample ID*	*Analyte*	*Action*
	PW-02-01 DISSOLVED PW-02-03 DISSOLVED W-03-112 DISSOLVED W-01-120 DISSOLVED W-14-150 DISSOLVED W-32-110 DISSOLVED	Arsenic	Revise to "U" non-detect at PQL, for all detects < PQL
	PW-02-03 DISSOLVED W-03-112 DISSOLVED	Thallium	Revise to "U" non-detect at PQL, for all detects < PQL
	PW-02-01 W-14-150 W-08-71 W-02-70 W-10-120	Potassium	Revise to "U" non-detect at PQL, for all detects < PQL
	PW-3-1 W-32-110	Potassium	Revise to "U" non-detect at PQL, for all detects < PQL
F0D020516:	MW-28S	Beryllium	Revise to "U" non-detect at PQL, for all detects < PQL
	MW-22S MW-28S	Mercury	Revise to "U" non-detect at PQL, for all detects < PQL
	MW-22S	Selenium	Revise to "U" non-detect at PQL, for all detects < PQL
F0D160564:	MW-P114-170R DISSOLVED MW-P114-290 DISSOLVED	Mercury	Revise to "U" non-detect at PQL, for all detects < PQL
	PW-3-7 PW-3-7 DISSOLVED	Arsenic	Revise to "U" non-detect at PQL, for all detects < PQL
	MW-P114-170R MW-P110-355 PW-3-7 PW-03-05 DISSOLVED	Selenium	Revise to "U" non-detect at PQL, for all detects < PQL
	MW-P114-170R DISSOLVED PW-03-05 DISSOLVED MW-P110-355 DISSOLVED MW-P110-440 DISSOLVED PW-3-3 DISSOLVED PW-3-7 DISSOLVED PW-2-2 DISSOLVED PW-3-4 DISSOLVED	Potassium	Revise to "U" non-detect at PQL, for all detects < PQL
	PW-03-05 DISSOLVED MW-P110-355 DISSOLVED PW-3-2 DISSOLVED	Aluminum	Revise to "U" non-detect at PQL, for all detects < PQL
	MW-P110-440	Lead	Revise to "U" non-detect at PQL, for all detects < PQL
F0E140521:	PW-07-01 PW-05-01 PW-07-05	Mercury	Revise to "U" non-detect at PQL, for all detects < PQL
	PW-07-01 PW-07-05 PW-07-06 DISSOLVED	Antimony	Revise to "U" non-detect at PQL, for all detects < PQL
	PW-07-01 PW-05-01 DUPL-7 PW-05-06 DISSOLVED PW-07-01 DISSOLVED	Arsenic	Revise to "U" non-detect at PQL, for all detects < PQL
	PW-07-01 PW-07-05 PW-07-06 PW-07-05 DISSOLVED	Selenium	Revise to "U" non-detect at PQL, for all detects < PQL

Table 3-1. *Evaluation of Laboratory Initial and Continuing Calibration Blanks*

Package Identification	*Sample ID*	*Analyte*	*Action*
	PW-05-06 DISSOLVED	Barium	Revise to "U" non-detect at PQL, for all detects < PQL
	DUPL-7 DUPL-7 DISSOLVED PW-07-06 DISSOLVED	Manganese	Revise to "U" non-detect at PQL, for all detects < PQL
	PW-05-06 DISSOLVED	Vanadium	Revise to "U" non-detect at PQL, for all detects < PQL
F0E050497:	PW-02-04 S-1-450	Mercury	Revise to "U" non-detect at PQL, for all detects < PQL
F0D300521:	W-27-240 DISSOLVED	Antimony	Revise to "U" non-detect at PQL, for all detects < PQL
	W-26-270 W-36-390 W-27-285 DISSOLVED	Arsenic	Revise to "U" non-detect at PQL, for all detects < PQL
	W-26-270 W-30-285 W-27-285 W-27-240 DUPL-5 W-27-285 DISSOLVED	Lead	Revise to "U" non-detect at PQL, for all detects < PQL
	W-26-270 W-30-285 W-36-448 W-36-390 DUPL-5 DISSOLVED W-36-448 DISSOLVED W-36-390 DISSOLVED W-30-285 DISSOLVED	Selenium	Revise to "U" non-detect at PQL, for all detects < PQL
	W-27-240 W-27-240 DISSOLVED	Thallium	Revise to "U" non-detect at PQL, for all detects < PQL
F0D230473:	W-6-79 DISSOLVED W-22-95 DISSOLVED W-11-70 DISSOLVED W-31-95 DISSOLVED W-12-120 DISSOLVED W-12-70 DISSOLVED DUPL-4 DISSOLVED W-16-148 DISSOLVED W-19-110 DISSOLVED W-19-150 DISSOLVED	Mercury	Revise to "U" non-detect at PQL, for all detects < PQL
	W-22-95 W-22-95 DISSOLVED	Arsenic	Revise to "U" non-detect at PQL, for all detects < PQL
	W-22-95 DISSOLVED DUPL-4 DISSOLVED	Thallium	Revise to "U" non-detect at PQL, for all detects < PQL
F0D280431:	W-23-110 W-23-110 DISSOLVED W-24-260	Arsenic	Revise to "U" non-detect at PQL, for all detects < PQL
F0E070471:	PW-05-03 DISSOLVED PW-02-07 DISSOLVED PW-05-05 DISSOLVED PW-05-02 DISSOLVED PW-05-04 DISSOLVED PW-04-04 DISSOLVED PW-04-02 DISSOLVED PW-05-07 DISSOLVED	Mercury	Revise to "U" non-detect at PQL, for all detects < PQL

Table 3-1. *Evaluation of Laboratory Initial and Continuing Calibration Blanks*

Package Identification	***Sample ID***	***Analyte***	***Action***
	PW-05-03 PW-05-05 PW-05-05 DISSOLVED PW-05-04 DISSOLVED PW-04-04 DISSOLVED	Selenium	Revise to "U" non-detect at PQL, for all detects < PQL
F0E120451:	PW-04-03 PW-04-01 DISSOLVED PW-07-02 DISSOLVED	Thallium	Revise to "U" non-detect at PQL, for all detects < PQL
FOE250512:	PW-06-02 PW-06-04 PW-06-06 PW-06-05 PW-06-03 PW-06-02 DISSOLVED PW-06-04 DISSOLVED PW-06-06 DISSOLVED PW-06-05 DISSOLVED PW-06-03 DISSOLVED PW-06-07 DISSOLVED	Arsenic	Revise to "U" non-detect at PQL, for all detects < PQL
	PW-06-02 PW-06-04 PW-06-06 PW-06-05 PW-06-03	Potassium	Revise to "U" non-detect at PQL, for all detects < PQL
	PW-06-04 DISSOLVED	Selenium	Revise to "U" non-detect at PQL, for all detects < PQL
	PW-06-02 PW-06-02 DISSOLVED PW-06-03 DISSOLVED PW-06-07 DISSOLVED	Zinc	Revise to "U" non-detect at PQL, for all detects < PQL
	PW-06-04 PW-06-06 PW-06-05 PW-06-03 PW-06-04 DISSOLVED PW-06-06 DISSOLVED PW-06-05 DISSOLVED	Zinc	Revise to "U" non-detect at PQL, for all detects < PQL

3.2.10. Laboratory Method Blanks (Preparation Blanks)

There were metals detected in several preparation blanks. When contamination in the preparation blanks is detected, the corresponding project sample results for the identified contaminants are revised to non-detect if the associated sample results are less than five times the method blank results in accordance with the QAPP (GTEOSI, 2002). A summary of the samples and analytes that were revised due to laboratory method blank contamination are presented in Table 3-2.

Table 3-2. *Evaluation of Laboratory Method Blanks*

Package Identification	*Sample ID*	*Analyte*	*Action*
F0D090534:	MW-3 MW-8 MW-11 MW-12 DUPL-3 MW-9	Zinc	Revise to "U" non-detect at PQL, for all detects < PQL
	MW-33S MW-10	Zinc	Revise to "U" non-detect at PQL, for all detects < PQL
	MW-3 MW-8 MW-11 MW-12 MW-9 MW-10 MW-04 DISSOLVED MW-10 DISSOLVED	Mercury	Revise to "U" non-detect at PQL, for all detects < PQL
	MW-11 DISSOLVED* MW-12 DISSOLVED* MW-9 DISSOLVED*	Aluminum	Revise to "U" non-detect at PQL, for all detects < PQL
	MW-3 DISSOLVED MW-04 DISSOLVED	Aluminum	Revise to "U" non-detect at PQL, for all detects < PQL
	MW-3 DISSOLVED*	Selenium	Revise to "U" non-detect at PQL, for all detects < PQL
F0D210536:	PW-02-01 DISSOLVED* PW-02-03 DISSOLVED* PW-3-6 DISSOLVED* PW-3-1 DISSOLVED* W-03-112 DISSOLVED* W-03-72 DISSOLVED* W-01-120 DISSOLVED* W-08-71 DISSOLVED* W-01-75 DISSOLVED* W-32-110 DISSOLVED* W-02-70 DISSOLVED* W-10-71 DISSOLVED* W-10-120 DISSOLVED* W-05-78 DISSOLVED*	Mercury	Revise to "U" non-detect at PQL, for all detects < PQL
F0D020516:	MW-28S MW018S MW-42I	Zinc	Revise to "U" non-detect at PQL, for all detects < PQL
	MW-22S* MW-28S* MW-18S MW-42I MW-20S MW-43S	Mercury	Revise to "U" non-detect at PQL, for all detects < PQL

Table 3-2. *Evaluation of Laboratory Method Blanks*

Package Identification	***Sample ID***	***Analyte***	***Action***
F0D160564:	MW-P114-170R MW-P114-290 PW-03-05 MW-P110-355 MW-P110-440 PW-3-2 PW-3-3 PW-3-7 PW-2-2	Zinc	Revise to "U" non-detect at PQL, for all detects < PQL
	PW-03-05 DISSOLVED* MW-P110-355 DISSOLVED* PW-3-2 DISSOLVED*	Aluminum	Revise to "U" non-detect at PQL, for all detects < PQL
	PW-03-05 DISSOLVED*	Selenium	Revise to "U" non-detect at PQL, for all detects < PQL
	MW-P114-170R DISSOLVED* MW-P114-290 DISSOLVED* PW-03-05 DISSOLVED MW-P110-355 DISSOLVED MW-P110-440 DISSOLVED PW-3-2 DISSOLVED PW-3-3 DISSOLVED PW-3-7 DISSOLVED PW-2-2 DISSOLVED PW-3-4 DISSOLVED	Mercury	Revise to "U" non-detect at PQL, for all detects < PQL
F0E140521:	PW-07-01* PW-07-05* PW-07-06 DISSOLVED*	Antimony	Revise to "U" non-detect at PQL, for all detects < PQL
	PW-07-01* PW-07-01 DISSOLVED* PW-05-01* DUPL-7* PW-05-06 DISSOLVED*	Arsenic	Revise to "U" non-detect at PQL, for all detects < PQL
	PW-07-01* PW-05-01* PW-07-05* PW-07-06 DISSOLVED DUPL-7 DISSOLVED PW-05-06 DISSLVED	Mercury	Revise to "U" non-detect at PQL, for all detects < PQL
F0E050497:	None	None	None
F0D300521:	None	None	None
F0D230473:	W-22-95 DISSOLVED* DUPL-4 DISSOLVED*	Thallium	Revise to "U" non-detect at PQL, for all detects < PQL
	W-6-79 DISSOLVED* W-22-95 DISSOLVED* W-11-70 DISSOLVED* W-31-95 DISSOLVED* W-12-120 DISSOLVED* W-12-70 DISSOLVED* DUPL-4 DISSOLVED* W-16-148 DISSOLVED* W-19-110 DISSOLVED* W-19-150 DISSOLVED*	Mercury	Revise to "U" non-detect at PQL, for all detects < PQL

Table 3-2. *Evaluation of Laboratory Method Blanks*

Package Identification	*Sample ID*	*Analyte*	*Action*
F0D280431:	W-23-110 W-20-160 W-25-150 W-25-188 W-24-260 W-23-110 DISSOLVED W-20-160 DISSOLVED W-25-150 DISSOLVED W-25-188 DISSOLVED W-24-260 DISSOLVED W-20-120 DISSOLVED	Mercury	Revise to "U" non-detect at PQL, for all detects < PQL
F0E070471:	PW-05-03 DISSOLVED* PW-02-07 DISSOLVED* PW-05-05 DISSOLVED* PW-05-02 DISSOLVED* PW-05-04 DISSOLVED* PW-04-04 DISSOLVED* PW-04-02 DISSOLVED* PW-05-07 DISSOLVED*	Mercury	Revise to "U" non-detect at PQL, for all detects < PQL
F0E120451:	None	None	None
F0E250512:	PW-06-02* PW-06-04* PW-06-06* PW-06-05* PW-06-03* PW-06-02 DISSOLVED* PW-06-04 DISSOLVED* PW-06-06 DISSOLVED* PW-06-05 DISSOLVED* PW-06-03 DISSOLVED* PW-06-07 DISSOLVED*	Arsenic	Revise to "U" non-detect at PQL, for all detects < PQL
	PW-06-04 DISSOLVED PW-06-06 DISSOLVED PW-06-05 DISSOLVED PW-06-03 DISSOLVED	Potassium	Revise to "U" non-detect at PQL, for all detects < PQL
	PW-06-02 PW-06-04 PW-06-06 PW-06-04 DISSOLVED*	Selenium	Revise to "U" non-detect at PQL, for all detects < PQL
	PW-06-02* PW-06-02 DISSOLVED* PW-06-03 DISSOLVED* PW-06-07 DISSOLVED*	Zinc	Revise to "U" non-detect at PQL, for all detects < PQL
	PW-06-04* PW-06-06* PW-06-05* PW-06-03* PW-06-04 DISSOLVED* PW-06-06 DISSOLVED* PW-06-05 DISSOLVED*	Zinc	Revise to "U" non-detect at PQL, for all detects < PQL
	PW-06-06 PW-06-05	Mercury	Revise to "U" non-detect at PQL, for all detects < PQL

- * - Also qualified due to other types of blank contamination
- ** - Also qualified due to laboratory duplicate contamination

3.2.11. Laboratory Control Sample Results

The laboratory analyzed an LCS for metals and chloride in each QC batch. The percent recoveries were within laboratory control limits for all QC batches.

3.2.12. MS/MSD or MS/MD Analyses

Samples for total and dissolved metals (including mercury) (MS/MSD) and chloride (MS/MD) analysis were chosen by the laboratory if not designated on the COC by the client. The MS/MSD or MS/MD sample analysis is designed to provide information about the effect of sample matrix on the sample preparation procedures and the measurement methodology. Data precision is also measured. Percent recoveries (%R) and relative percent differences (RPD) were within criteria ($75 \leq \%R \leq 125$; $RPD \leq 20\%$) therefore no qualifications were required for SDGs F0D210536, F0E140521, F0D230473, F0D280431 and F0E070471. A summary of the samples and analytes that were revised as estimated "J" due to MS/MSD or MS/MD being out of criteria are presented in Table 3-3.

Table 1-1 specifies the samples that were also performed for MS/MSD.

For the following, matrix effect of the samples for accuracy and precision was not evaluated:

- For SDGs F0D160564, F0D210536, F0D020516, F0D280431, F0E050497, FOE120451 and F0E250512 the MS/MSDs analyzed for total mercury were only performed on samples from other clients of the laboratory.
- For SDG F0E070471and F0E140521, the MS/MSD analyzed for total and dissolved Mercury were only performed on a sample from other clients of the laboratory.

Of the 1725 total metals (75 being total mercury), 1863 dissolved metals (81 being dissolved mercury) and 87 chloride data values (non-QA/QC values), 184 total metals, 4 total mercury, 92 dissolved metals, 7 dissolved mercury and 14 chloride parameters had corresponding MS/MSD results. This represented a frequency of 11.9 percent for total metals, 5.6 percent for total mercury, 5.2 percent for dissolved metals, 9.5 percent for dissolved mercury and 19.2 percent for chloride, which exceeds the QAPP's minimum required goal of 5 percent.

Table 3-3. *Evaluation of MS/MSD or MS/MD results*

Package Identification	***Sample ID***	***Analyte***	***Action***
F0D090534:	MW-3 DISSOLVED* MW-8 DISSOLVED* MW-04 DISSOLVED* MW-11 DISSOLVED* MW-12 DISSOLVED* MW-10 DISSOLVED	Potassium	"J" bias high
F0D210536:	None	None	None
F0D020516:	MW-22S MW-28S MW-18S MW-42I MW-20S MW-43S	Calcium	"J" bias low

Table 3-3. *Evaluation of MS/MSD or MS/MD results*

Package Identification	*Sample ID*	*Analyte*	*Action*
F0D160564:	MW-P114-170R DISSOLVED* MW-P114-290 DISSOLVED PW-03-05 DISSOLVED* MW-P110-355 DISSOLVED* MW-P110-440 DISSOLVED* PW-3-2 DISSOLVED PW-3-3 DISSOLVED* PW-3-7 DISSOLVED* PW-2-2 DISSOLVED* PW-3-4 DISSOLVED*	Potassium	"J" bias high
F0E140521:	None	None	None
F0E050497:	PW-02-05 DISSOLVED S-1-450 DISSOLVED	Mercury	"J" high bias
F0D300521:	W-26-270 W-30-285 W-37-325 (MS/MSD) W-27-285 W-27-240 DUPL-5 W-36-448 W-36-390	Sodium	"J" bias high
F0D230473:	None	None	None
F0D280431:	None	None	None
F0E070471:	None	None	None
F0E120451:	PW-04-03 PW-04-01 PW-04-05 PW-04-07 PW-07-02 PW-07-03 PW-07-07 PW-07-04	Potassium	"J" low bias
FOE250512:	PW-06-04 DISSOLVED PW-06-06 DISSOLVED PW-06-05 DISSOLVED PW-06-03 DISSOLVED	Potassium	"J" high bias

* - Also qualified "U" due to blank contamination

3.2.13. Field Duplicate Analyses

Five (5) project samples were submitted as blind field duplicates. This represents 235 duplicate data points (115 for dissolved metals, 115 for total metals and 5 for chloride). By design, the laboratory was never made aware of which field samples the blind field duplicates were associated with. An evaluation of the precision of the field sampling procedure (as well as the laboratory analysis procedure) was made based on RPD calculated between the original and duplicate sample results. Blind field duplicate samples were collected and analyzed to assess the overall sampling and analytical precision. Evaluation calculations were made only when both results were above the PQL. The RPD values for most duplicates were within the criterion of $\leq 30\%$ with the following exceptions:

- There were no field duplicates performed for SDGs F0D210536, F0D020516, F0D160564, F0E050497, F0D280431, F0E120451 and F0D250512.

It should be noted that QAPP requirements (GTEOSI, 2002) specified that a field duplicate sample be collected at a rate of one sample for every ten samples (collection rate of 10 percent). 8 total metals, 9 dissolved metals and 9 chloride field duplicate samples were required to be collected for the project since a total of 75 total metals, 81 dissolved metals and 87 chloride[13] project samples were submitted (not including other field QC samples collected) for analysis. The actual collection rate performed is equivalent to 7.1 percent for total metals, 6.6 percent for dissolved metals and 6.1 percent for chloride[14]. Since an adequate number of field duplicate samples were not collected, the precision objective for the project is not in compliance. Table 3-4 shows the evaluation of field duplicate samples submitted.

Table 3-4. *Evaluation of Field Duplicate Samples*

Package Identification	*Sample IDs*	*Analytes*	*Action*
F0D090534:	MW-11 vs. DUPL-3 Total and Dissolved	None	None
F0D210536:	None	None	None
F0D020516:	None	None	None
F0D160564:	None	None	None
F0E140521:	PW-07-06 vs. DUPL-7 Total and Dissolved	None	None
F0E050497:	None	None	None
F0D300521:	W-30-285 vs. DUPL-5 Total and Dissolved	None	None
F0D230473:	W-12-70 vs. DUPL-4 Total and Dissolved	Total Iron	"J" unknown bias
F0D280431:	None	None	None
F0E070471:	PW-05-04 vs. DUP1-6 Total and Dissolved	Total Aluminum	"J" unknown bias
F0E120451:	None	None	None
F0D250512:	None	None	None

3.2.14. Field Blanks and Equipment Blanks

A total of zero field blanks and 4 equipment blank data points were performed as part of the samples submitted for this data validation report. Although this limited number of blanks is in compliance with the QAPP, it is slightly insufficient to fully evaluate field contaminations (false positives). An appropriate frequency of blank collections should have been at a 5 percent rate. Based on the 5 percent rate, 5 field blanks and/or equipment blank samples should have been performed for total, dissolved metals and chloride. The actual rate performed is 5.7 percent for total metals, 5.3 percent for dissolved metals and 5.0 percent for chloride[15]. However, field blank collection for each time the sampling equipment was cleaned is also acceptable. This appears to have been the procedure.

There were no field blanks or equipment blanks submitted with SDGs F0D210536, F0D020516, F0E050497, F0D230473, F0D280431, F0E070471, F0E120451 and F0E250512. The following list summarized whether and which equipment blank had contamination and Table 3-5 shows which equipment blank was associated with which SDG.

[13] This number represents 243 (non-field blank/equipment blank) total data points minus 5 duplicate sample data points.
[14] Value = (duplicate data / (actual-5 duplicate data points) X 100.
[15] Value = 4/ ((non-field blank/equipment blank) total data points minus 5 duplicate sample data points) X 100.

Equipment Blank	Contamination?	Concentration (ug/L)
EQ-11854	No	all metals and chloride non-detect "U"
EQ-14932	Yes	Calcium - 241 ug/L Potassium – 1660 ug/L Zinc – 21.8 ug/L
EB-MP140	Yes	Selenium – 4.4 ug/L Mercury – 0.071 ug/L Chloride – 0.13 mg/L
EQ-9990	Yes	Zinc – 5.3 ug/L Chloride .023 mg/L

If an analyte was detected in the field blank or equipment blank, the associated field sample results are revised to non-detect if they were less than 10 times the blank result (when blank result > PQL), or to non-detect at the PQL value (when blank result < PQL). A summary of the samples and analytes that were revised due to field sampling contamination are presented in Table 3-5.

Table 3-5. *Evaluation of Field Blank and Equipment Blank Results*

Package Identification	***Associated Blank ID***	***Analyte***	***Sample ID***	***Action***
F0D090534:	EQ-11854	None	None	None
F0D210536:	EQ-14932	Calcium	None	None, associated results greater than 10 times blank amount
		Potassium	PW-02-01* PW-02-03 DISSOLVED* PW-3-1* PW-3-1 DISSOLVED* W-14-150* W-08-71* W-32-110* W-32-110 DISSOLVED* W-02-70* W-10-71 DISSOLVED* W-10-120* W-05-78 DISSOLVED*	Revise to "U" non-detect at PQL, for all detects < PQL
		Zinc	PW-02-03 PW-02-03 DISSOLVED PW-3-6 PW-3-6 DISSOLVED PW-3-1 PW-3-1 DISSOLVED W-03-112 W-03-112 DISSOLVED W-01-120 DISSOLVED W-14-150 DISSOLVED W-01-75 W-01-75 DISSOLVED W-32-110 W-32-110 DISSOLVED W-02-70 W-02-70 DISSOLVED W-10-71 W-10-71 DISSOLVED W-10-120 W-10-120 DISSOLVED W-05-78	Revise to "U" non-detect at PQL, for all detects < PQL
F0D020516:	EQ-11854	None	None	None

Table 3-5. *Evaluation of Field Blank and Equipment Blank Results*

Package Identification	*Associated Blank ID*	*Analyte*	*Sample ID*	*Action*
F0D160564:	EQ-14932	Calcium	None	None, associated results greater than 10 times blank amount
	EQ-14932	Potassium	MW-P114-170R PW-03-05 MW-P110-355 MW-P110-440 PW-3-3 PW-3-7 PW-2-2 MW-P114-170R0 DISSOLVED* PW-03-05 DISSOLVED* MW-P110-355 DISSOLVED* MW-P110-440 DISSOLVED* PW-3-3 DISSOLVED* PW-3-7 DISSOLVED* PW-2-2 DISSOLVED* PW-3-4 DISSOLVED*	Revise to "U" non-detect at PQL, for all detects < PQL
	EQ-14932	Zinc	MW-P114-170R* MW-P114-290* PW-03-05* MW-P110-355* MW-P110-440* PW-3-2* PW-3-3* PW-3-7* PW-2-2* MW-P114-170R DISSOLVED MW-P114-290 DISSOLVED PW-03-05 DISSOLVED MW-P110-355 DISSOLVED MW-P110-440 DISSOLVED PW-3-2 DISSOLVED PW-3-3 DISSOLVED PW-3-7 DISSOLVED PW-2-2 DISSOLVED PW-3-4 DISSOLVED	Revise to "U" non-detect at PQL, for all detects < PQL
F0E140521:	EB-MP140	Selenium	PW-07-01 PW-07-05* PW-07-05 DISSOLVED* PW-07-06*	Revise to "U" non-detect at PQL, for all detects < PQL
		Mercury	PW-07-01* PW-05-01* PW-07-05* PW-07-06 DISSOLVED* DUPL-7 DISSOLVED* PW-05-06 DISSOLVED*	Revise to "U" non-detect at PQL, for all detects < PQL
		Chloride	None	None, associated results greater than 10 times blank amount

Table 3-5. *Evaluation of Field Blank and Equipment Blank Results*

Package Identification	*Associated Blank ID*	*Analyte*	*Sample ID*	*Action*
F0E050497:	EQ-9990	Zinc	PW-02-04 PW-02-04 DISSOLVED PW-02-05 PW-02-05 DISSOLVED PW-02-06 PW-02-06 DISSOLVED S-1-450 S-1-450 DISSOLVED S-1-325 S-1-325 DISSOLVED	Revise to "U" non-detect at PQL, for all detects < PQL
		Chloride	None	None, associated results greater than 10 times blank amount
F0D300521:	EQ-9990	Zinc	W-26-270 W-30-285 W-37-325 (MS/MSD) W-27-285 W-27-240 DUPL-5 W-36-448 W-36-390 W-26-270 DISSOLVED W-37-385 DISSOLVED W-37-325 (MS/MSD) DISSOLVED W-27-285 DISSOLVED DUPL-5 DISSOLVED W-36-448 DISSOLVED W-36-390 DISSOLVED W-30-285 DISSOLVED	Revise to "U" non-detect at PQL, for all detects < PQL
	EQ-9990	Chloride	None	None, associated results greater than 10 times blank amount
F0D230473:	EQ-14932	Calcium	None	None, associated results greater than 10 times blank amount
		Potassium	W-12-70	Revise to "U" non-detect at PQL, for all detects < PQL
		Zinc	W-22-95 W-11-70 W-11-70 DISSOLVED W-12-120 W-12-120 DISSOLVED W-16-148 W-16-148 DISSOLVED W-19-110 W-19-150 W-19-150 DISSOLVED	Revise to "U" non-detect at PQL, for all detects < PQL
F0D280431:	EQ-14932	Calcium	None	None, associated results greater than 10 times blank amount or not detected
		Potassium	W-23-110 W-23-110 DISSOLVED W-24-260 W-24-260 DISSOLVED	Revise to "U" non-detect at PQL, for all detects < PQL

Table 3-5. *Evaluation of Field Blank and Equipment Blank Results*

Package Identification	*Associated Blank ID*	*Analyte*	*Sample ID*	*Action*
		Zinc	W-23-110 W-20-160 W-20-160 DISSOLVED W-25-150 W-25-150 DISSOLVED W-25-188 W-25-188 DISSOLVED W-24-260 W-24-260 DISSOLVED W-20-120 DISSOLVED	Revise to "U" non-detect at PQL, for all detects < PQL
F0E070471:	EQ-9990	Zinc	PW-05-03 PW-05-03 DISSOLVED PW-02-07 PW-02-07 DISSOLVED PW-05-05 PW-05-05 DISSOLVED PW-05-02 PW-05-02 DISSOLVED PW-05-04 PW-05-04 DISSOLVED DUP1-6 DUP1-6 DISSOLVED PW-04-04 DISSOLVED PW-04-02 PW-04-02 DISSOLVED	Revise to "U" non-detect at PQL, for all detects < PQL
		Chloride	None	None, associated results greater than 10 times blank amount
F0E120451:	EQ-9990	Zinc	PW-04-03 PW-04-03 DISSOLVED PW-04-01 PW-04-01 DISSOLVED PW-04-05 PW-04-05 DISSOLVED PW-04-06 PW-04-06 DISSOLVED PW-04-07 PW-04-07 DISSOLVED PW-07-02 PW-07-02 DISSOLVED PW-07-03 PW-07-03 DISSOLVED PW-07-07 PW-07-07 DISSOLVED PW-07-04 PW-07-04 DISSOLVED	Revise to "U" non-detect at PQL, for all detects < PQL
		Chloride	None	None, associated results greater than 10 times blank amount
F0E250512:	EB-MP140	Selenium	PW-06-02* PW-06-04* PW-06-04 DISSOLVED* PW-06-06* PW-06-06 DISSOLVED*	Revise to "U" non-detect at PQL, for all detects < PQL
		Mercury	PW-06-06* PW-06-05* PW-06-03 DISSOLVED	Revise to "U" non-detect at PQL, for all detects < PQL
		Chloride	None	None, associated results greater than 10 times blank amount

Table 3-5. *Evaluation of Field Blank and Equipment Blank Results*

Package Identification	Associated Blank ID	Analyte	Sample ID	Action

* - Also qualified due to other types of blank contamination

3.2.15. Quantitation of Results

The reporting limits for the total metals, dissolved metals and chloride were in accordance with the NYSDEC requirements (i.e., reporting at the PQL specified in the QAPP). The laboratory reported estimated data below the PQL but above the MDL, and qualified the estimated data with a "B" qualifier. The validation process revised the "B" qualifier to a "J" qualifier to provide consistency for others in review of the validated database.

When total and dissolved metals are performed on the same sample, the dissolved concentration should be less than the total concentration if the dissolved concentration is greater than or equal to 5x its MDL. If it is, and if the dissolved concentration is greater than the total concentration by more than 20%, both dissolved and total concentrations are to be qualified as estimated, "J." If the difference is greater than 50%, both concentrations are to be qualified as unusable, "R." The total and dissolved results were reviewed for all samples in the 12 SDGs and there were no differences greater than 20%.

3.2.16. Electronic Data Deliverables

The results in electronic database matched results listed on the hardcopy analytical report including laboratory qualifiers. The qualifiers and results were revised based on quality control issues, and foundation for changes are detailed in previous sections of this DUSR. The qualifiers were also placed onto the hardcopy reporting forms located near the beginning of each deliverable package (i.e., SDG package).

4. Summary and Data Usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. Overall, 97.5 percent[16] of the total metals, dissolved metals and chloride data were determined to be usable. However, those sample results qualified as estimated, "J" and "UJ," due to data validation QC exceedances should be considered conditionally usable for qualitative and quantitative purposes. There were 6 samples that were not analyzed for total metals and 1 sample for chloride as specified in the COC and are discussed in Section 3.2.5. The completeness percentage, with the 139 missing data points taken into consideration is 97.2 percent[17].

The samples collected at and in the vicinity of the site in Hicksville, New York were evaluated based on QA/QC criteria established by methods as listed in Section 1.3, in the data validation guidelines listed in Section 1.2, in the QAPP (GTEOSI, 2002) established for this project, and by professional judgment. There were no major deficiencies, which would have resulted in unusable data for either quantitative or qualitative purposes. However, there were some minor deficiencies in the data generation process, which resulted in some sample data being characterized as estimated and/or non-detects. Identification of a data point as estimated indicates uncertainty in the reported concentration of the analyte, but not its assigned identity.

The following paragraphs present the adherence of the data to the precision, accuracy, representativeness, comparability, completeness, and sensitivity (PSARCC) parameters. Completeness has been discussed above.

Precision is measured through the evaluation of field duplicate samples and matrix spike duplicate samples. For the metals analyses, none of the data were rejected due to precision non-conformances. However, the frequency of duplicate sample collection was insufficient, and therefore, evaluation of this criteria may not be adequate.

LCS, MS, and MSD recoveries indicate the accuracy of the data. None of the data were rejected due to accuracy non-conformances.

Holding times, sample preservation, blank analysis, and analyte quantification are indicators of the representativeness of the analytical data. There were some metals with contamination detected in the blanks resulting in many detects being qualified as non-detects.

Comparability is not compromised, provided that the analytical methods do not change over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures were consistently used by the laboratory, the comparability criteria for the analytical data were met.

Sensitivity is established by reported detection limits that represent measurable concentrations of analytes that can be determined with a designated level of confidence. None of the metals data were rejected due to sensitivity non-conformances.

[16] Value = ((243 discrete field data points – 6 unusable data points) / 243 discrete field data points) X 100.
[17] Value = (243 discrete data points /(243 discrete data points + 7 missing data points)) X 100.

5. Data Usability Summary Report Summary Information

The DUSR was performed to determine whether or not the data meets Site-specific criteria for data quality and use. The DUSR is developed by reviewing and evaluating the analytical data package. The following questions were addressed:

1. *Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?*

   The QAPP required that USEPA Level III deliverables be provided by the laboratory for each data package. This requirement was met with the exception of six missing total metals analyses and one missing chloride analysis as discussed in Section 3.2.5. The evaluation of the sample data was completed using the information provided in the data packages provided by the laboratory.

2. *Have all holding times been met?*

   The holding times were met for all analyses.

3. *Do all the QC data: blanks, standards, spike recoveries, replicate analyses, and sample data fall within the protocol-required limits and specifications?*

   The laboratory used laboratory control limits. QA/QC deviations and qualifications performed on the sample data are discussed in Chapter 3. Major non-conformances were not detected for the data. However, the low frequency of replicate (duplicate) analyses was not in compliance with the QAPP.

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

   The QAPP required that USEPA guidance methods be used in the analysis of the samples. The laboratory used the required method protocols for the analyses performed for this sampling event, which met data user and client needs.

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

   The evaluation of selected raw data confirmed the information provided in the data packages.

6. *Have the correct data qualifiers been used?*

   The laboratory applied the correct qualifiers to the sample data. The laboratory qualifiers were revised and/or new qualifiers applied as required by the validation guidelines listed in Section 1. The validation guideline qualifier definitions are listed in Section 2.2.

References

New York State Department of Environmental Conservation. *Analytical Services Protocol.* Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.

United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* EPA 540-R-01-008, July 2002.

United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.

United States Environmental Protection Agency, Region 2. *Validation of Metals for the Contract Laboratory Program based on SOW ILM05.3.* SOP No. HW-2, Revision 13. September 2006.

URS Corporation, GTE Operations Support Incorporated (GTEOSI). *Groundwater Investigation Work Plan (QAPP: Appendix C), Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* URS, September 2002.

REPORT

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Table 1-1 Sample Cross-Reference List

Executive Summary

This report addresses data quality for groundwater samples collected at the former Sylvania Electric Products Incorporated Facility in Hicksville, New York (the Site). This report pertains to "metals" samples collected by Malcolm Pirnie, Inc. (Malcolm Pirnie) from November 15, 2010 through November 16, 2010.

The environmental samples collected for this investigation were submitted to Test America Laboratories, Inc. of Earth City, Missouri, for metals analyses using United States Environmental Protection Agency (USEPA) guidance methods. A total of 8 samples[1] were submitted, which resulted in 16 nickel results[2]. Of this number, 16 of them are results[3] of actual samples and the remainders are field quality assurance/quality control (QA/QC) indicators[4] of these samples. The quality of the analytical data generated for this investigation were evaluated by Malcolm Pirnie using the QA/QC criteria established in the methods and USEPA guidelines. Non-conformances from the QA/QC criteria were qualified based on guidance provided in the following references:

- New York State Department of Environmental Conservation. *Analytical Services Protocol.* Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.
- United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* EPA 540-R-01-008, July 2002.
- United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.
- United States Environmental Protection Agency, Region 2. *Validation of Metals for the Contract Laboratory Program based on SOW ILM05.3.* SOP No. HW-2, Revision 13. September 2006.
- URS Corporation, GTE Operations Support Incorporated (GTEOSI). *Groundwater Investigation Work Plan (QAPP: Appendix C), Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* URS, September 2002.

In circumstances where the quality of the data or the accuracy of the results is suspect, the project's Quality Assurance Project Plan (QAPP) and professional judgment[5] were also used to consider if results should be qualified as estimated ("J" or "UJ"). Since the individual guidance documents used (as a source of reference for the validation) differ somewhat in the type of qualification applied to data, Malcolm Pirnie applied qualifiers generally with an err to caution. All instrument calibration analyses, laboratory control sample analyses, serial dilution analyses, and interference check sample analyses were acceptable.

Equipment/field blank samples were not performed. The relative percent differences (RPD) between one (1) field duplicate pair results were performed and assessed (one for dissolved nickel and one for total nickel). This is equivalent to a field duplicate sample collection rate of 14.3 percent[6]. Based on the

[1] Each sample has been analyzed for total recoverable and dissolved fractions.
[2] This is the number of results reported by the laboratory on their Sample Results reporting form (Form 1).
[3] This is the total number of well data points, which may include total recoverable and dissolved fractions including duplicate sample results.
[4] These indicators do not include Matrix Spike/Matrix Spike Duplicate or other internal laboratory QA/QC indicators.
[5] Professional judgment is performed by a USEPA certified data validator with over a decade of environmental laboratory experience.
[6] Value = (2 duplicate data / (16 - 2) discrete field sample data) X 100.

QAPP, the rate should of 10 percent has been met. With 14 discrete field sample data values[7], 1 field duplicate data sample was performed.

None of the exceedances of method non-conformances were significant enough to jeopardize the usability of the data. Overall, 100 percent[8] of the metals data were determined to be usable for qualitative and quantitative purposes. None of the results required qualification. The completeness percentage of all the analyses requested is 100[9]. Therefore, the completeness objective of 90 percent, as stated in the QAPP, has been met for the metals database.

[7] This number represents 16 (non-field blank/equipment blank) total data points minus 2 duplicate sample data points.
[8] Value = ((16 discrete field data points – 0 unusable data points) / 16 discrete field data points) X 100.
[9] Value = (16 discrete data points /(16 discrete data points + 0 missing data points)) X 100.

1. Introduction

1.1. Sample Identification

This report addresses the results of a data quality evaluation for groundwater samples collected at the Site for metals (nickel) collected by Malcolm Pirnie from November 15, 2010 through November 16, 2010.

The sample delivery group (SDG) number (laboratory package identification number), field identification, and corresponding laboratory identification of the samples that were submitted for data validation are presented in Table 1-1.

Table 1-1: *Sample Cross-Reference List*

Package Identification	***Sample ID***	***Laboratory ID***	***Analysis Performed***
F0K170503	MW-31S (designated MS/MSD)	-001	Total Nickel
	MW-26I	-002	Total Nickel
	MW-23S	-003	Total Nickel
	MW-27S	-004	Total Nickel
	Ni-Dup	-005	Total Nickel
	MW-44S	-006	Total Nickel
	MW-8	-007	Total Nickel
	MW-50I	-008	Total nickel
	MW-31S Dissolved (designated MS/MSD)	-009	Dissolved Nickel
	MW-26I Dissolved	-010	Dissolved Nickel
	MW-23S Dissolved	-011	Dissolved Nickel
	MW-27S Dissolved	-012	Dissolved Nickel
	Ni-Dup Dissolved	-013	Dissolved Nickel
	MW-44S Dissolved	-014	Dissolved Nickel
	MW-8 Dissolved	-015	Dissolved Nickel
	MW-50I Dissolved	-016	Dissolved Nickel

1.2. General Considerations

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Although the term is frequently used in discussing methodologies, it applies to all aspects of the analytical system and especially to samples, their measurements, and the actual data output. Accordingly, for the samples and analyses addressed herein, this report summarizes the findings of the review and outlines any deviations from the applicable quality control (QC) criteria referenced in the following documents:

- New York State Department of Environmental Conservation. *Analytical Services Protocol.* Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.

- United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* EPA 540-R-01-008, July 2002.

- United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.

- United States Environmental Protection Agency, Region 2. *Validation of Metals for the Contract Laboratory Program based on SOW ILM05.3.* SOP No. HW-2, Revision 13. September 2006.

- URS Corporation, GTE Operations Support Incorporated (GTEOSI). *Groundwater Investigation Work Plan (QAPP: Appendix C), Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* URS, September 2002.

1.3. Analytical Methods

The environmental samples presented in this report were submitted to Test America Laboratories, Inc. of Earth City, Missouri, for selected metals, including nickel, analyses. The laboratory used the following USEPA guidance methods for the analyses:

- SW-846 Method 3010A: Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by FLAA or ICP Spectroscopy

- SW-846 Method 6010B: Inductively Coupled Plasma-Atomic Emission Spectrometry

The laboratory assigned an SDG number to a group of samples during their sample log-in process. The SDG number is the means by which the laboratory tracks samples and QC analyses. A total of 8 samples in a total of one SDG are included in this data validation report. Of the 8 total number of samples, 8 were analyzed for total nickel and 8 for dissolved nickel[10]. The SDG, field identification, and corresponding laboratory identification for each sample are summarized in Table 1-1.

The following sections of this document address distinct aspects of the validation process. Section 2 lists the data QA/QC protocols used to validate the sample data. Section 3 presents a summary of the findings associated with the validation and a discussion of the specific QA/QC deviations and qualifications performed on the sample data. Section 4 presents a discussion of data completeness and usability. Section 5 presents the Data Usability Summary Report (DUSR) summary information.

[10] Each sample included total recoverable and/or dissolved fractions.

2. Data Validation Protocols

2.1. Sample Analysis Parameters

The validation of analyses for this project used guidance presented in the QAPP (GTEOSI, 2002), the analytical methodologies, the data validation guidelines referenced in Section 1, and professional judgment[11]. Malcolm Pirnie performed a data review of all analytical results to assess data quality. The data review included an assessment of sample handling protocols and supporting laboratory and field QC parameters. The following is a list of specific analytical information evaluated during the validation:

- Data package completeness review – per the NYSDEC ASP Category B or USEPA CLP deliverables requirements
- Analytical methods performed and test method references
- Sample condition - review of log-in records for cooler temperature, chemical preservation, etc.
- Holding times - comparison of collection, preparation, and analysis dates
- Analytical results - units, values, significant figures
- Sample traceability to raw data
- Initial calibration – comparison to technical guideline criteria
- Continuing calibration – comparison to technical guideline criteria
- Initial and continuing calibration blanks
- Method blank results and laboratory contamination
- Laboratory control sample (LCS) results and comparison to laboratory control limits
- Matrix spike/matrix spike duplicate (MS/MSD) results and comparison to laboratory control limits
- Field replicate/duplicate results and comparison to technical guideline criteria
- Field QC sample (i.e., equipment blanks and field blanks)
- Reporting limits and Dilutions
- Electronic Data Deliverables (EDDs) – comparison to the hardcopy analytical report

The analytical reports were reviewed for completeness and the accompanying QC data were reviewed for acceptable performance. When QC results indicated poor performance, Malcolm Pirnie applied data qualifiers to the results to inform the data user of the possible performance problem. These qualifiers are

[11] See footnote 5.

in addition to or a revision of the qualifiers provided by the laboratory. A summary of the data qualifiers used for this review is presented in Section 2.2.

2.2. Data Qualifiers

The following qualifiers may have been used by the laboratory for metals analyses:

"U" Non-detect result at the method (or instrument) detection limit.

"B" Indicates an estimated value or a value below the established reporting limit but above the method detection limit.

Laboratory qualifiers defined above, are retained in the final database unless revised during the data validation process to one of the following qualifiers:

"U" The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

"J" The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

"UJ" The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

"R" The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

2.3. Data Usability Summary Report Questions

The DUSR determines whether or not the data meets Site-specific criteria for data quality and use. It was developed to review and evaluate the analytical data packages. During the course of this review the following questions were addressed (where applicable):

1. *Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?*

2. *Have all holding times been met?*

3. *Do all the QC data: blanks, calibration standards, calibration verifications, spike recoveries, replicate analyses, laboratory controls and sample data fall within the protocol required limits and specifications?*

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

6. *Have the correct data qualifiers been used?*

The answers to the questions presented by the DUSR are presented in the following sections of the report and in the DUSR Summary Information Section, Section 5.

3. Data Quality Evaluation

3.1. Summary

This section summarizes whether the sample analysis parameters reported, which were specified in Section 2.1, met validation criteria. Summary of the individual components of the review are described in the following sub-sections.

3.2. Review of Validation Criteria

3.2.1. Completeness Review

The laboratory provided the analytical report using formats based on the Contract Laboratory Program (CLP). All necessary documents were included in the report packages including a case narrative summarizing the QC issues associated with the project analyses.

3.2.2. Test Methods

The laboratory performed the analyses using the analytical test methods listed in Section 1.3. They included USEPA SW-846 Method 3010 (digestion of aqueous samples) followed by Method 6010B (ICP) for metals analysis. No method anomalies were noted.

3.2.3. Sample Receipt

The laboratory received 8 aqueous samples[12] for metals analysis between November 15, 2010 and November 16, 2010. Samples collected for different analytical fractions from the same boring at the same depth are defined as the same sample within this data validation report. The sample temperatures at the time of receipt by the laboratory were within the recommended temperature range of 4°C ± 2°C for all SDGs. Field and laboratory personnel completed the chain-of-custody (COC) documents recording the signature, date, and time of custody transfer. The laboratory recorded the condition of the samples at the time of receipt on a "Condition Upon Receipt Form." This form identifies whether the containers were received undamaged, within the proper temperature range, at the proper pH, in a container that is sealed with a custody seal on the exterior, and with a completed COC enclosed to identify all samples submitted to the laboratory.

There were no problems found.

There were no custody seals attached to individual sample containers. No qualification is necessary because the exterior of the shipment coolers had intact custody seals.

3.2.4. Holding Times

The laboratory performed all nickel analyses within the EPA-recommended holding time of 180 days from date of collection for acid preserved samples.

3.2.5. Analytical Results

For each sample tested, the laboratory provided the analytical test information using the laboratory's standardized format, which shows critical information pertaining to the analyses performed. The information provided includes the following: the laboratory name; the project name; the analysis type; the laboratory sample ID; matrix; date sampled; date received; preparation batch ID; the result; the reporting

[12] Each sample included total recoverable and/or dissolved fractions.

limit; the units of measure; the laboratory method; dilution factor; analysis time; preparation date; analysis date; work order number, and laboratory qualifiers (if any). The laboratory provided all the appropriate forms for the requested methods.

A review of dissolved vs. total concentrations is performed and detailed in Section 3.2.15.

3.2.6. Traceability to Raw Data

Traceability of the metals analyses is established by the digestion (preparation) logs. These forms list the project samples analyzed per laboratory batch processed and the corresponding QC samples (e.g., preparation blank and laboratory control sample) performed with the project samples. All project samples analyzed, for all SDGs, were included on the applicable forms.

3.2.7. Initial Calibration

The laboratory prepared an initial calibration (ICAL) curve for each analyte in accordance with method criteria. Initial calibration verification (ICV) standards were analyzed immediately after each ICAL, with recoveries all within ± 10% of the true values for all analytes. All ICVs are acceptable.

3.2.8. Continuing Calibration Verification

The continuing calibration verification (CCV) standards were analyzed after the ICALs and after every 10 project samples as required by the reference test method. The percent recoveries were all within ± 10% of the true values for all analytes. All CCVs are acceptable.

3.2.9. Initial and Continuing Calibration Blanks

The initial calibration blank (ICB) and continuing calibration blanks (CCB) were analyzed after the ICALs and after every 10 project samples as required by the reference test method. The initial and continuing calibration blank results were all less than the laboratory reporting limit (a.k.a., practical quantitation limit (PQL)).

3.2.10. Laboratory Method Blanks (Preparation Blanks)

There was no nickel contaminations detected in the preparation blanks.

3.2.11. Laboratory Control Sample Results

The laboratory analyzed an LCS for each QC batch. The percent recoveries were within laboratory control limits for all QC batches.

3.2.12. Matrix Spike Analyses

Samples for Matrix Spike / Matrix Spike Duplicate (MS/MSD) analysis were chosen by the laboratory. The MS/MSD sample analysis is designed to provide information about the effect of sample matrix on the sample preparation procedures and the measurement methodology. Data precision is also measured. All percent recoveries (%R) and relative percent differences (RPD) were within criteria ($75 \leq \%R \leq 125$; $RPD \leq 20\%$) - no qualifications were required.

Table 1-1 specifies the samples that were also performed for MS/MSD.

Of the 16 discrete nickel data values (non-QA/QC values), 2 of them had corresponding MS/MSD results. This represented a frequency of 14.3 percent, which exceeds the QAPP's minimum required goal of 5 percent.

3.2.13. Field Duplicate Analyses

One project sample was submitted as a blind field duplicate sample. This represents 2 duplicate data points (1 for dissolved nickel and 1 for total nickel). By design, the laboratory was never made aware of which field samples the blind field duplicates were associated with. An evaluation of the precision of the field sampling procedure (as well as the laboratory analysis procedure) was made based on RPD calculated between the original and duplicate sample results. Blind field duplicate samples were collected and analyzed to assess the overall sampling and analytical precision. Evaluation calculations were made only when both results were above the PQL. The RPD values for both duplicates were within the criterion of $\leq 30\%$.

It should be noted that QAPP requirements (GTEOSI, 2002) specified that a field duplicate sample be collected at a rate of one sample for every ten samples (collection rate of 10%). Two (2) field duplicate data points were required to be collected for the project since a total of 16[13] project sample fractions were submitted (not including other field QC samples collected) for analysis. The actual collection rate performed is equivalent to 12.5 percent[14].

3.2.14. Field Blanks and Equipment Blanks

A total of 0 field blanks and 0 equipment blank data points were performed as part of the samples submitted for this data validation report. The lack of field/equipment blanks is insufficient to fully evaluate field contaminations (false positives). An appropriate frequency of blank collections should have been at a 5 percent rate. Based on the 5 percent rate, 1[15] field blank and/or equipment blank data points should been performed. The actual rate performed is 0 percent[16].

3.2.15. Quantitation of Results

The reporting limits for nickel was in accordance with the NYSDEC requirements (i.e., reporting at the PQL specified in the QAPP). The laboratory reported estimated data below the PQL but above the MDL, and qualified the estimated data with a "B" qualifier. The validation process revised the "B" qualifier to a "J" qualifier to provide consistency for others in review of the validated database.

When dissolved and total nickel are performed on the same sample, the dissolved concentration should not be greater than the total concentration if the dissolved concentration is greater than or equal to 5x its MDL. If it is, and if the dissolved concentration is greater than the total concentration by more than 20%, both dissolved and total concentrations are to be qualified as estimated, "J." If the difference is greater than 50%, both concentrations are to be qualified as unusable, "R." The above criteria have been met therefore no qualification was required.

3.2.16. Electronic Data Deliverables

The results in electronic database matched results listed on the hardcopy analytical report including laboratory qualifiers. The qualifiers and results were revised based on quality control issues, and foundation for changes are detailed in previous sections of this DUSR. The qualifiers were also placed onto the hardcopy reporting forms located near the beginning of each deliverable package (i.e., SDG package).

[13] This number represents 16 (non-field blank/equipment blank) total data points minus 2 duplicate sample data points.
[14] Value = (2 duplicate data / 16 discrete sample data points) X 100.

[15] Value = (16 (non-field blank/equipment blank) total data points minus 2 duplicate sample data points) X 0.05.
[16] Value = 0 / (16 (non-field blank/equipment blank) total data points minus 2 duplicate sample data points) X 100.

4. Summary and Data Usability

This chapter summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. Overall, 100 percent[17] of the nickel data were determined to be usable. The completeness percentage is 100%[18].

The samples collected from the site in Hicksville, New York were evaluated based on QA/QC criteria established by methods as listed in Section 1.3, in the data validation guidelines listed in Section 1.2, in the QAPP (GTEOSI, 2002) established for this project, and by professional judgment. There were no major deficiencies, which would have resulted in unusable data for either quantitative or qualitative purposes.

The following paragraphs present the adherence of the data to the precision, accuracy, representativeness, comparability, completeness, and sensitivity (PSARCC) parameters. Completeness has been discussed above.

Precision is measured through the evaluation of field duplicate samples and matrix spike duplicate samples. For the metals analyses, none of the data were rejected due to precision non-conformances. However, the frequency of duplicate sample collection was insufficient, and therefore, evaluation of this criteria may not be adequate.

LCS, MS, and MSD recoveries indicate the accuracy of the data. For the nickel analyses, none of the data were rejected due to accuracy non-conformances.

Holding times, sample preservation, blank analysis, and analyte quantification are indicators of the representativeness of the analytical data.

Comparability is not compromised, provided that the analytical methods do not change over time. A major component of comparability is the use of standard reference materials for calibration and QC. These standards are compared to other unknowns to verify their concentrations. Since standard analytical methods and reporting procedures were consistently used by the laboratory, the comparability criteria for the analytical data were met.

Sensitivity is established by reported detection limits that represent measurable concentrations of analytes that can be determined with a designated level of confidence. None of the metals data were rejected due to sensitivity non-conformances.

[17] Value = ((16 discrete field data points – 0 unusable data points) / 16 discrete field data points) X 100.
[18] Value = (16 discrete data points /(16 discrete data points + 0 missing data points)) X 100.

5. Data Usability Summary Report Summary Information

The DUSR was performed to determine whether or not the data meets Site-specific criteria for data quality and use. The DUSR is developed by reviewing and evaluating the analytical data package. The following questions were addressed:

1. *Is the data package complete as defined under the requirements for the NYSDEC ASP Category B or USEPA CLP deliverables?*

   The QAPP required that USEPA Level III deliverables be provided by the laboratory for each data package. This requirement was met.

2. *Have all holding times been met?*

   The holding times were met for all analyses.

3. *Do all the QC data: blanks, standards, spike recoveries, replicate analyses, and sample data fall within the protocol-required limits and specifications?*

   The laboratory used laboratory control limits. QA/QC deviations and qualifications performed on the sample data are discussed in Chapter 3. Major non-conformances were not detected for the data.

4. *Have all of the data been generated using established and agreed upon analytical protocols?*

   The QAPP required that USEPA guidance methods be used in the analysis of the samples. The laboratory used the required method protocols for the analyses performed for this sampling event, which met data user and client needs.

5. *Does an evaluation of the raw data confirm the results provided in the data summary sheets and quality control verification forms?*

   The evaluation of selected raw data confirmed the information provided in the data packages.

6. *Have the correct data qualifiers been used?*

   The laboratory applied the correct qualifiers to the sample data. The laboratory qualifiers were revised and/or new qualifiers applied, if applicable, as required by the validation guidelines listed in Section 1. The validation guideline qualifier definitions are listed in Section 2.2.

References

New York State Department of Environmental Conservation. *Analytical Services Protocol.* Guidance documents including Exhibits A, B, C, D, E, F, G, and I. June 2000.

United States Environmental Protection Agency. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.* EPA 540-R-01-008, July 2002.

United States Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* SW-846: Final Update IIIA. April 1998.

United States Environmental Protection Agency, Region 2. *Validation of Metals for the Contract Laboratory Program based on SOW ILM05.3.* SOP No. HW-2, Revision 13. September 2006.

URS Corporation, GTE Operations Support Incorporated (GTEOSI). *Groundwater Investigation Work Plan (QAPP: Appendix C), Former Sylvania Electric Products Incorporated Facility, Hicksville, New York.* URS, September 2002.

MALCOLM PIRNIE

INDEPENDENT ENVIRONMENTAL ENGINEERS, SCIENTISTS AND CONSULTANTS

K

APPENDIX

GREEN SEAL

Table 1b

WP-01 Groundwater Profile - VOC Data Formatted by Sample Depth
Former General Instrument Corporation Site
Hicksville, New York (a)

Depth (feet bgs)	Elevation (feet amsl)	Date Collected	Benzene	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Chloroform	1,2-DCB	1,1-DCA	1,2-DCA	1,1-DCE	Total 1,2-DCE	MTBE	PCE	1,1,1-TCA	Freon 113	TCE	Vinyl Chloride	Total Xylenes
63	60.29	05/30/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
80	43.29	05/30/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
100	23.29	05/31/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
160	-36.71	06/01/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.8	ND	ND	ND	2.5	ND	ND
170	-46.71	06/01/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.2	ND	1.9	ND	ND	6.7	ND	ND
180	-56.71	06/01/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.3	ND	7.5	ND	ND	34	ND	ND
198	-74.71	06/01/07	ND	ND	ND	4.5	ND	1.5	ND	ND	ND	2.1	50	ND	53	ND	1.5	170 D	ND	ND
210	-86.71	06/01/07	ND	ND	ND	3.4	ND	1.2	ND	ND	ND	3.4	72	ND	90 D	ND	2.3	300 D	ND	ND
220	-96.71	06/01/07	ND	ND	ND	2.2	ND	ND	ND	ND	ND	2.4	79	ND	70 D	ND	1.5	220 D	ND	ND
229	-105.71	06/02/07	ND	ND	ND	1.9	ND	1.1	ND	ND	ND	1.7	87	ND	85 D	ND	2.2	260 D	ND	ND
250	-126.71	06/02/07	ND	ND	ND	35	ND	2.5	ND	ND	ND	6.7	101	ND	87 D	ND	5.5	780 D	ND	ND
260	-136.71	06/02/07	ND	ND	ND	6.0	ND	3.2	ND	1.4	ND	6.4	243	ND	120 D	ND	7.8	910 D	1.8	ND
285	-161.71	06/03/07	3.3	ND	ND	39	46	5.8	120 D	4.8	ND	59	1,208 D	ND	ND	7.7	22	550 D	5.1	180
290	-166.71	06/03/07	2.2	ND	ND	24	47	3.9	290 D	6.1	ND	68	1,003	ND	95 D	14.0	13	860 D	4.7	82
300	-176.71	06/03/07	ND	1.0	1.4	130 D	20	14.0	71	5.2	1.1	62	1,531	ND	160 D	7.8	37	3,500 D	11	26
310	-186.71	06/04/07	ND	1.7	1.5	270 D	3.5	10.0	1.7	2.1	1.4	74	766	ND	180 D	8.4	29	3,700 D	3.0	ND
320	-196.71	06/04/07	2.6	ND	1.2	9.3	67	3.0	450 D	3.7	ND	35	1,408	ND	86 D	4.5	6.8	790 D	40	120
330	-206.71	06/04/07	ND	ND	ND	3.7	ND	1.3	3.2	3.7	ND	9.1	193	ND	350 D	3.7	7.0 J	1,000 D	ND	ND
341	-217.71	06/04/07	ND	ND	ND	1.5	ND	ND	ND	2.0	ND	4.6	72	ND	500 D	2.0	4.9 J	950 D	ND	ND
366	-242.71	06/05/07	ND	ND	ND	ND	18	ND	210	ND	ND	19.0	1,437	ND	170	ND	17	1,300 D	ND	48
370	-246.71	06/06/07	ND	ND	ND	1.4	ND	1.1	ND	2.5	ND	3.9	194	ND	140 D	2.3	3.7	490 D	ND	ND
389	-265.71	06/07/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.5	ND	390 D	ND	3.0	760 D	ND	ND
399	-275.71	06/07/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.0	ND	45	ND	ND	72	ND	ND

a/ All concentrations are in units of micrograms per liter (µg/l); bgs = below ground surface; amsl = above mean sea level.
b/ D = result is from a secondary dilution; J = estimated concentration; ND = not detected above reporting limits.
c/ DCB = dichlorobenzene; DCA = dichloroethane; DCE = dichloroethene, MTBE = methyl-tert-butyl-ether; PCE = tetrachloroethene; TCA = trichloroethane; Freon 113 = 1,1,2-Trichloro-1,2,2-trifluoroethane; TCE = trichloroethene.

Table 2b

WP-02 Groundwater Profile - VOC Data Formatted by Sample Depth
Former General Instrument Corporation Site
Hicksville, New York (a)

Depth (feet bgs)	Elevation (feet amsl)	Date Collected	Benzene	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Chloroform	1,2-DCB	1,1-DCA	1,2-DCA	1,1-DCE	Total 1,2-DCE	MTBE	PCE	1,1,1-TCA	Freon 113	TCE	Vinyl Chloride	Total Xylenes
61	52.22	06/14/07	ND	ND	ND	ND	ND	1.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
80	33.22	06/14/07	ND	ND	ND	ND	ND	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
100	13.22	06/14/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
140	-26.78	06/15/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.0	ND	ND
160	-46.78	06/15/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
172	-58.78	06/16/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
179	-65.78	06/16/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
189	-75.78	06/16/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.0	ND	ND
200	-86.78	06/16/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
209	-95.78	06/17/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.7	ND	3.0	ND	ND	17	ND	ND
235	-121.78	06/17/07	ND	ND	ND	9.9	ND	1.3	ND	1.4	ND	3.1	30	1.6	27	1.2	2.4	180 D	3.2	ND
240	-126.78	06/18/07	ND	ND	ND	ND	ND	ND	12	5.6	ND	28	196	ND	43	17	ND	210	36	ND
250	-136.78	06/18/07	ND	ND	ND	ND	ND	ND	8.6	4.6	ND	30	230	ND	39	20	ND	220	29	ND
263	-149.78	06/18/07	ND	ND	ND	ND	ND	1.3	240 D	8.8	ND	36	569	ND	80	17	5.9	430 D	160 D	3.1
270	-156.78	06/18/07	ND	ND	ND	ND	ND	4.2	200 D	9.0	ND	18	1,837	ND	48	5.3	3.6	420 D	340 D	8.8
280	-166.78	06/18/07	ND	ND	ND	ND	1.1	8.2	150 D	12	ND	26	1,619	ND	63	7.2	5.8	460 D	360 D	28
290	-176.78	06/18/07	ND	ND	ND	ND	ND	ND	170	ND	ND	ND	1,300	ND	96	ND	ND	500	260	ND
303	-189.78	06/19/07	ND	ND	ND	ND	ND	ND	300	14 J	ND	24 J	1,900	ND	300	ND	ND	560	360 J	32 J
310	-196.78	06/19/07	ND	ND	ND	ND	ND	ND	290	11 J	ND	21 J	1,900	ND	490	ND	ND	260	310	17 J
320	-206.78	06/19/07	ND	ND	ND	ND	ND	ND	140	11 J	ND	26 J	1,923	ND	170	ND	ND	610	150	ND
335	-221.78	06/20/07	ND	ND	ND	2.3 J	ND	1.5 J	72	5.3	ND	6.2	350	ND	97	ND	4.3 J	320	ND	5.0 J
340	-226.78	06/20/07	ND	ND	ND	ND	1.5 J	1.0 J	63	5.6	ND	4.9	220	ND	84	1.5 J	3.5 J	290	ND	3.5 J
350	-236.78	06/20/07	ND	ND	ND	ND	0.49 J	1.1 J	25	5.1	ND	3.9 J	120	ND	80	ND	6.7 J	270	ND	ND
360	-246.78	06/20/07	ND	ND	ND	ND	ND	1.2 J	ND	5.0	ND	2.4 J	34	ND	60	ND	5.6 J	200	ND	ND
371	-257.78	06/21/07	ND	ND	ND	ND	ND	ND	ND	5.5 M	ND	1.8 J	30	ND	68	ND	8.4	260	ND	ND
378	-264.78	06/21/07	ND	ND	ND	ND	ND	7.0 J	130	10	ND	17	730	ND	100	9.3 J	12 J	550	23	29
389	-275.78	06/26/07	ND	ND	ND	ND	ND	ND	ND	2.6 J	ND	2.3	121	ND	45	ND	ND	110	ND	ND
416	-302.78	06/28/07	ND	ND	ND	ND	ND	ND	ND	0.90 J	ND	0.84 J	140	0.25 J	55	ND	1.0 J	73	2.0	ND

a/ All concentrations are in units of micrograms per liter (µg/l); bgs = below ground surface; amsl = above mean sea level.
b/ B = compound also detected in laboratory blank; D = result is from a secondary dilution; J = estimated concentration; M = manual integration; R = unusable result, analyte may or may not be present in the sample; ND = not detected above reporting limits.
c/ DCB = dichlorobenzene; DCA = dichloroethane; DCE = dichloroethene, MTBE = methyl-tert-butyl-ether; PCE = tetrachloroethene; TCA = trichloroethane; Freon 113 = 1,1,2-Trichloro-1,2,2-trifluoroethane; TCE = trichloroethene.

Table 3b

WP-03 Groundwater Profile - VOC Data Formatted by Sample Depth
Former General Instrument Corporation Site
Hicksville, New York (a)

Depth (feet bgs)	Elevation (feet amsl)	Date Collected	Benzene	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Chloroform	1,2-DCB	1,1-DCA	1,2-DCA	1,1-DCE	Total 1,2-DCE	MTBE	PCE	1,1,1-TCA	Freon 113	TCE	Vinyl Chloride	Total Xylenes
60	59.65	07/01/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.44 J	ND	ND	ND	ND	ND	ND
78	41.65	07/01/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.36 J	ND	ND	ND	ND	ND	ND
100	19.65	07/01/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.30 J	ND	ND	ND	1.6	ND	ND
118	1.65	07/01/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.33 J	ND	ND
140	-20.35	07/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.3	ND	ND	ND	ND	ND	ND
160	-40.35	07/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.5	0.38 J	ND	ND	2.0	ND	ND
174	-54.35	07/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.2	ND	ND	32	ND	ND
180	-60.35	07/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.36 J	0.72 J	ND	ND	3.9	ND	ND
199	-79.35	07/02/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.18 J	0.31 J	ND	ND	0.91 J	ND	ND
210	-90.35	07/10/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15 J	0.37 J	ND	ND	1.7	ND	ND
220	-100.35	07/10/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.13 J	0.51 J	ND	ND	2.1	ND	ND
237	-117.35	07/11/07	ND	ND	ND	0.36 J	ND	0.77 J	ND	ND	ND	ND	0.54 J	ND	0.58 J	ND	ND	8.4	ND	ND
249	-129.35	07/11/07	ND	ND	ND	ND	ND	1.3	ND	0.21 J	ND	1.9	5.4	ND	7.9	ND	0.69 J	94	ND	ND
260	-140.35	07/12/07	ND	ND	ND	ND	ND	2.5	ND	0.44 J	ND	3.4	8.8	ND	9.4	ND	1.4 J	150	ND	ND
269	-149.35	07/12/07	ND	ND	ND	ND	ND	5.7	ND	1.2 J	ND	8.5	27	ND	16	ND	3.7 J	330	1.3 J	ND
276	-156.35	07/12/07	ND	ND	ND	ND	ND	5.2	11	1.5 J	ND	9.6	54	ND	23	ND	5.1 J	410	4.1 J	ND
303	-183.35	07/14/07	ND	ND	ND	ND	ND	19 J	30	7.1 J	ND	30	420	ND	93	ND	ND	1,400	100	ND
310	-190.35	07/14/07	ND	ND	ND	6.7 J	ND	18 J	12 J	6.3 J	ND	30	240	ND	83	ND	11 J	1,200	40	ND
320	-200.35	07/15/07	ND	ND	ND	2.9 J	ND	2.7 J	6.6	1.9 J	ND	4.5	120	2.1 J	67	ND	2.2 J	330	24	ND
330	-210.35	07/15/07	ND	ND	ND	ND	ND	28	75	9.0 J	ND	35	560	ND	120	ND	15 J	1,400	110	55
340	-220.35	07/15/07	ND	ND	ND	ND	ND	28	95	10 J	ND	38	610	ND	86	ND	18 J	1,300	85 M	72
350	-230.35	07/15/07	ND	ND	ND	ND	ND	17 J	140	11 J	ND	25	760	ND	89	ND	13 J	1,000	170 M	61
360	-240.35	07/16/07	ND	ND	ND	ND	ND	16 J	150	13 J	ND	28	1,100	ND	84	ND	ND	820	270	58
368	-248.35	07/17/07	ND	ND	ND	15 J	ND	13 J	45	5.0 J	ND	21	350	ND	120	ND	ND	1,200	24	25 J
378	-258.35	07/18/07	ND	1.2	ND	ND	ND	ND	ND	ND	ND	ND	0.60 J	ND	0.36 J	ND	ND	2.6	ND	ND
393	-273.35	07/24/07	ND	ND	ND	22	ND	ND	43	5.8 J	ND	19 J	600	ND	110	7.3 J	15 J	950	45	10 J
400	-280.35	07/24/07	ND	ND	ND	10 J	ND	ND	57	5.2 J	ND	12 J	710	ND	87	4.9 J	ND	720	46	14 J
410	-290.35	07/24/07	ND	ND	ND	ND	ND	ND	29	3.2 J	ND	ND	63	ND	150	ND	12 J	360	4.7 JM	ND
418	-298.35	07/24/07	ND	ND	ND	10.0 J	ND	8.2 J	9.7 J	6.7 J	ND	15 J	180	ND	160	9.7 J	22 J	820	17 J	ND
433	-313.35	07/25/07	ND	ND	ND	4.9 J	ND	6.0 J	ND	5.2 J	ND	9.2 J	140	ND	130	6.9 J	19 J	660	ND	ND
463	-343.35	07/26/07	ND	ND	ND	0.94 J	ND	0.35 J	ND	0.29 J	ND	0.29 J	3.3	ND	65	0.39 J	1.7 J	60	ND	ND

a/ All concentrations are in units of micrograms per liter (µg/l); bgs = below ground surface; amsl = above mean sea level.
b/ J = estimated concentration; M = manual integration; ND = not detected above reporting limits.
c/ DCB = dichlorobenzene; DCA = dichloroethane; DCE = dichloroethene, MTBE = methyl-tert-butyl-ether; PCE = tetrachloroethene; TCA = trichloroethane; Freon 113 = 1,1,2-Trichloro-1,2,2-trifluoroethane; TCE = trichloroethene.

Table 4b

WP-04 Groundwater Profile - VOC Data Formatted by Sample Depth
Former General Instrument Corporation Site
Hicksville, New York (a)

Depth (feet bgs)	Elevation (feet amsl)	Date Collected	Benzene	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Chloroform	1,2-DCB	1,1-DCA	1,2-DCA	1,1-DCE	Total 1,2-DCE	MTBE	PCE	1,1,1-TCA	Freon 113	TCE	Vinyl Chloride	Total Xylenes
65	52.88	07/29/07	0.10 J	ND	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
83	34.88	07/29/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
100	17.88	07/30/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
123	-5.12	07/30/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
137	-19.12	07/30/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
157	-39.12	07/30/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
167	-49.12	07/31/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
179	-61.12	07/31/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
190	-72.12	07/31/07	ND	ND	ND	1.7	ND	ND	ND	ND	ND	ND	ND	ND	1.1	ND	ND	3.2	ND	ND
200	-82.12	08/01/07	ND	ND	ND	3.5	ND	1.2 J	ND	0.49 J	ND	1.1 J	15	ND	19	ND	ND	150	ND	ND
213	-95.12	08/01/07	ND	ND	ND	4.4	ND	1.4 J	ND	ND	ND	ND	19	ND	29	ND	ND	210	ND	ND
220	-102.12	08/01/07	ND	ND	ND	9.9	ND	1.5 J	ND	ND	ND	ND	15	ND	44	ND	ND	280	ND	ND
245	-127.12	08/02/07	ND	ND	ND	15	ND	0.91 J	ND	ND	ND	1.6 J	6.1	ND	21	ND	ND	150	ND	ND
263	-145.12	08/02/07	ND	ND	ND	2.0	ND	0.73 J	ND	ND	ND	0.50 J	1.9	0.53 J	10	ND	ND	47	ND	ND
271	-153.12	08/07/07	ND	ND	ND	5.2	ND	1.7 J	ND	0.29 J	ND	1.3 J	8.1	ND	26	ND	0.86 J	170	ND	ND
277	-159.12	08/07/07	ND	ND	ND	3.5	ND	1.1	ND	ND	ND	0.83 J	4.1	0.33 J	18	ND	0.33 J	97	ND	ND
289	-171.12	08/08/07	ND	ND	ND	15	ND	1.3 J	ND	0.22 J	ND	1.9 J	4.1	ND	14	ND	0.51 J	100	ND	ND
300	-182.12	08/08/07	ND	ND	ND	51	ND	2.2 J	ND	0.45 J	ND	0.72 J	12.3	ND	54	ND	1.6 J	360	ND	ND
310	-192.12	08/09/07	ND	ND	ND	45	ND	2.9 J	ND	ND	ND	4.2 J	16.5	ND	73	ND	ND	450 J	ND	ND
319	-201.12	08/09/07	ND	ND	ND	44	ND	2.2 J	ND	0.83 J	ND	1.2 J	22.7	ND	77	ND	3.5 J	510	ND	ND
330	-212.12	08/09/07	ND	ND	ND	86	ND	2.4 J	ND	0.72 J	ND	1.2 J	30.4	ND	80	ND	ND	630	ND	ND
340	-222.12	08/09/07	ND	ND	ND	90 J	ND	ND	ND	ND	ND	7.0 J	65.9	ND	95	ND	ND	1,000	ND	ND
353	-235.12	08/10/07	ND	ND	ND	160	ND	11 J	ND	3.7 J	ND	24 J	473	ND	130	ND	11 J	2,800	ND	ND
363	-245.12	08/11/07	ND	ND	ND	130 J	ND	ND	ND	4.3 J	ND	32 J	475	ND	120	ND	ND	2,600	ND	ND
373	-255.12	08/11/07	ND	ND	ND	150 J	ND	ND	ND	ND	ND	15 J	260	ND	98	ND	ND	2,000	ND	ND
380	-262.12	08/12/07	ND	ND	ND	130 J	ND	ND	ND	2.2 J	ND	ND	263	ND	91	ND	ND	1,700	ND	ND
390	-272.12	08/12/07	ND	ND	ND	110 J	ND	ND	ND	ND	ND	6.5 J	225	ND	70	ND	ND	1,400	ND	ND
398	-280.12	08/12/07	ND	ND	ND	310 J	ND	ND	ND	6.6 J	ND	ND	750	ND	190	ND	ND	4,200	ND	ND
423	-305.12	08/13/07	ND	ND	ND	22 J	ND	ND	ND	1.7 J	ND	5.6 J	97	ND	87	ND	11 J	750	ND	ND
444	-326.12	08/14/07	ND	ND	ND	ND	ND	ND	ND	0.98 J	ND	ND	14	ND	100	ND	3.1 J	290	ND	ND
463	-345.12	08/15/07	ND	ND	ND	ND	ND	ND	ND	6.5 J	ND	11	93	ND	110	ND	18 J	610	1.3 J	ND
478	-360.12	08/16/07	ND	ND	ND	4.2 J	ND	2.0 J	ND	3.2 J	ND	4.5 J	50	ND	130	4.6 J	11	420	0.73 J	ND
493	-375.12	08/21/07	ND	ND	ND	1.0 J	ND	0.53 J	ND	0.43 J	ND	ND	9.5	ND	44	0.60 J	2.6 J	100	ND	ND

a/ All concentrations are in units of micrograms per liter (µg/l); bgs = below ground surface; amsl = above mean sea level.
b/ J = estimated concentration; ND = not detected above reporting limits.
c/ DCB = dichlorobenzene; DCA = dichloroethane; DCE = dichloroethene, MTBE = methyl-tert-butyl-ether; PCE = tetrachloroethene; TCA = trichloroethane; Freon 113 = 1,1,2-Trichloro-1,2,2-trifluoroethane; TCE = trichloroethene.

Table 5b

WP-05 Groundwater Profile - VOC Data Formatted by Sample Depth
Former General Instrument Corporation Site
Hicksville, New York (a)

Depth (feet bgs)	Elevation (feet amsl)	Date Collected	Benzene	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Chloroform	1,2-DCB	1,1-DCA	1,2-DCA	1,1-DCE	Total 1,2-DCE	MTBE	PCE	1,1,1-TCA	Freon 113	TCE	Vinyl Chloride	Total Xylenes
60	60.28	08/24/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.85 J	ND	ND	ND	ND	ND	ND
80	40.28	08/24/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.81 J	ND	ND	ND	ND	ND	ND
100	20.28	08/24/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.97 J	ND	ND	ND	ND	ND	ND
120	0.28	08/24/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.2	ND	ND	ND	ND	ND	ND
136	-15.72	08/24/07	ND	ND	ND	ND	ND	ND	ND	ND	1.5	ND	ND	14	0.33 J	ND	ND	ND	ND	ND
160	-39.72	08/26/07	ND	ND	ND	ND	ND	0.24 J	ND	ND	46	ND	ND	11	0.92 J	ND	ND	7.7	ND	ND
170	-49.72	08/26/07	ND	ND	ND	ND	ND	ND	ND	ND	1.7 M	ND	ND	0.16 J	0.30 J	ND	ND	ND	ND	ND
180	-59.72	08/26/07	ND	ND	ND	ND	ND	ND	ND	ND	52	ND	ND	1.0	0.39 J	ND	ND	ND	ND	ND
190	-69.72	08/26/07	ND	ND	ND	ND	ND	0.23 J	ND	ND	3.7	ND	ND	1.4	0.28 J	ND	ND	ND	ND	ND
200	-79.72	08/26/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.1	0.18 J	ND	ND	ND	ND	ND
223	-102.72	08/27/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12 J	0.14 J	ND	ND	ND	ND	ND
230	-109.72	08/28/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.57 J	ND	ND
241	-120.72	08/28/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.32 J	ND	ND	3.6	ND	ND
263	-142.72	08/29/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.28 J	0.36 J	ND	ND	3.4	ND	ND
270	-149.72	08/29/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.46 J	ND	ND
278	-157.72	08/29/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.35 J	ND	0.79 J	ND	ND	10	ND	ND
300	-179.72	08/30/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.34 J	ND	1.7	ND	ND	19	ND	ND
310	-189.72	09/05/07	ND	ND	ND	ND	ND	0.37 J	ND	ND	ND	0.55 J	0.92 J	ND	1.5	ND	ND	19	ND	ND
334	-213.72	09/06/07	ND	ND	ND	8.6 J	ND	4.6 J	ND	1.8 J	ND	11	28	ND	26	ND	6.3 J	660	ND	ND
350	-229.72	09/07/07	ND	ND	ND	ND	ND	ND	ND	9.1 J	ND	31	400	ND	98	ND	ND	1,400	94	ND
358	-237.72	09/07/07	ND	ND	ND	ND	ND	23	ND	6.6 J	ND	ND	250	ND	87	ND	ND	1,500	40	17 J
369	-248.72	09/07/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	152	ND	48	ND	ND	920	12	ND
383	-262.72	09/08/07	ND	ND	ND	ND	ND	47	ND	12 J	ND	43	405	ND	120	ND	ND	2,100	64	28 J
390	-269.72	09/08/07	ND	ND	ND	ND	ND	26	ND	12 J	ND	35	505	ND	100	20	ND	1,700	130	25 J
400	-279.72	09/08/07	ND	ND	ND	33	ND	ND	ND	6.9 J	ND	37	170	ND	170	25	ND	1,600	14 J	14 J
409	-288.72	09/08/07	ND	ND	ND	12	ND	12	ND	12	ND	ND	270	ND	160	9.3 J	ND	890	60	18 J
434	-313.72	09/09/07	ND	ND	ND	8.0 J	ND	ND	ND	1.6 J	ND	6.1 J	20 M	ND	290	6.3 J	ND	840	ND	ND
458	-337.72	09/10/07	ND	ND	ND	2.9 J	ND	1.5 J	ND	ND	ND	ND	14	ND	240 J	ND	9.4 J	590	ND	ND
470	-349.72	09/11/07	ND	ND	ND	1.7 J	ND	0.61 J	ND	0.29 J	ND	0.39 J	5.4	ND	210	ND	1.6 J	160	ND	ND
480	-359.72	09/11/07	ND	ND	ND	1.8 J	ND	ND	ND	ND	ND	ND	2.4	ND	160	ND	ND	98	ND	ND
490	-369.72	09/12/07	ND	ND	ND	0.55 J	ND	ND	ND	ND	ND	ND	0.45 J	ND	12	ND	0.38 J	19 J	ND	ND

a/ All concentrations are in units of micrograms per liter (µg/l); bgs = below ground surface; amsl = above mean sea level.
b/ J = estimated concentration; M = manual integration; ND = not detected above reporting limits.
c/ DCB = dichlorobenzene; DCA = dichloroethane; DCE = dichloroethene, MTBE = methyl-tert-butyl-ether; PCE = tetrachloroethene; TCA = trichloroethane; Freon 113 = 1,1,2-Trichloro-1,2,2-trifluoroethane; TCE = trichloroethene.

Table 6b

WP-06 Groundwater Profile - VOC Data Formatted by Sample Depth
Former General Instrument Corporation Site
Hicksville, New York (a)

Depth (feet bgs)	Elevation (feet amsl)	Date Collected	Benzene	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Chloroform	1,2-DCB	1,1-DCA	1,2-DCA	1,1-DCE	Total 1,2-DCE	MTBE	PCE	1,1,1-TCA	Freon 113	TCE	Vinyl Chloride	Total Xylenes
40	59.82	09/19/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
60	39.82	09/19/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
80	19.82	09/19/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
100	-0.18	09/19/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
120	-20.18	09/19/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
140	-40.18	09/20/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
150	-50.18	09/20/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
160	-60.18	09/20/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
171	-71.18	09/20/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
181	-81.18	09/21/07	ND	ND	0.52 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
190	-90.18	09/21/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
200	-100.18	09/21/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.45 J	ND	ND	ND	ND	ND
210	-110.18	09/21/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.42 J	ND	15	ND	ND	0.72 J	ND	ND
222	-122.18	09/21/07	ND	ND	0.54 J	ND	ND	ND	ND	ND	ND	ND	2.0	ND	38	ND	ND	2.3	ND	ND
230	-130.18	09/21/07	ND	ND	18 J	ND	ND	ND	ND	ND	ND	ND	120	ND	2,400	ND	ND	140	ND	ND
242	-142.18	09/22/07	ND	ND	24 J	ND	ND	ND	ND	ND	ND	ND	119	ND	2,300	ND	ND	130	ND	ND
251	-151.18	09/22/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	17	ND	530	ND	ND	26	ND	ND
260	-160.18	09/22/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	41	ND	930	ND	ND	52	ND	ND
270	-170.18	09/22/07	ND	ND	ND	0.53 J	ND	ND	ND	ND	ND	ND	14	ND	130	ND	ND	8.7	ND	ND
280	-180.18	09/23/07	ND	ND	ND	0.74 J	ND	0.25 J	ND	ND	ND	ND	ND	ND	2.3	ND	ND	1.3	ND	ND
290	-190.18	09/23/07	ND	ND	ND	5.2	ND	0.29 J	ND	ND	ND	1.0	0.42 J	ND	17 J	ND	ND	60	ND	ND
300	-200.18	09/23/07	ND	ND	ND	14	ND	0.42 J	ND	ND	ND	1.4	0.28 J	ND	26 J	ND	ND	32	ND	ND
313	-213.18	09/24/07	ND	ND	ND	230	ND	2.3 J	ND	ND	ND	10	24	ND	100	ND	ND	480	ND	ND
321	-221.18	09/24/07	ND	ND	ND	180	ND	ND	ND	ND	ND	17 J	288	ND	120	9.5 J	7.5 J	2,000	ND	ND
330	-230.18	09/24/07	ND	ND	ND	390	ND	4.2 J	ND	ND	ND	19 J	57	ND	110	ND	ND	1,700	ND	ND
341	-241.18	09/24/07	ND	ND	ND	320	ND	2.0 J	ND	ND	ND	7.8 J	16	ND	73	ND	ND	690	ND	ND
350	-250.18	09/24/07	ND	ND	ND	88	ND	0.91 J	ND	ND	ND	6.4	2.2	ND	20	ND	ND	110	ND	ND
387	-287.18	09/25/07	ND	ND	ND	110	ND	ND	ND	ND	ND	22 J	40	ND	780	ND	11 J	2,400	ND	ND
393	-293.18	09/26/07	ND	ND	ND	110	ND	4.1 J	ND	ND	ND	18 J	8.1 J	ND	810	ND	ND	1,000	ND	ND
452	-352.18	09/27/07	ND	ND	ND	0.43 J	ND	ND	ND	ND	ND	ND	ND	ND	3.2	ND	ND	3.3	ND	ND
473	-373.18	10/02/07	ND	ND	ND	ND	ND	0.20 J	ND	0.22 J	ND	0.55 J	1.5	ND	59	ND	0.56 J	39	ND	ND

a/ All concentrations are in units of micrograms per liter (µg/l); bgs = below ground surface; amsl = above mean sea level.
b/ J = estimated concentration; ND = not detected above reporting limits.
c/ DCB = dichlorobenzene; DCA = dichloroethane; DCE = dichloroethene, MTBE = methyl-tert-butyl-ether; PCE = tetrachloroethene; TCA = trichloroethane; Freon 113 = 1,1,2-Trichloro-1,2,2-trifluoroethane; TCE = trichloroethene.

Table 7b

WP-07 Groundwater Profile - VOC Data Formatted by Sample Depth
Former General Instrument Corporation Site
Hicksville, New York (a)

Depth (feet bgs)	Elevation (feet amsl)	Date Collected	Benzene	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Chloroform	1,2-DCB	1,1-DCA	1,2-DCA	1,1-DCE	Total 1,2-DCE	MTBE	PCE	1,1,1-TCA	Freon 113	TCE	Vinyl Chloride	Total Xylenes
63	61.49	02/28/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.76 J	ND	72	ND	ND	ND	ND	ND
70	54.49	02/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	59	ND	ND	2.0	ND	ND
80	44.49	02/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	31,000	ND	ND	730	ND	ND
92	32.49	02/29/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	300	ND	ND	3.6 J	ND	ND
100	24.49	03/01/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.23 J	9.1	ND	ND	0.24 J	ND	ND
109	15.49	03/01/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.3	ND	ND	0.30 J	ND	ND
128	-3.51	03/02/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.78 J	ND	ND	15	ND	ND
140	-15.51	03/02/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.26 J	ND	ND	0.25 J	ND	ND
173	-48.51	03/03/08	ND	ND	ND	0.42 J	ND	0.40 J	ND	ND	ND	ND	1.3	ND	2.9	ND	ND	16	ND	ND
180	-55.51	03/03/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.59 J	ND	ND	0.34 J	ND	ND
187	-62.51	03/03/08	ND	ND	ND	ND	ND	0.36 J	ND	ND	ND	ND	0.46 J	ND	0.87 J	ND	ND	1.6	ND	ND
198	-73.51	03/04/08	ND	ND	ND	0.33 J	ND	7.3	ND	2.0	ND	1.8	9.2	ND	8.2	ND	ND	26	ND	ND
208	-83.51	03/04/08	ND	ND	ND	0.35 J	ND	4.2	ND	1.3	ND	6.3	4.8	1.2	12	8.0	0.48 J	21	ND	ND
224	-99.51	03/05/08	ND	ND	ND	ND	ND	6.8	ND	2.2	ND	2.2	8.1	0.13 J	9.9	ND	ND	29	ND	ND
238	-113.51	03/06/08	ND	ND	ND	1.6	ND	30	ND	3.0	ND	4.4	16.3	ND	13	ND	ND	73	ND	ND
250	-125.51	03/06/08	ND	ND	ND	0.77 J	ND	52	ND	2.3	ND	1.8	6.2	0.12 J	9.3	ND	ND	26	ND	ND
260	-135.51	03/11/08	ND	ND	ND	9.3 J	ND	580	ND	ND	ND	ND	ND	ND	41	ND	ND	200	ND	ND
272	-147.51	03/11/08	ND	ND	ND	9.4 J	ND	540 J	ND	ND	ND	ND	ND	ND	38	ND	ND	190	ND	ND
284	-159.51	03/12/08	ND	ND	ND	18	ND	280	ND	ND	ND	4.6 J	8.7 J	ND	55	ND	ND	360	ND	ND
290	-165.51	03/12/08	ND	ND	ND	160	ND	49	ND	ND	ND	44	12 J	ND	130	ND	9.1 J	1,300	ND	ND
301	-176.51	03/12/08	ND	ND	ND	160	ND	46	ND	ND	ND	40	13 J	ND	120	ND	ND	1,400	ND	ND
313	-188.51	03/13/08	ND	ND	ND	61	ND	490	ND	ND	ND	27	17 J	ND	260	ND	5.4 J	1,200	ND	ND
320	-195.51	03/13/08	ND	ND	ND	13	ND	620	ND	1.2 J	ND	14	6.4 J	ND	120	ND	ND	500	ND	ND
329	-204.51	03/14/08	ND	ND	ND	ND	ND	80	ND	ND	ND	130	ND	ND	610	82	ND	1,800	ND	ND
353	-228.51	03/15/08	ND	ND	ND	ND	ND	170	ND	ND	ND	240	ND	ND	120	140	ND	360	ND	ND
360	-235.51	03/15/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	160	ND	ND	190	110	ND	520	ND	ND
373	-248.51	03/16/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	140	ND	ND	83	170	ND	150	ND	ND
380	-255.51	03/16/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	290	ND	ND	62	320	ND	54	ND	ND
393	-268.51	03/16/08	ND	ND	ND	ND	ND	ND	ND	1.3	ND	4.5	ND	ND	19	6.1	12	3.9	ND	ND
402	-277.51	03/17/08	ND	ND	ND	0.24 J	ND	0.28 J	ND	4.7	ND	27	ND	ND	68	26	59	11	ND	ND
410	-285.51	03/17/08	ND	ND	ND	0.48 J	ND	ND	ND	3.9	ND	8.2	2.2	ND	20	8.0	24	48	ND	ND
418	-293.51	03/18/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	17	ND	ND	ND	ND	180	ND	ND
427	-302.51	03/18/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	12	ND	ND	ND	ND	78	ND	ND

a/ All concentrations are in units of micrograms per liter (µg/l); bgs = below ground surface; amsl = above mean sea level.
b/ J = estimated concentration; ND = not detected above reporting limits.
c/ DCB = dichlorobenzene; DCA = dichloroethane; DCE = dichloroethene, MTBE = methyl-tert-butyl-ether; PCE = tetrachloroethene; TCA = trichloroethane; Freon 113 = 1,1,2-Trichloro-1,2,2-trifluoroethane; TCE = trichloroethene.

Table 8b

LP-01 Groundwater Profile - VOC Data Formatted by Sample Depth
Former General Instrument Corporation Site
Hicksville, New York (a)

Depth (feet bgs)	Elevation (feet amsl)	Date Collected	Benzene	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Chloroform	1,2-DCB	1,1-DCA	1,2-DCA	1,1-DCE	Total 1,2-DCE	MTBE	PCE	1,1,1-TCA	Freon 113	TCE	Vinyl Chloride	Total Xylenes
70	65.80	10/09/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.66 J	ND	ND	0.80 J	ND	ND
80	55.80	10/09/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.51 J	ND	ND	0.31 J	ND	ND
88	47.80	10/10/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.3	ND	ND	0.47 J	ND	ND
100	35.80	10/10/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.63 J	ND	ND	0.23 J	ND	ND
109	26.80	10/10/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.46 J	0.29 J	4.0	ND	ND	ND	3.9	ND
121	14.80	10/10/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.86 J	0.83 J	0.38 J	5.3	1.5	ND	4.7	ND	ND
130	5.80	10/10/07	ND	ND	ND	ND	ND	0.29 J	ND	0.93 J	ND	4.0	2.9	0.39 J	28	4.4	0.80 J	43	ND	ND
152	-16.20	10/16/07	ND	ND	ND	ND	ND	ND	ND	0.77 J	ND	1.7 J	0.63 J	ND	140	ND	7.5 J	34	ND	ND
161	-25.20	10/16/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.2	ND	1.3	11	3.0	4.4 J	0.89 J	ND	ND
170	-34.20	10/16/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.85 J	ND	ND	42	ND	17 J	0.68 J	ND	ND
182	-46.20	10/16/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.42 J	ND	ND	ND	ND	ND
192	-56.20	10/16/07	ND	ND	ND	ND	ND	0.45 J	ND	0.23 J	ND	3.7	ND	ND	160	2.1	55 J	9.7	ND	ND
200	-64.20	10/16/07	ND	ND	ND	ND	ND	1.2 J	ND	ND	ND	2.8 J	ND	ND	300	5.7	140 J	20	ND	ND
211	-75.20	10/17/07	ND	ND	ND	ND	ND	0.37 J	ND	ND	ND	1.7	ND	ND	29	1.3	26 J	12	ND	ND
219	-83.20	10/17/07	ND	ND	ND	ND	ND	2.4	ND	2.8	ND	9.8	0.52 J	ND	97	6.8	190 J	46	ND	ND
229	-93.20	10/17/07	ND	ND	ND	ND	ND	2.5 J	ND	ND	ND	19	ND	ND	200	11	270 J	80	ND	ND
255	-119.20	10/18/07	ND	ND	ND	ND	ND	0.30 J	ND	ND	ND	2.7	ND	ND	3.7	3.6	13 J	0.34 J	ND	ND
262	-126.20	10/18/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.78 J	ND	2.6	ND	ND	ND
270	-134.20	10/18/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.51 J	ND	0.82 J	0.55 J	ND	ND
280	-144.20	10/19/07	ND	ND	ND	ND	ND	0.29 J	ND	ND	ND	0.96 J	ND	ND	5.0	2.1	17 J	0.74 J	ND	ND
290	-154.20	10/19/07	ND	ND	ND	ND	ND	0.59 J	ND	4.4	ND	1.6	ND	ND	6.5	4.0	26 J	0.84 J	ND	ND
303	-167.20	10/19/07	ND	ND	ND	ND	ND	0.50 J	ND	12	ND	7.1	ND	ND	15	10 J	91	3.3	ND	ND
310	-174.20	10/19/07	ND	ND	ND	0.70 J	ND	0.57 J	ND	7.6	ND	3.0	1.4	ND	8.7	4.4	15 J	30	ND	ND
329	-193.20	10/20/07	ND	ND	ND	ND	ND	ND	ND	2.9 J	ND	18	4.2 J	ND	1.6 J	36 J	ND	350	ND	ND
338	-202.20	10/20/07	ND	ND	ND	ND	ND	ND	ND	3.0 J	ND	26	5.2 J	ND	ND	44 J	ND	450	ND	ND
353	-217.20	10/21/07	ND	ND	ND	ND	ND	ND	ND	3.2 J	ND	15	2.9 J	ND	ND	20 J	ND	280	ND	ND
360	-224.20	10/21/07	ND	ND	ND	ND	ND	ND	ND	2.5	ND	6.9	1.9 J	ND	0.78 J	14 J	ND	120	ND	ND
372	-236.20	10/21/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.2	1.4 J	ND	0.77 J	7.9 J	ND	88	ND	ND
380	-244.20	10/22/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.46 J	0.40 J	ND	0.92 J	1.6 J	ND	7.6	ND	ND

a/ All concentrations are in units of micrograms per liter (µg/l); bgs = below ground surface; amsl = above mean sea level.
b/ J = estimated concentration; M = manual integration; ND = not detected above reporting limits.
c/ DCB = dichlorobenzene; DCA = dichloroethane; DCE = dichloroethene, MTBE = methyl-tert-butyl-ether; PCE = tetrachloroethene; TCA = trichloroethane; Freon 113 = 1,1,2-Trichloro-1,2,2-trifluoroethane; TCE = trichloroethene.

Table 9b

LP-02 Groundwater Profile - VOC Data Formatted by Sample Depth
Former General Instrument Corporation Site
Hicksville, New York (a)

Depth (feet bgs)	Elevation (feet amsl)	Date Collected	Benzene	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Chloroform	1,2-DCB	1,1-DCA	1,2-DCA	1,1-DCE	Total 1,2-DCE	MTBE	PCE	1,1,1-TCA	Freon 113	TCE	Vinyl Chloride	Total Xylenes
67	69.61	02/04/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
76	60.61	02/04/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.2 J	ND	ND	ND	ND	ND
91	45.61	02/04/08	ND	ND	ND	ND	ND	0.4 J	ND	4.2	ND	ND	0.2 J	ND	3.4	ND	ND	0.37 J	ND	ND
100	36.61	02/05/08	ND	ND	ND	ND	ND	1.0	ND	ND	ND	ND	ND	ND	2.6	ND	ND	0.28 J	ND	ND
109	27.61	02/05/08	ND	ND	ND	0.22 J	ND	8.0	ND	ND	ND	1.4	ND	ND	4.3 J	ND	ND	0.21 J	ND	ND
120	16.61	02/05/08	ND	ND	ND	0.57 J	ND	11.0	ND	0.68 J	ND	4.0	0.94 J	ND	9.6	ND	2.0 J	0.41 J	ND	ND
130	6.61	02/06/08	ND	ND	ND	ND	ND	5.8	ND	ND	ND	ND	ND	ND	1.9	ND	ND	ND	ND	ND
140	-3.39	02/06/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.22 J	ND	ND	ND	ND	ND
150	-13.39	02/06/08	ND	ND	ND	ND	ND	0.4 J	ND	ND	ND	ND	ND	ND	0.37 J	ND	ND	ND	ND	ND
160	-23.39	02/06/08	ND	ND	ND	ND	ND	1.3	ND	ND	ND	1.2	ND	ND	1.0 J	ND	ND	0.24 J	ND	ND
170	-33.39	02/06/08	ND	ND	ND	ND	ND	0.77 J	ND	ND	ND	0.86 J	ND	ND	1.1	ND	ND	ND	ND	ND
180	-43.39	02/07/08	ND	ND	ND	ND	ND	0.82 J	ND	1.5	ND	1.2	ND	ND	2.5	ND	ND	ND	ND	ND
191	-54.39	02/07/08	ND	ND	ND	ND	ND	0.73 J	ND	ND	ND	ND	ND	ND	2.2 J	ND	ND	ND	ND	ND
200	-63.39	02/12/08	ND	ND	ND	ND	ND	0.73 J	ND	1.7	ND	1.1	ND	0.39 J	2.5	ND	ND	ND	ND	ND
216	-79.39	02/13/08	ND	ND	ND	ND	ND	0.72 J	ND	3.9	ND	1.7	ND	0.10 J	3.3	ND	ND	ND	ND	ND
225	-88.39	02/13/08	ND	ND	ND	ND	ND	0.32 J	ND	0.56 J	ND	0.37 J	ND	0.087 J	1.1	ND	ND	ND	ND	ND
235	-98.39	02/14/08	ND	ND	ND	ND	ND	0.52 J	ND	1.6	ND	0.66 J	ND	ND	2.0	ND	ND	ND	ND	ND
245	-108.39	02/14/08	ND	ND	ND	ND	ND	0.65 J	ND	4.4	ND	1.0	ND	ND	1.3	ND	ND	0.14 J	ND	ND
255	-118.39	02/14/08	ND	ND	ND	ND	ND	0.43 J	ND	5.3	ND	1.4	ND	ND	1.1	ND	ND	0.18 J	ND	ND
265	-128.39	02/14/08	ND	ND	ND	ND	ND	0.58 J	ND	6.2	ND	1.8	ND	ND	1.3	ND	ND	0.24 J	ND	ND
275	-138.39	02/14/08	ND	ND	ND	ND	ND	0.58 J	ND	5.0	ND	1.2	ND	ND	1.2	ND	0.48 J	0.16 J	ND	ND
285	-148.39	02/14/08	ND	ND	ND	ND	ND	0.43 J	ND	4.4	ND	1.3	ND	ND	1.1	ND	0.89 J	0.25 J	ND	ND
292	-155.39	02/15/08	ND	ND	ND	ND	ND	0.57 J	ND	1.6	ND	2.5	ND	ND	0.87 J	ND	3.5	0.67 J	ND	ND
303	-166.39	02/15/08	ND	ND	ND	ND	ND	0.18 J	ND	ND	ND	ND	ND	ND	0.35 J	ND	4.4	0.13 J	ND	ND
310	-173.39	02/16/08	ND	ND	ND	ND	ND	0.13 J	ND	2.9	ND	0.42 J	ND	ND	0.40 J	ND	5.0	0.39 J	ND	ND
320	-183.39	02/16/08	ND	ND	ND	ND	ND	0.25 J	ND	11.0	ND	0.95 J	ND	ND	0.87 J	ND	5.3	1.3	ND	ND
330	-193.39	02/16/08	ND	ND	ND	ND	ND	ND	ND	1.1	ND	ND	ND	ND	0.22 J	ND	0.24 J	0.88 J	ND	ND
339	-202.39	02/17/08	ND	ND	ND	ND	ND	ND	ND	1.2	ND	ND	ND	ND	0.21 J	ND	0.22 J	0.52 J	ND	ND
353	-216.39	02/18/08	ND	ND	ND	ND	ND	ND	ND	8.6	ND	1.4	ND	ND	ND	4.1	3.9	2.4	ND	ND
360	-223.39	02/18/08	ND	ND	ND	ND	ND	ND	ND	5.3	ND	ND	ND	ND	ND	2.7	3.7	4.5	ND	ND
372	-235.39	02/19/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	640	ND	ND
380	-243.39	02/19/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	730	ND	ND
392	-255.39	02/20/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	35	ND	ND
402	-265.39	02/26/08	ND	ND	ND	ND	ND	0.40 J	ND	1.1	ND	ND	0.62 J	ND	ND	ND	ND	7.7	ND	ND

a/ All concentrations are in units of micrograms per liter (µg/l); bgs = below ground surface; amsl = above mean sea level.
b/ J = estimated concentration; ND = not detected above reporting limits.
c/ DCB = dichlorobenzene; DCA = dichloroethane; DCE = dichloroethene, MTBE = methyl-tert-butyl-ether; PCE = tetrachloroethene; TCA = trichloroethane; Freon 113 = 1,1,2-Trichloro-1,2,2-trifluoroethane; TCE = trichloroethene.

Table 10b

LP-03 Groundwater Profile - VOC Data Formatted by Sample Depth
Former General Instrument Corporation Site
Hicksville, New York (a)

Depth (feet bgs)	Elevation (feet amsl)	Date Collected	Benzene	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Chloroform	1,2-DCB	1,1-DCA	1,2-DCA	1,1-DCE	Total 1,2-DCE	MTBE	PCE	1,1,1-TCA	Freon 113	TCE	Vinyl Chloride	Total Xylenes
64	65.10	01/16/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.39 J	ND	ND	ND	ND	ND	ND
70	59.10	01/16/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
83	46.10	01/16/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.91 J	ND	ND	ND	ND	ND	ND
90	39.10	01/16/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.72 J	ND	ND	ND	ND	ND	ND
100	29.10	01/17/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.69 J	ND	ND	ND	ND	ND
110	19.10	01/17/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
136	-6.90	01/18/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.58 J	ND	ND	ND	ND	ND	ND
145	-15.90	01/18/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
157	-27.90	01/18/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
165	-35.90	01/19/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
175	-45.90	01/19/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
212	-82.90	01/20/08	ND	ND	ND	2.0	ND	ND	ND	ND	ND	ND	48.1	ND	30	ND	ND	160	ND	ND
220	-90.90	01/20/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.25 J	ND	ND	ND	ND	ND
230	-100.90	01/21/08	ND	ND	ND	ND	ND	ND	2.1 J	ND	ND	ND	191	ND	89	ND	ND	370	ND	ND
240	-110.90	01/21/08	ND	ND	ND	ND	ND	ND	1.4 J	ND	ND	ND	75.5	ND	39	ND	ND	160	ND	ND
250	-120.90	01/21/08	ND	ND	ND	ND	ND	ND	3.4 J	ND	9.1 J	434	ND	53	ND	ND	590	ND	ND	
262	-132.90	01/22/08	ND	ND	ND	ND	ND	31	ND	19 J	ND	150	1,000	ND	230	ND	ND	1,100	ND	8.3 J
293	-163.90	01/23/08	ND	ND	ND	ND	ND	ND	47	32 J	ND	82	190	ND	420	ND	ND	830	ND	4.1 J
302	-172.90	01/23/08	ND	ND	ND	ND	21	ND	73 J	11 J	ND	110	420	ND	330	ND	ND	990	ND	24 J
310	-180.90	01/23/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	73	190	ND	300	ND	ND	1,500	ND	9.0 J
348	-218.90	01/29/08	ND	ND	ND	ND	ND	ND	55	7.2 J	ND	110	62	ND	1,100	ND	ND	950	ND	3.1 J
356	-226.90	01/30/08	ND	ND	ND	ND	ND	ND	ND	ND	ND	16 J	26	ND	720	ND	11 J	1,200	ND	ND
377	-247.90	01/31/08	ND	ND	ND	ND	ND	0.18 J	ND	4.5 J	ND	5.2	0.66 J	ND	81	5.3	13	53	ND	ND
399	-269.90	02/01/08	ND	ND	ND	ND	ND	ND	ND	4.2 J	ND	8.6	3.7	ND	47	7.1	19	38	ND	ND

a/ All concentrations are in units of micrograms per liter (µg/l); bgs = below ground surface; amsl = above mean sea level.
b/ J = estimated concentration; ND = not detected above reporting limits.
c/ DCB = dichlorobenzene; DCA = dichloroethane; DCE = dichloroethene, MTBE = methyl-tert-butyl-ether; PCE = tetrachloroethene; TCA = trichloroethane; Freon 113 = 1,1,2-Trichloro-1,2,2-trifluoroethane; TCE = trichloroethene.

Table 11b

LP-04 Groundwater Profile - VOC Data Formatted by Sample Depth
Former General Instrument Corporation Site
Hicksville, New York (a)

Depth (feet bgs)	Elevation (feet amsl)	Date Collected	Benzene	Bromoform	Bromomethane	Carbon Tetrachloride	Chlorobenzene	Chloroform	1,2-DCB	1,1-DCA	1,2-DCA	1,1-DCE	Total 1,2-DCE	MTBE	PCE	1,1,1-TCA	Freon 113	TCE	Vinyl Chloride	Total Xylenes
59	73.42	10/24/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
70	62.42	10/24/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
80	52.42	10/24/07	ND	ND	ND	0.48 J	ND	ND	ND	ND	ND	ND	0.68 J	ND	2.1	ND	ND	8.3	ND	ND
89	43.42	10/24/07	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.3	ND	ND	1.1	ND	ND
99	33.42	10/24/07	ND	ND	ND	ND	ND	ND	160	ND	ND	ND	2.5	ND	110	ND	ND	42	ND	ND
110	22.42	10/25/07	ND	ND	ND	ND	ND	ND	1.7 J	ND	ND	3.4	16	ND	110	ND	ND	140	5.4	ND
120	12.42	10/25/07	ND	ND	ND	1.0 J	9.9	ND	11	ND	ND	5.0	42	ND	48	5.3	ND	220	27	ND
169	-36.58	10/31/07	ND	ND	ND	ND	ND	ND	230	4.4 J	ND	24	764	ND	140	36	ND	950	2.0 J	ND
180	-47.58	11/01/07	ND	ND	ND	ND	ND	ND	230	2.2 J	ND	39	805	ND	100	52	ND	640	ND	ND
190	-57.58	11/01/07	ND	ND	ND	ND	ND	ND	6.7	6.7	ND	1.5	26	0.90 J	99	1.8	ND	61	0.17 J	ND
200	-67.58	11/01/07	ND	ND	ND	ND	ND	ND	5.4	2.6	ND	0.52 J	0.83 J	1.7	14 J	ND	ND	5.1	ND	ND
208	-75.58	11/01/07	ND	ND	ND	ND	ND	0.21 J	13	1.0	ND	0.50 J	29	1.1	32	ND	ND	67	ND	0.11 J
232	-99.58	11/02/07	ND	ND	ND	0.44 J	ND	ND	16	ND	ND	1.1 J	101	ND	88	ND	0.67 J	170	ND	0.71 J
240	-107.58	11/02/07	ND	ND	ND	2.4 J	ND	2.9 J	90	3.5 J	ND	4.8 J	150	ND	54	1.5 J	8.9 J	520	3.8 J	27
250	-117.58	11/02/07	ND	ND	ND	0.44 J	ND	0.51 J	35	1.5 J	ND	5.3	171	ND	140	4.3	0.79 J	160	1.4 J	2.0 J
259	-126.58	11/03/07	ND	ND	ND	ND	ND	ND	16	1.8 J	ND	3.2 J	121	ND	620	ND	ND	270	6.4 J	ND
270	-137.58	11/03/07	ND	ND	ND	ND	ND	ND	3.6 J	2.3 J	ND	ND	192	ND	910	ND	ND	380	12 J	ND
279	-146.58	11/03/07	ND	ND	ND	ND	ND	ND	3.3 J	ND	ND	1.2 J	182	ND	300	ND	ND	220	2.0 J	ND
288	-155.58	11/03/07	ND	ND	ND	ND	ND	ND	2.3 J	1.6 J	ND	3.5 J	81	ND	670	ND	ND	230	2.3 J	ND
298	-165.58	11/03/07	ND	ND	ND	ND	ND	ND	7.1 J	1.9 J	ND	1.7 J	52	ND	430	ND	ND	200	2.1 J	ND
313	-180.58	11/04/07	ND	ND	ND	ND	ND	ND	29	1.4 J	ND	1.3 J	5.1	ND	100	ND	0.62 J	190	ND	ND
329	-196.58	11/04/07	ND	ND	ND	ND	ND	ND	16	ND	ND	1.2 J	4.2	ND	110	ND	0.77 J	180	ND	ND
338	-205.58	11/05/07	ND	ND	ND	ND	ND	ND	21	1.7 J	ND	1.7 J	8.7	ND	130	ND	1.6 J	220	ND	ND
350	-217.58	11/05/07	ND	ND	ND	ND	ND	ND	6.1	ND	ND	ND	0.43 J	ND	32	ND	0.23 J	19	ND	ND
367	-234.58	11/06/07	ND	ND	ND	0.49 J	ND	ND	ND	ND	ND	ND	3.8 J	ND	200	ND	2.0 J	300	ND	ND
373	-240.58	11/06/07	ND	ND	ND	0.53 J	ND	ND	ND	ND	ND	ND	3.2 J	ND	220	ND	2.8 J	270	ND	ND
379	-246.58	11/06/07	ND	ND	ND	0.28 J	ND	0.15 J	0.10 J	0.47 J	ND	ND	1.5	ND	96	0.24 J	1.2 J	81	ND	ND

a/ All concentrations are in units of micrograms per liter (µg/l); bgs = below ground surface; amsl = above mean sea level.
b/ J = estimated concentration; ND = not detected above reporting limits.
c/ DCB = dichlorobenzene; DCA = dichloroethane; DCE = dichloroethene, MTBE = methyl-tert-butyl-ether; PCE = tetrachloroethene; TCA = trichloroethane; Freon 113 = 1,1,2-Trichloro-1,2,2-trifluoroethane; TCE = trichloroethene.

LITHOLOGICAL EVALUATION REPORT

FORMER SYLVANIA ELECTRIC PRODUCTS INCORPORATED FACILITY

HICKSVILLE, NEW YORK

SITE NUMBER V 00089-1

Prepared by
URS Corporation
and
Envirocon, Inc.

For:

GTE Operations Support Incorporated
One Verizon Way
Basking Ridge, New Jersey 07920

August 2007

New York State Department of Environmental Conservation
Division of Environmental Remediation, Region One
Stony Brook University
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Alexander B. Grannis
Commissioner

September 30, 2008

Ms. Jean Agostinelli
Vice President - Controller
GTE Operations Support Inc.
One Verizon Way (VC34W453)
Basking Ridge, NJ 07920

Re: Approval of the following reports:
1. Lithological Evaluation Report, August 30, 2007
2. Archived Sample Disposal Report, August 2007
3. Radiological Status Survey Results, December 2007
Former Sylvania Electric Products Facility, Site # V00089

Dear Ms. Agostinelli:

The Department has reviewed the three subject reports. I find them all to be acceptable as written. These reports are hereby approved.

Due to the lack of space at the document repository at the Hicksville Public Library and the relative importance of these reports compared to other reports currently located at the library, please do not place these documents at the library repository. Of course, my copies will be added to the Region 1 document repository.

Sincerely,

Robert R. Stewart
Environmental Engineer I

cc: W. Parish
J. Riggi

GTE Operations Support Incorporated
One Verizon Way (VC34W453)
Basking Ridge, New Jersey 07920
(908) 559-3687

August 30, 2007

Mr. Robert Stewart
Division of Environmental Remediation
New York State Department of Environmental Conservation
Region One Headquarters
SUNY @ Stony Brook
50 Circle Road
Stony Brook, New York 11790-3409

Re: **Voluntary Cleanup Agreement**
For: Former Sylvania Electric Products Incorporated Facility
By: GTE Operations Support Incorporated
Site #: V-00089-1 Index #: W1-0903-01-12

Lithological Evaluation Report

Dear Mr. Stewart:

Enclosed are 3 copies of the *Lithological Evaluation Report.*

If you have any questions or require additional information, please do not hesitate to contact me. I can be reached at (908) 5559-3687.

Sincerely,

Jean M. Agostinelli
Vice President and Controller

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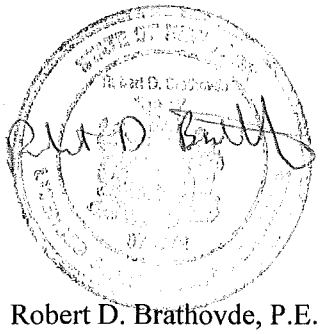
This Lithological Evaluation Report has been reviewed by URS Corporation – New York, and I am in agreement with the conclusions.

URS Corporation – New York



Robert D. Brathovde, P.E.
Engineer of Record

This Lithological Evaluation Report has been reviewed by Professional Radiation Consulting, Inc. (PRCI), and I am in agreement with the conclusions.

Shane Brightwell, CHP
President, PRCI

This Lithological Evaluation Report has been reviewed by Envirocon, Inc., and I am in agreement with the conclusions.

Richard Hafner
Radiation Safety Officer

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Figure 1: 2003 Site Layout with Historic and Cross-Section Overlays

Figure 2: Lithological Drilling Locations

Figure 3: Grain Size Distribution Sample Locations

Appendices

Appendix A: Boring Logs

Appendix B: Geotechnical Testing Results

Appendix C: Generalized Subsurface Cross Sections

The Boring Logs, Appendix A, are presented on the enclosed CD which also includes a complete electronic copy of the remainder of this report.

1. TASK OBJECTIVE

In January 2003, GTE Operations Support Incorporated (GTEOSI) entered into a Voluntary Agreement (Index # W1-0903-01-12) with the New York State Department of Environmental Conservation (NYSDEC) for soil remediation at the Former Sylvania Electric Products Incorporated (Sylvania) Facility in Hicksville, New York (the "Site"). The objective of this lithological evaluation drilling and sampling program was to characterize the subsurface conditions and soil strata underlying the Site, collect distribution coefficient data, and improve the understanding of transport through the unsaturated soils. During the on-Site investigations, a silt zone was encountered in a number of borings. The presence of this lower permeability zone in some, but not all borings, prompted the lithological drilling program. The Site lithological evaluation provides a generalized description of soil units across the Site to a maximum depth of 119 feet (ft) below ground surface (bgs). The report is not intended to define the Site lithology from a geologic/depositional history perspective, but to better understand the influence of infiltrating precipitation on the potential mobilization of residual contaminants within the identified lithologic units.

2. SITE USE

From 1952 through 1967 Sylvania conducted operations at the Site, primarily involving the manufacture of nuclear fuel rods under contract with the Atomic Energy Commission. After operations at the Site ceased, the historic buildings, shown on Figure 1 with a stipple overlay, were subsequently demolished except for Former Building #4 which remains to date. Historically, there were 14 leach pools and four recharge basins that received surface water run off and industrial discharges. In the late 1960's, the Site was subdivided into three new parcels and they were assigned separate lot numbers. Today the Site is comprised of three separate lots: the 140 Property, 100 Property, and 70 Property. Prior to beginning the soil remediation, more than 95 percent of the 10.5-acre fenced Site was either paved or occupied by buildings.

3. FIELD INVESTIGATION

The development of an accurate Site lithology is important to the understanding of transport via infiltration through unsaturated soils. To investigate the Site lithology, a soil boring program was designed and implemented. Additionally, geotechnical testing results on soil samples collected from excavation surfaces were used to supplement the samples from borings.

3.1. Boring Program

Data and samples from a total of 39 soil borings were used for the lithological evaluation of the Site. In addition to the 28 lithologic borings, 11 deep borings advanced during the on-Site investigation, were incorporated into the lithological evaluation.

Cross-Section Locations

Figure 1 illustrates the location of the generalized subsurface cross sections with respect to historic Site buildings and structures. The boring locations are shown on Figure 2, Lithological Drilling Locations. The borings were placed to provide cross-section transects (A-A' through L-L') and are superimposed on the 2003 Site Layout. Using information contained in boring logs from previous investigations, Site history, and the current Site conditions found during the Site remediation

program, locations for 12 transects were selected. These locations were selected taking into account existing obstructions and access limitations to better understand subsurface conditions under former and existing Site structures. Seven parallel east-west sections were defined and labeled A-A' through G-G' (Appendix C). The cross sections F-F' and G-G' were not completed as access to this portion of the Site was limited during the Phase I investigation due to an existing manufacturing operation. Five north-south trending cross sections were defined and labeled H-H' through L-L'. The L-L' cross section was located completely within the Nassau County Golf Course Driving Range (GCDR) property and describes the general subsurface lithology immediately east of the Site.

As an example of the cross-section siting choice and boring locations, cross section A-A' was established to transect the center of the 140 Building, the northern portion of the historic former Building #2, and the location of the former recharge basin located in the northeastern corner of the 140 Property. Cross section D-D' provides information of the subsurface lithology for the center of the 100 Building, and together with cross sections J-J' and K-K', provides additional detail beneath areas previously excavated in Cell 3, Cell 4, and Cell 12. Cross sections J-J' and K-K' were positioned to provide greater lithologic characterization detail of the subsurface in areas that may need further remediation consideration.

3.2. Boring Depths

The lithologic borings (Figure 2) were advanced to approximately 66 ft bgs, and approximately 8 ft above the presumed ground water table of 74 ft bgs. The exceptions were the four Distribution Coefficient (Kd) borings (three of which, KD2, KD3 and KD4 are cited in this report) which were drilled to an average depth of 114 ft bgs, approximately 40 ft below the ground water table. KD1 was not included in this report because geotechnical testing could not be performed on the samples collected due to limited recovery from this boring.

3.3. Drilling and Sampling Method

Drilling for the lithological evaluation was conducted by SGS Environmental Services Inc., West Creek, New Jersey under the supervision of URS Corporation (URS). During this program, there were two truck-mounted drill rigs [a Central Mine Equipment (CME) 1050 and a CME 75] and one all terrain vehicle (ATV)-mounted drill rig (Mobile B-61 HDX) utilized on the Site.

The three drill rigs were equipped with 5-ft long sections of 8-inch nominal outside diameter (OD) hollow stem augers [4 ¼-inch inside diameter (ID)]. Soil samples were recovered with 3-inch OD split spoon samplers and a sampler driving system using a 300-pound hammer and a drop distance of 18 inches. The drill rigs used a combination of automatic hydraulic hammers and standard drop hammers operated with a rope and cat-head system.

The exception to the above described sampling method was for the Kd (Distribution Coefficient) boring program during which multiple sampling methods were used to recover soil samples. In addition to hollow stem augers, in borings KD2 and KD4, a 4-inch diameter drill casing was advanced from a depth of 69 ft to the bottom of the boring. The sampling methods included use of the 3-inch OD drive sampler, a 2-inch diameter standard penetration test (SPT) sampler driven with a 140 pound hammer and a drop distance of 30 inches, a push type Shelby tube, a Dames & Moore U-type sampler, and a piston sampler with Shelby tube. Results of the Kd boring program are presented in two reports regarding the potential transport of uranium from Cell 1 and Cell 6 (*Potential Transport of Uranium from Subsurface Soils in Cell 1 to the Point of Interest*, October

2006, URS Corporation and Envirocon, Inc. and *Potential Transport of Uranium from Subsurface Soils in Cell 6 to the Point of Interest*, November 2006, URS Corporation and Envirocon, Inc.)

3.4. Sample Logging

The soil samples were recovered and logged under the direction of URS field personnel. The soil logging procedure included recording the sample number, sample date and time, sample interval, sample recovery, and sample type. All of the samples were described and logged at the time of collection in general accordance with the Unified Soil Classification System (USCS). During sampling, the blow counts per foot of advancement were recorded on the boring logs. The Site reference elevation, 145 ft above mean sea level (msl), is used in the boring logs to allow comparison of lithologic units from one log to the next from a common datum. Appendix A contains the boring logs for the lithologic drilling program.

3.5. Screening and Analyses Performed

In accordance with the approved *Comprehensive Soil Remediation Program Work Plan, Former Sylvania Electric Products Incorporated Facility, Hicksville, New York, Revision 5, June 2003,* (Work Plan, URS, et al., 2003), field screening was performed during the investigation process to assess the recovered soil samples for the presence of volatile organic compounds (VOCs) and certain borings for the presence of radioactivity above background levels. Field instruments used for this drilling program were calibrated and checked for proper operation according to the Work Plan.

Sample Screening Process for Radioactivity

Field instruments to identify the presence of radioactivity supported both the soil excavation activities and the lithologic evaluation. The presence of radioactivity was monitored using field instruments, including sodium iodide (NaI) gamma detectors and alpha/beta scintillation detectors. Radioactivity levels in soil samples were screened and characterized using on-Site gamma spectroscopy. The use of on-Site gamma spectroscopy analysis confirmed that the field instruments provided an accurate evaluation of field conditions. The instrument's nuclide library for radionuclide identification was specific to the radionuclide constituents of concern at the Site, and consistent with that used by Severn Trent Laboratory, Inc. (STL) of Earth City.

Sample Screening Process for Volatile Organic Compounds

Prior to sample collection, soils were screened for VOCs using a mini RAE 2000™ photoionization detector by inserting the probe into a depression made in the recovered soil sample in the split spoon at several locations to take headspace readings. The highest of these readings was recorded on the Boring Log for the recovered soil interval.

Sample Terminology and Analysis

The samples collected from the lithologic borings above the elevation of the final soil sample were termed Delineation Samples (DL). The DL samples were subjected to radiological analysis by the on-Site gamma spectroscopy system and VOC and nickel (Ni) analysis by Stone Environmental Inc. (SEI) analytical service. The final sample of the lithologic borings was termed a Sample Point (SP) sample. All DL samples were analyzed on Site while certain DL samples and all SP samples were analyzed both on and off Site. Off-Site samples were analyzed by STL for radiological parameters, VOCs, Ni and beryllium (Be).

Analysis Frequency

In general, soil samples collected from borings for the lithologic evaluation were subjected to on-Site radiological analysis at one-foot intervals, and to on-Site analysis for VOCs at even-numbered

foot intervals alternating with Ni at odd-numbered foot intervals. Soil samples from these same borings were subjected to off-Site analysis for VOCs at 10, 20, 30, 40, 50, and 64-foot depths bgs, and for radiological parameters, Ni and Be at the final sample interval beginning at 64 ft bgs. Details of the analytical program for each boring are provided as the final statement on the boring logs for each specific boring (Appendix A). Although the lithologic evaluation objective was neither radiological nor chemical delineation, the analytical results from this evaluation were used to support other Site investigations. Chemical and radiological laboratory testing data results are presented in other Site reports and are not included in this report.

Geotechnical Testing

Geotechnical testing for grain size distribution [using ASTM International (American Society for Testing and Materials) Method D422] was conducted on a group of soil samples at various depths ranging from 5 to 37 ft bgs obtained from excavation surfaces within cell areas of the soil remediation program and from three borings for the Kd drilling program at depths ranging from 21 to 107 ft bgs. The locations of samples obtained for geotechnical testing are presented in Figure 3. Additional geotechnical testing was conducted on soils from three Kd borings, KD2, KD3, and KD4, and included water content (ASTM D2216), organic content (ASTM D2974), specific gravity (ASTM D854), and for soils from KD2 and KD4, permeability (constant head) (ASTM D5084). The summary of laboratory testing results conducted on the Kd borings and the grain size distribution results for both the excavation area samples and the Kd boring samples are presented in Appendix B.

4. GENERALIZED SUBSURFACE CONDITIONS

Based on Site-specific data collected during the investigation and Site remediation activities, and supplemented by data publicly available from published sources, the unconsolidated deposits are subdivided into lithologic units based on their stratigraphic position and similar characteristics, such as grain size distribution, sorting, porosity, composition of grains, and other unique characteristics.

Four sedimentary geologic units lie beneath the Site. From surface to deepest, the four units include glacial deposits composed of the Ronkonkoma and/or Harbor Hill glacial outwash (Upper Glacial Aquifer), the Magothy Formation, the Raritan Formation (Raritan Clay) and the Lloyd Sand Member of the Raritan Formation (Lloyd) (Isbister, 1966). Only the shallowest of these units, the Upper Glacial Aquifer of Pleistocene Age, was encountered during the lithologic evaluation in the borings that terminated at 66 ft bgs, as described below. Others have identified the Magothy Formation of Late Cretaceous Age at depths of approximately 75 ft bgs on Site (Malcolm Pirnie, Inc., 2007). Three borings, drilled specifically for the Kd drilling program and incorporated in this investigation, were drilled to greater than 75 ft. These borings had limited soil recovery, consequently, the Magothy Formation was not observed in detail.

Based on interpretation of Site boring logs, surficial deposits are fairly uniform, predominantly brown, fine to coarse sand with minor amounts of gravel and silt. The grain size distribution results (Tables 2, 4, and 6) are typical for poorly graded sands with some gravel and trace quantities of silt.

Site Lithology

Based on Site investigation data and the attached boring logs, generalized subsurface cross sections of the Site were developed. To provide a generalized cross-section model of the Site and the underlying lithology, several USCS soil types were consolidated into single generalized lithologic units to assist in visualizing zones that exhibit similar properties with respect to relative

permeability and contaminant transport. The rationale for naming the various soil lithologic horizons is described below. The soils are discussed in lithologic horizons (LH) from the surface down to maximum observed depths. It is these LH groupings that are shown on the cross sections in Appendix C.

From the surface downward, LH A soils are composed of fill and backfill, underlain by LH B soils composed of sands, gravelly sands, and to a lesser extent, silty and clayey sands. LH C soils are composed of interbedded silts, silty sand, clays, sandy or silty clays, and sand-silt mixtures. L-H-D soils, underlying the above three units, are similar to LH B soils and are composed of sands, gravelly sands, and to a lesser extent, silty and clayey sands. Lithological Horizons are described in detail below.

Table 1. Summary of Lithologic Horizon Soil Characteristics

Lithologic Horizon	Approximate Depth - feet bgs	Generalized Soil Types	USCS Classification
A	Surface to 25	Fill, Backfill placed by GTEOSI, non-native sediments in leach pool structures, silt (topsoil) in Cell 14	None
B	~2 to ~43.5	Sand, Sand and Gravel mixtures, Gravelly Sands, Silty Sands, Clayey Sands	SP, SW, GW, GP, SM, SC
C	~43.5 to 63	Silt, Silty Sand, Clays, Sandy or Silty Clays, Sand-Silt Mixtures	ML, SP-SM, CL, SM
D	~63 to bottom of borings	Sand, Sand and Gravel mixtures, Gravelly Sands, Silty Sands, Clayey Sands	SP, SW, GW, GP, SM, SC

Lithologic Horizon A Soils

The first LH group, LH A, includes the material located at the surface labeled as fill or backfill. These materials contain virtually all the soil types found on the Site and have been homogenized to a point that they can be considered one lithologic type.

During excavation, fill materials and non-native sediments (in leach pool structures) were encountered from ground surface to depths ranging from less than 1 to approximately 25 ft bgs. Such fill materials were also encountered in certain borings in unexcavated areas of the Site. Fill materials consisted of light brown to brown sand and various debris such as bricks, drum remnants, pipe pieces, metal and wire fragments, and various sizes of concrete and other structural remnants. Also identified as fill materials in this evaluation are the soils used as backfill during the current remediation to return excavated areas to previous soil contours at the Site. The fill materials are labeled as the LH A soils.

Silt soils were identified as the topsoil in Cell 14 at the GCDR and are labeled "silt" on the cross section L – L'. Although these soils are not considered fill or backfill equivalent to the Site fill materials of LH A, they have been grouped with LH A due to their stratigraphic position.

Lithologic Horizons B and D Soils

For the non-fill materials, the properties that are most significant to infiltrating precipitation and contaminant migration are relative permeability and carbon content. In terms of the lithologic groupings, most of the sands and sand and gravel mixtures (USCS classified SP, SW, GP and GW) fall into a single category of relative high permeability. These lithologic units named as LH B and LH D, are labeled as "sands with some gravel" (SP and SW) and "gravels and gravel sand mixtures" (GW and GP) on the cross sections.

In areas where native soils remained at or near the surface, the upper units were primarily gray to brown sands interbedded with discontinuous silt units ranging up to a foot in thickness. Below a depth of 20 ft bgs, the Upper Glacial Aquifer consists of interbedded brown to tan and occasionally orange to yellowish brown sands and sandy gravel units that have been labeled as the "LH B" soils. The sands were classified as poorly-graded, gravelly sands, with little to no fines to well-graded, gravelly sands with little to no fines. In many Site areas (see cross sections in Appendix C: central portion of D-D', northern portion of K-K' and L-L') these interbedded units do not exhibit continuity for any appreciable horizontal distance, grading into slightly different facies[1] that have different USCS classifications. The sands are composed primarily of quartz with minor amounts of other minerals such as feldspars, micas, and trace amounts of mafic (ferromagnesian) minerals. The quartz grains are rounded to subrounded; most of the gravels are rounded to subrounded also and display an elongated, that is, ovoid shape. These upper units are loose to medium dense and display no cementation.

The LH B soils were subjected to geotechnical testing for grain size distribution analysis. The results of the testing are presented in Table 2. The geotechnical testing program used K-2, K-3, and K-4 to represent samples from borings KD1, KD2, and KD3, respectively. Except for one sample (sample at 21 ft bgs in boring KD3), the LH B soils demonstrate a fairly uniform distribution with percentage sands ranging from approximately 69 to 96 percent, percentage of gravel ranging from approximately 1 to 30 percent, and fines ranging from 0.1 to 3 percent. All, except for one sample of the LH B soils, were identified as USCS class "SP", that is, poorly-graded sands, gravelly sands, little or no fines. The soils at 21 ft bgs in boring KD3 were classified as GW, that is, gravel-sand mixture with little or no fines.

Table 2. Grain Size Distribution for Lithologic Horizon B Soils

Boring Number Sample Location	Sample Number	Sample Depth ft bgs	% Gravel	% Sand	% Fines	USCS Symbol
Cell 4 subcell W22	05571	5	12.1	87.2	0.7	SP
Cell 6 subcell R10	15117	6	28.7	68.9	2.4	SP
Cell 12 subcell O17	06169	7.5	16.2	83.1	0.7	SP
Cell 11 subcell N19	09666	16	26.1	73.4	0.5	SP
Cell 12 subcell Q18	09850	20	25.1	74.4	0.5	SP
KD3 subcell P62	K-3 21.0-21.5	21.0-21.5	68.7	29.7	1.6	GW
Cell 4 subcell V17	05327	24	29.5	70.3	0.2	SP
KD2 subcell O54	K-2 24.5-25	24.5-25	17.1	79.8	3.1	SP
KD4 subcell Z05	K-4 25-25.5	25-25.5	5.9	92.9	1.2	SP
Cell 5 subcell Q04	12737	25	20.4	79.4	0.2	SP
Cell 11 subcell P21	09687	26	30.1	69.7	0.2	SP
KD3 subcell P62	K-3 31.0-31.5	31.0-31.5	12.3	84.4	3.3	SP
Cell 5 subcell R05	12764	33	21.0	78.9	0.1	SP
Cell 6 subcell Q07	14926	37	18.6	81.2	0.2	SP
KD3 subcell P62	K-3 41.5-42	41.5-42	22.8	74.4	2.8	SP
KD4 subcell Z05	K-4 43-43.5	43-43.5	1.1	96.3	2.6	SP

Note: Samples identified with cell and subcell numbers are from excavation surfaces, not borings (see Section 3 and Figure 3).

[1] Facies: The general aspect, nature, or appearance of a sedimentary unit produced under or affected by similar conditions; a distinctive group of characteristics that differs from other groups within a stratigraphic unit.

Results of additional geotechnical testing on LH B soils presented in Table 3 indicate that they have a low organic content (less than 1 per cent) and that permeability ranges (1.7×10^{-2} centimeters per second (cm/sec) to 1.2×10^{-1} cm/sec) are typical of sands (Freeze and Cherry, 1979).

Table 3. Other Identification Tests for Lithologic Horizon B Soils

Boring Number Sample Location	Sample Number	Sample Depth ft bgs	% Water Content	% Organic Content	Specific Gravity	Permeability cm/sec
Cell 4 subcell W22	05571	5	2.3	na	na	na
Cell 6 subcell R10	15117	6	7.7	na	na	na
Cell 12 subcell O17	06169	7.5	3.6	na	na	na
Cell 11 subcell N19	09666	16	2.2	na	na	na
Cell 12 subcell Q18	09850	20	3.2	na	na	na
KD3 subcell P62	K-3 21.0-21.5	21.0-21.5	1.5	0.2	2.651	na
Cell 4 subcell V17	05327	24	1.6	na	na	na
KD2 subcell O54	K-2 24.5-25	24.5-25	3.1	0.5	2.648	1.2E-1
KD4 subcell Z05	K-4 25-25.5	25-25.5	1.2	0.3	2.644	1.7E-2
Cell 5 subcell Q04	12737	25	4.8	na	na	na
Cell 11 subcell P21	09687	26	1.9	na	na	na
KD3 subcell P62	K-3 31.0-31.5	31.0-31.5	2.6	0.1	2.644	na
Cell 5 subcell R05	12764	33	1.9	na	na	na
Cell 6 subcell Q07	14926	37	1.3	na	na	na
KD3 subcell P62	K-3 41.5-42	41.5-42	2.0	0.1	2.652	na
KD4 subcell Z05	K-4 43-43.5	43-43.5	2.6	0.1	2.641	2.2E-2

Note: na = not analyzed.

Below the discontinuous silty sands and clay seams of LH C (described below), sand sequences similar to those described above in the LH B soils continue to the bottom of the borings in this drilling program. These lower sands are light brown to tan, moist, medium dense to dense and have occasional interbeds of small to medium-size gravel. Silts and sand/silt mixtures as present in this horizon also. This zone is labeled as the LH D soils.

Several soil samples acquired during the Kd drilling program were either just above or below the water table. Tables 4 and 5 present the results of various tests on these soils. The organic content of these soils is low (0.1 to 0.2 percent) and the permeability test conducted on the samples from KD2 and KD4 soils indicated a typical sand permeability of 1.2×10^{-2} cm/sec (Table 5). The soils in the LH D group below approximately 75 ft bgs are thought to be in the Late Cretaceous Magothy Aquifer.

Table 4. Grain Size Distribution for Lithologic Horizon D Soils

Boring Number Sample Location	Sample Number	Sample Depth ft bgs	% Gravel	% Sand	% Fines	USCS Symbol
KD4 subcell Z05	K-4 63.5-64	63.5-64	0	92.6	7.4	SP-SM
KD3 subcell P62	K-3 71-71.7	71-71.5	0.4	92.7	6.9	SP-SM
KD2 subcell O54	K-2 72-72.5	72-72.5	0	93.6	6.4	SP-SM
KD3 subcell P62	K-3 89-89.5	89-89.5	0.4	87.7	11.9	SP-SM
KD2 subcell O54	K-2 94.5-98.7	94.5-98.7	0.1	94.5	5.4	SP-SM
KD4 subcell Z05	K-4 93-96	93-96	0	96.0	4.0	SP
KD4 subcell Z05	K-4 104.5-107.3	104.5-107.3	0	85.4	14.6	SM

Table 5. Other Identification Tests for Lithologic Horizon D Soils

Boring Number Sample Location	Sample Number	Sample Depth ft bgs	% Water Content	% Organic Content	Specific Gravity	Permeability cm/sec
KD4 subcell Z05	K-4 63.5-64	63.5-64	7.4	0.1	2.658	1.2E-2
KD3 subcell P62	K-3 71-71.7	71-71.5	18.3	0.1	2.642	na
KD2 subcell O54	K-2 72-72.5	72-72.5	3.5	0.2	2.663	1.2E-2
KD3 subcell P62	K-3 89-89.5	89-89.5	24.3	0.1	2.643	na
KD2 subcell O54	K-2 94.5-98.7	94.5-98.7	17.7	na	na	na
KD4 subcell Z05	K-4 93-96	93-96	23.8	0.2	2.641	na
KD4 subcell Z05	K-4 104.5-107.3	104.5-107.3	24.1	0.1	2.649	na

Note: na = not analyzed.

Lithologic Horizon C Soils

A notable sequence was encountered in most borings deeper than 50 ft that consists of gray silty sands to clayey silts and silty clays as depicted on the figures in Appendix C. Within the Upper Glacial Aquifer unit, the sequence was found at depths ranging from approximately 42 to 65 ft bgs (approximately 103 to 80 ft above msl) with discontinuous layers of silt and clay displaying thicknesses of less than 1 inch (borings 12D-DL01 and 28G-DL01, cross section L – L') to almost 15 ft (boring O55-DL01, cross section A – A'). The sequence alternates with sand seams in many locations and referred to as "Combined Lithologic Units". This zone of soils has the lowest measured relative permeability of the soils tested and lies between the LH B and the LH D. This unit is composed of two major groupings: "silty sand" (USCS classified as SM and ML) and "silt/clay" mixtures (USCS classified as SM-CL). However, in many borings, the individual layers were not observed to persist as independent units for appreciable horizontal distances, that is, hundreds of feet. In some cases these units consist of clay, silt, clayey sand and silty sand units overlying or adjacent to each other. Because the discontinuous layers exhibit similar grain size and permeability and are sufficiently similar to be grouped as a single unit, this discontinuous zone has been identified as the LH C. The cross sections in Appendix C illustrate the interpretation of the extent of this LH. The "combined lithologic units" are shown as well as the specific lithologic units depicted on the individual borings logs in the detailed blow-ups of some of the borings.

The LH C geotechnical testing program included 5 soil samples. The percentage of fines in these samples is higher on average than those in the LH B soils. Although the percentage of gravel in the KD2 boring samples is approximately 17 percent on average (Table 6), it is the presence of fines that has the major influence on the permeability range reported at 8.7×10^{-5} cm/sec to 2.0×10^{-3} cm/sec, typical of silts (Table 7) (Freeze and Cherry, 1979). The organic content measurements on the samples from KD2 are 1.2 and 0.9 percent for the samples beginning at 47 and 47.5 ft, respectively, listed in Table 7. Similarly, the organic content measurement on the sample from KD3 is 0.7 percent, lower than the two previously discussed samples from boring KD2 but higher than the LH B soils. The two samples from KD3 at 51.0 and 61.5 ft bgs in the LH C soils are regarded as transitional between the typical LH C soils and the underlying LH D soils.

Table 6. Grain Size Distribution for Lithologic Horizon C Soils

Boring Number Sample Location	Sample Number	Sample Depth ft bgs	% Gravel	% Sand	% Fines	USCS Symbol
KD3 subcell P62	K-3 46.5-47	46.5-47	0	2.7	97.3	ML
KD2 subcell O54	K-2 47-47.5	47-47.5	21.8	65.4	12.8	SM
KD2 subcell O54	K-2 47.5-48	47.5-48	11.8	70.3	17.9	SM
KD3 subcell P62	K-3 51.0-51.5	51.0-51.5	0	93.5	6.5	SP-SM
KD3 subcell P62	K-3 61.5-62	61.5-62	0	92.0	8.0	SP-SM

Table 7. Other Identification Tests for Lithologic Horizon C Soils

Boring Number Sample Location	Sample Number	Sample Depth ft bgs	% Water Content	% Organic Content	Specific Gravity	Permeability cm/sec
KD3 subcell P62	K-3 46.5-47	46.5-47	34.3	0.7	2.702	na
KD2 subcell O54	K-2 47-47.5	47-47.5	12.8	1.2	2.662	8.7E-5
KD2 subcell O54	K-2 47.5-48	47.5-48	17.9	0.9	2.683	2.0E-3
KD3 subcell P62	K-3 51.0-51.5	51.0-51.5	4.7	0.1	2.662	na
KD3 subcell P62	K-3 61.5-62	61.5-62	4.6	0.0	2.653	na

Note: na = not analyzed.

In summary, the LH C soils are finer grained, have a higher organic content, have a higher water (moisture) content, have a slightly higher specific gravity (density), and have a lower measured permeability than the soils above (LH B soils) and the soils below (LH D soils) this unit. The LH C soils appear at slightly higher elevations along the northwestern portions of the Site and dip slightly to the southeast. Appendix B provides additional details on the Site soil types.

5. CONCLUSION

The Upper Glacial Aquifer, the uppermost of four major sedimentary geologic units that underlie the Site, is approximately 75 ft thick with the upper 10 to 20 ft consisting of fill and recent deposits. Most recharge must infiltrate through the Upper Glacial Aquifer to reach the lower aquifers. Recharge, originating from precipitation, migrates to the water table either directly from the land surface or subsequently through dry wells, recharge basins (historically), or other man-made facilities. Depth to water was anticipated to be approximately 71 to 74 ft bgs beneath the Site as measured in borings, and this appears to be confirmed with the data obtained from the Kd borings and previous Site ground water profiles reported elsewhere (Malcolm Pirnie, Inc., 2007).

The majority of the Site sediments in the unsaturated zone beneath the fill are classified as sands with some gravel (USCS class SP) and display fairly high permeabilities based on both field observations (precipitation events) and laboratory testing. For the purposes of this investigation, USCS soil types encountered in borings were grouped into four major lithologic units. LH B and LH D compared to LH C exhibited distinctly different permeability and carbon content. From the data collected during this study, it is apparent that LH C exists as a discontinuous, lower permeability layer underlying nearly all the Site at depths between approximately 42 to 65 ft bgs. The engineering properties of this lithologic unit would tend to reduce or impede the vertically downward migration of infiltrating precipitation and overlying residual contaminants and this unit would function as a limited aquitard. The exception is the area of Cell 1 in the extreme northeast corner of the Site. Cell 1 is apparently absent the LH C lower permeability zone. The adjacent Cells 5 and 6 are interpreted to be transition zones in which the LH C is thinning (pinching out) to the east. Likewise, Cell 2 is interpreted to be an area of thinning, because although LH C is present in boring U08 DL01, it was not observed in the eastern-most boring, 07C DL01, at the terminus of cross section B-B'. Although the lower permeability zone LH C is considered a limited aquitard and may slow or disperse (spread laterally) contaminants migrating vertically toward the water table, given sufficient time this zone would present only a temporary barrier to contaminant transport.

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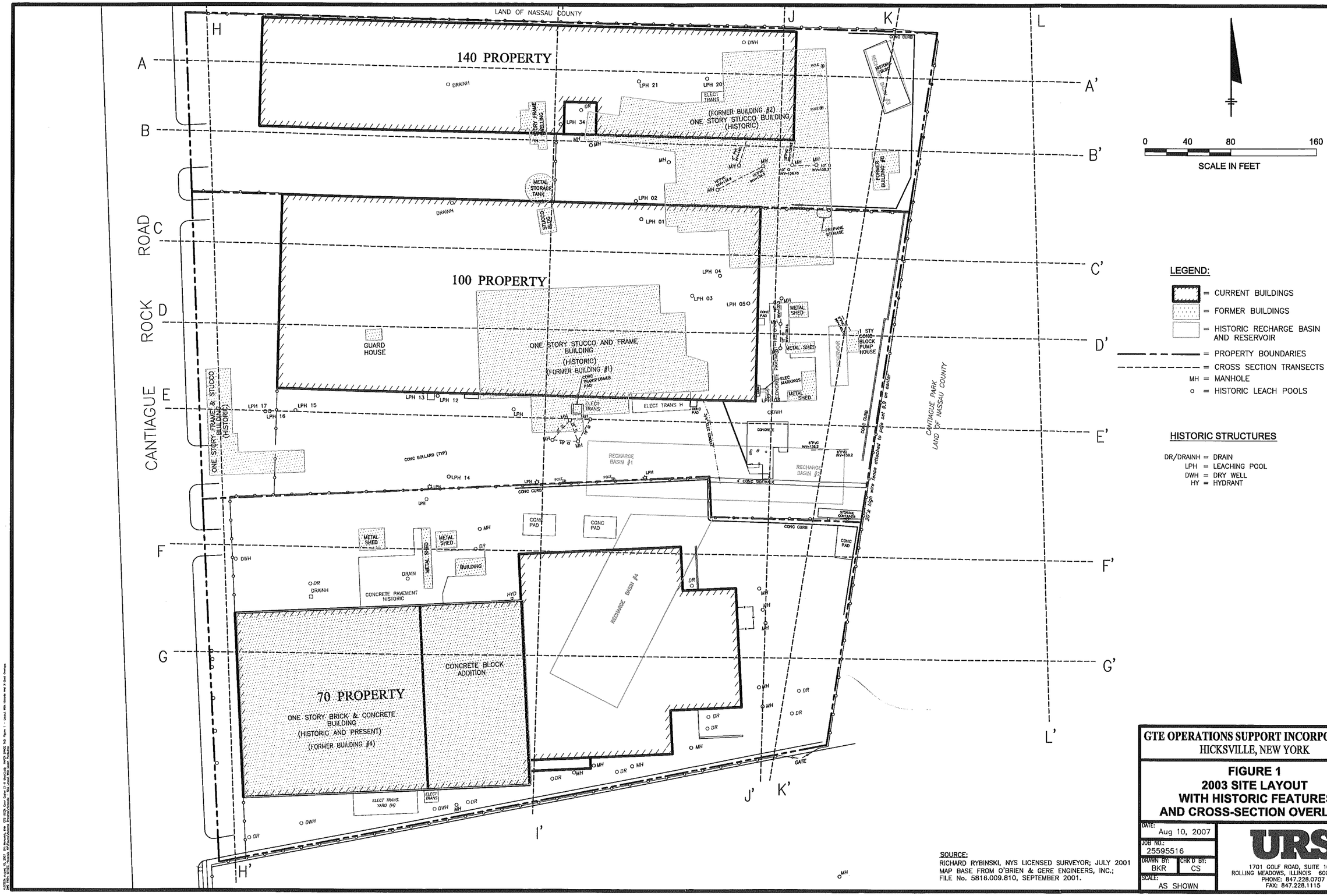

LEGEND:

- = CURRENT BUILDINGS
- = FORMER BUILDINGS
- = HISTORIC RECHARGE BASIN AND RESERVOIR
- = PROPERTY BOUNDARIES
- = CROSS SECTION TRANSECTS
- MH = MANHOLE
- o = HISTORIC LEACH POOLS

HISTORIC STRUCTURES

DR/DRAINH = DRAIN
LPH = LEACHING POOL
DWH = DRY WELL
HY = HYDRANT

SOURCE:
RICHARD RYBINSKI, NYS LICENSED SURVEYOR; JULY 2001
MAP BASE FROM O'BRIEN & GERE ENGINEERS, INC.;
FILE No. 5816.009.810, SEPTEMBER 2001.

GTE OPERATIONS SUPPORT INCORPORATED
HICKSVILLE, NEW YORK

FIGURE 1
2003 SITE LAYOUT WITH HISTORIC FEATURES AND CROSS-SECTION OVERLAYS

DATE: Aug 10, 2007
JOB NO: 25595516
DRAWN BY: BKR
CHK'D BY: CS
SCALE: AS SHOWN

URS
1701 GOLF ROAD, SUITE 1000
ROLLING MEADOWS, ILLINOIS 60008-4227
PHONE: 847.228.0707
FAX: 847.228.1115

GTES004247

Figure 2
Lithological Drilling Locations

Legend

- KD and DL Borings
- Cross Section Lines
- Building
- Property Line
- 9 Cell Boundary and Number
- H07 Subcell Boundary and Number

140 Building

100 Building

70 Building

Loading Dock Area

Feet
0 30 60

Projection Information
Stateplane Projection
Long Island Zone
North American Datum 1983
Feet

NYSDEC V00089-1 URS27010-039

GTE OPERATIONS SUPPORT INCORPORATED
HICKSVILLE, NEW YORK

DESTINY RESOURCES, INC.

DRI ID: 1006.H6793 June 11, 2007

\\ServerPublic\Destiny Data\GIS\GIS_NY\mxdfiles\Cross Section\Allsite boring profile locations cross section 20070611.mxd

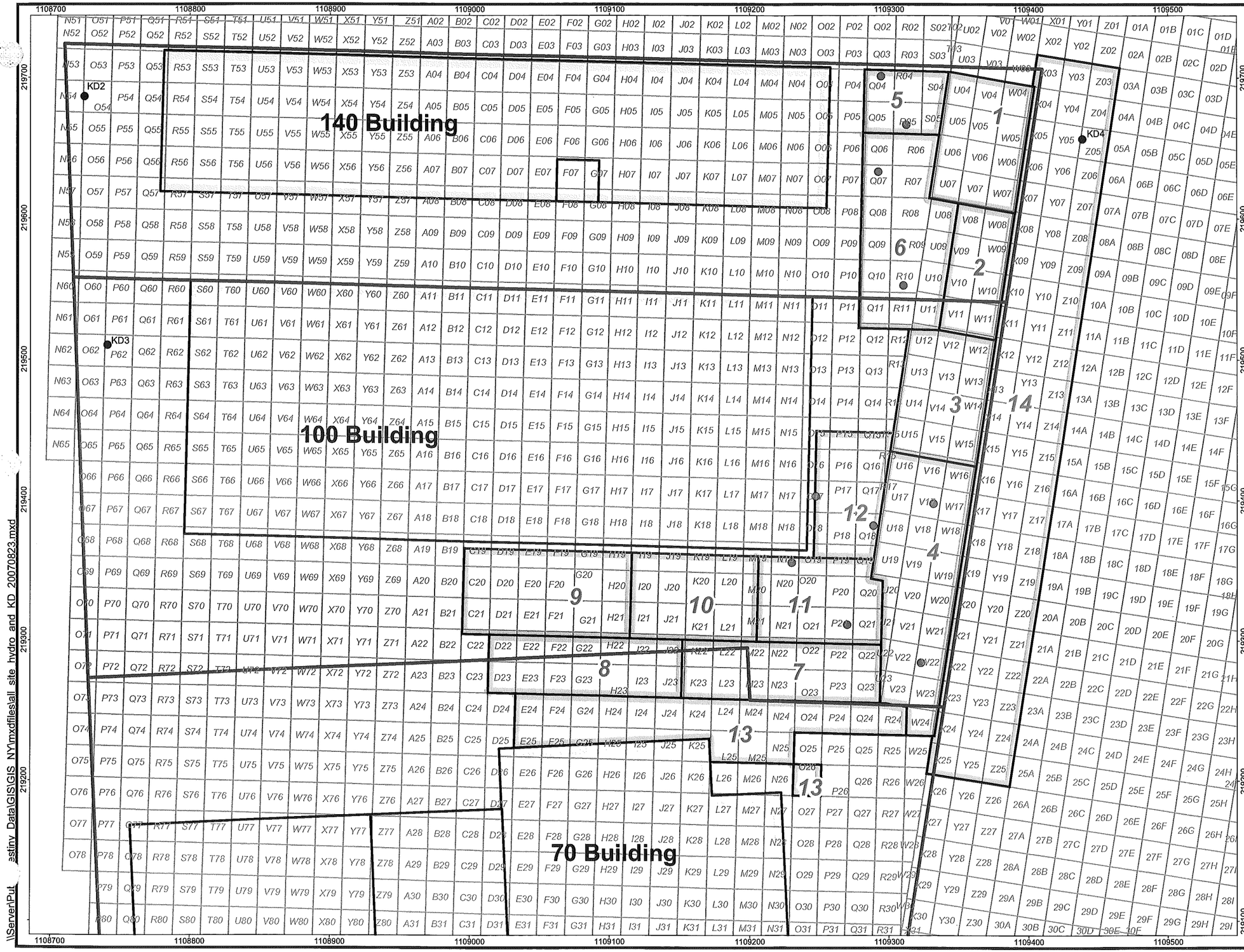

Figure 3
Grain Size Distribution Sample Locations

Legend

- Grain Size Distribution Samples
- KD Borings with Grain Size Distribution Samples
- Building
- Property Line
- 9 — Cell Boundary and Number
- H07 — Subcell Boundary and Number

Note:
Grain size distribution samples were collected from excavation surfaces, not borings. Please see Tables 2 and 3.

N

Feet
0 30 60

Projection Information
Stateplane Projection
Long Island Zone
North American Datum 1983
Feet

NYSDEC V00089-1 URS27010-039

GTE OPERATIONS SUPPORT INCORPORATED
HICKSVILLE, NEW YORK

DESTINY
RESOURCES, INC.

DRI_ID: 1006.H6741 August 23, 2007

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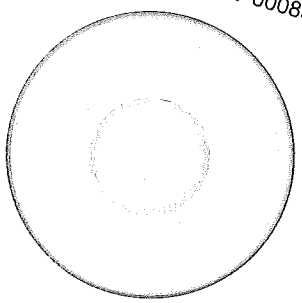
APPENDIX A

BORING LOGS

LITHOLOGICAL EVALUATION REPORT

FORMER
SYLVANIA ELECTRIC PRODUCTS INCORPORATED FACILITY
HICKSVILLE, NEW YORK
SITE NUMBER V 00089-1



Prepared by
URS Corporation and
Envirocon, Inc.
for
GTE Operations Support Incorporated

August 2007

APPENDIX A

BORING LOGS

APPENDIX B

GEOTECHNICAL TESTING RESULTS

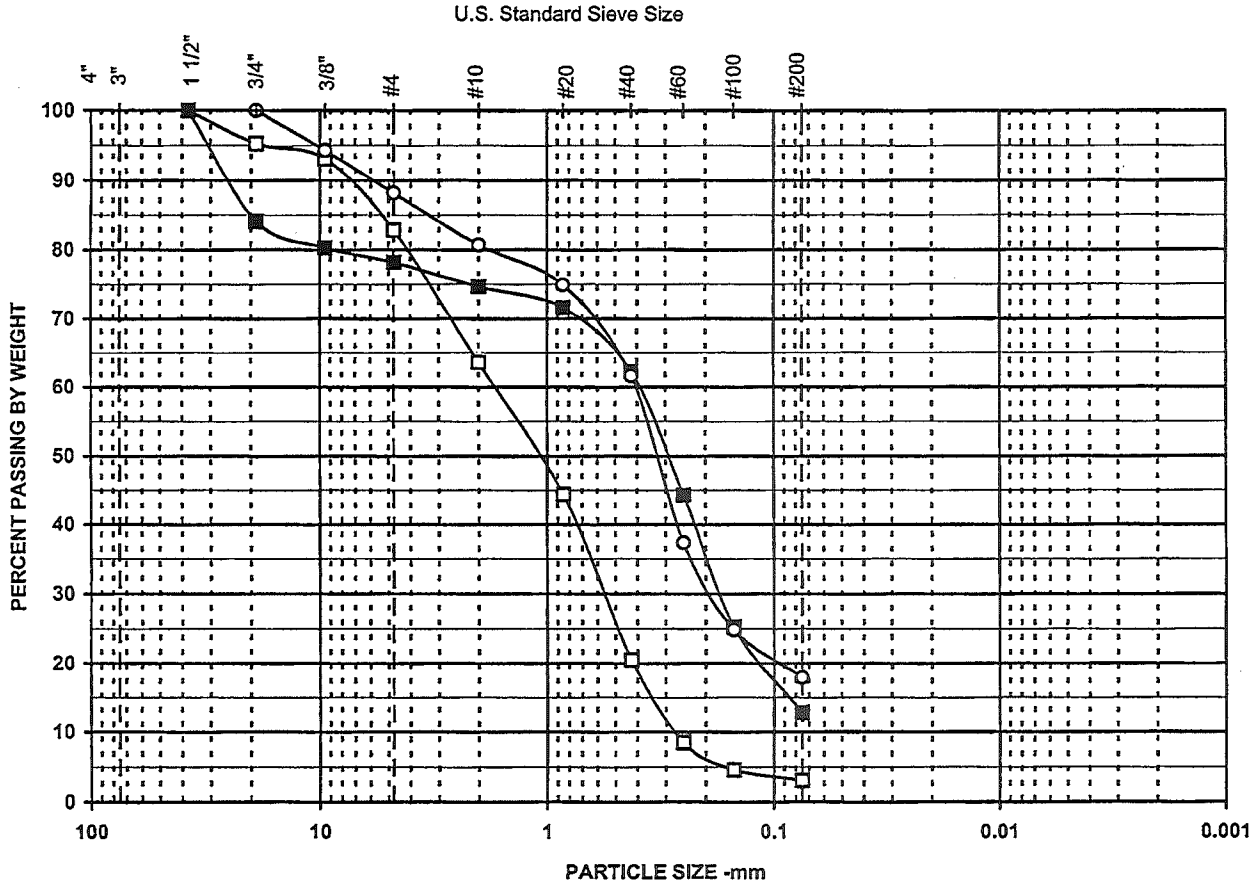
APPENDIX B

GTE OSI
NYSDEC: V-00089-1
LABORATORY TESTING DATA SUMMARY

BORING NO.	SAMPLE NO.	DEPTH (ft)	IDENTIFICATION TESTS					PERMEABILITY (cm/sec)	REMARKS
			WATER CONTENT (%)	USCS SYMB. (1)	SIEVE MINUS NO. 200 (%)	ORGANIC CONTENT (burnoff) (%)	SPECIFIC GRAVITY		
K-2		24.5-25	3.1	SP	3.1	0.5	2.648	1.2E-1	
K-2		47-47.5	12.8	SM	12.8	1.2	2.662	8.7E-5	
K-2		47.5-48	17.9	SM	17.9	0.9	2.683	2.0E-3	
K-2		72-72.5	3.5	SP-SM	6.4	0.2	2.663	1.2E-2	
K-2		94.5-98.7	17.7	SP-SM	5.4				
K-2		113-119	21.1			0.1			
K-4		25-25.5	1.2	SP	1.2	0.3	2.644	1.7E-2	
K-4		43-43.5	2.6	SP	2.6	0.1	2.641	2.2E-2	
K-4		63.5-64	7.4	SP-SM	7.4	0.1	2.658	1.2E-2	
K-4		93-96	23.8	SP	4.0	0.2	2.641		
K-4		104.5-107.3	24.1	SM	14.6	0.1	2.649		

Note: (1) USCS symbol based on visual observation and Sieve reported.

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



SYMBOL	DESCRIPTION AND REMARKS
□	brown c-f SAND, some gravel, trace silt.
■	c-f SAND, some gravel, silt.
○	orange-brown c-f SAND, some silt, trace f. gravel.

Symbol	□	■	○
Boring	K-2	K-2	K-2
Sample			
Spec Depth	24.5-25	47-47.5	47.5-48
% +3"			
% Gravel	17.1	21.8	11.8
% SAND	79.8	65.4	70.3
% FINES	3.1	12.8	17.9
% -2μ			
Cc	0.7		
Cu	6.6		
LL			
PL			
PI			
USCS	SP	SM	SM
w (%)			

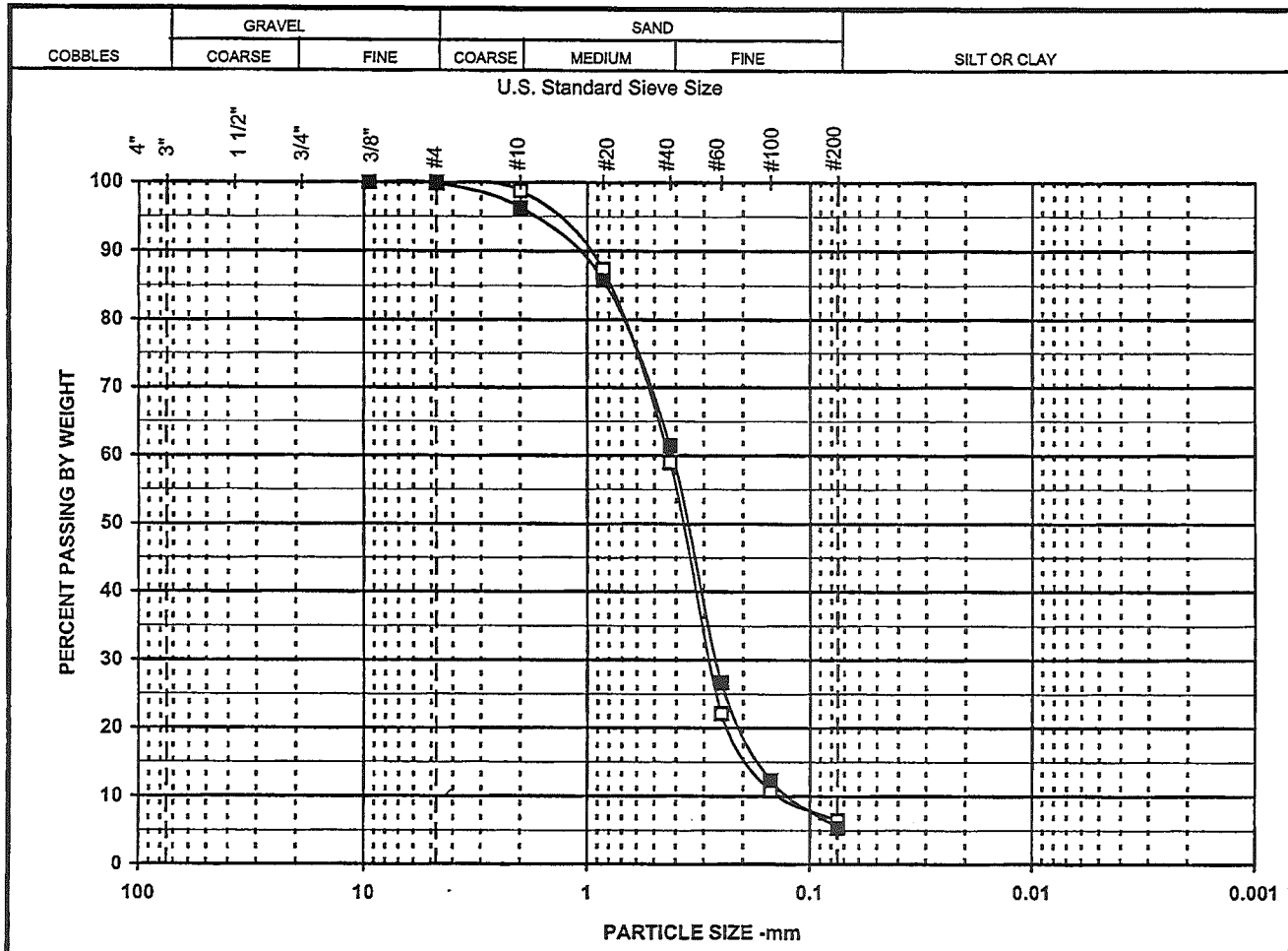
Particle Size	PERCENT FINER		
(Sieve #)	□	■	○
4"			
3"			
1 1/2"	100.0	100.0	
3/4"	95.3	84.1	100.0
3/8"	93.1	80.3	94.3
4	82.9	78.2	88.2
10	63.6	74.7	80.7
20	44.4	71.6	75.0
40	20.5	62.3	61.6
60	8.5	44.3	37.3
100	4.6	25.2	24.8
200	3.1	12.8	17.9

PARTICLE SIZE DISTRIBUTION

NYSDEC- V00089-1

Project No.		Figure
25595516	November 2004	

Geotesting Services, Inc.



SYMBOL	DESCRIPTION AND REMARKS
□	light brown c-f SAND, trace silt.
■	brown c-f SAND, trace silt.
○	

Symbol	□	■	○
Boring	K-2	K-2	
Sample			
Spec	72-	94.5-	
Depth	72.5	98.7	
% +3"			
% Gravel		0.1	
% SAND	93.6	94.5	
% FINES	6.4	5.4	
% -2μ			
Cc	1.4	1.4	
Cu	3.2	3.3	
LL			
PL			
PI			
USCS	SP-SM	SP-SM	
w (%)			

Particle Size	PERCENT FINER		
(Sieve #)	□	■	○
4"			
3"			
1 1/2"			
3/4"			
3/8"		100.0	
4	100.0	99.9	
10	98.8	96.3	
20	87.3	85.8	
40	59.0	61.4	
60	22.1	26.7	
100	10.8	12.3	
200	6.4	5.4	

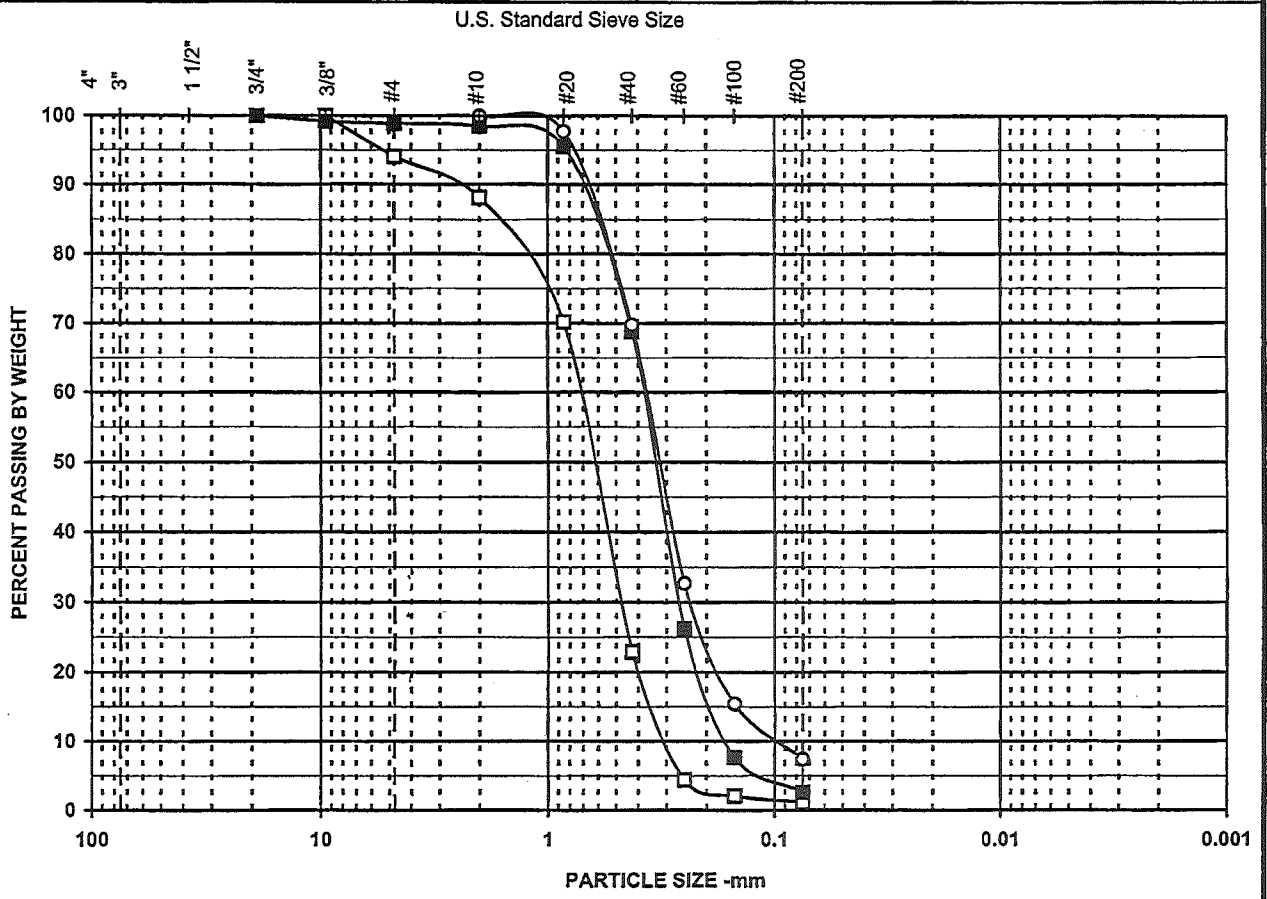
PARTICLE SIZE DISTRIBUTION

NYSDEC- V00089-1

Project No.		
25595516	November 2004	Figure

URS Corporation

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



SYMBOL	DESCRIPTION AND REMARKS
□	yellowish brown c-f SAND, trace f. gravel, silt.
■	brown m-f SAND, trace f. gravel, silt.
○	yellowish brown m-f SAND, trace silt.

Symbol	□	■	○
Boring	K-4	K-4	K-4
Sample			
Spec Depth	25-25.5	43-43.5	63.5-64
% +3"			
% Gravel	5.9	1.1	
% SAND	92.9	96.3	92.6
% FINES	1.2	2.6	7.4
% -2μ			
Cc	1.0	1.1	1.5
Cu	2.5	2.4	3.8
LL			
PL			
PI			
USCS	SP	SP	SP-SM
w (%)			

Particle Size	PERCENT FINER		
(Sieve #)	□	■	○
4"			
3"			
1 1/2"			
3/4"		100.0	
3/8"	100.0	99.2	
4	94.1	98.9	
10	88.1	98.5	100.0
20	70.2	95.5	97.7
40	22.9	68.8	69.8
60	4.4	26.2	32.7
100	2.1	7.7	15.4
200	1.2	2.6	7.4

PARTICLE SIZE DISTRIBUTION
NYSDEC- V00089-1

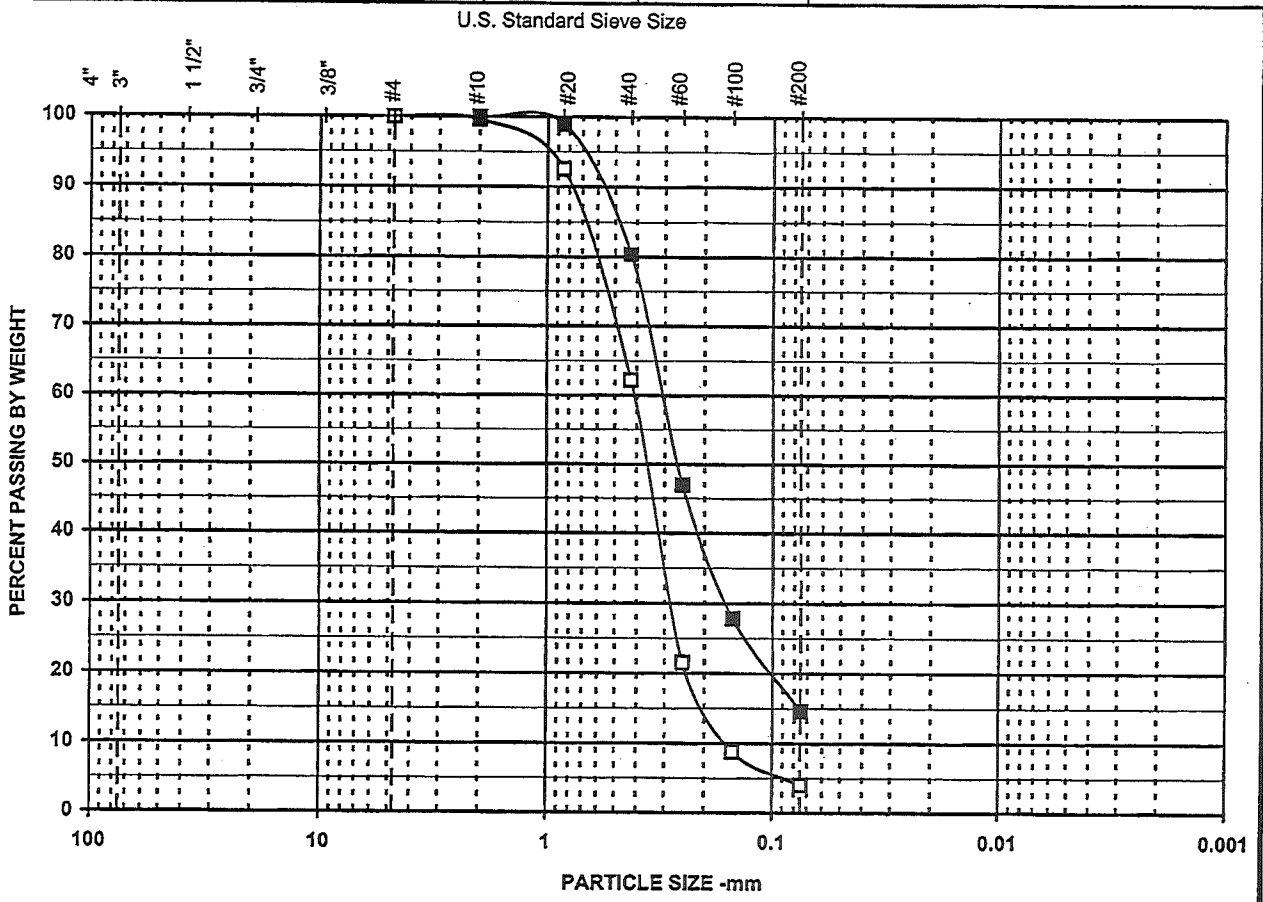
Project No.		
25595516	November 2004	Figure

Geotesting Services, Inc.

GTE OSI
NYSDEC: V-00089-1
SUMMARY OF LABORATORY PERMEABILITY TESTS PERFORMED ON UNDISTURBED TUBE SAMPLES

BORING NO.	DEPTH	INDEX DATA		WATER CONTENTS	TOTAL UNIT WGTS	DRY UNIT WGTS	STRESSES	CONSOLIDATION STRAINS	DURING TEST	COEFFICIENT OF HYDRAULIC CONDUCTIVITY @ 20°C (cm/sec)	REMARKS
		% FINES	SPEC. GRAV.	INITIAL	INITIAL	INITIAL	BACK PRESSURE	AXIAL	PERMEANT		
		ORGANIC CONTENT	USCS SYMBOL	PRE-TEST	PRE-TEST	PRE-TEST	EFFECTIVE	VOLUMETRIC	INITIAL GRADIENT		
	(ft)	(%)		(%)	(pcf)	(pcf)	(psi)	(%)			
K-2	24.5-25	3.1	2.65	2.3	111.2	108.7	100.0	0.2	Tap		
		0.5	SP	17.0	133.3	113.9	5.0	4.6	0.12	1.19E-1	
K-2	47-47.5	12.8	2.66	7.1	123.4	115.2	100.0	1.0	Tap		
		1.2	SM	15.7	135.6	117.3	5.0	1.8	4.42	8.69E-5	
K-2	47.5-48	17.9	2.68	7.3	126.7	118.1	100.0	0.7	Tap		
		0.9	SM	13.8	139.2	122.4	5.0	3.5	0.61	2.04E-3	
K-2	72-72.5	3.5	2.66	12.5	123.4	109.7	100.0	0.7	Tap		
		0.2	SP	17.1	133.7	114.1	5.0	3.9	0.33	1.16E-2	
K-4	25-25.5	1.2	2.64	4.3	105.5	101.1	100.0	0.1	Tap		
		0.3	SP	23.6	125.7	101.7	5.0	0.6	0.26	1.73E-2	
K-4	43-43.5	2.6	2.64	4.3	100.9	96.7	100.0	0.1	Tap		
		0.1	SP	26.2	123.0	97.4	5.0	0.7	0.30	2.22E-2	
K-4	63.5-64	7.4	2.66	3.3	105.3	101.9	100.0	0.5	Tap		
		0.1	SP-SM	23.0	126.7	103.0	5.0	1.1	0.36	1.15E-2	

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



SYMBOL	DESCRIPTION AND REMARKS
□	light brown m-f SAND, trace silt.
■	light brown m-f SAND, some silt.
○	

Symbol	□	■	○
Boring	K-4	K-4	
Sample			
Spec	93-	104.5-	
Depth	96	107.2	
% +3"			
% Gravel			
% SAND	96.0	85.4	
% FINES	4.0	14.6	
% -2μ			
Cc	1.2		
Cu	2.6		
LL			
PL			
PI			
USCS	SP	SM	
w (%)			

Particle Size	PERCENT FINER		
(Sieve #)	□	■	○
4"			
3"			
1 1/2"			
3/4"			
3/8"			
4	100.0		
10	99.6	100.0	
20	92.6	99.0	
40	62.2	80.4	
60	21.6	47.0	
100	8.8	27.8	
200	4.0	14.6	

PARTICLE SIZE DISTRIBUTION
NYSDEC- V00089-1

Project No.		Figure
25595516	November 2004	

URS Corporation

CONSTANT HEAD HYDRAULIC CONDUCTIVITY TEST
ASTM D 5084 - 90

Project No. **25595516** BORING: K2
Project Name: **GTE OSI** SAMPLE: DEPTH (ft): 24.5-25.0 Test No.: **P7244**

Specimen - Apparatus set-up - Test Information Apparatus No. C-2 Cell No. CH-2 Stage 2

1) Specimen Tested in :	x	Triaxial Cell or		Compaction Mold or		
		with stones or		Stones with filter paper or	fabric	top + bottom
2) Specimen orientation for:	x	Vertical or		Horizontal permeability determination		
3) During saturation: Water flushed up sides of specimen to remove air:			x	No		Yes
4) During consolidation:	x	Top and bottom drainage or		Top		Bottom only
5) Direction of permeant :		Up during or	X	Down during permeation		
6) Permeant: water used	x	Tap		Distilled		
		Demineralized		0.005 N calcium sulfate (CaSO4)		

Consol Stage- Trial No.	Temp. °C	Date	Time hr	Time min	Time sec	Initial σ_c psi	Initial Ub psi	Dial Indicator in	Pressure Head Reading Mercury (inch)	Pressure Head Reading Gage (psi)	Flow Reading (cm)	Flow Vol (cm3) Rate (cm3/sec)	Fluid Head Reading Head (cm)	Fluid Head Reading Tail (cm)	Total Head Uncorrected Correction Corrected (cm)	Gradient Total Corrected	Permeability Preliminary Final at 20°C cm/sec
initial	21.5	10/27/04	00	00	00	105.0	100.0				5.00	51.7	46.80	41.95	4.85	0.47	
final	21.5	10/27/04	00	02	06						7.50	0.4103	46.80	41.95	2.91		7.33E-02
7	RT = 0.963	dT =		2.10 min		σ'_c =	0.7 ksf						46.8	41.95	1.94	0.19	7.36E-02
initial	21.5	10/27/04	00	00	00	105.0	100.0				7.50	62.04	46.80	41.95	4.85	0.47	
final	21.5	10/27/04	00	02	27						10.50	0.4220	46.80	41.95	2.99		7.88E-02
8	RT = 0.963	dT =		2.45 min		σ'_c =	0.7 ksf						46.8	41.95	1.86	0.18	7.91E-02
initial	23.5	10/27/04	00	00	00	105.0	100.0				5.50	51.7	47.45	44.05	3.40	0.33	
final	23.5	10/27/04	00	03	03						8.00	0.2825	47.45	44.05	2.00		7.02E-02
9	RT = 0.919	dT =		3.05 min		σ'_c =	0.7 ksf						47.45	44.05	1.40	0.14	6.72E-02
initial	23.6	10/27/04	00	00	00	105.0	100.0				8.00	82.72	47.45	44.05	3.40	0.33	
final	23.6	10/27/04	00	04	42						12.00	0.2933	47.45	44.05	2.08		7.71E-02
10	RT = 0.917	dT =		4.70 min		σ'_c =	0.7 ksf						47.45	44.05	1.32	0.13	7.37E-02
initial	21.5	10/27/04	00	00	00	105.0	100.0				5.00	72.38	47.75	45.55	2.20	0.21	
final	21.5	10/27/04	00	04	48						8.50	0.2513	47.75	45.55	1.78		2.09E-01
11	RT = 0.963	dT =		4.80 min		σ'_c =	0.7 ksf						47.75	45.55	0.42	0.04	2.09E-01
initial	21.5	10/27/04	00	00	00	105.0	100.0				8.50	86.856	47.75	45.55	2.20	0.21	
final	21.5	10/27/04	00	05	45						12.70	0.2518	47.75	45.55	1.78		2.10E-01
12	RT = 0.963	dT =		5.75 min		σ'_c =	0.7 ksf						47.75	45.55	0.42	0.04	2.11E-01

Preliminary Length/Area Calculations

Lo =	4.067	in	Lo=	10.330	cm
Ao=	4.623	in^2	Ao =	29.83	cm^2
Vo=	18.801	in^3	Vo =	308.10	cm^3
Lc =	4.060	in	Lc =	10.312	cm
Ac=	4.607	in^2	Ac=	29.723	cm^2
Vc =	18.704	in^3	Vc =	306.50	cm^3

Tested By: BB Reviewed By: CMJ

TEST CONDITIONS

Final Specimen and Test Conditions

Lc = 10.312 cm ε_{axial} = 0.2%
Ac = 28.516 cm^2
Vc= 294.05 cm^3 ε_{vol} = 4.6%

	w (%)	γ_τ (pcf)	γ_d (pcf)	S (%)
Initial	2.30	111.2	108.7	11.7
PreTest	17.05	133.3	113.9	100.0

Project No. 25595516
Project Name: GTE OSI
NYSDEC: V-00089-1
BORING: K2
SAMPLE: DEPTH (ft): 24.5-25.0

HYDRAULIC CONDUCTIVITY TEST SUMMARY

Averages for trials: 1-6
ave K @ 20 °C: **1.19E-01** cm/sec
(i_o)ave = 0.12

CONSTANT HEAD HYDRAULIC CONDUCTIVITY TEST
ASTM D 5084 - 90

Project No. 25595516 BORING: K2
Project Name: GTE OSI SAMPLE: DEPTH (ft): 47.0-47.5 Test No.: **P7245**

Specimen - Apparatus set-up - Test Information

Apparatus No. C-2 Cell No. CH-2 Stage 2

1) Specimen Tested in :	x	Triaxial Cell or		Compaction Mold or	
		with stones or		Stones with filter paper or	fabric top + bottom
2) Specimen orientation for:	x	Vertical or		Horizontal permeability determination	
3) During saturation: Water flushed up sides of specimen to remove air:			x	No	Yes
4) During consolidation:	x	Top and bottom drainage or		Top	Bottom only
5) Direction of permeant :		Up during or	X	Down during permeation	
6) Permeant: water used	x	Tap		Distilled	
		Demineralized		0.005 N calcium sulfate (CaSO4)	

Consol Stage-Trial No.	Temp. °C	Date	Time hr	Time min	Time sec	Initial σ_c psi	Initial Ub psi	Dial Indicator in	Pressure Head Reading Mercury (inch)	Pressure Head Reading Gage (psi)	Flow Reading (cm)	Flow Vol (cm3) Rate (cm3/sec)	Fluid Head Reading Head (cm)	Fluid Head Reading Tail (cm)	Total Head Uncorrected / Correction / Corrected (cm)	Gradient Total Corrected	Permeability Preliminary / Final at 20°C cm/sec
initial	21.3	10/28/04	00	00	00	105.0	100.0				4.30	24.816	82.00	37.30	44.70	4.43	
final	21.3	10/28/04	00	36	30						5.50	0.0113	82.00	37.30	0.08		8.84E-05
1	RT = 0.968	dT =		36.50 min		σ'_c =	0.7 ksf						82	37.3	44.62	4.42	8.45E-05
initial	21.3	10/28/04	00	00	00	105.0	100.0				5.50	26.884	82.00	37.30	44.70	4.43	
final	21.3	10/28/04	00	38	00						6.80	0.0118	82.00	37.30	0.08		9.20E-05
2	RT = 0.968	dT =		38.00 min		σ'_c =	0.7 ksf						82	37.3	44.62	4.42	8.79E-05
initial	21.3	10/28/04	00	00	00	105.0	100.0				6.80	26.884	82.00	37.30	44.70	4.43	
final	21.3	10/28/04	00	38	09						8.10	0.0117	82.00	37.30	0.08		9.16E-05
3	RT = 0.968	dT =		38.15 min		σ'_c =	0.7 ksf						82	37.3	44.62	4.42	8.76E-05
initial	21.3	10/28/04	00	00	00	105.0	100.0				4.30	78.584	82.00	37.30	44.70	4.43	
final	21.3	10/28/04	00	111	24						8.10	0.0118	82.00	37.30	0.08		9.17E-05
4	RT = 0.968	dT =		111.40 min		σ'_c =	0.7 ksf						82	37.3	44.62	4.42	8.77E-05

Preliminary Length/Area Calculations

Lo =	4.010	in	Lo=	10.185	cm
Ao=	4.583	in^2	Ao =	29.57	cm^2
Vo=	18.378	in^3	Vo =	301.17	cm^3
Lc =	3.970	in	Lc =	10.084	cm
Ac=	4.491	in^2	Ac=	28.973	cm^2
Vc =	17.828	in^3	Vc =	292.16	cm^3

Tested By: BB Reviewed By: CMJ

TEST CONDITIONS

Final Specimen and Test Conditions

Lc = 10.084 cm ε_{axial} = 1.0%
Ac = 29.334 cm^2
Vc= 295.80 cm^3 ε_{vol} = 1.8%

	w (%)	γ_τ (pcf)	γ_d (pcf)	S (%)
Initial	7.13	123.4	115.2	42.8
PreTest	15.68	135.6	117.3	100.0

Project No. 25595516
Project Name: GTE OSI
NYSDEC: V-00089-1
BORING: K2
SAMPLE: DEPTH (ft): 47.0-47.5

HYDRAULIC CONDUCTIVITY TEST SUMMARY

Averages for trials: 1-6
ave K @ 20 °C: **8.69E-05** cm/sec
(i_c)ave = 4.42

CONSTANT HEAD HYDRAULIC CONDUCTIVITY TEST
ASTM D 5084 - 90

Project No. **25595516** BORING: K2
Project Name: **GTE OSI** SAMPLE: DEPTH (ft): 47.5-48.0 Test No.: **P7246**

Specimen - Apparatus set-up - Test Information

Apparatus No. C-2 Cell No. CH-2 Stage 2

1) Specimen Tested in :	x	Triaxial Cell or		Compaction Mold or	
		with stones or		Stones with filter paper or	fabric top + bottom
2) Specimen orientation for:	x	Vertical or		Horizontal permeability determination	
3) During saturation: Water flushed up sides of specimen to remove air:			x	No	Yes
4) During consolidation:	x	Top and bottom drainage or		Top	Bottom only
5) Direction of permeant :		Up during or	X	Down during permeation	
6) Permeant: water used	x	Tap		Distilled	
		Demineralized		0.005 N calcium sulfate (CaSO4)	

Consol Stage- Trial No.	Temp. °C	Date	Time hr	Time min	Time sec	Initial σ_c psi	Initial Ub psi	Dial Indicator in	Pressure Head Reading Mercury (inch)	Pressure Head Reading Gage (psi)	Flow Reading (cm)	Flow Vol (cm3) Rate (cm3/sec)	Fluid Head Reading Head (cm)	Fluid Head Reading Tail (cm)	Total Head Uncorrected / Correction / Corrected (cm)	Gradient Total / Corrected	Permeability Preliminary / Final at 20°C cm/sec
initial	21.0	10/29/04	00	00	00	105.0	100.0				4.40	33.088	48.45	44.10	4.35	0.43	
final	21.0	10/29/04	00	22	18						6.00	0.0247	48.45	44.10	0.18		2.00E-03
1	RT = 0.975	dT =		22.30 min		σ'_c =	0.7 ksf						48.45	44.1	4.17	0.41	1.98E-03
initial	21.0	10/29/04	00	00	00	105.0	100.0				6.00	37.224	48.45	44.10	4.35	0.43	
final	21.0	10/29/04	00	22	24						7.80	0.0277	48.45	44.10	0.20		2.26E-03
2	RT = 0.975	dT =		22.40 min		σ'_c =	0.7 ksf						48.45	44.1	4.15	0.41	2.23E-03
initial	21.0	10/29/04	00	00	00	105.0	100.0				4.60	39.292	48.45	42.15	6.30	0.62	
final	21.0	10/29/04	00	18	54						6.50	0.0346	48.45	42.15	0.25		1.94E-03
3	RT = 0.975	dT =		18.90 min		σ'_c =	0.7 ksf						48.45	42.15	6.05	0.60	1.92E-03
initial	21.0	10/29/04	00	00	00	105.0	100.0				6.50	41.36	48.45	42.15	6.30	0.62	
final	21.0	10/29/04	00	18	30						8.50	0.0373	48.45	42.15	0.26		2.09E-03
4	RT = 0.975	dT =		18.50 min		σ'_c =	0.7 ksf						48.45	42.15	6.04	0.60	2.07E-03
initial	21.0	10/29/04	00	00	00	105.0	100.0				5.20	64.108	48.40	39.60	8.80	0.87	
final	21.0	10/29/04	00	21	00						8.30	0.0509	48.40	39.60	0.36		2.04E-03
5	RT = 0.975	dT =		21.00 min		σ'_c =	0.7 ksf						48.4	39.6	8.44	0.83	2.02E-03
initial	21.0	10/29/04	00	00	00	105.0	100.0				8.30	143.726	48.40	39.60	8.80	0.87	
final	21.0	10/29/04	00	46	42						15.25	0.0513	48.40	39.60	0.36		2.06E-03
6	RT = 0.975	dT =		46.70 min		σ'_c =	0.7 ksf						48.4	39.6	8.44	0.83	2.04E-03

Preliminary Length/Area Calculations

Lo =	4.016	in	Lo=	10.200	cm
Ao=	4.705	in^2	Ao =	30.36	cm^2
Vo=	18.896	in^3	Vo =	309.65	cm^3
Lc =	3.988	in	Lc =	10.129	cm
Ac=	4.639	in^2	Ac=	29.931	cm^2
Vc =	18.501	in^3	Vc =	303.17	cm^3

Tested By: BB Reviewed By: CMJ

TEST CONDITIONS

Final Specimen and Test Conditions

Lc = 10.129 cm ε_{axial} = 0.7%
Ac = 29.495 cm^2
Vc= 298.76 cm^3 ε_{vol} = 3.5%

	w (%)	γ_t (pcf)	γ_d (pcf)	S (%)
Initial	7.29	126.7	118.1	46.7
PreTest	13.75	139.2	122.4	100.0

Project No. 25595516
Project Name: GTE OSI
NYSDEC: V-00089-1
BORING: K2
SAMPLE: DEPTH (ft): 47.5-48.0

HYDRAULIC CONDUCTIVITY TEST SUMMARY

Averages for trials: 1-6
ave K @ 20 °C: **2.04E-03** cm/sec
(i_o)ave = 0.61

CONSTANT HEAD HYDRAULIC CONDUCTIVITY TEST
ASTM D 5084 - 90

Project No. **25595516** BORING: K2
Project Name: **GTE OSI** SAMPLE: DEPTH (ft): 72-72.5 Test No.: **P7247**

Specimen - Apparatus set-up - Test Information Apparatus No. C-2 Cell No. CH-2 Stage 2

1) Specimen Tested in :	x	Triaxial Cell or		Compaction Mold or			
		with stones or		Stones with filter paper or	fabric	top + bottom	
2) Specimen orientation for:	x	Vertical or		Horizontal permeability determination			
3) During saturation: Water flushed up sides of specimen to remove air:					x	No	Yes
4) During consolidation:	x	Top and bottom drainage or				Top	Bottom only
5) Direction of permeant :		Up during or	X	Down during permeation			
6) Permeant: water used	x	Tap		Distilled			
		Demineralized		0.005 N calcium sulfate (CaSO4)			

Consol Stage- Trial No.	Temp. ° C	Date	Time hr	Time min	Time sec	Initial σ_c psi	Initial Ub psi	Dial Indicator in	Pressure Head Reading Mercury (inch)	Pressure Head Reading Gage (psi)	Flow Reading (cm)	Flow Vol (cm3) Rate (cm3/sec)	Fluid Head Reading Head (cm)	Fluid Head Reading Tail (cm)	Total Head Uncorrected / Correction / Corrected (cm)	Gradient Total / Corrected	Permeability Preliminary / Final at 20°C cm/sec
initial	21.0	10/28/04	00	00	00	105.0	100.0				4.70	49.632	48.40	46.20	2.20	0.22	
final	21.0	10/28/04	00	14	06						7.10	0.0587	48.40	46.20	0.42		1.15E-02
1	RT = 0.975	dT =		14.10 min		σ'_c =	0.7 ksf						48.4	46.2	1.78	0.17	1.14E-02
initial	21.0	10/28/04	00	00	00	105.0	100.0				7.10	41.36	48.40	46.20	2.20	0.22	
final	21.0	10/28/04	00	11	48						9.10	0.0584	48.40	46.20	0.41		1.14E-02
2	RT = 0.975	dT =		11.80 min		σ'_c =	0.7 ksf						48.4	46.2	1.79	0.18	1.13E-02
initial	21.0	10/28/04	00	00	00	105.0	100.0				4.50	41.36	48.20	43.95	4.25	0.42	
final	21.0	10/28/04	00	06	03						6.50	0.1139	48.20	43.95	0.81		1.15E-02
3	RT = 0.975	dT =		6.05 min		σ'_c =	0.7 ksf						48.2	43.95	3.44	0.34	1.15E-02
initial	21.0	10/28/04	00	00	00	105.0	100.0				6.50	62.04	48.20	43.95	4.25	0.42	
final	21.0	10/28/04	00	09	00						9.50	0.1149	48.20	43.95	0.81		1.17E-02
4	RT = 0.975	dT =		9.00 min		σ'_c =	0.7 ksf						48.2	43.95	3.44	0.34	1.16E-02
initial	21.0	10/28/04	00	00	00	105.0	100.0				4.50	45.496	48.10	41.95	6.15	0.60	
final	21.0	10/28/04	00	04	30						6.70	0.1685	48.10	41.95	1.19		1.19E-02
5	RT = 0.975	dT =		4.50 min		σ'_c =	0.7 ksf						48.1	41.95	4.96	0.49	1.18E-02
initial	21.0	10/28/04	00	00	00	105.0	100.0				6.70	41.36	48.10	41.95	6.15	0.60	
final	21.0	10/28/04	00	04	03						8.70	0.1702	48.10	41.95	1.21		1.20E-02
6	RT = 0.975	dT =		4.05 min		σ'_c =	0.7 ksf						48.1	41.95	4.94	0.48	1.19E-02

Preliminary Length/Area Calculations

Lo =	4.042	in	Lo=	10.267	cm
Ao=	4.596	in^2	Ao =	29.65	cm^2
Vo=	18.580	in^3	Vo =	304.47	cm^3
Lc =	4.014	in	Lc =	10.196	cm
Ac=	4.532	in^2	Ac=	29.241	cm^2
Vc =	18.194	in^3	Vc =	298.14	cm^3

Tested By: BB Reviewed By: CMJ

TEST CONDITIONS

Final Specimen and Test Conditions

Lc = 10.196 cm ε_{axial} = 0.7%
Ac = 28.701 cm^2
Vc= 292.64 cm^3 ε_{vol} = 3.9%

	w (%)	γ_t (pcf)	γ_d (pcf)	S (%)
Initial	12.49	123.4	109.7	64.6
PreTest	17.14	133.7	114.1	100.0

Project No. 25595516
Project Name: GTE OSI
NYSDEC: V-00089-1
BORING: K2
SAMPLE: DEPTH (ft): 72-72.5

HYDRAULIC CONDUCTIVITY TEST SUMMARY

Averages for trials: 1-6
ave K @ 20 °C: **1.16E-02** cm/sec
(i_c)ave = 0.33

CONSTANT HEAD HYDRAULIC CONDUCTIVITY TEST
ASTM D 5084 - 90

Project No. **25595516** BORING: K4
Project Name: **GTE OSI** SAMPLE: DEPTH (ft): 25-25.5 Test No.: **P7248**

Specimen - Apparatus set-up - Test Information

Apparatus No. C-2 Cell No. CH-2 Stage 3

1) Specimen Tested in :	x	Triaxial Cell or		Compaction Mold or	
		with stones or		Stones with filter paper or	fabric top + bottom
2) Specimen orientation for:	x	Vertical or		Horizontal permeability determination	
3) During saturation: Water flushed up sides of specimen to remove air:			x	No	Yes
4) During consolidation:	x	Top and bottom drainage or		Top	Bottom only
5) Direction of permeant :		Up during or	X	Down during permeation	
6) Permeant: water used	x	Tap		Distilled	
		Demineralized		0.005 N calcium sulfate (CaSO4)	

Consol Stage- Trial No.	Temp. ° C	Date	Time hr	Time min	Time sec	Initial σ_c psi	Initial Ub psi	Dial Indicator in	Pressure Head Reading Mercury (inch)	Pressure Head Reading Gage (psi)	Flow Reading (cm)	Flow Vol (cm3) Rate (cm3/sec)	Fluid Head Reading Head (cm)	Fluid Head Reading Tail (cm)	Total Head Uncorrected / Correction / Corrected (cm)	Gradient Total / Corrected	Permeability Preliminary / Final at 20°C cm/sec
initial	20.3	10/25/04	00	00	00	105.0	100.0				4.50	62.04	48.05	44.95	3.10	0.30	
final	20.3	10/25/04	00	09	03						7.50	0.1143	48.05	44.95	0.81		1.76E-02
1	RT = 0.991	dT =		9.05 min		σ'_c =	0.7 ksf						48.05	44.95	2.29	0.22	1.75E-02
A-1	20.3	10/25/04	00	00	00	105.0	100.0				7.50	51.7	48.05	44.95	3.10	0.30	
final	20.3	10/25/04	00	07	27						10.00	0.1157	48.05	44.95	0.82		1.79E-02
2	RT = 0.991	dT =		7.45 min		σ'_c =	0.7 ksf						48.05	44.95	2.28	0.22	1.78E-02
initial	20.3	10/25/04	00	00	00	105.0	100.0				10.00	62.04	48.05	44.95	3.10	0.30	
final	20.3	10/25/04	00	09	03						13.00	0.1143	48.05	44.95	0.81		1.76E-02
3	RT = 0.991	dT =		9.05 min		σ'_c =	0.7 ksf						48.05	44.95	2.29	0.22	1.75E-02
initial	20.3	10/25/04	00	00	00	105.0	100.0				4.50	72.38	48.05	43.75	4.30	0.41	
final	20.3	10/25/04	00	07	57						8.00	0.1517	48.05	43.75	1.08		1.66E-02
4	RT = 0.991	dT =		7.95 min		σ'_c =	0.7 ksf						48.05	43.75	3.22	0.31	1.65E-02
initial	20.3	10/25/04	00	00	00	105.0	100.0				8.00	62.04	48.05	43.75	4.30	0.41	
final	20.3	10/25/04	00	06	30						11.00	0.1591	48.05	43.75	1.13		1.77E-02
5	RT = 0.991	dT =		6.50 min		σ'_c =	0.7 ksf						48.05	43.75	3.17	0.30	1.76E-02
initial	20.3	10/25/04	00	00	00	105.0	100.0				11.00	84.788	48.05	43.75	4.30	0.41	
final	20.3	10/25/04	00	09	06						15.10	0.1553	48.05	43.75	1.10		1.71E-02
6	RT = 0.991	dT =		9.10 min		σ'_c =	0.7 ksf						48.05	43.75	3.20	0.30	1.70E-02

Preliminary Length/Area Calculations

Lo =	4.137	in	Lo=	10.507	cm
Ao=	4.631	in^2	Ao =	29.88	cm^2
Vo=	19.156	in^3	Vo =	313.92	cm^3
Lc =	4.133	in	Lc =	10.497	cm
Ac=	4.622	in^2	Ac=	29.818	cm^2
Vc =	19.101	in^3	Vc =	313.00	cm^3

Tested By: BB Reviewed By: CMJ

TEST CONDITIONS

Final Specimen and Test Conditions

Lc =	10.497 cm	ε_{axial} =	0.1%
Ac =	29.734 cm^2		
Vc=	312.13 cm^3	ε_{vol} =	0.6%

	w (%)	γ_τ (pcf)	γ_d (pcf)	S (%)
Initial	4.32	105.5	101.1	18.1
PreTest	23.57	125.7	101.7	100.0

Project No. 25595516
Project Name: GTE OSI
NYSDEC: V-00089-1
BORING: K4
SAMPLE: DEPTH (ft): 25-25.5

HYDRAULIC CONDUCTIVITY TEST SUMMARY

Averages for trials: 1-6
ave K @ 20 °C: **1.73E-02** cm/sec
(i_o)ave = 0.26

CONSTANT HEAD HYDRAULIC CONDUCTIVITY TEST
ASTM D 5084 - 90

Project No. **25595516** BORING: K4
Project Name: **GTE OSI** SAMPLE: DEPTH (ft): 43-43.5 Test No.: **P7249**

Specimen - Apparatus set-up - Test Information

Apparatus No. C-2 Cell No. CH-2 Stage 2

1) Specimen Tested in :	x	Triaxial Cell or		Compaction Mold or	
		with stones or		Stones with filter paper or	fabric top + bottom
2) Specimen orientation for:	x	Vertical or		Horizontal permeability determination	
3) During saturation: Water flushed up sides of specimen to remove air:			x	No	Yes
4) During consolidation:	x	Top and bottom drainage or		Top	Bottom only
5) Direction of permeant :		Up during or	X	Down during permeation	
6) Permeant: water used	x	Tap		Distilled	
		Demineralized		0.005 N calcium sulfate (CaSO4)	

Consol Stage- Trial No.	Temp. °C	Date	Time hr	Time min	Time sec	Initial σ_c psi	Initial Ub psi	Dial Indicator in	Pressure Head Reading Mercury (inch)	Pressure Head Reading Gage (psi)	Flow Reading (cm)	Flow Vol (cm3) Rate (cm3/sec)	Fluid Head Reading Head (cm)	Fluid Head Reading Tail (cm)	Total Head Uncorrected / Correction / Corrected (cm)	Gradient Total / Corrected	Permeability Preliminary / Final at 20°C cm/sec
initial	20.7	10/26/04	00	00	00	105.0	100.0				4.50	41.36	48.20	46.20	2.00	0.19	
final	20.7	10/26/04	00	08	24						6.50	0.0821	48.20	46.20	0.58		2.06E-02
1	RT = 0.982	dT =		8.40 min		σ'_c =	0.7 ksf						48.2	46.2	1.42	0.13	2.03E-02
initial	20.7	10/26/04	00	00	00	105.0	100.0				6.50	51.7	48.20	46.20	2.00	0.19	
final	20.7	10/26/04	00	10	24						9.00	0.0829	48.20	46.20	0.59		2.09E-02
2	RT = 0.982	dT =		10.40 min		σ'_c =	0.7 ksf						48.2	46.2	1.41	0.13	2.06E-02
initial	20.7	10/26/04	00	00	00	105.0	100.0				4.50	53.768	48.00	44.00	4.00	0.38	
final	20.7	10/26/04	00	05	03						7.10	0.1775	48.00	44.00	1.26		2.30E-02
3	RT = 0.982	dT =		5.05 min		σ'_c =	0.7 ksf						48	44	2.74	0.26	2.27E-02
initial	20.7	10/26/04	00	00	00	105.0	100.0				7.10	59.972	48.00	44.00	4.00	0.38	
final	20.7	10/26/04	00	05	24						10.00	0.1851	48.00	44.00	1.31		2.45E-02
4	RT = 0.982	dT =		5.40 min		σ'_c =	0.7 ksf						48	44	2.69	0.26	2.41E-02
initial	20.7	10/26/04	00	00	00	105.0	100.0				4.50	41.36	47.60	39.95	7.65	0.73	
final	20.7	10/26/04	00	02	03						6.50	0.3363	47.60	39.95	2.38		2.27E-02
5	RT = 0.982	dT =		2.05 min		σ'_c =	0.7 ksf						47.6	39.95	5.27	0.50	2.24E-02
initial	20.7	10/26/04	00	00	00	105.0	100.0				6.50	51.7	47.60	39.95	7.65	0.73	
final	20.7	10/26/04	00	02	30						9.00	0.3447	47.60	39.95	2.44		2.36E-02
6	RT = 0.982	dT =		2.50 min		σ'_c =	0.7 ksf						47.6	39.95	5.21	0.50	2.32E-02

Preliminary Length/Area Calculations

Lo =	4.143	in	Lo=	10.523	cm
Ao=	4.589	in^2	Ao =	29.61	cm^2
Vo=	19.013	in^3	Vo =	311.57	cm^3
Lc =	4.138	in	Lc =	10.510	cm
Ac=	4.578	in^2	Ac=	29.538	cm^2
Vc =	18.944	in^3	Vc =	310.44	cm^3

Tested By: BB Reviewed By: CMJ

TEST CONDITIONS

Final Specimen and Test Conditions

Lc = 10.510 cm ε_{axial} = 0.1%
Ac = 29.438 cm^2
Vc= 309.39 cm^3 ε_{vol} = 0.7%

	w (%)	γ_t (pcf)	γ_d (pcf)	S (%)
Initial	4.34	100.9	96.7	16.3
PreTest	26.23	123.0	97.4	100.0

Project No. 25595516
Project Name: GTE OSI
NYSDEC: V-00089-1
BORING: K4
SAMPLE: DEPTH (ft): 43-43.5

HYDRAULIC CONDUCTIVITY TEST SUMMARY

Averages for trials: 1-6
ave K @ 20 °C: **2.22E-02** cm/sec
(i_c)ave = 0.30

CONSTANT HEAD HYDRAULIC CONDUCTIVITY TEST
ASTM D 5084 - 90

Project No. **25595516** BORING: K4
Project Name: **GTE OSI** SAMPLE: DEPTH (ft): 63.5-64 Test No.: **P7250**

Specimen - Apparatus set-up - Test Information

Apparatus No. C-2 Cell No. CH-2 Stage 2

1) Specimen Tested in :	x	Triaxial Cell or		Compaction Mold or		
		with stones or		Stones with filter paper or	fabric	top + bottom
2) Specimen orientation for:	x	Vertical or		Horizontal permeability determination		
3) During saturation: Water flushed up sides of specimen to remove air:			x	No		Yes
4) During consolidation:	x	Top and bottom drainage or		Top		Bottom only
5) Direction of permeant :		Up during or	X	Down during permeation		
6) Permeant: water used	x	Tap		Distilled		
		Demineralized		0.005 N calcium sulfate (CaSO4)		

Consol Stage-Trial No.	Temp. °C	Date	Time hr	Time min	Time sec	Initial σ_c psi	Initial Ub psi	Dial Indicator in	Pressure Head Reading Mercury (inch)	Pressure Head Reading Gage (psi)	Flow Reading (cm)	Flow Vol (cm3) Rate (cm3/sec)	Fluid Head Reading Head (cm)	Fluid Head Reading Tail (cm)	Total Head Uncorrected / Correction / Corrected (cm)	Gradient Total / Corrected	Permeability Preliminary / Final at 20°C cm/sec
initial	23.0	10/26/04	00	00	00	105.0	100.0				4.30	47.564	48.20	46.20	2.00	0.19	
final	23.0	10/26/04	00	14	00						6.60	0.0566	48.20	46.20	0.40		1.27E-02
1	RT = 0.930	dT =		14.00 min		σ'_c =	0.7 ksf						48.2	46.2	1.60	0.15	1.17E-02
initial	23.0	10/26/04	00	00	00	105.0	100.0				6.60	31.02	48.20	46.20	2.00	0.19	
final	23.0	10/26/04	00	09	03						8.10	0.0571	48.20	46.20	0.41		1.28E-02
2	RT = 0.930	dT =		9.05 min		σ'_c =	0.7 ksf						48.2	46.2	1.59	0.15	1.19E-02
initial	23.0	10/26/04	00	00	00	105.0	100.0				4.30	31.02	48.10	43.80	4.30	0.41	
final	23.0	10/26/04	00	04	24						5.80	0.1175	48.10	43.80	0.83		1.21E-02
3	RT = 0.930	dT =		4.40 min		σ'_c =	0.7 ksf						48.1	43.8	3.47	0.33	1.12E-02
initial	23.0	10/26/04	00	00	00	105.0	100.0				5.80	41.36	48.10	43.80	4.30	0.41	
final	23.0	10/26/04	00	05	42						7.80	0.1209	48.10	43.80	0.86		1.26E-02
4	RT = 0.930	dT =		5.70 min		σ'_c =	0.7 ksf						48.1	43.8	3.44	0.33	1.16E-02
initial	23.0	10/26/04	00	00	00	105.0	100.0				4.30	41.36	47.85	40.25	7.60	0.72	
final	23.0	10/26/04	00	03	18						6.30	0.2089	47.85	40.25	1.48		1.22E-02
5	RT = 0.930	dT =		3.30 min		σ'_c =	0.7 ksf						47.85	40.25	6.12	0.58	1.13E-02
initial	23.0	10/26/04	00	00	00	105.0	100.0				6.30	43.428	47.85	40.25	7.60	0.72	
final	23.0	10/26/04	00	03	27						8.40	0.2098	47.85	40.25	1.49		1.23E-02
6	RT = 0.930	dT =		3.45 min		σ'_c =	0.7 ksf						47.85	40.25	6.11	0.58	1.14E-02

Preliminary Length/Area Calculations

Lo =	4.147	in	Lo=	10.533	cm
Ao=	4.587	in^2	Ao =	29.59	cm^2
Vo=	19.021	in^3	Vo =	311.70	cm^3
Lc =	4.128	in	Lc =	10.485	cm
Ac=	4.545	in^2	Ac=	29.321	cm^2
Vc =	18.760	in^3	Vc =	307.42	cm^3

Tested By: BB Reviewed By: CMJ

TEST CONDITIONS

Final Specimen and Test Conditions

Lc = 10.485 cm ε_{axial} = 0.5%
Ac = 29.412 cm^2
Vc= 308.37 cm^3 ε_{vol} = 1.1%

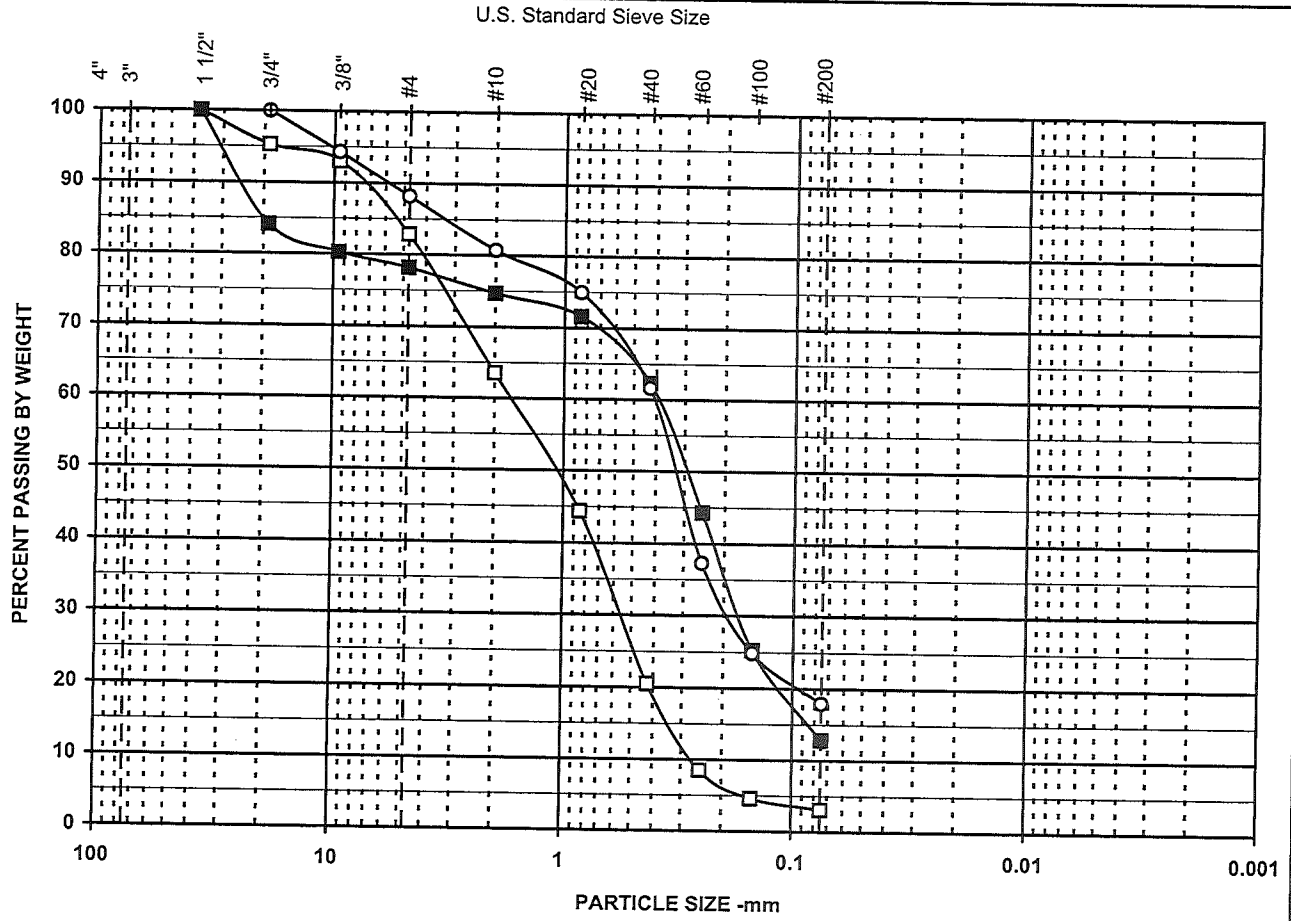
	w (%)	γ_t (pcf)	γ_d (pcf)	S (%)
Initial	3.31	105.3	101.9	14.0
PreTest	23.01	126.7	103.0	100.0

Project No. 25595516
Project Name: GTE OSI
NYSDEC: V-00089-1
BORING: K4
SAMPLE: DEPTH (ft): 63.5-64

HYDRAULIC CONDUCTIVITY TEST SUMMARY

Averages for trials: 1-6
ave K @ 20 °C: **1.15E-02** cm/sec
(i_o)ave = 0.36

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



SYMBOL	DESCRIPTION AND REMARKS
□	brown c-f SAND, some gravel, trace silt.
■	c-f SAND, some gravel, silt.
○	orange-brown c-f SAND, some silt, trace f. gravel.

Symbol	□	■	○
Boring	K-2	K-2	K-2
Sample			
Spec	24.5-	47-	47.5-
Depth	25	47.5	48
% +3"			
% Gravel	17.1	21.8	11.8
% SAND	79.8	65.4	70.3
% FINES	3.1	12.8	17.9
% -2μ			
Cc	0.7		
Cu	6.6		
LL			
PL			
PI			
USCS	SP	SM	SM
w (%)			

Particle Size	PERCENT FINER		
(Sieve #)	□	■	○
4"			
3"			
1 1/2"	100.0	100.0	
3/4"	95.3	84.1	100.0
3/8"	93.1	80.3	94.3
4	82.9	78.2	88.2
10	63.6	74.7	80.7
20	44.4	71.6	75.0
40	20.5	62.3	61.6
60	8.5	44.3	37.3
100	4.6	25.2	24.8
200	3.1	12.8	17.9

PARTICLE SIZE DISTRIBUTION
NYSDEC- V00089-1

Project No.		
25595516	November 2004	Figure

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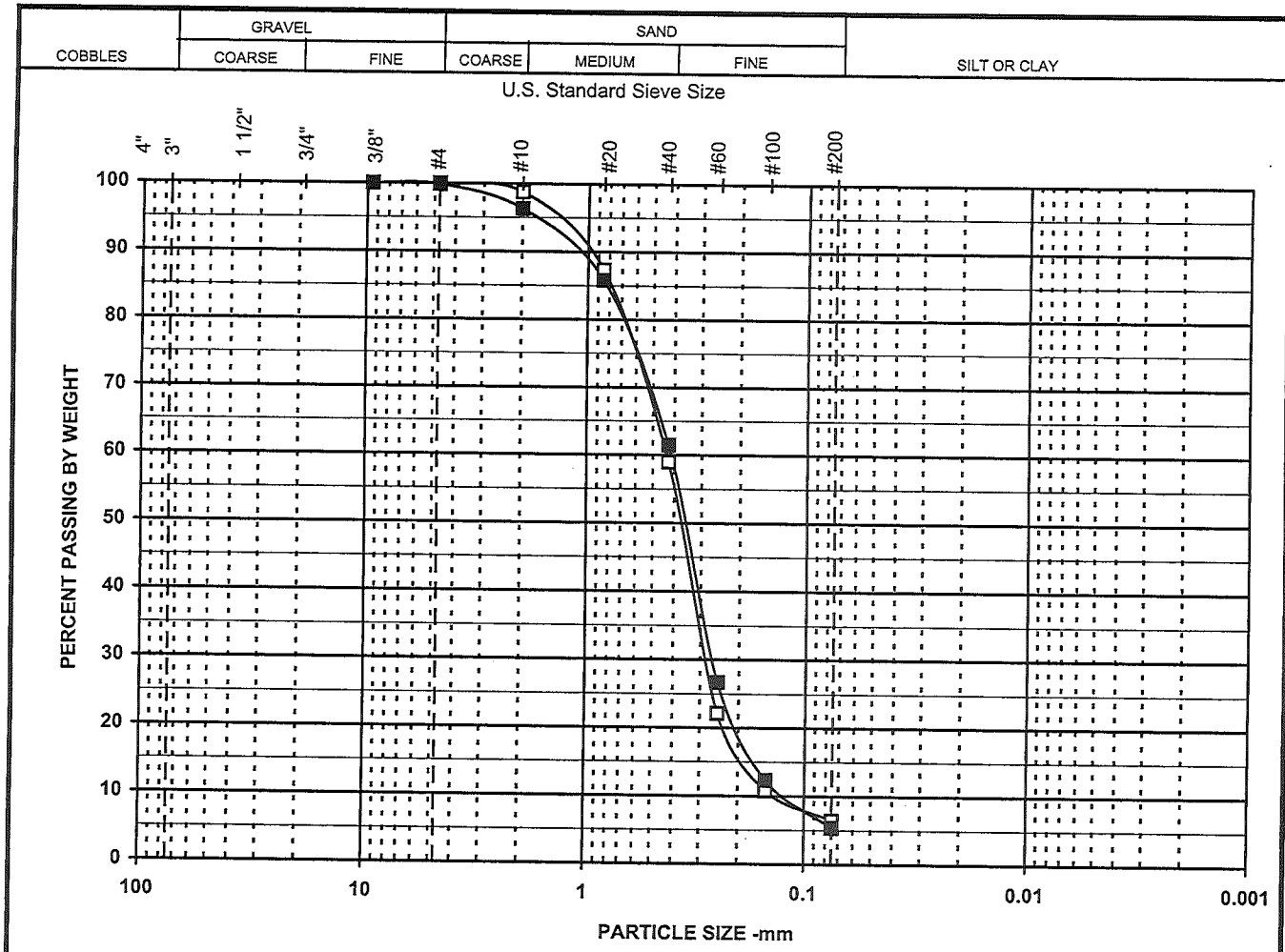

SYMBOL	DESCRIPTION AND REMARKS
□	light brown c-f SAND, trace silt.
■	brown c-f SAND, trace silt.
○	

Symbol	□	■	○
Boring	K-2	K-2	
Sample			
Spec	72-	94.5-	
Depth	72.5	98.7	
% +3"			
% Gravel		0.1	
% SAND	93.6	94.5	
% FINES	6.4	5.4	
% -2μ			
Cc	1.4	1.4	
Cu	3.2	3.3	
LL			
PL			
PI			
USCS	SP-SM	SP-SM	
w (%)			

Particle Size	PERCENT FINER		
(Sieve #)	□	■	○
4"			
3"			
1 1/2"			
3/4"			
3/8"		100.0	
4	100.0	99.9	
10	98.8	96.3	
20	87.3	85.8	
40	59.0	61.4	
60	22.1	26.7	
100	10.8	12.3	
200	6.4	5.4	

PARTICLE SIZE DISTRIBUTION
NYSDEC- V00089-1

Project No.		Figure
25595516	November 2004	

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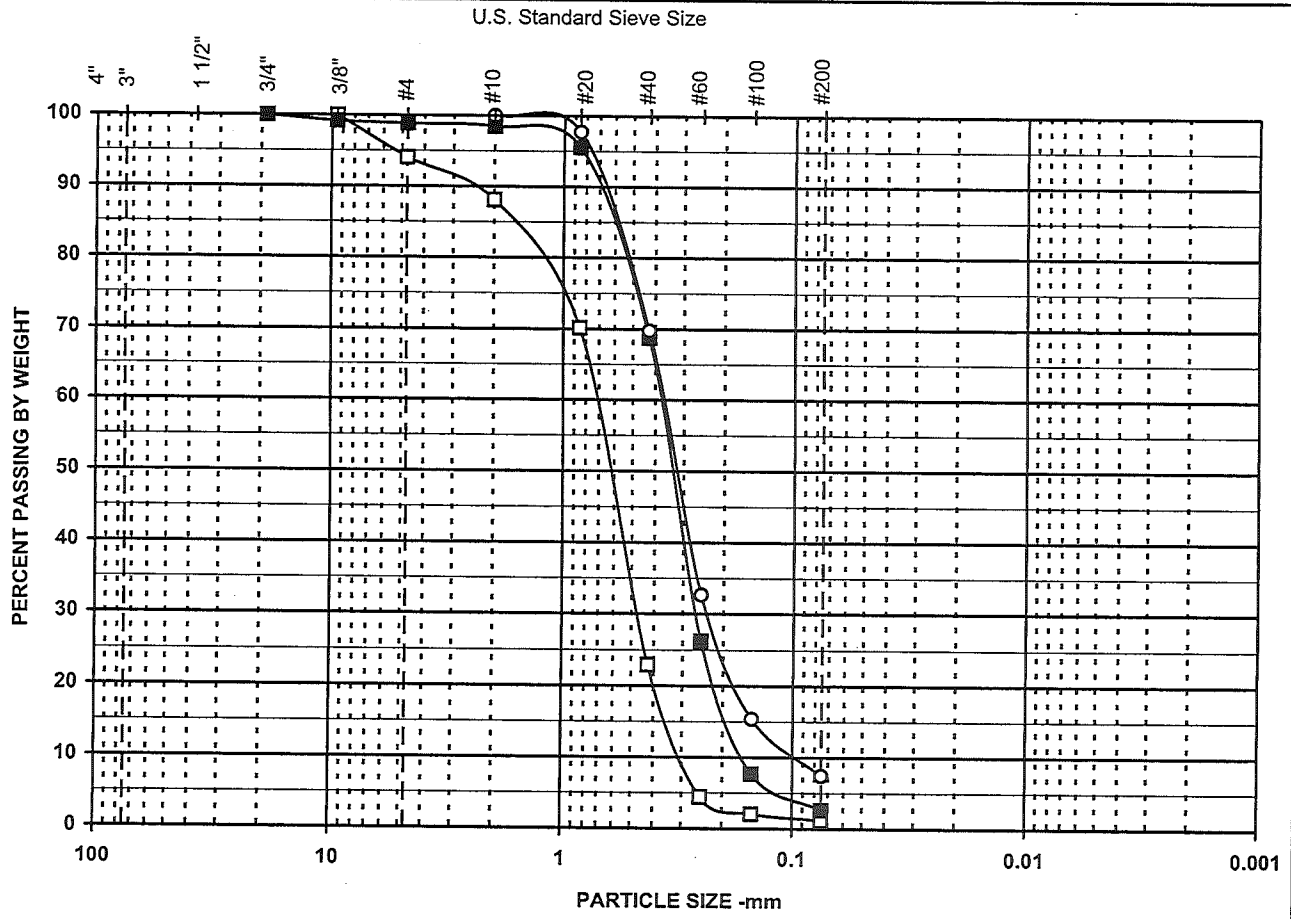
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



SYMBOL	DESCRIPTION AND REMARKS
□	yellowish brown c-f SAND, trace f. gravel, silt.
■	brown m-f SAND, trace f. gravel, silt.
○	yellowish brown m-f SAND, trace silt.

Symbol	□	■	○
Boring	K-4	K-4	K-4
Sample			
Spec	25-	43-	63.5-
Depth	25.5	43.5	64
% +3"			
% Gravel	5.9	1.1	
% SAND	92.9	96.3	92.6
% FINES	1.2	2.6	7.4
% -2μ			
Cc	1.0	1.1	1.5
Cu	2.5	2.4	3.8
LL			
PL			
PI			
USCS	SP	SP	SP-SM
w (%)			

Particle Size	PERCENT FINER		
(Sieve #)	□	■	○
4"			
3"			
1 1/2"			
3/4"		100.0	
3/8"	100.0	99.2	
4	94.1	98.9	
10	88.1	98.5	100.0
20	70.2	95.5	97.7
40	22.9	68.8	69.8
60	4.4	26.2	32.7
100	2.1	7.7	15.4
200	1.2	2.6	7.4

PARTICLE SIZE DISTRIBUTION

NYSDEC- V00089-1

Project No.		
25595516	November 2004	Figure

Geotesting Services, Inc.

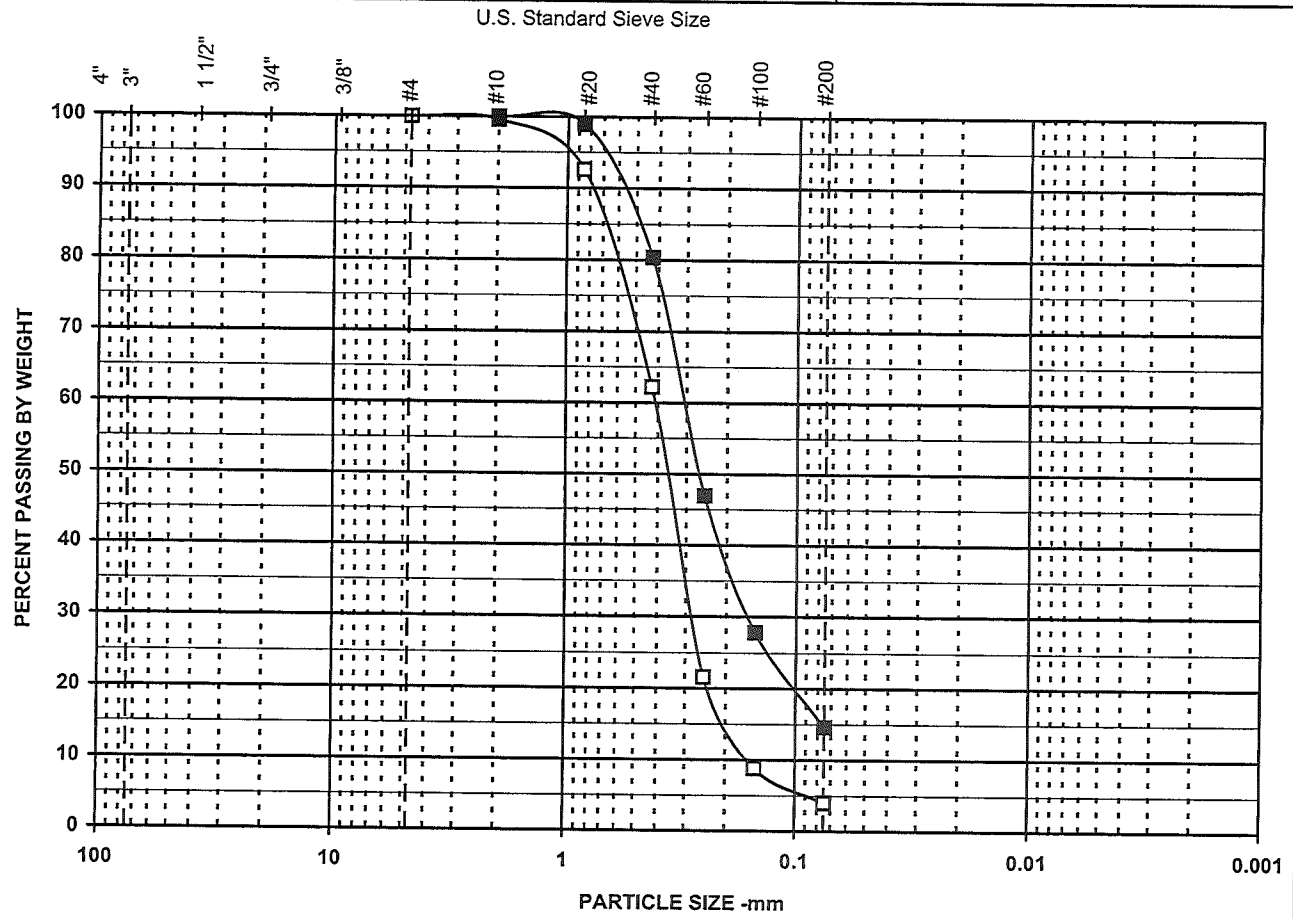
GTE OSI V00089-1

LABORATORY TESTING DATA SUMMARY

BORING NO.	SAMPLE NO.	DEPTH (ft)	IDENTIFICATION TESTS						REMARKS
			WATER CONTENT (%)	USCS SYMB. (1)	SIEVE MINUS NO. 200 (%)	HYDROMETER % MINUS 2 µm (%)	ORGANIC CONTENT (burnoff) (%)	SPECIFIC GRAVITY	
K3		21.0-21.5	1.5	GW	1.6	1	0.2	2.651	
K3		31.0-31.5	2.6	SP	3.3	2	0.1	2.644	
K3		41.5-42	2.0	SP	2.8	2	0.1	2.652	
K3		46.5-47	34.3	ML	97.3	17	0.7	2.702	
K3		51.0-51.5	4.7	SP-SM	6.5	2	0.1	2.662	
K3		61.5-62	4.6	SP-SM	8.0	3	0.0	2.653	
K3		71-71.5	18.3	SP-SM	6.9	3	0.1	2.642	
K3		89-89.5	24.3	SW-SM	11.9	3	0.1	2.643	
K3		100-103	10.5				0.1		

Note: (1) USCS symbol based on visual observation and Sieve reported.

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



SYMBOL	DESCRIPTION AND REMARKS
□	light brown m-f SAND, trace silt.
■	light brown m-f SAND, some silt.
○	

Symbol	□	■	○
Boring	K-4	K-4	
Sample			
Spec	93-	104.5-	
Depth	96	107.2	
% +3"			
% Gravel			
% SAND	96.0	85.4	
% FINES	4.0	14.6	
% -2μ			
Cc	1.2		
Cu	2.6		
LL			
PL			
PI			
USCS	SP	SM	
w (%)			

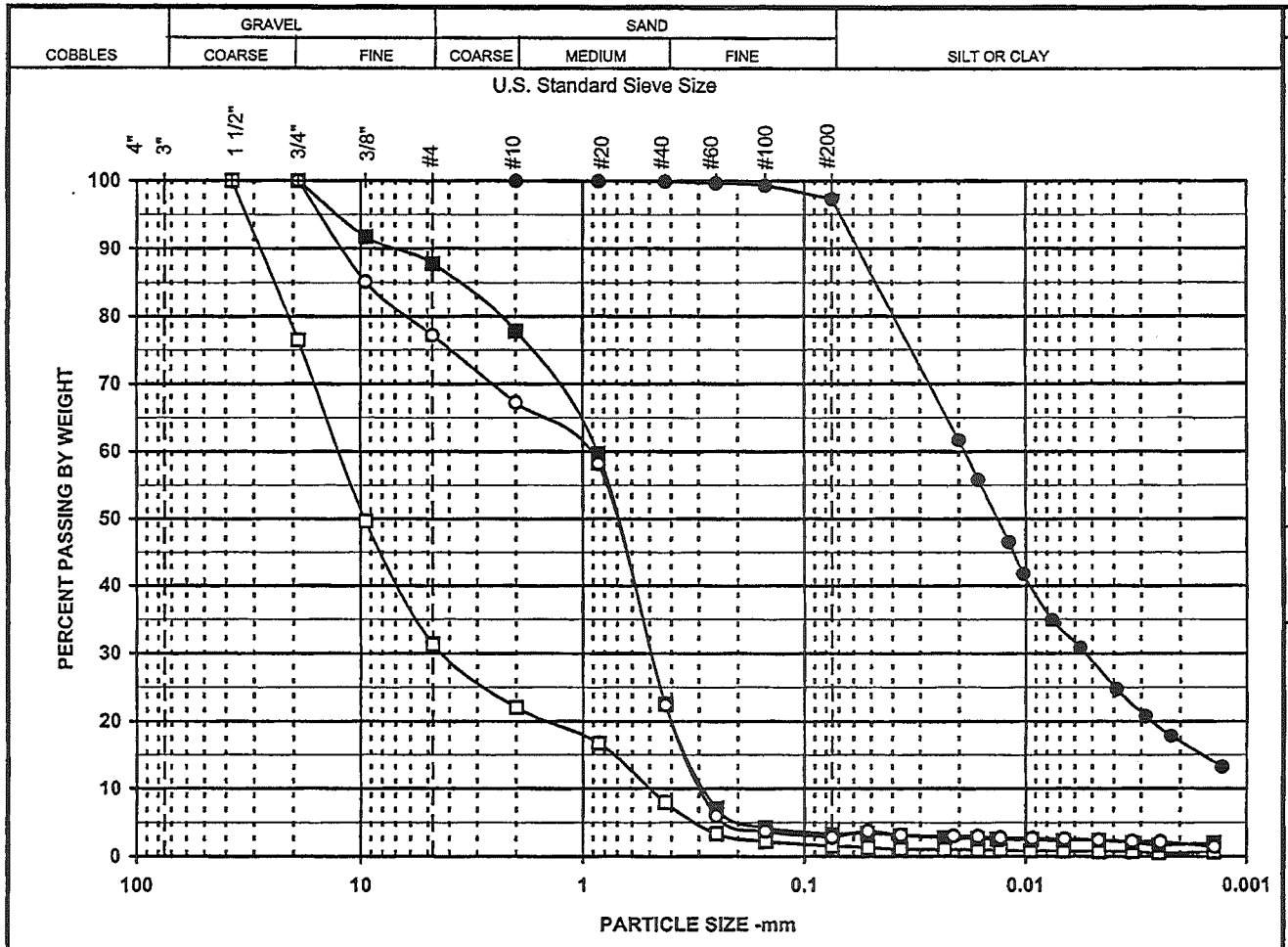
Particle Size	PERCENT FINER		
(Sieve #)	□	■	○
4"			
3"			
1 1/2"			
3/4"			
3/8"			
4	100.0		
10	99.6	100.0	
20	92.6	99.0	
40	62.2	80.4	
60	21.6	47.0	
100	8.8	27.8	
200	4.0	14.6	

PARTICLE SIZE DISTRIBUTION

NYSDEC- V00089-1

Project No.		
25595516	November 2004	Figure

URS Corporation



SYMBOL	DESCRIPTION AND REMARKS
□	yellowish brown GRAVEL, some c-f sand, trace silt.
■	brown c-f SAND, some f. gravel, trace silt.
○	brown c-f SAND, some f. gravel, trace silt.
●	brown SILT, trace f. sand.

Symbol	□	■	○	●
Boring	K3	K3	K3	K3
Sample				
Spec				
Depth	21.0-21.5	31.0-31.5	41.5-42	46.5-47
% +3"				
% Gravel	68.7	12.3	22.8	
% SAND	29.7	84.4	74.4	2.7
% FINES	1.6	3.3	2.8	97.3
% -2μ	1	2	2	17
Cc	2.7	1.1	0.8	
Cu	25.1	3.1	3.7	
LL				
PL				
PI				
USCS	GW	SP	SP	ML
w (%)	1.5	2.6	2.0	34.3

Particle Size	PERCENT FINER			
(Sieve #)	□	■	○	●
4"				
3"				
1 1/2"	100.0			
3/4"	76.5	100.0	100.0	
3/8"	49.6	91.7	85.1	
4	31.3	87.7	77.2	
10	22.0	77.9	67.3	100.0
20	16.7	59.7	58.2	100.0
40	8.0	22.5	22.4	99.9
60	3.3	7.1	6.0	99.7
100	2.2	4.2	3.7	99.3
200	1.6	3.3	2.8	97.3

PARTICLE SIZE DISTRIBUTION

GTE OSI V00089-1

Project No.		Figure
25595516	September 2004	

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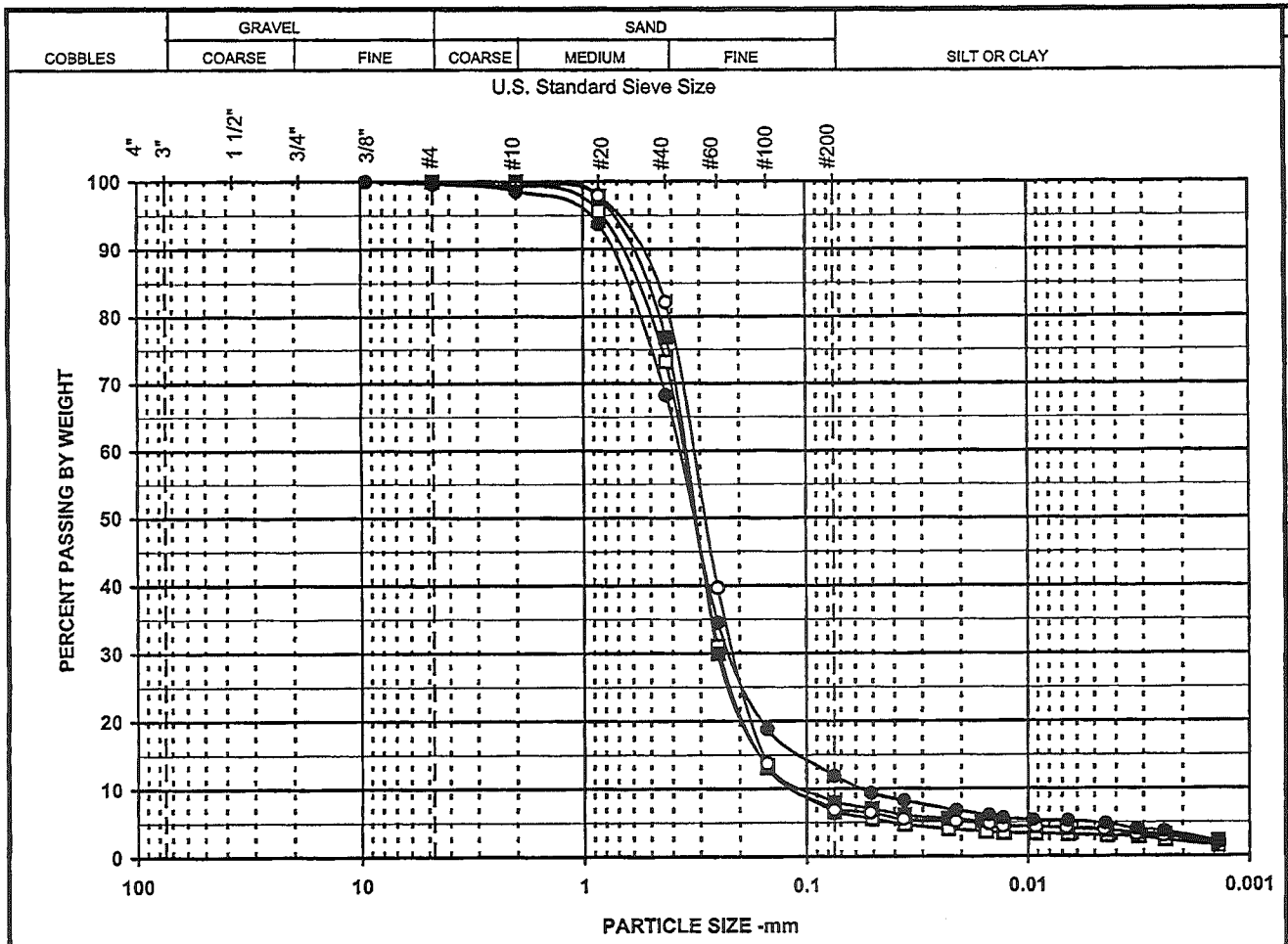

SYMBOL	DESCRIPTION AND REMARKS
□	yellowish brown m-f SAND, trace silt.
■	yellowish brown m-f SAND, trace silt.
○	yellowish brown m-f SAND, trace silt.
●	yellowish brown c-f SAND, trace silt.

Symbol	□	■	○	●
Boring	K3	K3	K3	K3
Sample				
Spec				
Depth	51.0-51.5	61.5-62	71-71.5	89.0-89.5
% +3"				
% Gravel			0.4	0.4
% SAND	93.5	92.0	92.7	87.7
% FINES	6.5	8.0	6.9	11.9
% -2μ	2	3	3	3
Cc	1.4	1.7	1.2	2.3
Cu	3.2	3.5	3.1	6.7
LL				
PL				
PI				
USCS	SP-SM	SP-SM	SP-SM	SW-SM
w (%)	4.7	4.6	18.3	24.3

Particle Size	PERCENT FINER			
(Sieve #)	□	■	○	●
4"				
3"				
1 1/2"				
3/4"				
3/8"			100.0	100.0
4	100.0		99.6	99.6
10	99.7	100.0	99.3	98.6
20	95.7	97.8	97.9	93.7
40	73.2	76.9	82.1	68.3
60	31.0	29.9	39.6	34.5
100	13.2	13.4	13.8	18.8
200	6.5	8.0	6.9	11.9

PARTICLE SIZE DISTRIBUTION
GTE OSI V00089-1

Project No.		Figure
25595516	September 2004	

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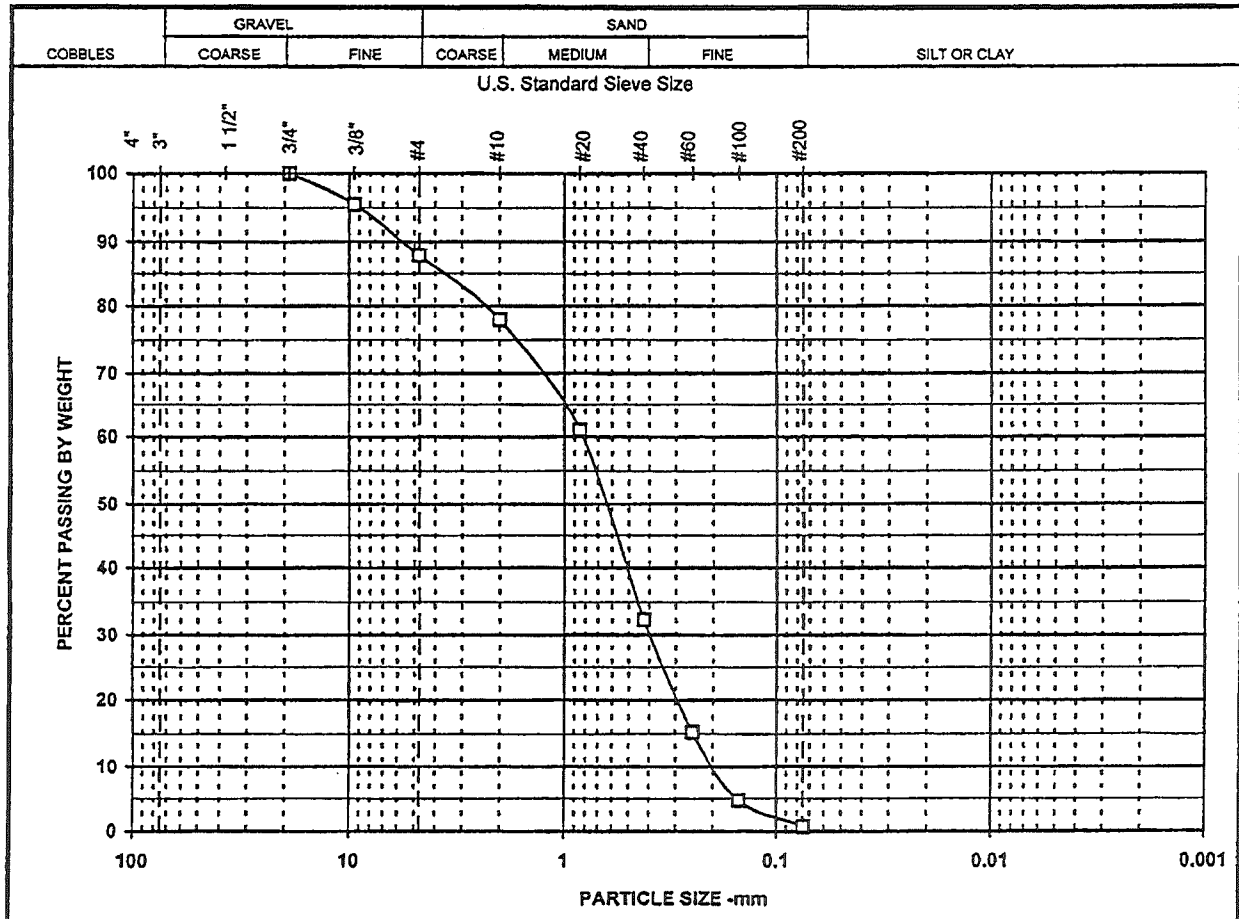

SYMBOL	DESCRIPTION AND REMARKS
□	yellowish brown c-f SAND, some f. gravel.
■	
○	

Symbol	□	■	○
Sample	05571		
Location	Cell #4		
	Sub Cell W22		
Depth	5		
% +3"			
% Gravel	12.1		
% SAND	87.2		
% FINES	0.7		
% -2μ			
Cc	1.0		
Cu	4.2		
LL			
PL			
PI			
USCS	SP		
w (%)	2.3		

Particle Size	PERCENT FINER		
(Sieve #)	□	■	○
4"			
3"			
1 1/2"			
3/4"	100.0		
3/8"	95.5		
4	87.9		
10	78.0		
20	61.1		
40	32.3		
60	15.3		
100	4.7		
200	0.7		

PARTICLE SIZE DISTRIBUTION
GTE OSI V00089-1

Project No.		Figure
25595516	June 2004	

URS Corporation

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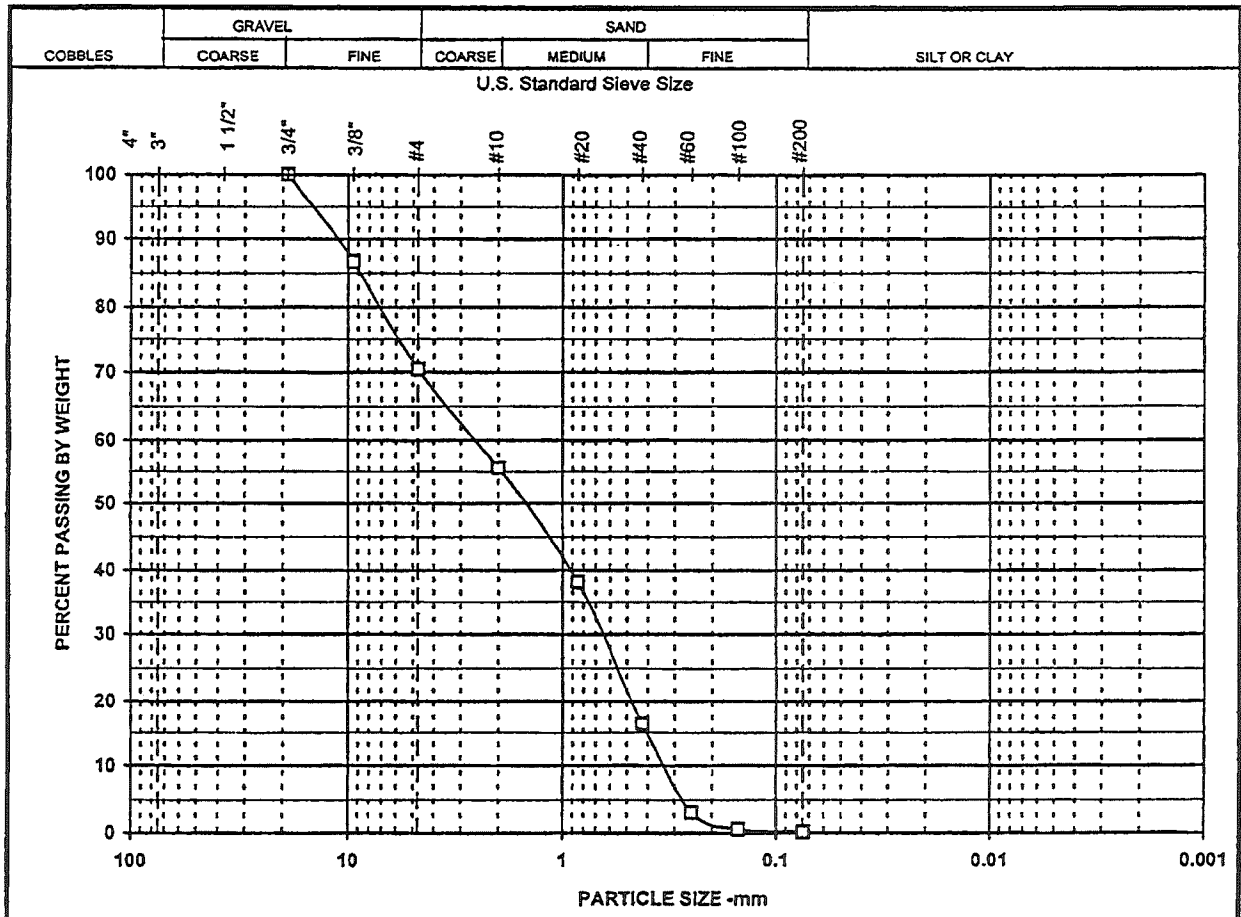


SYMBOL	DESCRIPTION AND REMARKS
□	yellowish brown c-f SAND, some f. gravel.
■	
○	

Symbol	□	■	○
Sample	05327		
Location	Cell #4 Sub Cell V17		
Depth	24		
% +3"			
% Gravel	29.5		
% SAND	70.3		
% FINES	0.2		
% -2μ			
Cc	0.5		
Cu	8.3		
LL			
PL			
PI			
USCS	SP		
w (%)	1.6		

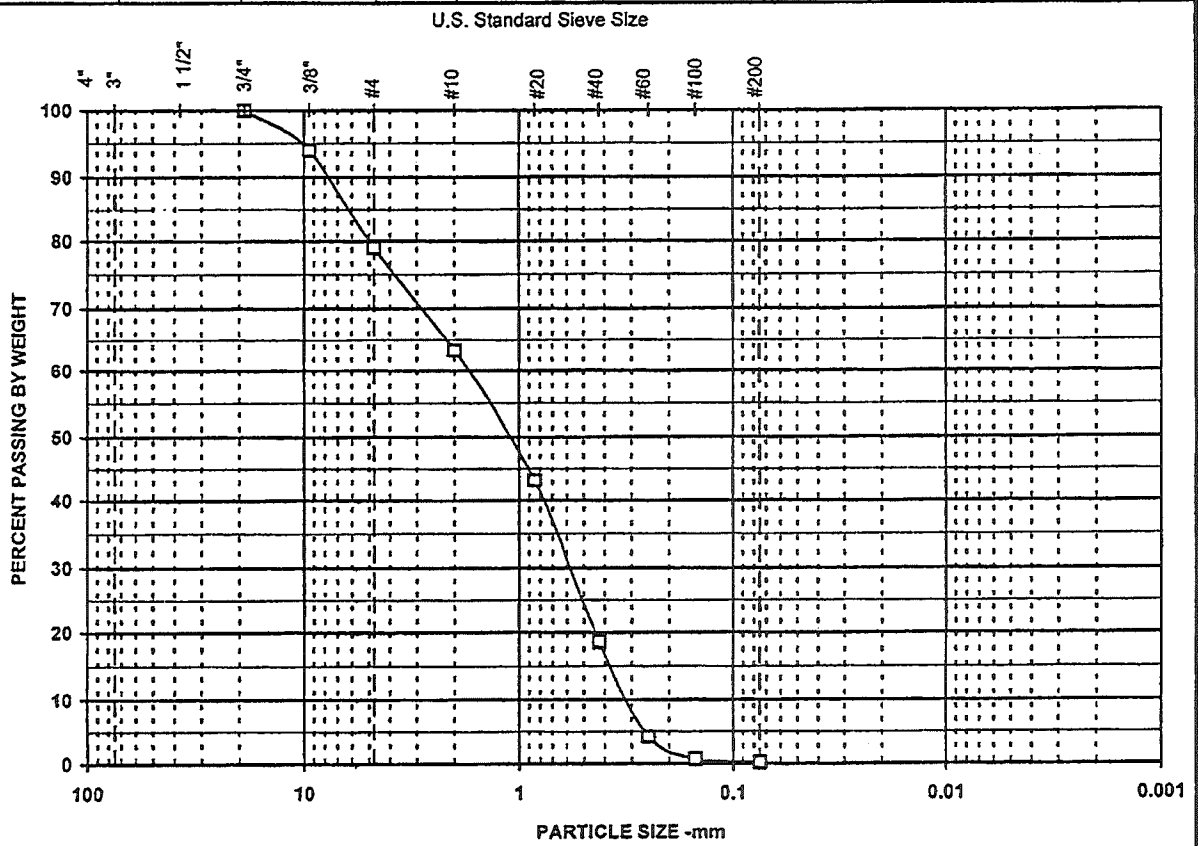
Particle Size	PERCENT FINER		
(Sieve #)	□	■	○
4"			
3"			
1 1/2"			
3/4"	100.0		
3/8"	86.7		
4	70.5		
10	55.6		
20	38.1		
40	16.4		
60	3.2		
100	0.6		
200	0.2		

PARTICLE SIZE DISTRIBUTION
GTE OSI V00089-1

Project No.		Figure
25595516	June 2004	

URS Corporation

sieve3e.XLS 06/07/2004



SYMBOL	DESCRIPTION AND REMARKS
□	yellowish brown c-f SAND, some f. gravel.
■	
○	

Symbol	□	■	○
Sample	12764		
Location	Cell #5 Sub Cell R05		
Depth	33		
% +3"			
% Gravel	21.0		
% SAND	78.9		
% FINES	0.1		
% -2μ			
Cc	0.7		
Cu	5.7		
LL			
PL			
PI			
USCS	SP		
w (%)	1.9		

Particle Size	PERCENT FINER		
(Sieve #)	□	■	○
4"			
3"			
1 1/2"			
3/4"	100.0		
3/8"	94.0		
4	79.0		
10	63.3		
20	43.2		
40	18.6		
60	4.2		
100	0.7		
200	0.1		

PARTICLE SIZE DISTRIBUTION
GTE OSI V00089-1

Project No.		Figure
25595516	June 2004	

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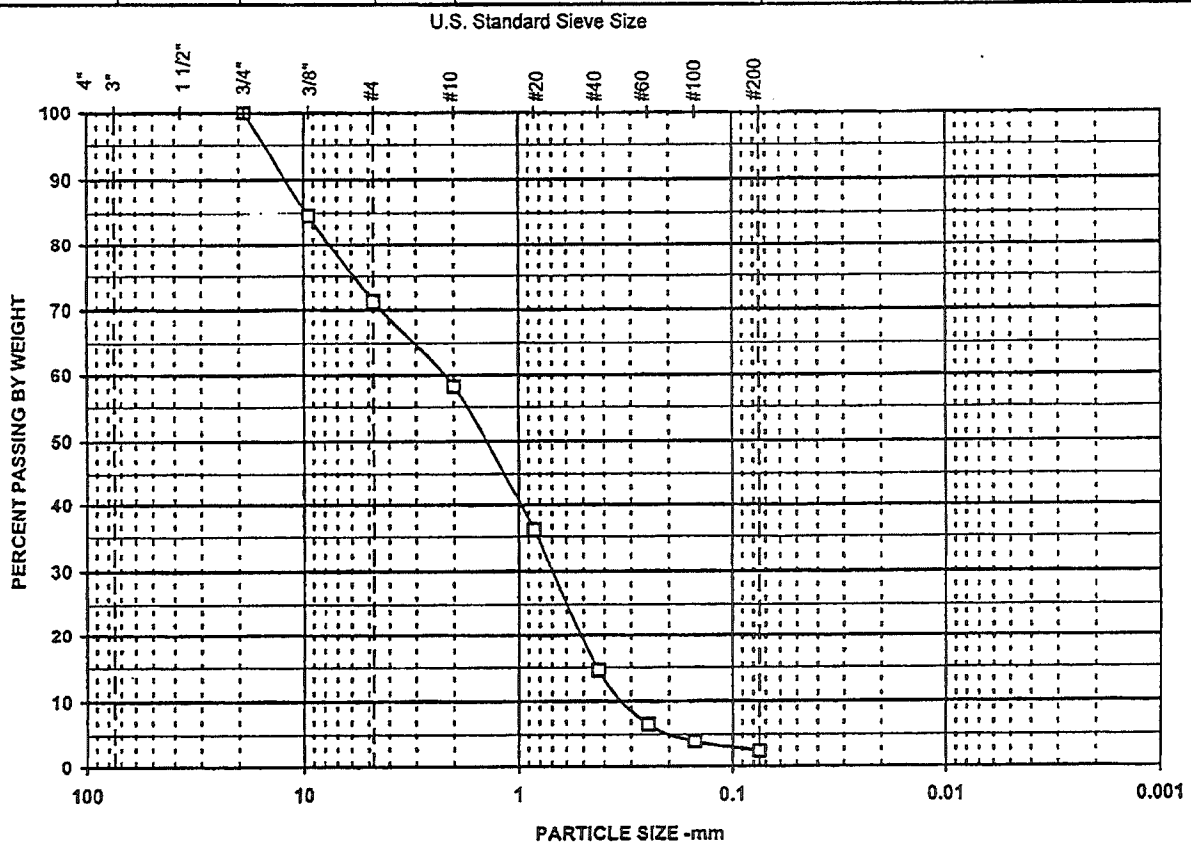
sieve3k.XLS 06/07/2004



SYMBOL	DESCRIPTION AND REMARKS
□	yellowish brown c-f SAND, some f. gravel, trace silt.
■	
○	

Symbol	□	■	○
Sample	15117		
Location	Cell #6		
	Sub Cell 10C		
Depth	6		
% +3"			
% Gravel	28.7		
% SAND	68.9		
% FINES	2.4		
% -2μ			
Cc	0.7		
Cu	7.3		
LL			
PL			
PI			
USCS	SP		
w (%)	7.7		

Particle Size	PERCENT FINER		
(Sieve #)	□	■	○
4"			
3"			
1 1/2"			
3/4"	100.0		
3/8"	84.6		
4	71.3		
10	58.2		
20	36.0		
40	14.6		
60	6.6		
100	3.9		
200	2.4		

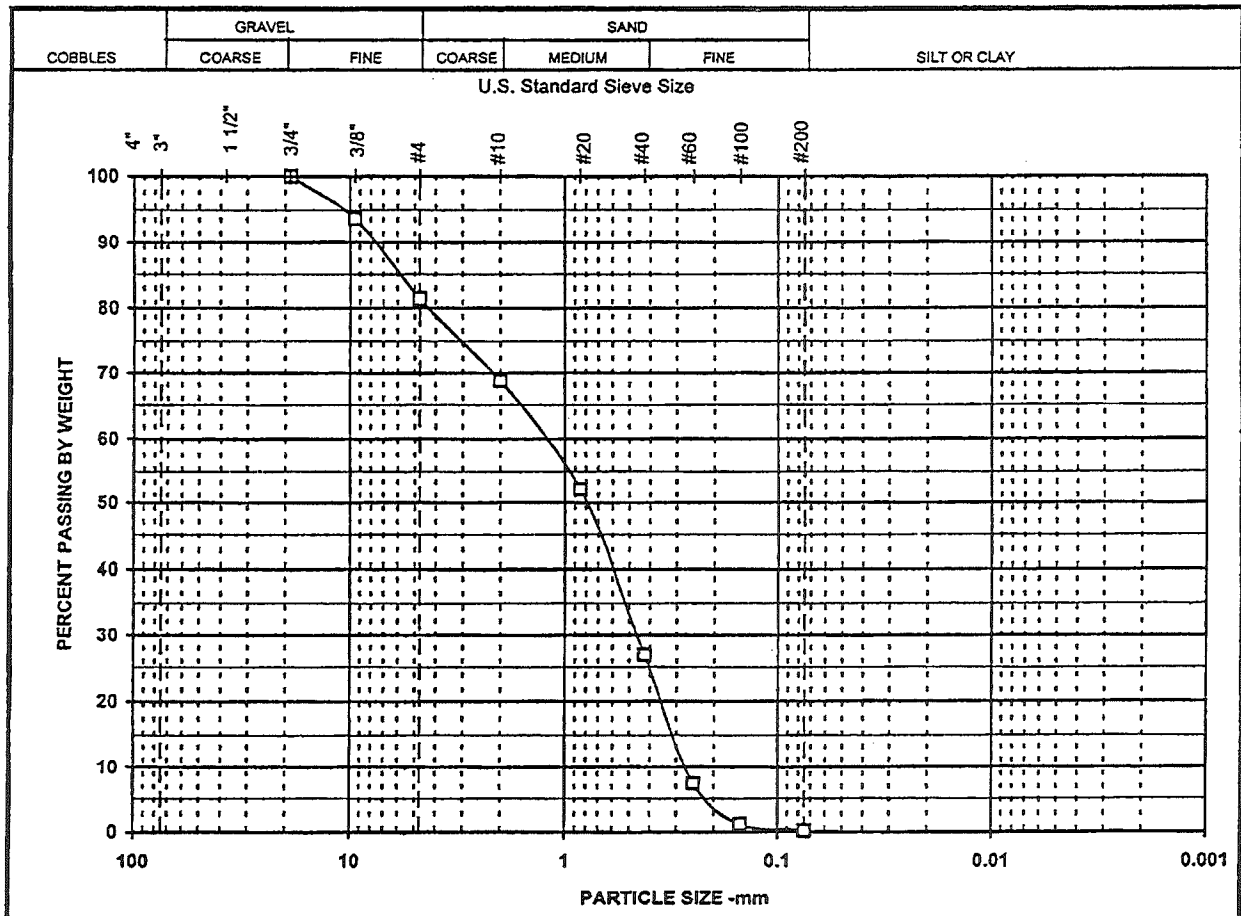
PARTICLE SIZE DISTRIBUTION

GTE OSI V00089-1

Project No.		Figure
25595516	June 2004	

URS Corporation

sieve3m.XLS 06/07/2004



SYMBOL	DESCRIPTION AND REMARKS
□	yellowish brown c-f SAND, some f. gravel.
■	
○	

Symbol	□	■	○
Sample	14926		
Location	Cell #6 Sub Cell Q07		
Depth	37		
% +3"			
% Gravel	18.6		
% SAND	81.2		
% FINES	0.2		
% -2μ			
Cc	0.6		
Cu	5.1		
LL			
PL			
PI			
USCS	SP		
w (%)	1.3		

Particle Size	PERCENT FINER		
(Sieve #)	□	■	○
4"			
3"			
1 1/2"			
3/4"	100.0		
3/8"	93.7		
4	81.4		
10	68.7		
20	52.2		
40	26.9		
60	7.4		
100	1.1		
200	0.2		

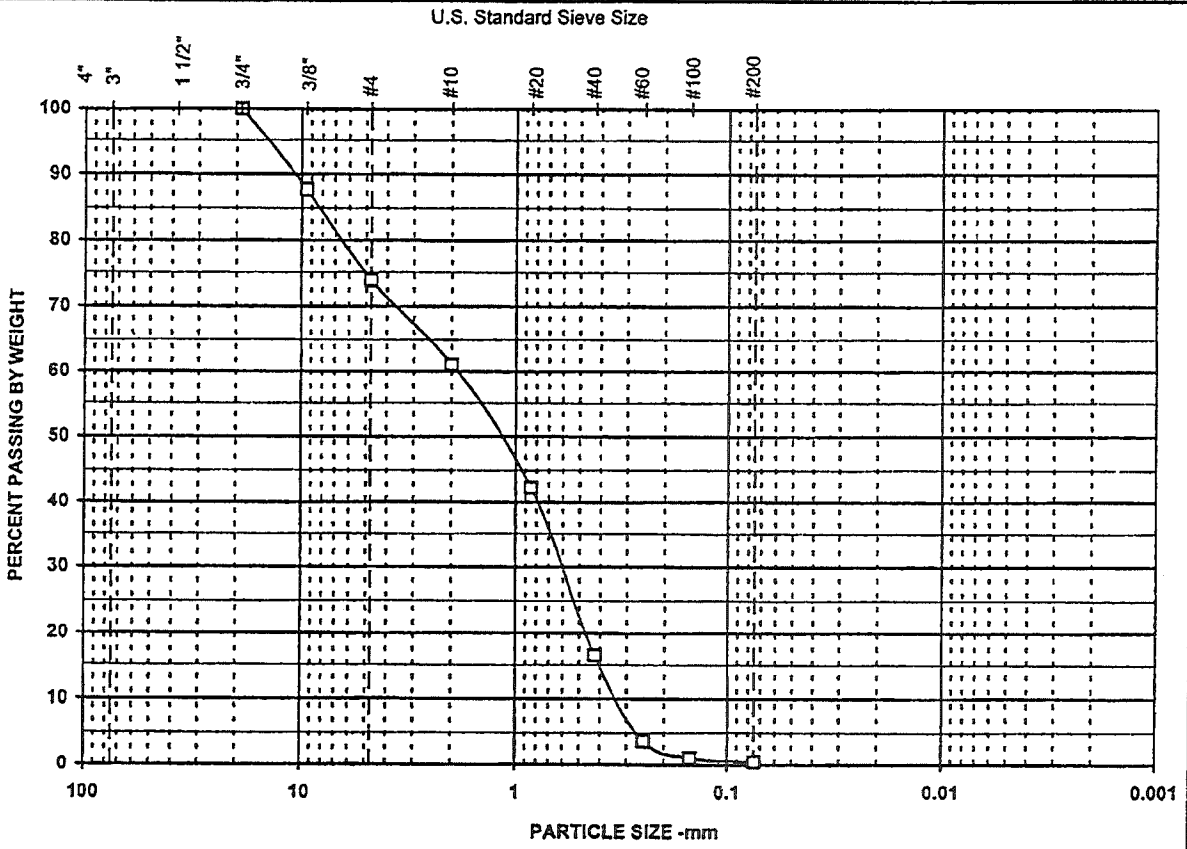
PARTICLE SIZE DISTRIBUTION
GTE OSI V00089-1

Project No.		Figure
25595516	June 2004	

URS Corporation

sieve3l.XLS 06/07/2004

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



SYMBOL	DESCRIPTION AND REMARKS
□	yellowish brown c-f SAND, some f. gravel.
■	
○	

Symbol	□	■	○
Sample	09666		
Location	Cell #11 Sub Cell N19		
Depth	16		
% +3"			
% Gravel	26.1		
% SAND	73.4		
% FINES	0.5		
% -2μ			
Cc	0.6		
Cu	5.7		
LL			
PL			
PI			
USCS	SP		
w (%)	2.2		

Particle Size	PERCENT FINER		
(Sieve #)	□	■	○
4"			
3"			
1 1/2"			
3/4"	100.0		
3/8"	87.7		
4	73.9		
10	61.2		
20	42.3		
40	16.5		
60	3.7		
100	1.1		
200	0.5		

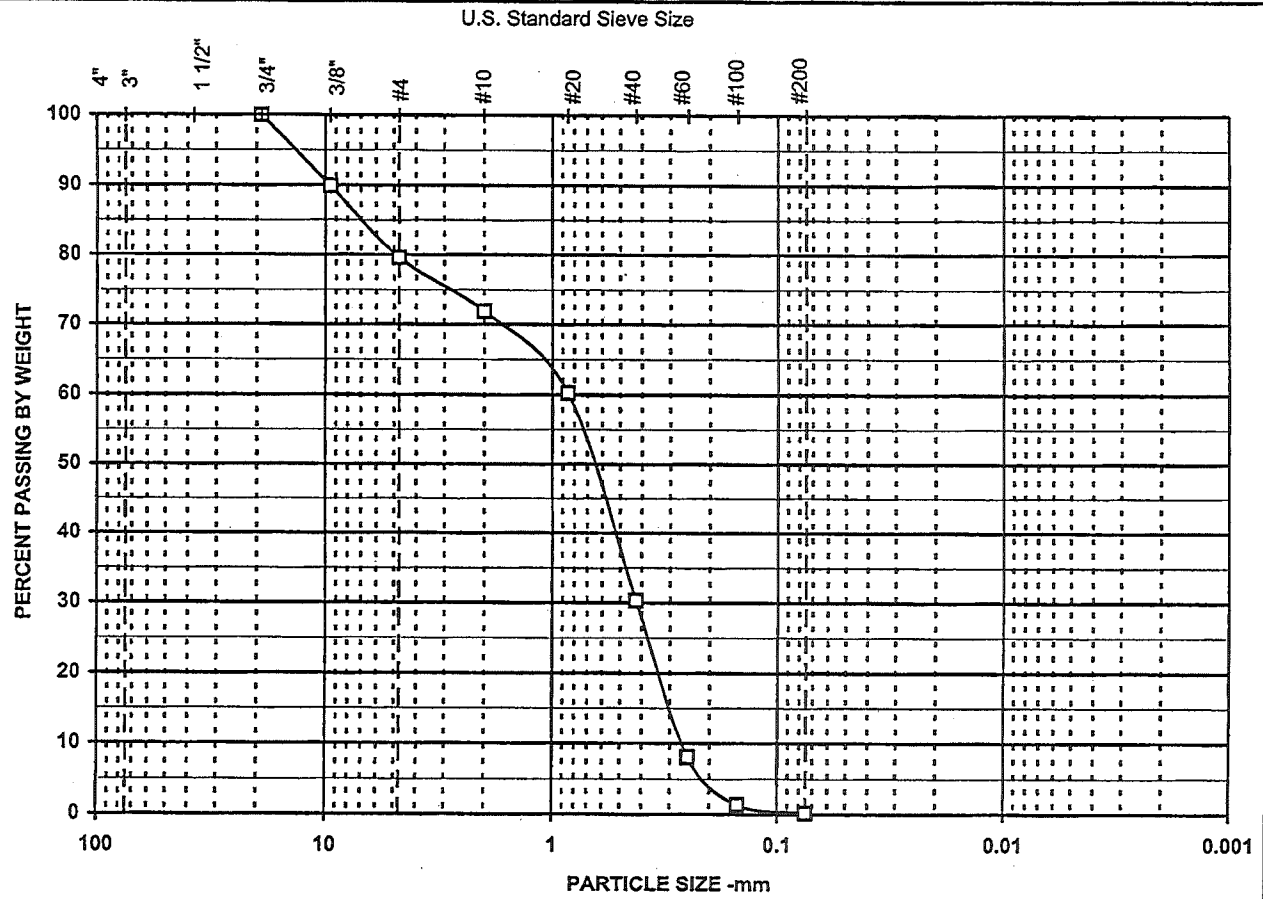
PARTICLE SIZE DISTRIBUTION
GTE OSI V00089-1

Project No.		Figure
25595516	June 2004	

URS Corporation

sieve3g.XLS 06/07/2004

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



SYMBOL	DESCRIPTION AND REMARKS
□	yellowish brown c-f SAND, some f. gravel.
■	
○	

Symbol	□	■	○
Sample	12737		
Location	Cell #5		
	Sub Cell Q04		
Depth	25		
% +3"			
% Gravel	20.4		
% SAND	79.4		
% FINES	0.2		
% -2μ			
Cc	0.8		
Cu	3.2		
LL			
PL			
PI			
USCS	SP		
w (%)	4.8		

Particle Size	PERCENT FINER		
(Sieve #)	□	■	○
4"			
3"			
1 1/2"			
3/4"	100.0		
3/8"	89.8		
4	79.6		
10	71.9		
20	60.2		
40	30.3		
60	8.1		
100	1.4		
200	0.2		

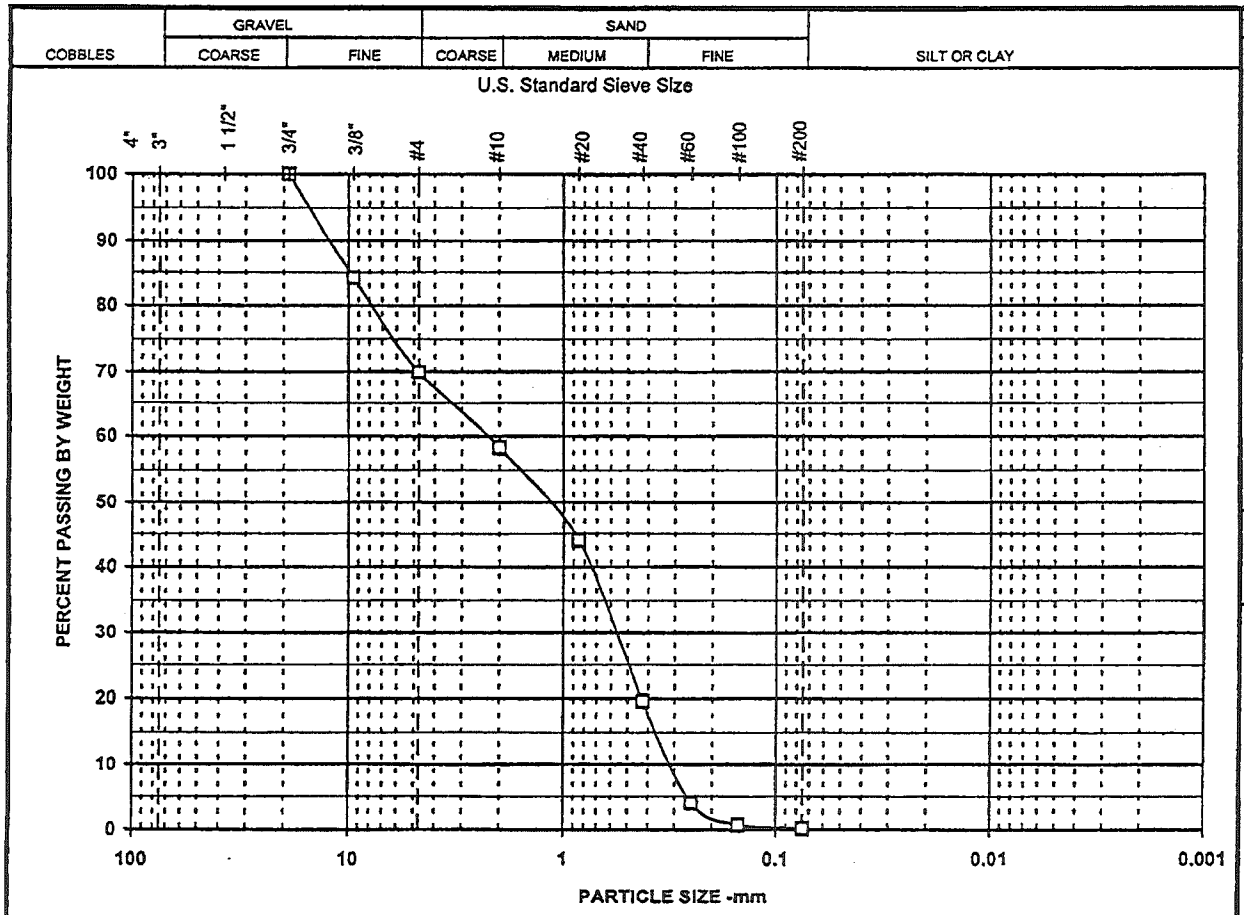
PARTICLE SIZE DISTRIBUTION

GTE OSI V00089-1

Project No.		
25595516	July 2005	Figure

URS Corporation

siev3j.XLS 7/13/2005



SYMBOL	DESCRIPTION AND REMARKS
□	yellowish brown f. gravelly c-f SAND.
■	
○	

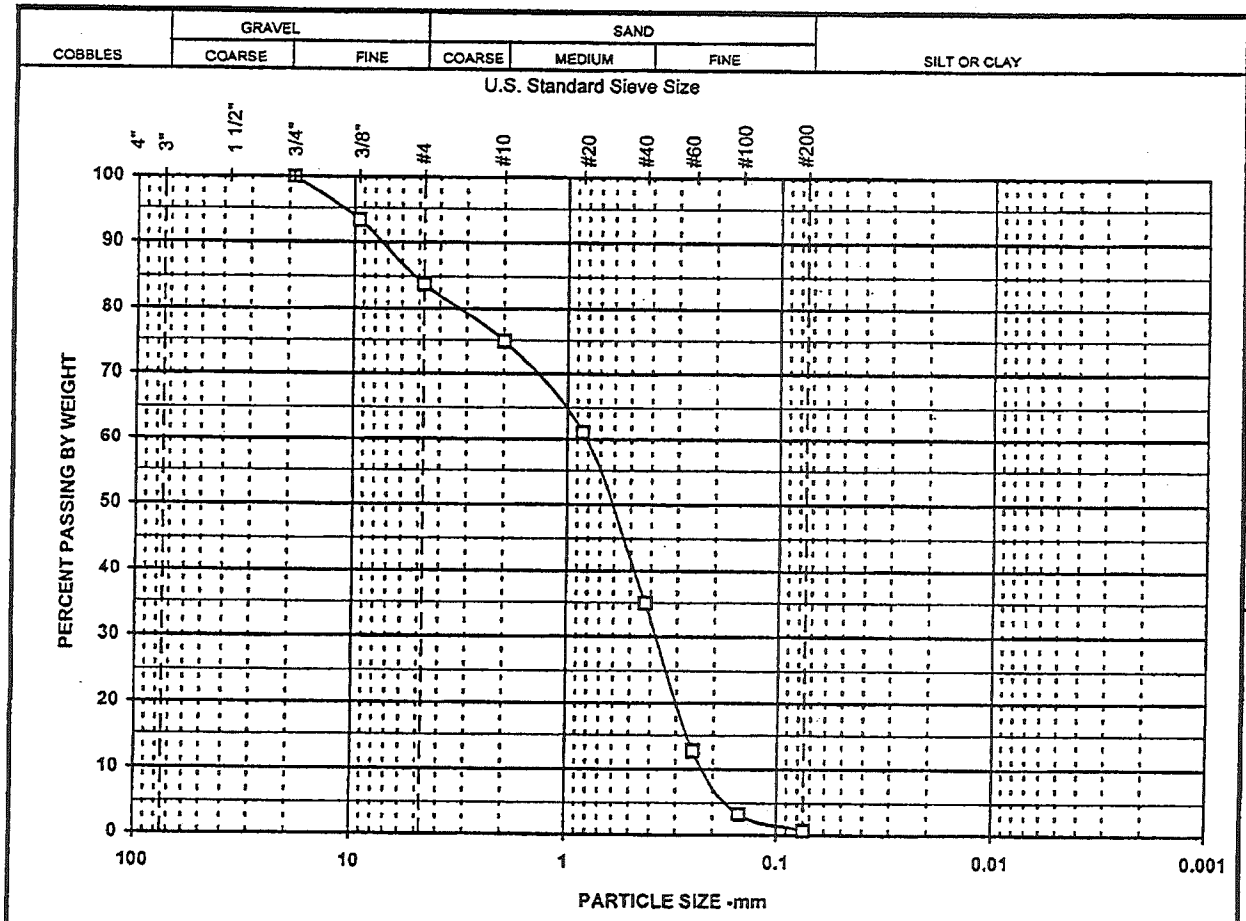
Symbol	□	■	○
Sample	09687		
Location	Cell #11 Sub Cell P21		
Depth	26		
% +3"			
% Gravel	30.1		
% SAND	69.7		
% FINES	0.2		
% -2μ			
Cc	0.5		
Cu	7.5		
LL			
PL			
PI			
USCS	SP		
w (%)	1.9		

Particle Size	PERCENT FINER		
(Sieve #)	□	■	○
4"			
3"			
1 1/2"			
3/4"	100.0		
3/8"	84.2		
4	69.9		
10	58.3		
20	44.1		
40	19.6		
60	4.0		
100	0.7		
200	0.2		

PARTICLE SIZE DISTRIBUTION
GTE OSI V00089-1

Project No.		
25595516	June 2004	Figure

URS Corporation



SYMBOL	DESCRIPTION AND REMARKS
□	yellowish brown c-f SAND, some f. gravel.
■	
○	

Symbol	□	■	○
Sample	06169		
Location	Cell # 12		
	Sub Cell O17		
Depth	7.5		
% +3"			
% Gravel	16.2		
% SAND	83.1		
% FINES	0.7		
% -2μ			
Cc	0.8		
Cu	3.8		
LL			
PL			
PI			
USCS	SP		
w (%)	3.6		

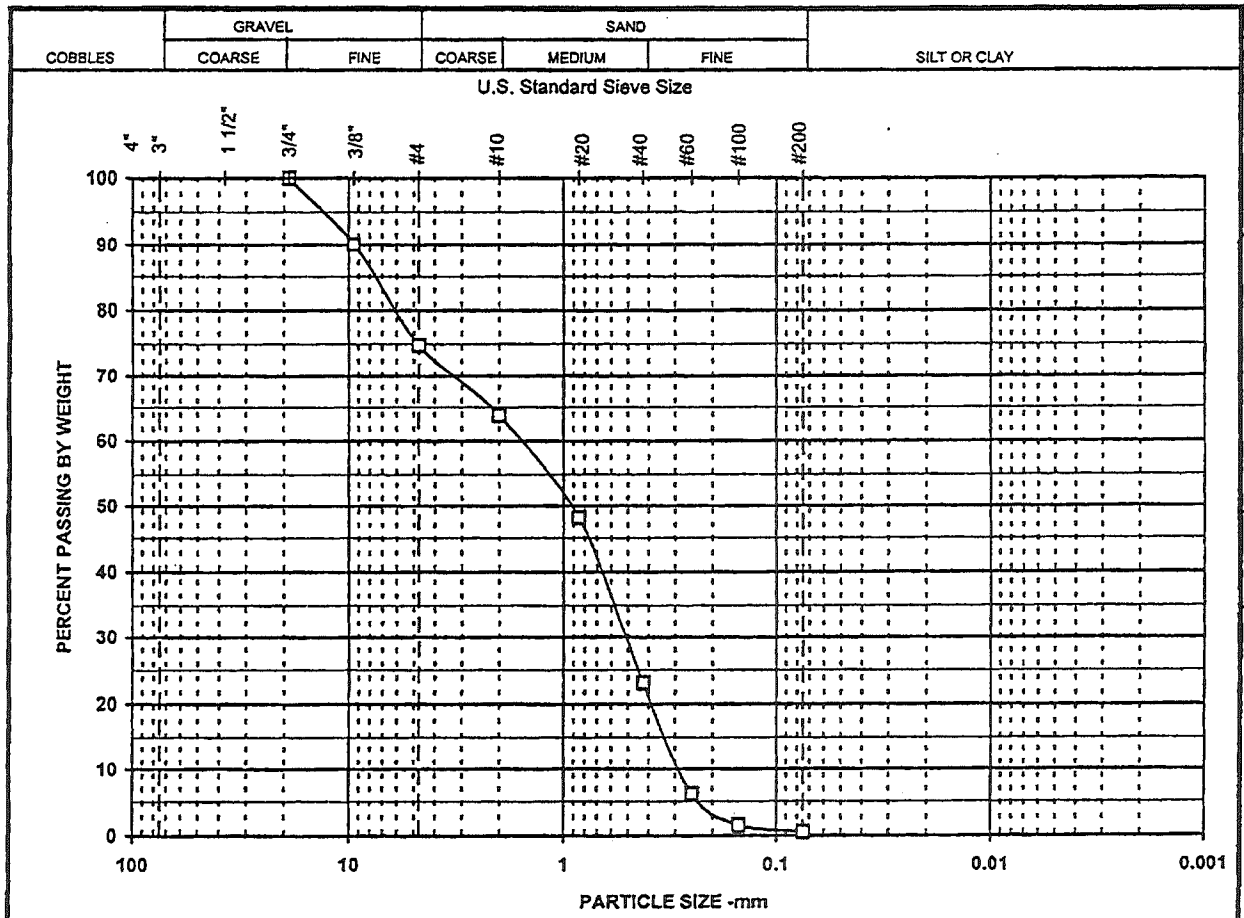
Particle Size	PERCENT FINER		
(Sieve #)	□	■	○
4"			
3"			
1 1/2"			
3/4"	100.0		
3/8"	93.2		
4	83.8		
10	74.8		
20	61.1		
40	34.9		
60	12.8		
100	3.3		
200	0.7		

PARTICLE SIZE DISTRIBUTION
GTE OSI V00089-1

Project No.		Figure
25595516	June 2004	

URS Corporation

sieve3c.XLS 06/07/2004



SYMBOL	DESCRIPTION AND REMARKS
□	yelowish brown c-f SAND, some f. gravel.
■	
○	

Symbol	□	■	○
Sample	09850		
Location	Cell #12 Sub Cell Q18		
Depth	20		
% +3"			
% Gravel	25.1		
% SAND	74.4		
% FINES	0.5		
% -2μ			
Cc	0.6		
Cu	5.9		
LL			
PL			
PI			
USCS	SP		
w (%)	3.2		

Particle Size	PERCENT FINER		
(Sieve #)	□	■	○
4"			
3"			
1 1/2"			
3/4"	100.0		
3/8"	90.1		
4	74.9		
10	63.8		
20	48.2		
40	23.1		
60	6.1		
100	1.5		
200	0.5		

PARTICLE SIZE DISTRIBUTION
GTE OSI V00089-1

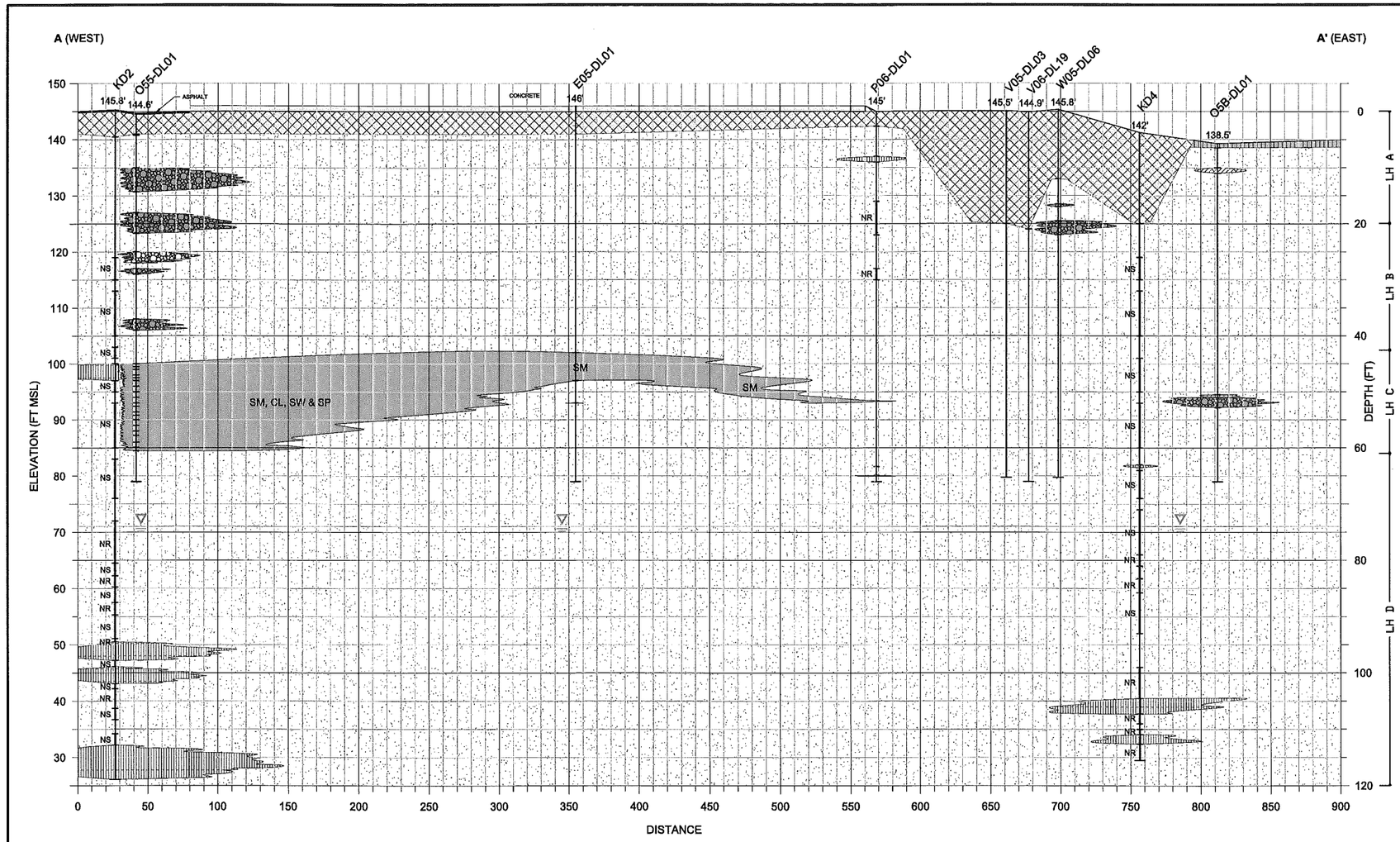
Project No.		
25595516	June 2004	Figure

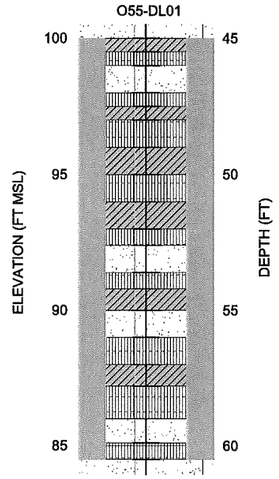
URS Corporation

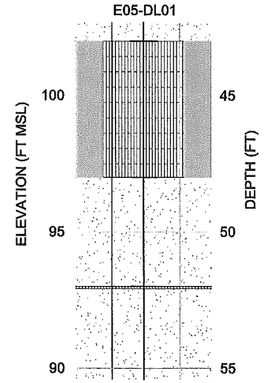
APPENDIX C

APPENDIX C

GENERALIZED SUBSURFACE CROSS SECTIONS







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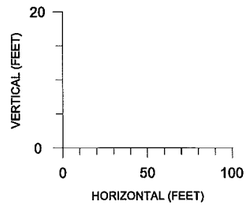

LEGEND

GRAPHIC SYMBOL	TYPICAL SOIL DESCRIPTION	INCLUDES USCS * LETTER SYMBOLS
	BACKFILL OR FILL	NONE
	GRAVELS AND GRAVEL SAND MIXTURES	GW AND GP
	SANDS AND GRAVELLY SANDS	SW AND SP
	SILTY SAND, SAND-SILT MIXTURES	SM
	CLAYEY SAND	SC
	SILT	ML
	CLAYS, SANDY OR SILTY CLAYS	CL
	COMBINED LITHOLOGIC UNITS	

(* USCS = UNIFIED SOIL CLASSIFICATION SYSTEM)

NOTES

NR = NO RECOVERY
NS = NOT SAMPLED
FT = FEET
MSL = MEAN SEA LEVEL
DEPTH (FT) = DEPTH BELOW SITE REFERENCE, 145 FT MSL
= ASPHALT
= CONCRETE
= ESTIMATED DEPTH OF WATER TABLE DURING DRILLING
LH A = LITHOLOGIC HORIZON A
(LH A VARIES IN DEPTH WITH THE DEPTH OF BACKFILL).
GEOLOGIC CONTACTS INFERRED BETWEEN BORINGS
BACKFILL DEPTHS INTERPRETED BETWEEN BORINGS.
= OBSERVED CONTACTS BETWEEN SOIL TYPES ARE INDICATED WITH A BOLD BLACK LINE

NYSDEC: V-00089-1 URS: 27010-039

GTE OPERATIONS SUPPORT INCORPORATED
HICKSVILLE, NEW YORK

CROSS SECTION A-A'

DATE: Aug 24, 2007
JOB NO.: 25595516
DRAWN BY: KWH
CHK'D BY: CS
SCALE: AS SHOWN

URS
5 PENN PLAZA, 13TH FLOOR
NEW YORK, NY 10001

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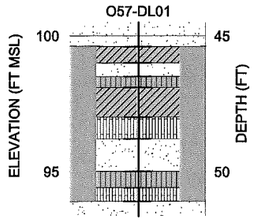

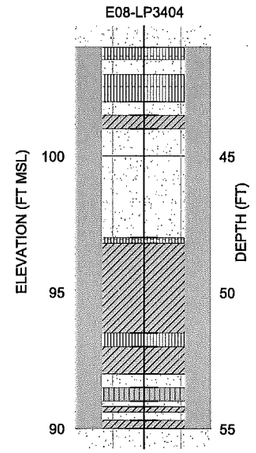

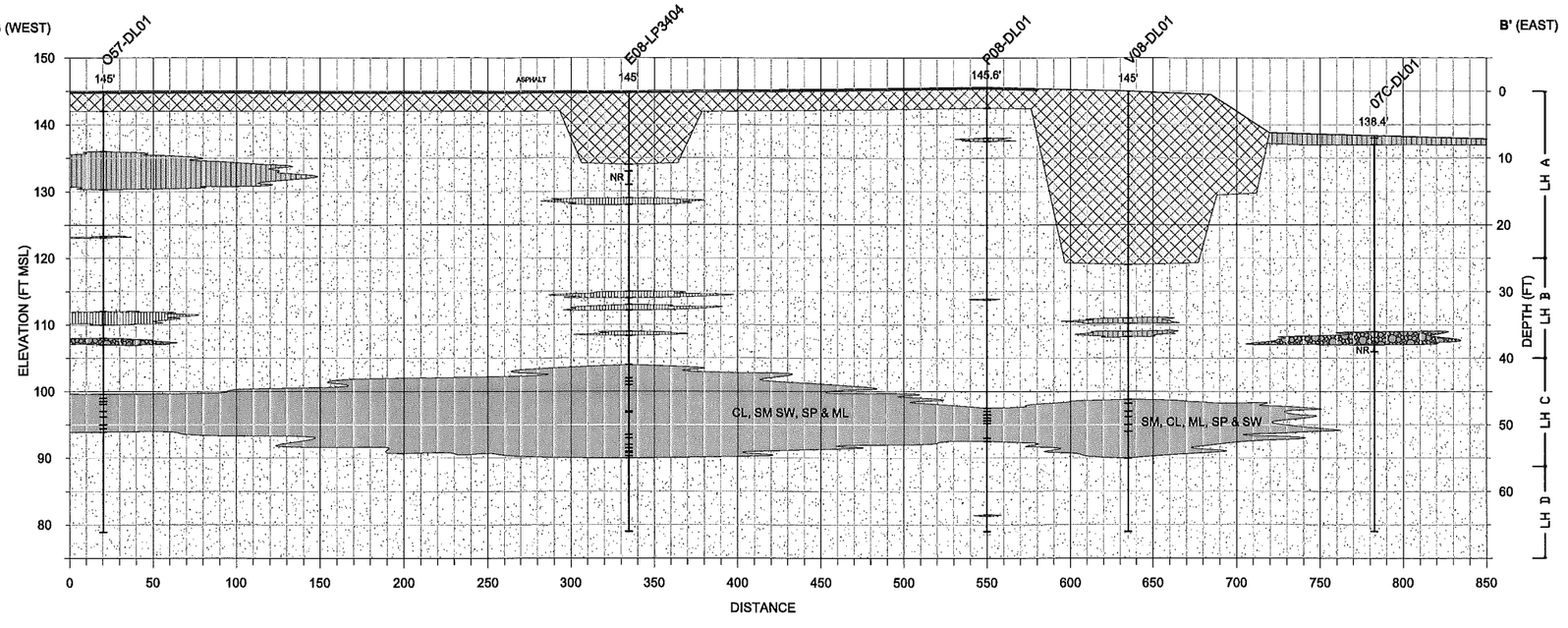

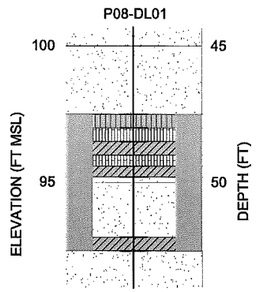

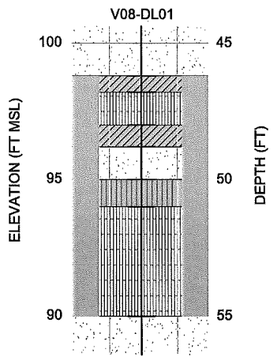

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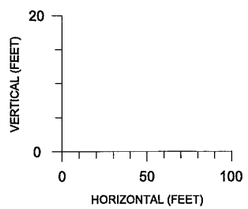

LEGEND

GRAPHIC SYMBOL	TYPICAL SOIL DESCRIPTION	INCLUDES USCS * LETTER SYMBOLS
	BACKFILL OR FILL	NONE
	GRAVELS AND GRAVEL SAND MIXTURES	GW AND GP
	SANDS AND GRAVELLY SANDS	SW AND SP
	SILTY SAND, SAND-SILT MIXTURES	SM
	CLAYEY SAND	SC
	SILT	ML
	CLAYS, SANDY OR SILTY CLAYS	CL
	COMBINED LITHOLOGIC UNITS	

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GEOLOGIC CONTACTS INFERRED BETWEEN BORINGS
BACKFILL DEPTHS INTERPRETED BETWEEN BORINGS.

NYSDEC: V-00089-1 URS: 27010-039

GTE OPERATIONS SUPPORT INCORPORATED
HICKSVILLE, NEW YORK

CROSS SECTION B-B'

DATE: Aug 09, 2007
JOB NO.: 25595516
DRAWN BY: KWH
CHK'D BY: CS
SCALE: AS SHOWN

URS
5 PENN PLAZA, 13TH FLOOR
NEW YORK, NY 10001

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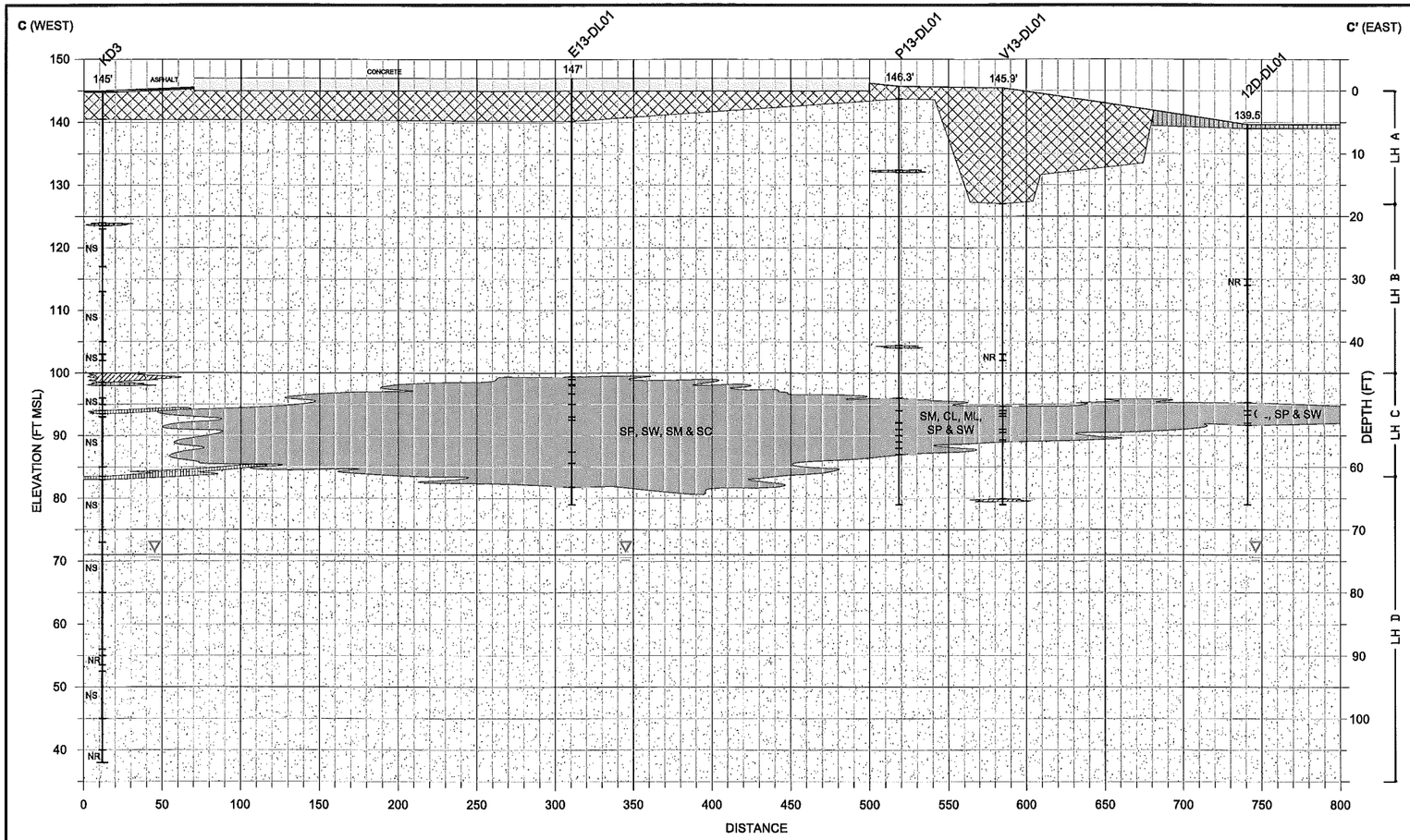

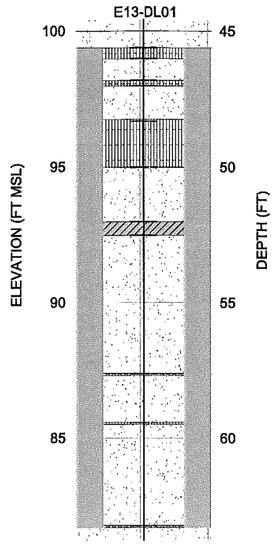

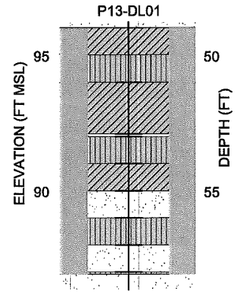

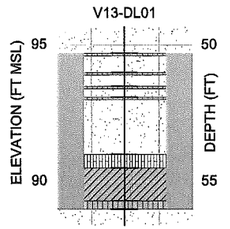

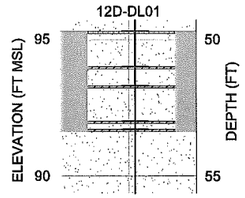

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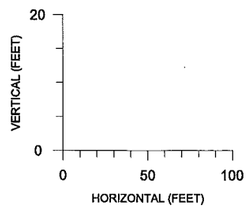

LEGEND

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	SILT	ML
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BACKFILL DEPTHS INTERPRETED BETWEEN BORINGS.

NYSDEC: V-00089-1 URS: 27010-039

GTE OPERATIONS SUPPORT INCORPORATED
HICKSVILLE, NEW YORK

CROSS SECTION C-C'

DATE: Aug 09, 2007
JOB NO.: 25595516
DRAWN BY: KWH
CHK'D BY: CS
SCALE: AS SHOWN

URS
5 PENN PLAZA, 13TH FLOOR
NEW YORK, NY 10001

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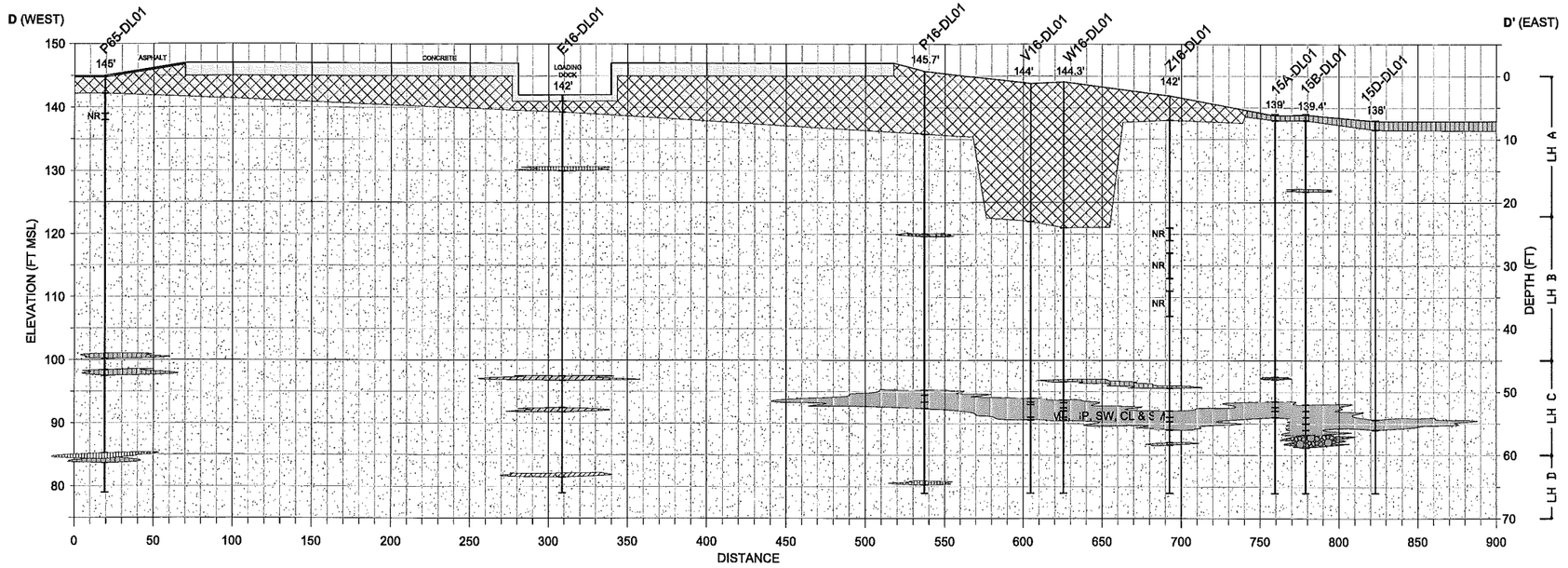

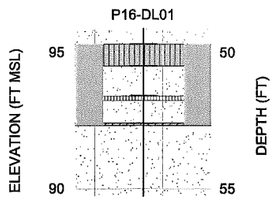

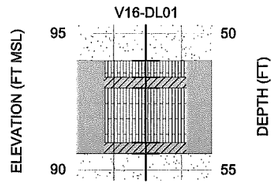

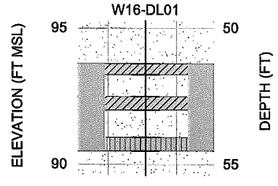

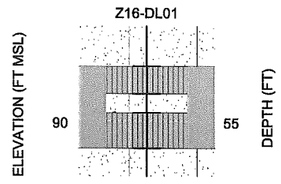

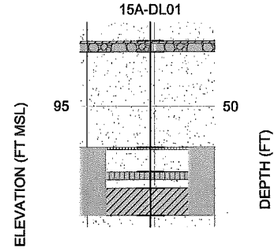

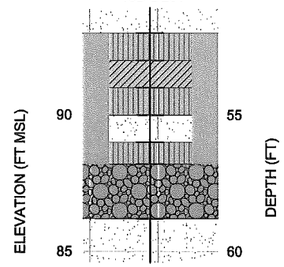

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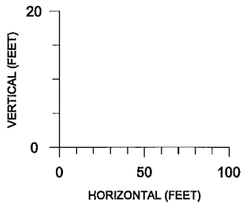

LEGEND

GRAPHIC SYMBOL	TYPICAL SOIL DESCRIPTION	INCLUDES USCS * LETTER SYMBOLS
	BACKFILL OR FILL	NONE
	GRAVELS AND GRAVEL SAND MIXTURES	GW AND GP
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	CLAYEY SAND	SC
	SILT	ML
	CLAYS, SANDY OR SILTY CLAYS	CL
	COMBINED LITHOLOGIC UNITS	

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LH A = LITHOLOGIC HORIZON A

(LH A VARIES IN DEPTH WITH THE DEPTH OF BACKFILL).

= OBSERVED CONTACTS BETWEEN SOIL TYPES ARE INDICATED WITH A BOLD BLACK LINE

GEOLOGIC CONTACTS INFERRED BETWEEN BORINGS
BACKFILL DEPTHS INTERPRETED BETWEEN BORINGS.

NYSDEC: V-00089-1 URS: 27010-039

GTE OPERATIONS SUPPORT INCORPORATED
HICKSVILLE, NEW YORK

CROSS SECTION D-D'

DATE: Aug 09, 2007
JOB NO.: 25595516
DRAWN BY: KWH
CHK'D BY: CS
SCALE: AS SHOWN

URS
5 PENN PLAZA, 13TH FLOOR
NEW YORK, NY 10001

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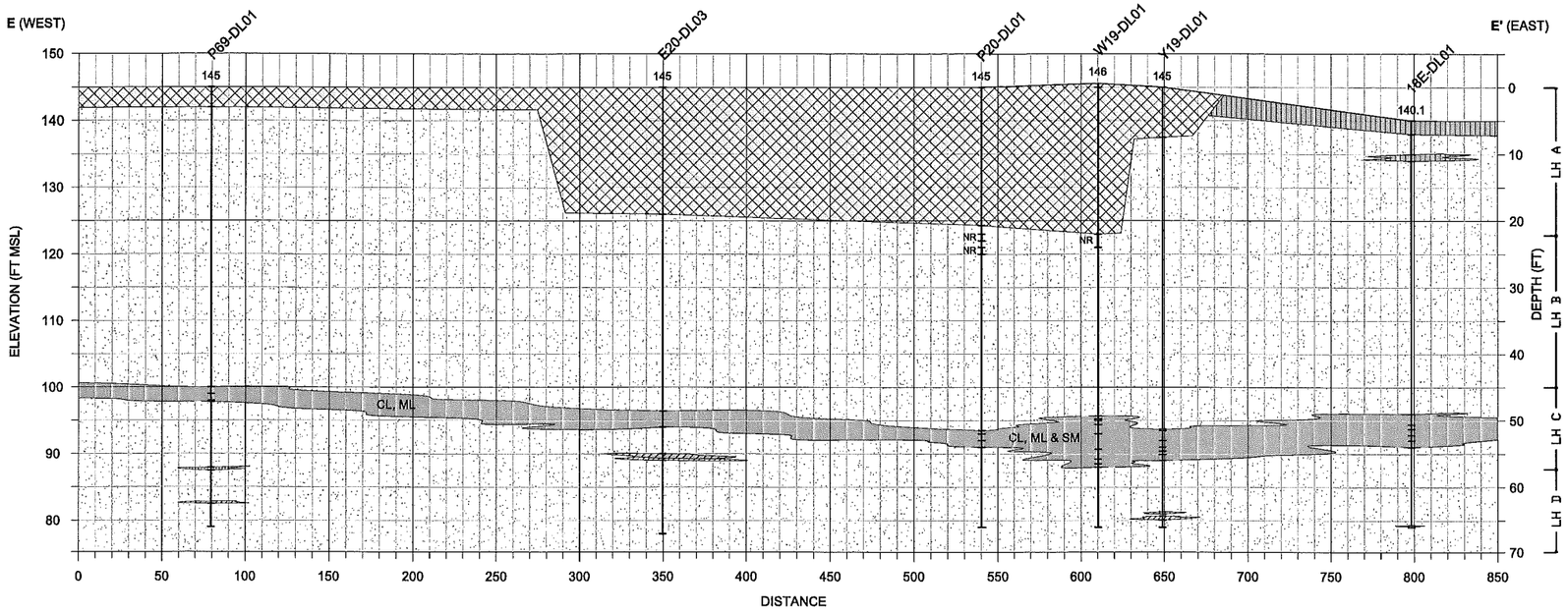

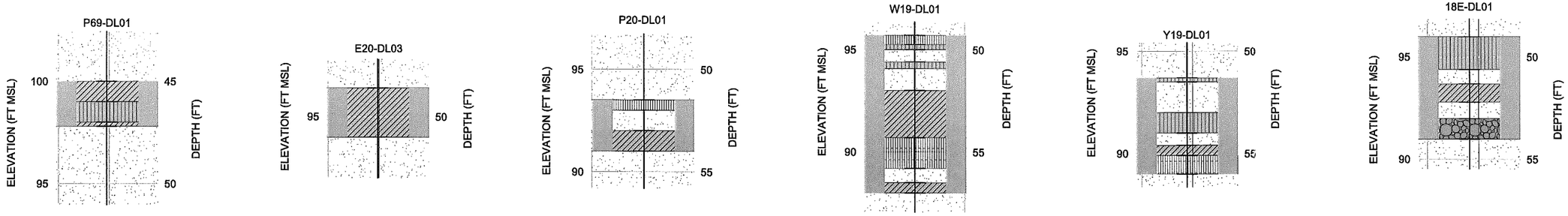

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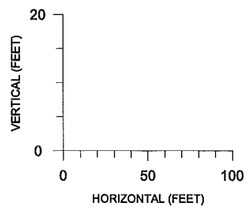

LEGEND

GRAPHIC SYMBOL	TYPICAL SOIL DESCRIPTION	INCLUDES USCS * LETTER SYMBOLS
	BACKFILL OR FILL	NONE
	GRAVELS AND GRAVEL SAND MIXTURES	GW AND GP
	SANDS AND GRAVELLY SANDS	SW AND SP
	SILTY SAND, SAND-SILT MIXTURES	SM
	CLAYEY SAND	SC
	SILT	ML
	CLAYS, SANDY OR SILTY CLAYS	CL
	COMBINED LITHOLOGIC UNITS	

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= ASPHALT

= CONCRETE

= ESTIMATED DEPTH OF WATER TABLE DURING DRILLING

LH A = LITHOLOGIC HORIZON A

(LH A VARIES IN DEPTH WITH THE DEPTH OF BACKFILL).

= OBSERVED CONTACTS BETWEEN SOIL TYPES ARE INDICATED WITH A BOLD BLACK LINE

GEOLOGIC CONTACTS INFERRED BETWEEN BORINGS

BACKFILL DEPTHS INTERPRETED BETWEEN BORINGS.

NYSDEC: V-00089-1 URS: 27010-039

GTE OPERATIONS SUPPORT INCORPORATED
HICKSVILLE, NEW YORK

CROSS SECTION E-E'

DATE: Aug 09, 2007
JOB NO.: 25595516
DRAWN BY: KWH
CHK'D BY: CS
SCALE: AS SHOWN

URS
5 PENN PLAZA, 13TH FLOOR
NEW YORK, NY 10001

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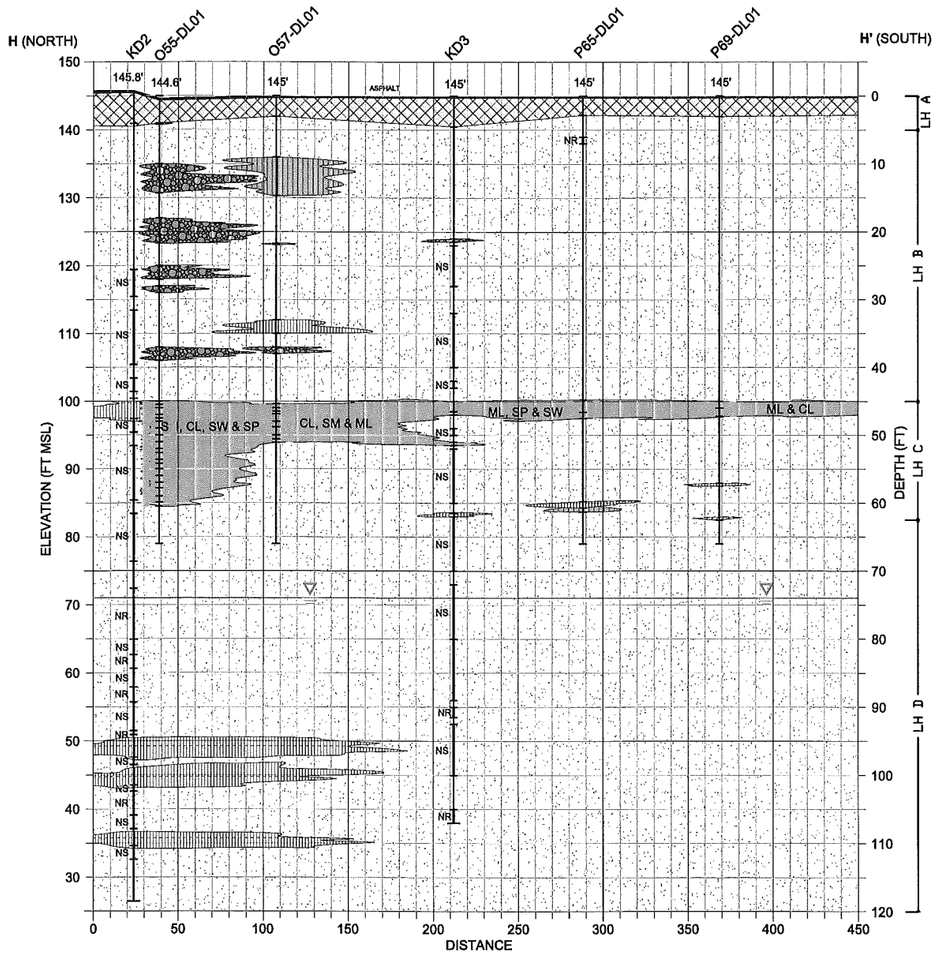

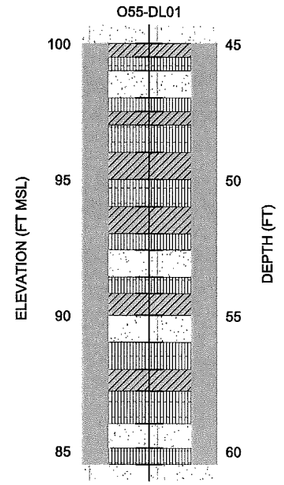

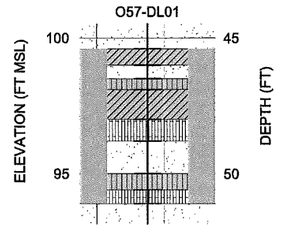

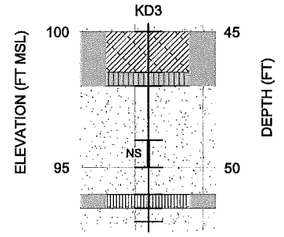

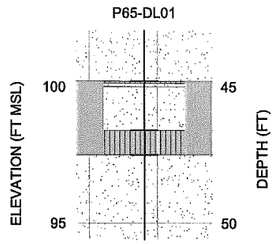

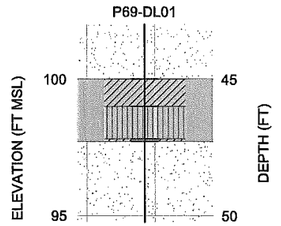

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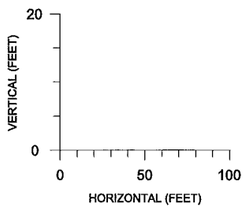

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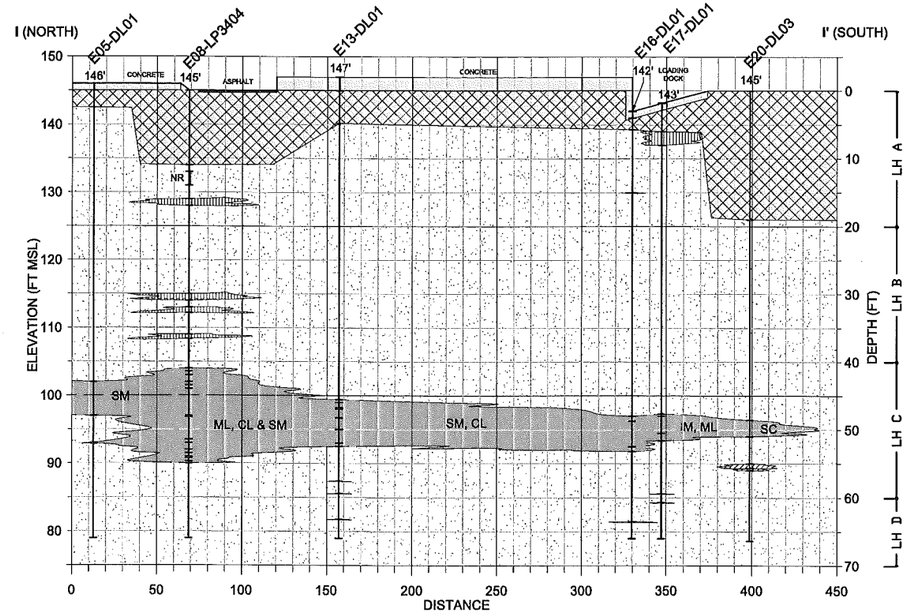

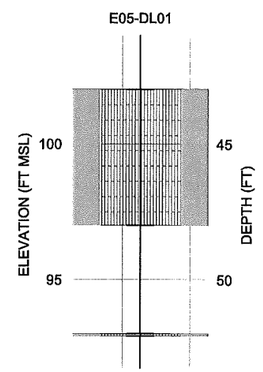

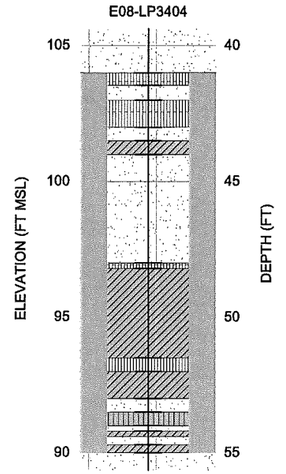

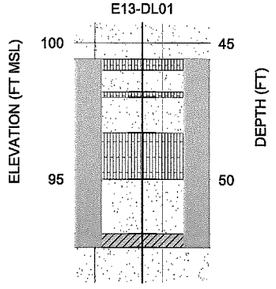

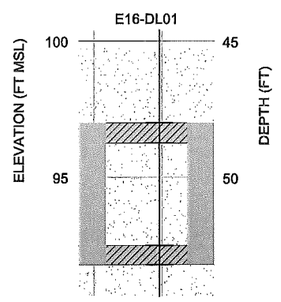

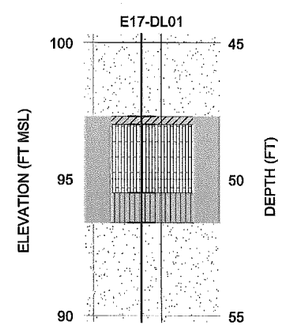

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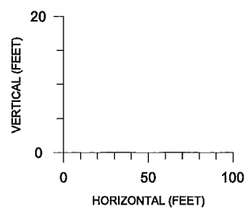

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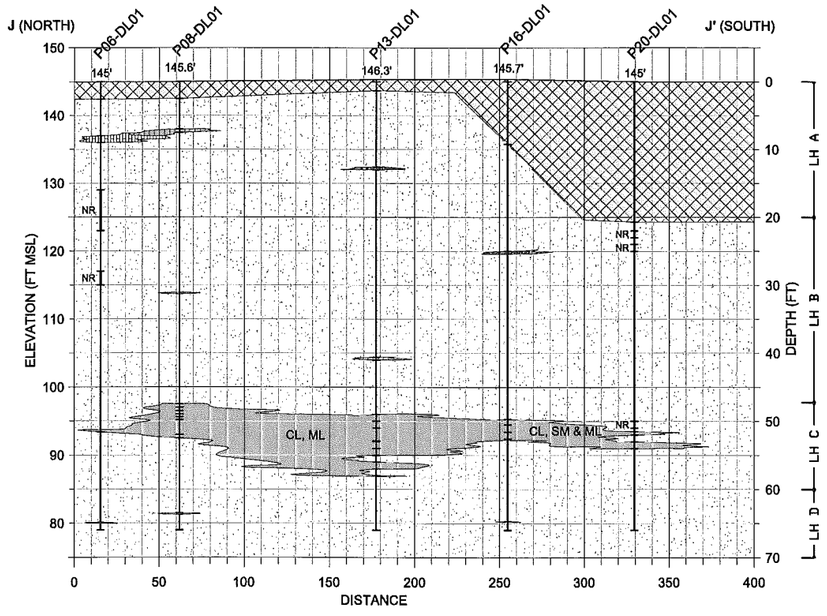

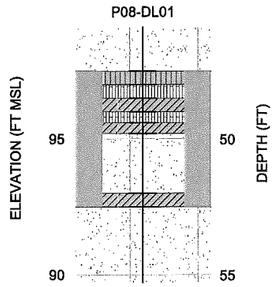

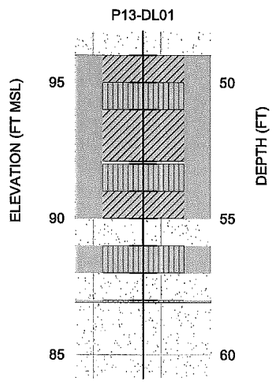

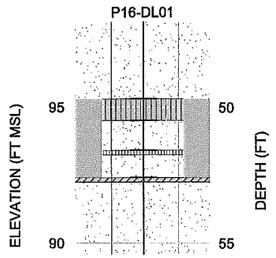

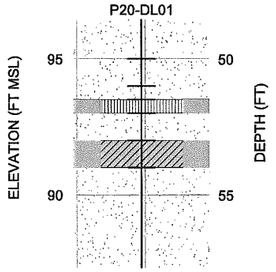

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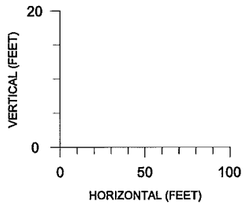

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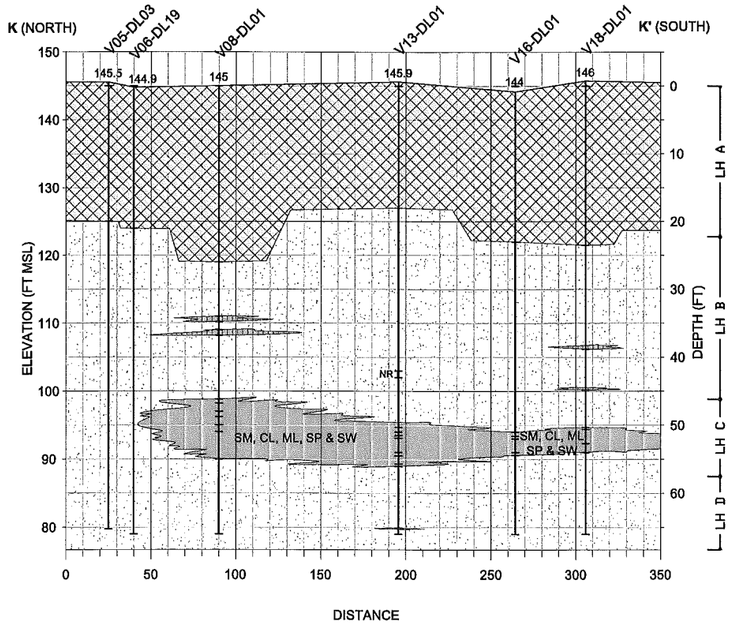

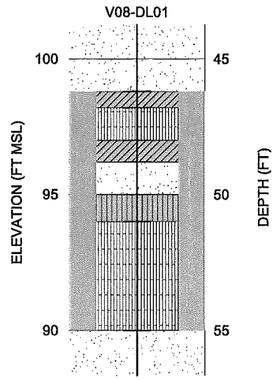

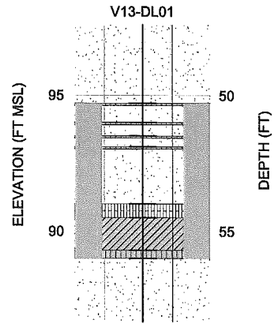

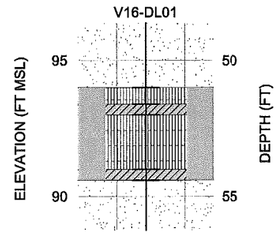

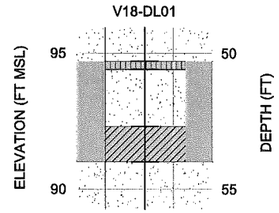

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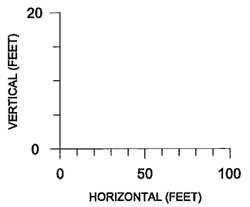

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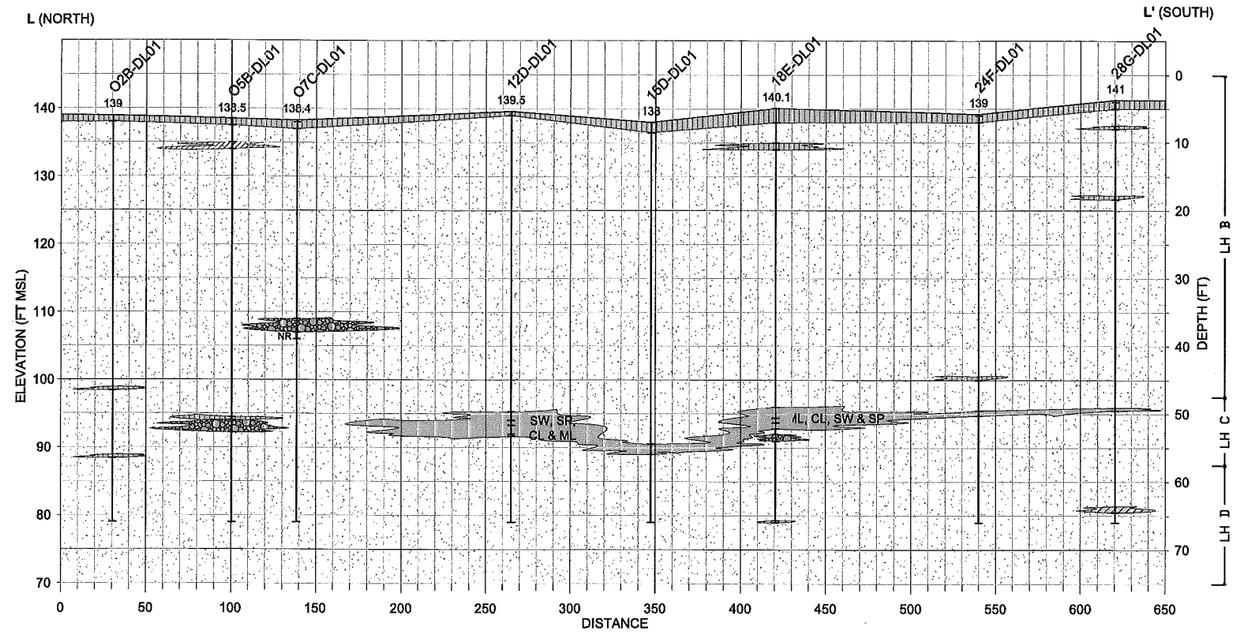

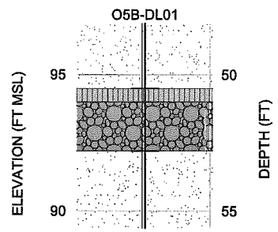

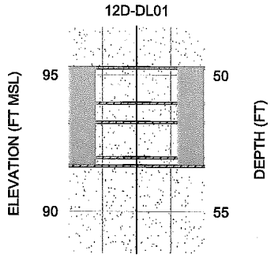

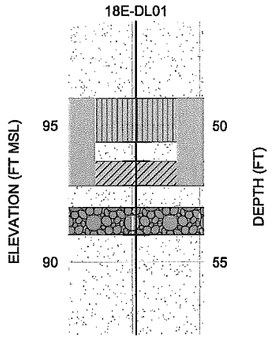

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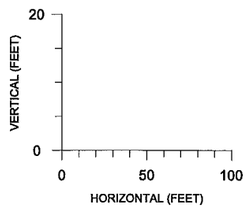

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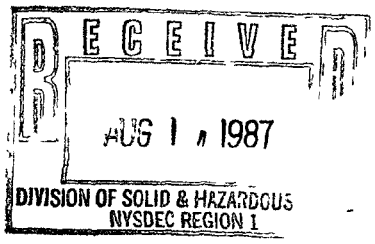
REMEDIAL EXCAVATION
AND
SUBSURFACE INVESTIGATION
AIR TECHNIQUES, INC.
HICKSVILLE, NEW YORK

Remediation

ERM-Northeast
Environmental Resources Management

ERM-Northeast



REMEDIAL EXCAVATION AND SUBSURFACE INVESTIGATION AIR TECHNIQUES, INC. HICKSVILLE, NEW YORK

AUGUST 1987

PREPARED FOR:

AIR TECHNIQUES, INC.
HICKSVILLE, NEW YORK

PREPARED BY:

ERM-NORTHEAST, INC.
88 SUNNYSIDE BOULEVARD
PLAINVIEW, NEW YORK 11803

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1.0 INTRODUCTION

1.1 Background

During the construction of a building addition, Air Techniques, Inc. (ATI) of Hicksville, New York, encountered a cache of buried drums inside the foundation wall. (Air Techniques, Inc. is a tenant at the site which is owned by AT Realty Co.) Following notification of the Nassau County Department of Health (NCDH) and the New York State Department of Environmental Conservation (NYSDEC) on January 5, 1987, approximately 30 drums and surrounding soil were removed by ATI. Soil and drum samples collected by NCDH and NYSDEC showed tetrachloroethylene and arsenic to be present. At that time, several environmental concerns still existed at the site including, 1) the potential presence of additional buried drums; and 2) soil quality beneath the former buried drum location. ERM-Northeast was retained by ATI to conduct a subsurface investigation at the site to resolve these issues. This document presents the results of a geophysical survey, the subsequent excavations of drums and contaminated soil, and the post-excavation sampling of subsurface soil.

1.2 Chronology of Events

Sylvania Corporation originally developed the property in 1957. A storm water recharge basin was constructed east of the original building. In 1959, an addition was built on the east side of the original structure. Sylvania sold the property in 1972 to the Dewiant Co., from which Air Techniques, Inc. acquired the property in 1979. In 1986, ATI acquired a landlocked portion of property on their eastern boundary from Nassau County. In 1986, the company began construction of a 30,000 sq. ft. addition to the east side of their existing facility. Figure 1-1 (in rear pocket) shows the site property lines and the building structures.

The following is a chronology of events associated with the discovery of buried drums at the site during the 1986 construction operations. This summary is based on conversations with Harry Nagel and Frank Bader, of Air Techniques, Inc.; Robert Becherer of NYSDEC; Edward Epstein, Project Construction Manager; and letters and laboratory data from the NCDH and NYSDEC.

- December 28, 1986 - Construction personnel discovered buried drums while excavating through the paved parking lot for foundation construction. Air Techniques contacted NCDH who

subsequently notified NYSDEC. Mr. Allan Fitzgerald (NCDH) responded to the site and gave contractor permission to proceed because the barrels were found on the interior of the foundation line. Four drums were removed.

- Based on the fact that the Sylvania Corporation had previously manufactured uranium rods, NYSDEC checked the site for radiation with negative results.

- January 7, 1987 - 12 to 14 drums and contaminated soil were removed by a crane and placed in a lined dumpster. Samples from the drums and from the excavation's floor were collected by NCDH. The area of excavation measured approximately 12 square feet at the surface and 7 feet in depth.

- February 11, 1987 - Mr. L. Sama, NCDH notified Mr. A. Candela of NYSDEC via letter of the sampling results which revealed that tetrachloroethylene, arsenic, and low levels of PCBs were present in some of the drums. NCDH sampling results are presented in Appendix B.

- March 16, 1987 - NCDH supervised removal of 12 to 14 additional drums many of which were badly crushed,

fragmented, and empty. These drums were found approximately 5 to 6 feet from the original drums at a similar depth.

- March 17, 1987 - NYSDEC took two samples from the floor of the excavation which now measured approximately 20 square feet at the surface and 12 feet in depth.

- April 1, 1987 - In an effort to determine the origin of the drums, ATI asked Stauffer Chemical Company (whose name was discovered on one or more drums) to check their records for past shipments to Air Techniques' address dating back to 1957. A sample of the drum contents was also supplied to Stauffer.

- April 20, 1987 - Stauffer Chemical Company informed Air Techniques that the sample did not appear to be a Stauffer Chemical Company Product and records do not show any prior shipments. Stauffer's response is presented in Appendix B.

- June 11, 1987 - Air Techniques informs NYSDEC of intent to dispose of existing buried drums through Chemical Management, Corp.

- June 11, 1987 - Air Techniques retains ERM-Northeast, Inc.

- June 15, 1987 - ERM-Northeast, Inc. conducts a geophysical survey of the interior of the building addition, and the parking lot to the building's north (Figure 1-1). Two anomalous areas (titled "A" and "B") were revealed in the northwestern region of the addition.

- June 18, 1987 - ERM submits a work plan describing the proposed subsurface investigation to be conducted at the ATI site.

- June 25, 1987 - NYSDEC approved ERM's work plan for investigation at ATI.

- June 30, 1987 - Air Techniques excavates (using a backhoe) "Anomalous Area B", and begins excavation of "Anomalous Area A". Five drums containing waste were removed from "Area B". ERM performed a post-excavation magnetometer survey of "Area B", which revealed that the magnetic anomaly had been removed. ERM collects soil sample from the floor of the excavation for chemical analyses (submitted to EnviroTest Laboratories), and the excavation is subsequently backfilled. Soil samples were also collected, from test boring B-1, in the area where drums were previously excavated (during January and March, 1987) by ATI.

- July 6, 1987 - Air Techniques excavates remainder of "Anomalous Area A". In total, approximately 22 drums containing waste were removed from "Area A". ERM performs a magnetometer survey of "Area A" following drum removal but prior to back filling which reveals that the magnetic anomaly had been removed. The excavation was then quickly backfilled due to concern over potential collapse of the north building wall which was about six feet from the edge of the 12 foot deep hole.

- July 10, 1987 - ERM collects soil samples from four test borings in the vicinity of "Anomalous Area A" for chemical analyses (submitted to EnviroTest Laboratories).

- July 30, 1987 - Meeting is held at Air Techniques to discuss the chemical data obtained from soil sampling. Attendees at the meeting included: Frank Bader and Harry Nagel, of Air Techniques, Inc.; Robert Becherer and Alex Moskie of NYSDEC; Howard Schaefer, of NCDH; Edward Epstein, Project Construction Manager; and Craig Werle and Glenn Wygant of ERM-Northeast.

1.3 Objectives

During June, 1987, ERM-Northeast prepared a work plan for further investigation of the Air Techniques site in Hicksville, New York. This work plan was approved by NYSDEC on 25 June 1987, and its contents were based on the geophysical survey as well as the other background information listed above. The NYSDEC-approved work plan included the following objectives:

1. The excavation of the two magnetic anomalies to determine if additional drums are present on-site;

2. The collection and analysis of subsurface soil samples to evaluate soil quality beneath the former buried drum locations.

2.0 SUBSURFACE INVESTIGATION

2.1 Geophysical Studies

A magnetometer survey of the site was initially conducted to determine the presence of buried drums, additional to those previously excavated by ATI. Except for a portion of the excavated sump area, the entire interior area of the new building addition was surveyed. The magnetometer survey also included the parking lot north of the building addition.

A Model DM22 Differential Magnetometer manufactured by Dowty RFL Industries, Incorporated was used to conduct the magnetometer survey. This magnetometer is capable of measuring vertical magnetic fields ranging from +10 gammas to 100,000 gammas. In the northeastern United States, the earth's magnetic field intensity is approximately 53,000 gammas. Buried metal objects, such as drums, cause localized disturbances (increases) in this vertical magnetic field.

The geophysical survey indicated two anomalous areas existed within the new building area (Figure 1-1). "Anomalous Area A" adjoins the excavated drum area and was approximately 16 square feet in area. Readings varied above normal vertical magnetic-

field background (53,000 gammas) ranging from 60,000 to 62,000 gammas. A second anomaly, labeled "B", was found approximately 60 feet south and 25 feet east of the addition's northwest corner. "Anomalous area B" yielded a reading of 56,000 gammas. These readings were considered as moderately-strong to strong in magnitude, and indicative of large buried metallic objects such as drums. Based on these results, both areas were concluded to require additional investigation as specified in the work plan.

2.2 Drum/Soil Excavation

To investigate the two anomalous areas delineated during the geophysical survey, test pits were excavated over the entire area of each anomaly. NYSDEC and/or NCDH personnel were present during the excavation work. Drums and contaminated soil were encountered in both of the anomalous areas. Approximately 22 drums were removed from "Anomalous Area A", and five drums were removed from "Anomalous Area B". Most of these drums contained a clear fluid, but a few contained either a white viscous fluid (3 drums in "Area A", 6 drums in "Area B"), or an amber-colored fluid (two drums in "Area A").

The excavation continued laterally and vertically until drums and visibly contaminated soil were removed. The

approximate lateral limits of these excavations are shown in Figure 1-1. Excavation depths ranged between 10 and 15 feet. All excavated, contaminated material was initially placed on a plastic-liner inside of the building, and then was removed and stored in plastic-lined dumpsters, which were in turn encapsulated with plastic. Prior to backfilling the excavations with clean fill, magnetometer readings were obtained at the bottom of the excavations. In no instance were any anomalous (above background) readings obtained. Soil and drums placed in the dumpsters will be transported off site to a permitted, hazardous-waste disposal facility.

2.3 Test Borings and Soil Sampling

ERM performed five soil borings and one test-pit sample to evaluate the presence of contaminated soil underlying the regions where drums were excavated. The approximate locations of the borings and test-pit sample are shown on Figure 1-1, while the results of the chemical analyses are presented in Table 2-1. Boring B-1 was performed approximately six feet from the north building wall in the area where drums were initially removed by ATI prior to ERM's involvement. Borings B-2 through B-5 were performed within lateral boundaries of the excavation associated with "Anomalous Area A". The one test pit sample was collected

TABLE 2-1
CHEMICAL ANALYSES OF SOIL SAMPLES,
AIR TECHNIQUES, INC.
HICKSVILLE, NEW YORK

SAMPLE	B-1 15-17ft	B-1 15-17ft	B-1 25-27ft	B-1 25-27ft	B-1 35-37ft	B-1 35-37ft	B-2 15-17ft	B-2 25-27ft	B-3 15-17ft	B-3 25-27ft	B-3 35-37ft	B-4 15-17ft	B-4 25-27ft	B-5 15-17ft	B-5 25-27ft	TP-1 10ft	TP-1 10ft
SAMPLER	ERM-NE	NCDH	ERM-NE	NCDH	ERM-NE	NCDH	ERM-NE	ERM-NE	ERM-NE	ERM-NE	ERM-NE	ERM-NE	ERM-NE	ERM-NE	ERM-NE	ERM-NE	NCDH
COLLECTION DATE	6/30/87	6/30/87	6/30/87	6/30/87	6/30/87	6/30/87	7/10/87	7/10/87	7/10/87	7/10/87	7/10/87	7/10/87	7/10/87	7/10/87	7/10/87	6/30/87	6/30/87
PERCENT SOLIDS	66	NA	84	NA	98	NA	94	94	85	96	96	97	96	96	94	93	NA
TOTAL PURGEABLE ORGANICS, in ppm (of 33 compounds)																	
Tetrachloroethylene	7800	1700	1.6	NR	0.036	NR	0.110	BDL	0.0046	BDL	BDL	BDL	BDL	BDL	BDL	0.86	NR
Trans-1,2-dichloroethylene	1.1	0.92	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,1,1-trichloroethene	0.29	0.18	BDL	BDL	BDL	BDL	0.021	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,1,2-trichloroethene	BDL	0.41	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Trichloroethylene	270	92	BDL	NR	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Total Xylenes	0.41	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
TOTAL RCRA METALS, in ppm (all 8 compounds listed)		NA		NA		NA											NA
Arsenic	BDL		BDL		BDL		BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
Barium	16		12		6.4		1.1	7.7	6.7	6.1	6.3	6.2	11	8.4	9.3	9.0	
Cadmium	2.6		0.36		0.31		1.4	0.43	1.2	0.94	0.94	0.10	0.20	0.10	1.2	BDL	
Chromium	120		22		13		8.6	4.4	2.4	6.1	12	5.6	12	11	14	8.7	
Lead	99		29		15		32	23	34	39	52	29	34	24	40	17	
Mercury	0.21		0.10		0.10		BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
Selenium	BDL		BDL		BDL		BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	
Silver	7.9		1.2		0.92		0.32	0.32	0.35	0.52	0.31	0.31	0.42	0.31	0.42	4.4	
TOTAL PCBs, in ppm (of 7 compounds)		NA		NA		NA											NA
PCB-1254	15		15		0.16		1.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.77	

NOTES: 1) BDL denotes below detection limit of laboratory instrument.
2) NA denotes compound not analyzed for.
3) NR denotes no result due to technical reasons (NCDH, DIR).

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from the floor, approximately 10 feet below grade, of the completed excavation at "Anomalous Area B".

The borings were performed following the backfilling of the excavations. Two borings (B-1 and B-3) were completed to a depth of 37 feet, with samples collected for chemical analyses from three intervals: 15 to 17 ft., 25 to 27 ft., and 35 to 37 ft. Three borings (B-2, B-4, and B-5) were completed to a depth of 27 feet, with samples collected for chemical analyses from two intervals: 15 to 17 ft., and 25 to 27 ft. Boring locations and sampling depths were reviewed and approved by NYSDEC before work was started. NYSDEC personnel were on-site to observe the boring and sampling procedures.

As each boring was advanced, using 3-inch I.D. hollow-stem augers, soil samples were collected at five-foot intervals. The split-spoon sampler was cleaned (either steam cleaned, or scrubbed in an alconox solution and rinsed with deionized water) after each sample to prevent cross contamination. A visual inspection of all soil samples was conducted to identify any obvious signs of contamination. Additionally, all samples were screened in the field using an Organic Vapor Analyzer (Century Foxboro Model 128 Flame Ionization Detector). The OVA was also

used to evaluate ambient vapor levels and personnel health-and-safety requirements.

The surficial geologic strata in the vicinity of the Air Techniques site belongs to the glacial outwash deposits of the Harbor-Hill Drift. This surficial deposit is lithologically characterized by sandy gravels and gravelly sands (with post-depositional coatings of vadose silt and clay), as confirmed by the on-site borings performed by ERM-Northeast (Appendix A). A review of available hydrogeologic literature suggests that ground water beneath the Air Techniques site occurs at a depth of approximately 50 feet below the ground surface (Ku and Simmons, 1983; Koszalka, 1974; and Isbister, 1966). The ground water table was not encountered in any of the test borings performed by ERM (to a maximum depth of 37 feet).

Based on the previous samples collected at the site by NYSDEC and NCDH, the soil samples collected by ERM were analyzed for volatile organics (Method 601/602), total RCRA metals (arsenic, barium cadmium, chromium, lead, mercury, selenium, and silver), and PCB's (Method 608). Duplicate soil samples ("splits") were also collected by the NCDH, and analyzed for only volatile organics. Table 2-1 summarizes the results of these analyses by ERM and NCDH. All of the soil samples were stored on

ice in insulated coolers immediately after being collected. They were delivered by Federal Express on the day following collection to EnviroTest Laboratories, Inc. in Newburgh, New York, a NYSDEC-approved laboratory. Chain of custody procedures were used during sample storage, transport and delivery.

3.0 DISCUSSION OF RESULTS

The three soil samples obtained from boring B-1 displayed a marked gradient in the concentration of the parameters detected at the site. The sample obtained from the 15 to 17 foot interval contained elevated concentrations of several priority-pollutant compounds: 7,800 ppm of tetrachloroethylene; 1.1 ppm of 1,2-dichloroethylene; 0.29 ppm of 1,1,1-trichloroethylene; 270 ppm of trichloroethylene; 0.41 ppm of xylene; 120 ppm of chromium; 7.9 ppm of silver; and 15 ppm of PCB acrochlor-1254. However, at the 25 to 27 foot level, only tetrachloroethylene (1.6 ppm) and acrochlor-1254 (15 ppm) are present in elevated concentrations. The concentrations of these two compounds continued to decrease significantly at the 35 to 37 foot interval, where only tetrachloroethylene (36 ppb) and acrochlor-1254 (0.16 ppm) were detected.

Samples from boring B-1 were split with NCDH and analyzed for volatile organics. The results are also presented in Table 2-1. The NCDH results from the B-1 15 to 17 foot sample are similar to ERM's results, however, the reported concentrations are uniformly lower. Tetrachloroethylene, trans 1,2-dichloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, and trichloroethylene were detected by NCDH. Metals and PCB's

were not analyzed. The NCDH results from the B-1 25 to 27 foot and 35 to 37 foot samples were also similar to ERM's results with the exception of tetrachloroethylene which was not reported (NR in data table) due to technical reasons (original NCDH lab data sheets are contained in Appendix C).

The initial soil sample (15 to 17 feet) from boring B-2 contained low concentrations of priority-pollutant compounds: 110 ppb of tetrachloroethylene; 21 ppb of 1,1,1-trichloroethane; and 1.7 ppm of acrochlor-1254. These compounds were not present in the sample obtained from 25 to 27 feet. Neither of the two samples from boring B-2 contained elevated concentrations of metals.

Soil sample TP-1 collected from the base of the anomalous area "B" test pit found 0.86 ppm of tetrachloroethylene and 0.77 ppm of PCBs. Metals concentrations were consistent with natural background concentrations. The NCDH analysis of TP-1 for volatile organics found all compounds below detectable limits with the exception of tetrachloroethylene which was not reported due to technical reasons.

The seven soil samples collected from borings B-3, B-4 and B-5 contained virtually no detectable concentration of volatile

organics and PCBs. The levels of RCRA metals in these samples were all somewhat consistent, which suggests that these levels represent natural conditions (i.e., background). A more detailed discussion of background levels and standards is presented below.

NYSDEC currently has no parameter specific soil-cleanup guidelines to which the ATI soil results can be compared. Some guidance is available from soil-cleanup standards established by the New Jersey Department of Environmental Protection (NJDEP) as part of their Environmental Cleanup and Responsibility Act (ECRA). For the parameters that were analyzed for at ATI, the soil cleanup guideline concentrations are:

o	Total volatile organics	1 ppm
o	PCBs	1 to 5 ppm
o	Arsenic	20 ppm
o	Cadmium	3 ppm
o	Chromium	100 ppm
o	Lead	100 ppm
o	Mercury	1 ppm
o	Silver	5 ppm
o	Selenium	4 ppm

Metals are naturally occurring constituents in soils at concentrations that have been shown to vary up to three orders of magnitude. Presented in Table 3-1 are data from two recent studies) Parr, et. al 1983; and Ure and Berrow, 1983) that document the range of natural metals concentration in soil.

A comparison of the soil sample results to the ECRA standards and the natural metals concentrations shows the only significant soil contamination at the site is found at the B-1 location between 15 feet and 27 feet below grade. In this zone, volatile organics (tetrachloroethylene, trichloroethylene, trans 1,2-dichloroethylene) and PCBs were detected in excess of ECRA standards. Chromium and silver were detected marginally above ECRA standards and naturally occurring background concentrations in only the 15 to 17 foot sample. All other samples collected found parameter concentrations below ECRA guidelines and within the background range for metals.

The sample results from borings B-2 through B-5 in Anomalous Area A and from TP-1 at Anomalous Area B show that the excavation of drums and surrounding contaminated soils was largely successful. Most of the buried wastes at the ATI site were remediated via removal with off-site disposal. The boring B-1 area appears to be a hot spot where some leakage of drum contents

TABLE 3-1

NATURALLY APPEARING METAL CONCENTRATIONS IN SOIL

Element	Concentration Range, in ppm	Typical Medium, in ppm	Mean Ambient Background Concentration, Eastern U.S., in ppm
Arsenic	0.1 to 194 (C)	11 (C)	5.4 (B)
Barium	---	---	500 (B)
Cadmium	0.01 to 7 (A)	0.5 (A)	1 (B)
Chromium	5 to 3,000 (A)	100 (A)	36 (B)
Lead	<1 to 888 (C)	29 (C)	14 (B)
Mercury	0.01 to 4.6 (C)	0.098 (C)	0.096 (B)
Selenium	0.1 to 38 (A)	0.2 (A)	0.39 (B)
Silver	0.01 to 8 (C)	0.4 (C)	---

(A) Parr et al., 1983
(B) USGS, 1975
(C) Ure and Berrow, 1983

over time or inadvertent spillage during the preliminary excavation occurred. The quantity of liquids spilled from the drums appears to be limited however, because the sampling data clearly demonstrates that the contaminants were absorbed in the 12 foot zone immediately under the drums. Contaminant concentrations are shown to be negligible at 35 feet below grade, 20 feet below the base of the drum excavation.

The actual quantity of pure contaminants that remain in the soil surrounding boring B-1 from 15 to 27 feet is estimated to be approximately 27 gallons or less than 1/2 of one drum. This volume was calculated using the following procedure and assumptions:

- The vertical extent of contamination is 12 feet
- The areal extent of contamination includes the entire area originally excavated by ATI between January and March 1987 excluding that area that was not re-excavated by ERM. This area is conservatively estimated to be 6 feet by 12 feet.
- The volume of soil in this area is 864 cubic feet or 24.5 cubic meters.

- The average volatile organic contaminant concentration in the contaminated zone is 4,000 mg/kg. This is an average of sample B-1 (15 to 17 feet) and B-1 (25 feet to 27 feet).

- The density of wet coarse to medium grained sand is 2,000 kg/cubic meter (Handbook of Tables for Applied Engineering Science, Second Editions; 1973, p 636).

- $24.5\ m^3 \times 2{,}000\ kg/m^3 = 49{,}000$ kg of wet soil.

- Soil moisture retained in sandy soil = 15% by weight.

- Weight of dry soil in contaminated area = 49,000 kg x 85% = 41,650 kg dry soil.

- 41,650 kg dry soil x 4,000 mg/kg = 1.67×10^8 mg of volatile organics (VO's).

- 1.67×10^8 mg VO's = 167 kg VO's.

- Based on lab results, assume all VO's are tetrachloroethylene.

- Density of tetrachloroethylene = 1.62 gm/cm^3 = 1.62 kg/liter.

- 167 kg of VO's x $\frac{\text{liter}}{1.62\ \text{kg}}$ x $\frac{\text{gallon}}{3.785\ \text{liters}}$ = 27 gallons

The potential for future migration of contaminants from the 15 to 27 foot area deeper into the unsaturated zone or down to the water table appears to be negligible. This area is already covered by the building roof which prevents the infiltration of any precipitation. A six-inch thick concrete floor is scheduled to be built over this area that will further encapsulate this zone. Rain water from the roof is collected and piped to a remote dry well. As previously discussed, the estimated depth to the water table below the site is over 50 feet. The two soil samples from 35 to 37 feet had an average of 97% solids which indicates a large capacity to retain any fluids that could potentially migrate downward from the impacted zone. The low soil moisture content would reasonably be expected to continue to just above the capillary fringe immediately above the water table.

The B-1 boring was located approximately six feet from the northern wall of the building addition. Removal of soil from 15 feet to 27 feet below grade would require the use of a crane

because it is beyond the reach of a backhoe or hydraulic excavator. Excavation of these soils would, therefore, necessitate the dismantling of an extended section of the northern wall (i.e., 50 feet or more) and a section of the roof. Based on the very low risk to health or the environment posed by the remaining contaminants around boring B-1, this does not appear to be warranted.

4.0 CONCLUSIONS

The following conclusions can be drawn based on data collected during ERM's investigation at the ATI site:

1. Buried drums were discovered by ATI inside the footings of their building in late 1986. Initial drum and soil excavations resulted in the removal of approximately 25 to 30 drums and about 30 yards of soil.

2. In accordance with a NYSDEC-approved work plan, ERM conducted a magnetometer survey of the interior of the ATI building addition and the area north of the building. Two magnetic anomalies were discovered and targeted for further investigation.

3. Excavation of the smaller, separate "Anomalous Area B" resulted in the removal of 5 drums and soil. A post excavation magnetometer survey showed no anomalies present indicating all drums had been removed. A post excavation soil sample, TP-1, showed residual soil quality to be below relevant guidelines and natural background levels.

4. Excavation of Anomalous Area A (contiguous with the initial excavation area) resulted in the removal of 22 drums and approximately 50 to 60 yards of soil. The excavation covered an area about 25 feet by 25 feet to a depth of 12 feet. Magnetometer surveys conducted after the drums were removed but prior to backfilling showed no anomalies were present demonstrating that all drums had been removed.

5. Five soil borings were installed in the main excavation area (Anomaly A plus initial excavation) to evaluate residual soil quality. Four of the five borings found soils below the former drum locations (15 to 25 feet) to be either completely unimpacted or contain low concentrations of several parameters. These data suggest that the drum/soil removal project was largely successful in remediating subsurface contamination at ATI.

6. Boring B-1, located in the initial excavation area, found elevated concentrations of several volatile organics (tetrachloroethylene, trichloroethylene, trans 1,2-dichloroethylene) and PCB acrochlor-1254 between 15 and 27 feet. Samples from 35 to 37 feet found

contaminant concentrations to be negligible. This 12 foot thick zone appears to be an areally and vertically isolated hot spot. It is estimated that up to 27 gallons of chlorinated hydrocarbons may be absorbed as residual soil moisture within the contaminated zone. The opportunity for continued vertical migration of contaminants appears to be limited since this area is already covered by a roof and is scheduled to be capped by a six inch thick concrete slab. It is estimated to be unlikely that contaminants now or in the future will have any impact on ground water which is located over 50 feet below grade.

NOT SO!

7. Boring B-1 is located about six feet from the northern building wall. Removal of the contaminated soil from 15 to 27 feet would require dismantling of an extended section of existing building wall and sections of the roof. Based on data collected during this investigation, this does not appear to be warranted.

5.0 REFERENCES

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APPENDIX A

Environmental Resources Management

Drilling Log

Project AIR TECHNIQUES Owner AIR TECHNIQUES

Location Hicksville, NY WO Number

Boring ~~Well~~ Number B-1 Total Depth 37 ft. Diameter ---

Surface Elevation --- Water Level Initial NE 24-hrs. ---

Screen Dia --- Length --- Slot Size ---

Casing Dia --- Length --- Type ---

Drilling Company SOIL MECHANICS Drilling Method 3 In. I.D. HSA

Driller Charles Gamble Log By Glenn Wygant Date Drilled 6/30/87

Sketch Map

Notes

Depth (Feet)	OVA	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0				
1				
2				
3				
4				
5				
6	0.0		S-1	Brown cm SAND and f GRAVEL, dry
7				
8				
9				
10				
11	0.0		S-2	No Recovery
12				
13				
14				
15				
16	0.0		S-3	Light Brown cmf SAND, wet
17				
18				
19				
20				
21	0.0		S-4	Light Brown f GRAVEL, some cm Sand, dry
22				
23				
24				
25				

Environmental Resources Management

Drilling Log

Project AIR TECHNIQUES Owner AIR TECHNIQUES

Location HICKSVILLE, NY W.O. Number

Boring Well Number B-1 Total Depth 37 ft. Diameter ---

Surface Elevation ___ Water Level. Initial NE 24-hrs ---

Screen. Dia --- Length --- Slot Size ---

Casing Dia --- Length --- Type ---

Drilling Company Soil Mechanics Drilling Method 3 in. I.D. HSA

Driller Charles Gamble Log By Glenn Wygant Date Drilled 6/30/87

Sketch Map

Notes

Depth (Feet)	OVA	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
26	0.0		S-5 ↓	SAME
27				
28				
29				
30				
31	0.0		S-6 ↑↓	Light Brown cm SAND, some Gravel, dry
32				
33				
34				
35				
36	0.0		S-7 ↑↓	SAME
37				
				Bottom of Hole 37 ft.
				Notes: 1) ground water not encountered
				2) hole backfilled upon completion

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Environmental Resources Management

Drilling Log

Project AIR TECHNIQUES Owner AIR TECHNIQUES

Location HICKSVILLE, NY WO Number

Boring Well Number B-2 Total Depth 27 ft Diameter ---

Surface Elevation Water Level Initial NE 24-hrs ---

Screen Dia --- Length --- Slot Size ---

Casing Dia --- Length --- Type ---

Drilling Company SOIL MECHANICS Drilling Method 3 in. I.D. HSA

Driller Charles Gamble Log By Glenn Wygant Date Drilled 7/10/87

Sketch Map

Notes

Depth (Feet)	OVA	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11	0.0		S-1	Brown cm SAND and f GRAVEL, dry
12				
13				
14				
15				
16	0.0		S-2	SAME
17				
18				
19				
20				
21	0.0		S-3	SAME
22				
23				
24				
25				

Environmental Resources Management

Drilling Log

Project AIR TECHNIQUES Owner AIR TECHNIQUES

Location HICKSVILLE, NY W.O. Number

Boring ~~Well~~ Number B-2 Total Depth 27 ft. Diameter ---

Surface Elevation Water Level. Initial NE 24-hrs ---

Screen Dia --- Length --- Slot Size ---

Casing Dia --- Length --- Type ---

Drilling Company SOIL MECHANICS Drilling Method 3 in. I.D. HSA

Driller Charles Gamble Log By Glenn Wygant Date Drilled 7/10/87

Sketch Map

Notes

Depth (Feet)	OVA	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
26	0.0		S-4	SAME
27			↓	
				Bottom of Hole 27 ft.
				Notes: 1) ground water not encountered.
				2) hole backfilled upon completion

Environmental Resources Management

Drilling Log

Project AIR TECHNIQUES Owner AIR TECHNIQUES

Location HICKSVILLE, NY W.O. Number

Boring Well Number B-3 Total Depth 37 ft Diameter ---

Surface Elevation Water Level Initial NE 24-hrs. ---

Screen Dia --- Length --- Slot Size ---

Casing. Dia. --- Length --- Type ---

Drilling Company SOIL MECHANICS Drilling Method 3 in. I.D. HSA

Driller Charles Gamble Log By Glenn Wygant Date Drilled 7/10/87

Sketch Map

Notes

Depth (Feet)	OVA	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11	1.5		S-1	Brown cm SAND and f GRAVEL, dry
12				
13				
14				
15				
16	1.5		S-2	SAME
17				
18				
19				
20				
21	0.0		S-3	SAME
22				
23				
24				
25				

Environmental Resources Management

Drilling Log

Project AIR TECHNIQUES Owner AIR TECHNIQUES

Location HICKSVILLE, NY WO Number

Boring Well Number B-3 Total Depth 37 ft. Diameter ---

Surface Elevation Water Level Initial NE 24-hrs ---

Screen. Dia --- Length --- Slot Size ---

Casing. Dia --- Length --- Type ---

Drilling Company SOIL MECHANICS Drilling Method 3 in. I.D. HSA

Driller CHARLES GAMBLE Log By GLENN WYGANT Date Drilled 7/10/87

Sketch Map

Notes

Depth (Feet)	OVA	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
26	0.0		S-4	SAME
27				
28				
29				
30				
31	0.0		S-5	Brown cmf SAND, some f GRAVEL, dry
32				
33				
34				
35				
36	0.0		S-6	Brown cm SAND and f GRAVEL, dry
37				
				Bottom of Hole 37 ft.
				NOTES: 1) ground water not encountered
				2) hole backfilled upon completion

Environmental Resources Management

Drilling Log

Project AIR TECHNIQUES Owner AIR TECHNIQUES

Location HICKSVILLE, NY WO Number

Boring ~~Well~~ Number B-4 Total Depth 37 ft. Diameter ---

Surface Elevation ____ Water Level Initial NE 24-hrs ---

Screen. Dia --- Length --- Slot Size ---

Casing Dia --- Length --- Type ---

Drilling Company SOIL MECHANICS Drilling Method 3 in. I.D. HSA

Driller CHARLES GAMBLE Log By GLENN WYGANT Date Drilled 7/10/87

Sketch Map

Notes

Depth (Feet)	OVA	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11	0.0		S-1 ↓	Brown cm SAND and f GRAVEL, dry
12				
13				
14				
15				
16	0.0		S-2 ↓	SAME
17				
18				
19				
20				
21	0.0		S-3 ↓	SAME
22				
23				
24				
25	0.0		↑	

Environmental Resources Management

Drilling Log

Project AIR TECHNIQUES Owner AIR TECHNIQUES

Location HICKSVILLE, NY W.O Number

Boring Well Number B-4 Total Depth 27 ft Diameter ---

Surface Elevation Water Level. Initial NE 24-hrs. ---

Screen Dia --- Length --- Slot Size ---

Casing. Dia --- Length --- Type ---

Drilling Company SOIL MECHANICS Drilling Method 3 in. I.D. HSA

Driller CHARLES GAMBLE Log By GLENN WYGANT Date Drilled 7/10/87

Sketch Map

Notes

Depth (Feet)	OVA	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
26	0.0		S-4	SAME
27			↓	
				Bottom of Hole 27 ft.
				NOTES: 1) ground water not encountered
				2) hole backfillled upon completion

SSB 240068

Environmental Resources Management

Drilling Log

Project AIR TECHNIQUES Owner AIR TECHNIQUES

Location HICKSVILLE, NY WO Number

Boring ~~Well~~ Number B-5 Total Depth 27 ft Diameter ---

Surface Elevation Water Level. Initial N.E. 24-hrs ---

Screen. Dia --- Length --- Slot Size ---

Casing Dia. --- Length --- Type ---

Drilling Company SOIL MECHANICS Drilling Method 3 in. I.D. HSA

Driller Charles Gamble Log By Glenn Wygant Date Drilled 7/10/87

Sketch Map

Notes

Depth (Feet)	OVA	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
0				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11	0.0		S-1 ↓	Brown cm SAND and f GRAVEL, dry
12				
13				
14				
15				
16	0.0		S-2 ↓	SAME
17				
18				
19				
20				
21	0.0		S-3 ↓	SAME
22				
23				
24				
25			↑	

Environmental Resources Management

Drilling Log

Project AIR TECHNIQUES Owner AIR TECHNIQUES

Location HICKSVILLE, NY W.O. Number

Boring Well Number B-5 Total Depth 27 ft Diameter ---

Surface Elevation Water Level Initial NE 24-hrs. ---

Screen Dia --- Length --- Slot Size ---

Casing Dia --- Length --- Type ---

Drilling Company SOIL MECHANICS Drilling Method 3 in. I.D. HSA

Driller CHARLES GAMBLE Log By GLENN WYGANT Date Drilled 7/10/87

Sketch Map

Notes

Depth (Feet)	OVA	Well Construction	Sample Number	Description/Soil Classification (Color, Texture, Structures)
26	0.0		S-4	SAME
27			↓	
				Bottom of Hole 27 ft.
				NOTES: 1) ground water not encountered
				2) hole backfilled upon completion

SSB 240070

APPENDIX B

SOIL SAMPLES COLLECTED BY NCDH (AS SPLIT SAMPLES WITH ERM) ON JUNE 30, 1987. SAMPLES INCLUDE: B-1, 15-17 FEET (NCDH LAB. NO. 870706); B-1, 25-27 FEET (NCDH LAB. NO. 870707); B-1, 35-37 FEET (NCDH LAB. NO. 870708); AND TP-1, 10 FEET (NCDH LAB. NO. 870709).

LABORATORY WORKSHEET

CHEMICAL EXAMINATION FOR TRACE ORGANIC CONSTITUENTS IN WATER, HAZARDOUS WASTES AND SOLID WASTES

Division of Laboratories and Research

Nassau County Department of Health

1 ☑ Routine
2 ☐ Resample
3 ☑ Special
4 ☐ Complaint
5 ☐ Other

Lab. No. 870706 **D**

Field No. VN-122

N No. (Public Water Supply Only)

Source Information (Please Print)

Premises	AIR TECHNIQUES INC
Address	70 CANTIAGUE ROCKRD
Town	HICKSVILLE
Collection Point	Well No.
	NORTH WALL OF BLDG

	Month	Day	Year
Date Collected	06	30	8 87
Date Received	JUN 30 1987		
Date Reported	AUG 05 1987		
Collection Time	12:20 PM		
Collected By:	KW		

Sampler's Comments:

SOIL SAMPLE 6FT INSIDE NORTH WALL OF WAREHOUSE 15-17FT DEPTH BORING #1
SAMPLE STORED ON ICE

Bureau

1 ☑ Land Resources Management
2 ☐ Public Water Supply
3 ☐ Water Pollution Control
4 ☐ Environmental Sanitation
9 ☐ Other (specify)

SAMPLE TYPE

AQUEOUS				NON-AQUEOUS	
1	Community Well	6	Surface Water	1	Soil
2	Non-Community Well	7	Waste Water	2	Sludge
3	Private Well	8	Industrial Effluent	3	Waste Solvent
4	Monitoring Well	9	Raw Supply Water	4	Oil
5	Drinking Water	10	Distribution Water	5	Other (specify)

ANALYSIS TYPE

A	Purgeable halogenated hydrocarbons
B	Purgeable halogenated hydrocarbons - gases
C	Purgeable nonhalogenated hydrocarbons
D	Other (specify)

Examiner's Comments.

DL 211 2/86

SSB 240073

USTODY RECORD

Laboratories and Research
ounty Department of Health

1 ☐ Routine
2 ☐ Resample
3 ☑ Special
4 ☐ Complaint
5 ☐ Other

Lab. No. 870706

Field No. VN-122

e Information (Please Print)

emises Air Techniques Inc.

ddress 70 Cantiague Rock Rd

wn Hicksville

Collection Point Location 6 ft FROM NORTH WALL OF WAREHOUSE INSIDE BLDG

Sampler's Comments 15-17 ft DEPTH BORING #1 SOIL SAMPLE SAMPLE ON ICE

Collection Date 06-30-87

Collection Time 12:20 PM

No. of Containers 1

Type of Containers glass

Method of Preservation

Collection Procedure

Method of Transportation to Laboratory

NTAINER DISTRIBUTION Clean sampling containers designated by field number VN-122 have been issued for collection of the sample identified on this form.

	Relinquished by:		Received by:	
nted Name	MARK K SOLAN	Date 6/30/87	Printed Name Kurt Welch	Date 06-30-87
Signature X		Time 10:30 AM	Signature X Kurt Welch	Time 10:34 AM
pose of Transfer	SAMPLE COLLECTION			

STODY TRANSFER 1	Relinquished by:		Received by:	
nted Name	Kurt Welch	Date 06-30-87	Printed Name MARK K SOLAN	Date 6/30/87
nature X	Kurt Welch	Time 2:54 PM	Signature X	Time 2:54 PM
Purpose of Transfer	Analysis of sample			

STODY TRANSFER 2	Relinquished by:		Received by:	
rinted Name		Date	Printed Name	Date
nature X		Time	Signature X	Time
urpose of Transfer				

STODY TRANSFER 3	Relinquished by:		Received by:	
rinted Name		Date	Printed Name	Date
nature X		Time	Signature X	Time
pose of Transfer				

CUSTODY TRANSFER 4	Relinquished by:		Received by:	
ted Name		Date	Printed Name	Date
Signature X		Time	Signature X	Time
ose of Transfer				

Comments:

219 7/84

SSB 240074

NASSAU COUNTY DEPARTMENT OF HEALTH
DIVISION OF LABORATORIES AND RESEARCH
ENVIRONMENTAL HEALTH LABORATORIES

TRACE ORGANICS

Access Num er: 870706
Source: AIR TECHNIQUES - 70 CANTIAGUE ROCK RD., HICKSVILLE
Matrix: SOIL
Site: BORING# 1 - NORTH WALL: 15-17FT.
Date Sampl d: 06/30/87
Date of Re ort: 08/05/87

VOLATILE H LOGENATED	MRC (ng/g)		RESULT (ng/g)
TRICHL ROFLUOROMETHANE	25	------	< 25
METHYL NE CHLORIDE			
1,1-DI HLOROETHYLENE			
1,1,2- RICHLOROTRIFLUOROETHANE	125	------	< 125
c & t- ,2-DICHLOROETHYLENE	100	------	920
1,1-DI HLOROETHANE	150	------	< 150
CHLORO ORM	25	------	< 25
1,1,1- RICHLOROETHANE	25	------	180
CARBON TETRACHLORIDE	25	------	< 25
TRICHL ROETHYLENE	25	------	92000
BROMOD CHLOROMETHANE	25	------	< 25
c-1,3- ICHLOROPROPENE			
DIBROM CHLOROMETHANE	25	------	< 25
1,1,2- RICHLOROETHANE	25	------	410
1,2-DI ROMOETHANE	NA	------	NA
TETRAC LOROETHYLENE	25	------	1700000
BROMOF RM	250	------	< 250

VOLATILE A OMATICS	MRC (ng/g)		RESULT (ng/g)
BENZEN	75	------	< 75
TOLUEN	100	------	< 100
CHLORO ENZENE	1000	------	< 1000
ETHYLB NZENE	1250	------	< 1250
XYLENE (o,m,p)	1750	------	< 1750
DICHLO OBENZENE (o,m.p)	500	------	< 500

MRC - MINI UM REPORTABLE CONCENTRATION NA - NOT ANALYZED
NR - NO R SULT DUE TO TECHNICAL REASONS - RESAMPLE SUGGESTED
PPB: AIR nl/l WATER - ug/l SOIL - ng/g

DETECTED BY GC/MS

C-CHClCHCl
CH_3CCl_3
CHClCCl2
$CH_2ClCHCl_2$
CCl_2CCl_2

SSB 240075

LABORATORY WORKSHEET

CHEMICAL EXAMINATION FOR TRACE ORGANIC CONSTITUENTS IN WATER, HAZARDOUS WASTES AND SOLID WASTES

Division of Laboratories and Research

Nassau County Department of Health

1 ☐ Routine
2 ☐ Resample
3 ☑ Special
4 ☐ Complaint
5 ☐ Other

Lab. No. 870707

Field No. VV-133

N No. (Public Water Supply Only)

Source Information (Please Print)

Premises: AIR TECHNIQUES INC
Address: 70 CANTIAGUE ROCK Rd
Town: HICKSVILLE
Collection Point: NORTH SIDE Well No.
OF WAREHOUSE

	Month	Day	Year
Date Collected	06	30	87
Date Received	JUN	30	1987
Date Reported			8
Collection Time	12:50 PM		
Collected By:	KW		

Sampler's Comments:
SOIL SAMPLE 6 ft INSIDE NORTH WALL OF WAREHOUSE 25-27 ft DEPTH
BORING #1
SAMPLE STORED ON ICE

Bureau
1 ☑ Land Resources Management
2 ☐ Public Water Supply
3 ☐ Water Pollution Control
4 ☐ Environmental Sanitation
9 ☐ Other (specify)

SAMPLE TYPE

	AQUEOUS				NON-AQUEOUS
	Community Well	6	Surface Water	1	Soil
	Non-Community Well	7	Waste Water	2	Sludge
	Private Well	8	Industrial Effluent	3	Waste Solvent
	Monitoring Well	9	Raw Supply Water	4	Oil
5	Drinking Water	10	Distribution Water	5	Other (specify)

ANALYSIS TYPE

	Purgeable halogenated hydrocarbons
	Purgeable halogenated hydrocarbons - gases
	Purgeable nonhalogenated hydrocarbons
	Other (specify)

Examiner's Comments:

DL 211 2/86

SSB 240076

USTODY RECORD

t Laboratories and Research
County Department of Health

1 ☐ Routine
2 ☐ Resample
3 ☑ Special
4 ☐ Complaint
5 ☐ Other

Lab. No. 870707

Field No. VN-123

rce Information (Please Print)

emises Air Techniques Inc.

ddress 70 Cantiague Rock Rd

wn Hicksville

Collection Point Location 6 FT FROM NORTH WALL
WELL HOUSE INSIDE BLDG

Sampler's Comments
SOIL SAMPLE TAKEN AT 25-27 FT DEPTH
SAMPLE ON ICE (Boring #1)

Collection Date 06/30/87

Collection Time 12:50 PM

No. of Containers 1

Type of Containers glass

Method of Preservation

Collection Procedure

Method of Transportation to Laboratory

ONTAINER DISTRIBUTION Clean sampling containers designated by field number VN-123 have been issued for collection of the sample identified on this form.

	Relinquished by:		Received by:	
Printed Name	MARK K SOLARI	Date 6/30/87	Printed Name Kurt Welch	Date 06-30-8
Signature X	[signature]	Time 16:30	Signature X Kurt Welch	Time 10:34 A
Purpose of Transfer	SAMPLE COLLECTION			

CUSTODY TRANSFER 1	Relinquished by:		Received by:	
Printed Name	Kurt Welch	Date 06-30-87	Printed Name MARK K SOLARI	Date 6/30/8
Signature X	Kurt Welch	Time 2:55 PM	Signature X [signature]	Time 2:55 pm
Purpose of Transfer	Analysis of Sample			

USTODY TRANSFER 2	Relinquished by:		Received by:	
Printed Name		Date	Printed Name	Date
gnature X		Time	Signature X	Time
Purpose of Transfer				

USTODY TRANSFER 3	Relinquished by:		Received by:	
Printed Name		Date	Printed Name	Date
gnature X		Time	Signature X	Time
Purpose of Transfer				

USTODY TRANSFER 4	Relinquished by:		Received by:	
nted Name		Date	Printed Name	Date
nature X		Time	Signature X	Time
rpose of Transfer				

Comments:

L 219 7/84

SSB 240077

NASSAU COUNTY DEPARTMENT OF HEALTH
DIVISION OF LABORATORIES AND RESEARCH
ENVIRONMENTAL HEALTH LABORATORIES

TRACE ORGANICS

Access Number: 870707
Source: AIR TECHNIQUES INC. - 70 CANTIAGUE ROCK RD., HICKSVIL
Matrix: SOIL
Site: 6' INSIDE NORTH WALL - 25-27FT
Date Sampled: 06/30/87
Date of Report: 07/29/87

VOLATILE HALOGENATED	MPC (ng/g)		RESULT (ng/g)
TRICHLOROFLUOROMETHANE	25	<	25
METHYLENE CHLORIDE			
1,1-DICHLOROETHYLENE			
1,1,2-TRICHLOROTRIFLUOROETHANE	125	<	125
c & t-1,2-DICHLOROETHYLENE	100	<	100
1,1-DICHLOROETHANE	150	<	150
CHLOROFORM	25	<	25
1,1,1-TRICHLOROETHANE	25	<	25
CARBON TETRACHLORIDE	25	<	25
TRICHLOROETHYLENE	25		NR
BROMODICHLOROMETHANE	25	<	25
c-1,3-DICHLOROPROPENE			
DIBROMOCHLOROMETHANE	25	<	25
1,1,2-TRICHLOROETHANE	25	<	25
1,2-DIBROMOETHANE	NA		NA
TETRACHLOROETHYLENE	25		NP
BROMOFORM	25		NP

VOLATILE AROMATICS	MRC (ng/g)		RESULT (ng/g)
BENZENE	75	<	75
TOLUENE	100	<	100
CHLOROBENZENE	100	<	100
ETHYLBENZENE	125	<	125
XYLENE (o,m,p)	175	<	175
DICHLOROBENZENE (o,m,p)	500	<	500

MPC - MINIMUM REPORTABLE CONCENTRATION NA - NOT ANALYZED
NP - NO RESULT DUE TO TECHNICAL REASONS - RESAMPLE SUGGESTED
PPB: AIR - nl/l WATER - ug/l SOIL - ng/g

SSB 240078

LABORATORY WORKSHEET 870708

CHEMICAL EXAMINATION FOR TRACE ORGANIC CONSTITUENTS IN WATER, HAZARDOUS WASTES AND SOLID WASTES

Division of Laboratories and Research

Nassau County Department of Health

1 ☐ Routine
2 ☐ Resample
3 ☑ Special
4 ☐ Complaint
5 ☐ Other

Lab. No. 870708

D

Field No. VN-124

N No. (Public Water Supply Only)

Source Information (Please Print)

Premises	AIR TECHNIQUES INC
Address	70 CANTIAGUE ROCKRD
Town	HICKSVILLE
Collection Point	NORTH SIDE OF BLDG WALL
Well No.	

	Month	Day	Year
Date Collected	06	30	87
Date Received	JUN	30	1987
Date Reported	JUL	09	1987
Collection Time	1115 PM		
Collected By:	KW		

Sampler's Comments:
SOIL SAMPLE 6 FT INSIDE NORTH WALL OF WAREHOUSE 35-37 FT DEPTH BORING #1
SAMPLE STORED ON ICE

Bureau
1 ☑ Land Resources Management
2 ☐ Public Water Supply
3 ☐ Water Pollution Control
4 ☐ Environmental Sanitation
9 ☐ Other (specify)

SAMPLE TYPE

AQUEOUS				NON-AQUEOUS	
1	Community Well	6	Surface Water	1	Soil
2	Non-Community Well	7	Waste Water	2	Sludge
3	Private Well	8	Industrial Effluent	3	Waste Solvent
4	Monitoring Well	9	Raw Supply Water	4	Oil
5	Drinking Water	10	Distribution Water	5	Other (specify)

ANALYSIS TYPE

A	Purgeable halogenated hydrocarbons
B	Purgeable halogenated hydrocarbons - gases
C	Purgeable nonhalogenated hydrocarbons
D	Other (specify)

Examiner's Comments:

DL 211 2/80

SSB 240079

CUSTODY RECORD

of Laboratories and Research

County Department of Health

1 ☐ Routine
2 ☐ Resample
3 ☐ Special
4 ☐ Complaint
5 ☐ Other

Lab. No. 870708

Field No. VN-124

Source Information (Please Print)

Premises Air Techniques Inc.

Address 70 Cantiague Rock Rd.

Town Hicksville

Collection Point Location 6FT FROM NORTH WALL OF WAREHOUSE INSIDE BLDG

Sampler's Comments
SOIL SAMPLE 35-37 FT DEPTH
BORING #1
SAMPLE ON ICE

Collection Date 06-30-87

Collection Time 1:15 PM

No. of Containers 1

Type of Containers glass

Method of Preservation

Collection Procedure

Method of Transportation to Laboratory

CONTAINER DISTRIBUTION Clean sampling containers designated by field number VN-124 have been issued for collection of the sample identified on this form.

	Relinquished by:		Received by:	
Printed Name	MARK K SOLAN	Date 6/30/87	Printed Name Kurt Welch	Date 06-30-87
Signature X	Mark K Solan	Time 10:30 AM	Signature X Kurt Welch	Time 10:35 AM

Purpose of Transfer SAMPLE COLLECTION

CUSTODY TRANSFER 1	Relinquished by:		Received by:	
Printed Name	Kurt Welch	Date 06-30-87	Printed Name MARK K SOLAN	Date 6/30/87
Signature X	Kurt Welch	Time 2:55 PM	Signature X Mark K Solan	Time 2:55 PM

Purpose of Transfer Analysis of sample

CUSTODY TRANSFER 2	Relinquished by:		Received by:	
Printed Name		Date	Printed Name	Date
Signature X		Time	Signature X	Time

Purpose of Transfer

CUSTODY TRANSFER 3	Relinquished by:		Received by:	
Printed Name		Date	Printed Name	Date
Signature X		Time	Signature X	Time

Purpose of Transfer

CUSTODY TRANSFER 4	Relinquished by:		Received by:	
Printed Name		Date	Printed Name	Date
Signature X		Time	Signature X	Time

Purpose of Transfer

Comments:

219 7/84

SSB 240080

NASSAU COUNTY DEPARTMENT OF HEALTH
DIVISION OF LABORATORIES AND RESEARCH
ENVIRONMENTAL HEALTH LABORATORIES

TRACE ORGANICS

Access Number: 870708
Source: AIR TECHNIQUES INC - 70 CANTIAGUE ROCK RD., HICKSVILLE
Matrix: SOIL
Site: BORING#1-6FT INSIDE NORTH WALL 35-37FT
Date Sampled: 06/30/87
Date of Report: 07/08/87

replaced by Next page GTW

VOLATILE HALOGENATED	MRC (ng/g)		RESULT (ng/g)
TRICHLOROFLUOROMETHANE	25	<	25
METHYLENE CHLORIDE			
1,1-DICHLOROETHYLENE			
1,1,2-TRICHLOROTRIFLUOROETHANE	125	<	125
c & t-1,2-DICHLOROETHYLENE	225	<	225
1,1-DICHLOROETHANE	125	<	125
CHLOROFORM	25	<	25
1,1,1-TRICHLOROETHANE	25	<	25
CARBON TETRACHLORIDE	25	<	25
TRICHLOROETHYLENE	25	<	25
BROMODICHLOROMETHANE	25	<	25
c-1,3-DICHLOROPROPENE			
DIBROMOCHLOROMETHANE	50	<	50
1,1,2-TRICHLOROETHANE	25	<	25
1,2-DIBROMOETHANE	NA		NA
TETRACHLOROETHYLENE	25		470
BROMOFORM	50	<	50

VOLATILE AROMATICS	MRC (ng/g)		RESULT (ng/g)
BENZENE	75	<	75
TOLUENE	75	<	75
CHLOROBENZENE	75	<	75
ETHYLBENZENE	175	<	175
XYLENE (o,m,p)	250	<	250
DICHLOROBENZENE (o,m,p)	500	<	500

MRC - MINIMUM REPORTABLE CONCENTRATION NA - NOT ANALYZED
NR - NO RESULT DUE TO TECHNICAL REASONS - RESAMPLE SUGGESTED
PPB: AIR - nl/l WATER - ug/l SOIL - ng/g

DETECTED BY CC/MS
CCl3 CCl2

NASSAU COUNTY DEPARTMENT OF HEALTH
DIVISION OF LABORATORIES AND RESEARCH
ENVIRONMENTAL HEALTH LABORATORIES

TRACE ORGANICS

Access Number: 870708
Source: AIR TECHNIQUES INC. - 70 CANTIAGUE ROCK RD., HICKSVILLE
Matrix: SOIL
Site: 6' INSIDE NORTH WALL - 35-37FT
Date Sampled: 06/30/87
Date of Report: 07/29/87

VOLATILE HALOGENATED	MRC (ng/g)		RESULT (ng/g)
TRICHLOROFLUOROMETHANE	25	<	25
METHYLENE CHLORIDE			
1,1-DICHLOROETHYLENE			
1,1,2-TRICHLOROTRIFLUOROETHANE	125	<	125
c & t-1,2-DICHLOROETHYLENE	100	<	100
1,1-DICHLOROETHANE	150	<	150
CHLOROFORM	25	<	25
1,1,1-TRICHLOROETHANE	25	<	25
CARBON TETRACHLORIDE	25	<	25
TRICHLOROETHYLENE	25	<	25
BROMODICHLOROMETHANE	25	<	25
c-1,3-DICHLOROPROPENE			
DIBROMOCHLOROMETHANE	25	<	25
1,1,2-TRICHLOROETHANE	25	<	25
1,2-DIBROMOETHANE	NA		NA
TETRACHLOROETHYLENE	25		NR
BROMOFORM	25	<	25

VOLATILE AROMATICS	MRC (ng/g)		RESULT (ng/g)
BENZENE	75	<	75
TOLUENE	100	<	100
CHLOROBENZENE	100	<	100
ETHYLBENZENE	125	<	125
XYLENE (o,m,p)	175	<	175
DICHLOROBENZENE (o,m,p)	500	<	500

MRC - MINIMUM REPORTABLE CONCENTRATION NA - NOT ANALYZED
NR - NO RESULT DUE TO TECHNICAL REASONS - RESAMPLE SUGGESTED
PPB: AIR - nl/l WATER - ug/l SOIL - ng/g

REPLACES PREVIOUS REPORT

SSB 240082

LABORATORY WORKSHEET

CHEMICAL EXAMINATION FOR TRACE ORGANIC CONSTITUENTS IN WATER, HAZARDOUS WASTES AND SOLID WASTES

Division of Laboratories and Research

Nassau County Department of Health

1 ☐ Routine
2 ☐ Resample
3 ☒ Special
4 ☐ Complaint
5 ☐ Other

Lab. No. 870709

D

Field No. VN-125

N No. (Public Water Supply Only)

Source Information (Please Print)

Premises: AIR TECH QUALITY INC

Address: 70 CANTIAGUE LOCK Rd

Town: HICKSVILLE

Collection Point: WEST SIDE Well No.

OF BLDG WALL

	Month	Day	Year
Date Collected	06	30	87
Date Received	JUN 30 1987		
Date Reported			8
Collection Time	2:00 PM		
Collected By:	KW		

Sampler's Comments:

SOIL SAMPLE 32 FT FROM WEST WALL OF WAREHOUSE INSIDE BLDG 10 FT DEPTH. EXCAVATED PIT SAMPLE STORED ON ICE

Bureau

1 ☑ Land Resources Management
2 ☐ Public Water Supply
3 ☐ Water Pollution Control
4 ☐ Environmental Sanitation
9 ☐ Other (specify)

SAMPLE TYPE

AQUEOUS				NON-AQUEOUS	
1	Community Well	6	Surface Water	(1)	Soil
2	Non-Community Well	7	Waste Water	2	Sludge
3	Private Well	8	Industrial Effluent	3	Waste Solvent
4	Monitoring Well	9	Raw Supply Water	4	Oil
5	Drinking Water	10	Distribution Water	5	Other (specify)

ANALYSIS TYPE

(A)	Purgeable halogenated hydrocarbons
B	Purgeable halogenated hydrocarbons - gases
(C)	Purgeable nonhalogenated hydrocarbons
D	Other (specify)

Examiner's Comments:

DL 211 2/do

SSB 240083

CUSTODY RECORD

of Laboratories and Research
u County Department of Health

1 ☐ Routine
2 ☐ Resample
3 ☐ Special
4 ☐ Complaint
5 ☐ Other

Lab. No. 870709

Field No. VN-125

urce Information (Please Print)

Premises: Air. Techniques

Address: 70 Cantiague Rock Rd

Town: Hicksville

Collection Point Location: 33 ft FROM WEST WALL OF WAREHOUSE INSIDE BLDG.

Sampler's Comments: SOIL SAMPLE 10 FT DEPTH EXCAVATED PIT SAMPLE STORED ON ICE.

Collection Date: 06/30/87

Collection Time: 2:00 PM

No. of Containers: 1

Type of Containers: GLASS

Method of Preservation:

Collection Procedure:

Method of Transportation to Laboratory:

ONTAINER DISTRIBUTION

Clean sampling containers designated by field number VN-125 have been issued for collection of the sample identified on this form.

	Relinquished by:		Received by:	
Printed Name	MARK K SOLAN	Date 6/30/87	Kurt Welch	Date 06-30-87
Signature X		Time 11:30 AM	Kurt Welch	Time 10:35 AM

Purpose of Transfer: SAMPLE COLLECTION

STODY TRANSFER 1

	Relinquished by:		Received by:	
Printed Name	Kurt Welch	Date 06-30-87	MARK K SOLAN	Date 6/30/87
Signature X	Kurt Welch	Time 2:56 PM		Time 2:56

Purpose of Transfer: Analysis of sample

STODY TRANSFER 2

	Relinquished by:		Received by:	
Printed Name		Date		Date
Signature X		Time		Time

Purpose of Transfer

STODY TRANSFER 3

	Relinquished by:		Received by:	
Printed Name		Date		Date
Signature X		Time		Time

Purpose of Transfer

CUSTODY TRANSFER 4

	Relinquished by:		Received by:	
Printed Name		Date		Date
Signature X		Time		Time

Purpose of Transfer

Comments:

L 219 7/84

SSB 240084

NASSAU COUNTY DEPARTMENT OF HEALTH
DIVISION OF LABORATORIES AND RESEARCH
ENVIRONMENTAL HEALTH LABORATORIES

TRACE ORGANICS

Access Number: 870709
Source: AIR TECHNIQUES INC. - 70 CANTIAGUE ROCK RD., HICKSVILLE
Matrix: SOIL
Site: 32' INSIDE WEST WALL - 10FT
Date Sampled: 06/30/87
Date of Report: 07/29/87

VOLATILE HALOGENATED	MRC (ng/g)		RESULT (ng/g)
TRICHLOROFLUOROMETHANE	25	<	25
METHYLENE CHLORIDE			
1,1-DICHLOROETHYLENE			
1,1,2-TRICHLOROTRIFLUOROETHANE	125	<	125
c & t-1,2-DICHLOROETHYLENE	100	<	100
1,1-DICHLOROETHANE	150	<	150
CHLOROFORM	25	<	25
1,1,1-TRICHLOROETHANE	25	<	25
CARBON TETRACHLORIDE	25	<	25
TRICHLOROETHYLENE	25		NR
BROMODICHLOROMETHANE	25	<	25
c-1,3-DICHLOROPROPENE			
DIBROMOCHLOROMETHANE	25	<	25
1,1,2-TRICHLOROETHANE	25	<	25
1,2-DIBROMOETHANE	NA		NA
TETRACHLOROETHYLENE	25		NR
BROMOFORM	25	<	25

VOLATILE AROMATICS	MRC (ng/g)		RESULT (ng/g)
BENZENE	75	<	75
TOLUENE	100	<	100
CHLOROBENZENE	100	<	100
ETHYLBENZENE	125	<	125
XYLENE (o,m,p)	175	<	175
DICHLOROBENZENE (o,m,p)	500	<	500

MRC - MINIMUM REPORTABLE CONCENTRATION NA - NOT ANALYZED
NR - NO RESULT DUE TO TECHNICAL REASONS - RESAMPLE SUGGESTED
PPB: AIR - nl/l WATER - ug/l SOIL - ng/g

SSB 240085

ERM-Northeast

A SAMPLE OF DRUM CONTENTS COLLECTED ON APRIL 1, 1987 AND ANALYZED BY STAUFFER CHEMICAL COMPANY

cc N. Hagel

Stauffer Chemical Company

April 20, 1987

Mr. Frank Bader
Executive Vice President
Air Techniques, Inc.
70 Cantiague Rock Road
P. O. Box 870
Hicksville, New York 11802

Dear Mr. Bader:

Confirming our telephone conversation on April 10, I am attaching herewith a copy of the analytical report from our Eastern Research Center describing the composition of residues found in drums recently excavated at your facilities in Hicksville, New York. As I indicated on the phone, the bulk of the material appears to be a mixture of silica, aluminum hydroxide and water with trace levels of perchloroethylene. Some iron was also present, presumably from corrosion inside the drum.

These materials do not appear to constitute any product sold by Stauffer Chemical Company. In addition, a check of our sales records have not been able to turn up any shipments to your address. It could well be that these drums were reclaimed and/or reused by a third party after their original contents had been emptied.

I hope the information which we provided is of help.

Sincerely,

STAUFFER CHEMICAL COMPANY

J. D. Sheehan, Director
Environmental Control Dept.

JDS2/rcg

SSB 240087

Stauffer CHEMICAL

INTER-OFFICE CORRESPONDENCE

ORIGINATING OFFICE Dobbs Ferry

Westport

FROM P. E. Kaufmann

DATE 4/15/87

ATTN: J. Sheehan

SUBJECT Air Products - Barrels
Sample Identification

COPY TO: S. Adler
V. Brice
H. Caspers
D. McGrade
T. Marolewski
D. Marr
Central File

PROJ: Environmental Control
Support - 559704

RRA#: 86026

KWDS: Air Products, Hicksville,
EPA, Aluminum Trihydrate,
Aluminum Hydroxide

A sample labelled Air Products, Hicksville, Long Island (4/1/87), was received for analysis at the Eastern Research Center on 4/2/87. Analysis indicated that the sample contained approximately 50% aluminum hydroxide ($Al(OH)_3$), 45% water containing carbonate, 1 - 5% silicon dioxide (SiO_2) and 10 - 100 ppm of perchloroethylene. A 50:50 slurry of the sample with water had a pH of 13.2. In addition, the following elements were determined to be present at trace concentration levels (less than 1%) in this sample: iron, copper, manganese, potassium, chloride, calcium, zirconium, zinc and uranium (less than 0.05%). When reviewing this data, one should note that the sample was not homogenous and, therefore, the concentrations of the materials present may vary in the sample source.

Analysis for inorganic compound identification was performed by X-ray fluorescence (XRF-elemental data) and X-ray diffraction (XRD-crystalline compound identification). The liquid portion of the sample was characterized using infrared spectroscopy. Mass spectrometry was used to determine the presence and identity of organic compounds. Headspace gas chromatography/mass spectrometry was used for volatile organic compound identification. No non-volatile organic compounds were detected (limit of detection = 100 ppm) using direct probe mass spectrometry.

Paula E. Kaufmann

P. E. Kaufmann

PEK/rg

GAS #70381, 70399

Work done by: F. Cambria
M. Connelly
P. Kaufmann
E. Skelly

RECEIVED
APR 20 1987
J.D. SHEEHAN

SAFEGUARD COMPANY INFORMATION

SSB 240088

SOIL SAMPLES COLLECTED BY NYSDEC ON MARCH 17, 1987. SAMPLES INCLUDE: EXCAVATION BOTTOM AT 10-12 FEET (NUS SAMPLE I.D. NO. R186-010-01) AND EXCAVATION BOTTOM AT 5-6 FEET (NUS SAMPLE I.D. NO. R186-010-02).

NUS CORPORATION

Laboratory Services Group
5350 Campbells Run Road
Pittsburgh, PA 15205

REMIT TO:
Park West Two
Cliff Mine Road
Pittsburgh, PA 15275

412-788-1080

LAB ANALYSIS REPORT

CLIENT NAME: N.Y.DEPT.OF ENVIRONMENTAL CONSERVATION
ADDRESS: BLDG.40-RM 133,UNIV.CAMPUS
STONY BROOK, NY 11794
ATTENTION: MR. ALEX MOSKIE

REPORT DATE: 04/13/87

NUS CLIENT NO: 040107
NUS SAMPLE NO: 17031391
VENDOR NO: 02315310
WORK ORDER NO: 55830
DATE RECEIVED: 03/18/87

SAMPLE IDENTIFICATION: R186-010-01 03/17

TEST	DETERMINATION	RESULTS	UNITS
0D06	HSL - Semi-volatile analysis		
0E26	HSL - Soil BN/A Extraction		
0E27	HSL-Soil Pest/PCB Extraction		
0F19	HSL-Volatile Organic Acid-Soil		
0N96	HSL - Pesticides/PCB		
S073	CLP - Cyanide	1	mg/kg
S121	CLP-% Moisture	11.5	%
S149	pH for HSL Organics	8.5	
S575	CLP - Tin (Sn)	8.7UN	mg/kg
s402	Inorganics(Task 1) - Solid		
S550	CLP - Aluminum (Al)	9450*	mg/kg
S556	CLP - Barium (Ba)	43	mg/kg
S558	CLP - Beryllium (Be)	1.1U	mg/kg
S562	CLP - Calcium (Ca)	4500*	mg/kg
S564	CLP - Chromium (Cr)	13	mg/kg
S566	CLP - Cobalt (Co)	8.7U	mg/kg
S568	CLP - Copper (Cu)	20	mg/kg
S570	CLP - Iron (Fe)	12300*	mg/kg
S574	CLP - Magnesium (Mg)	3650*	mg/kg
S576	CLP - Manganese (Mn)	140	mg/kg
S580	CLP - Nickel (Ni)	194*	mg/kg
S582	CLP - Potassium (K)	[321]	mg/kg
S586	CLP - Silver (Ag)	2.2U	mg/kg
S588	CLP - Sodium (Na)	452J	mg/kg
S594	CLP - Zinc (Zn)	65	mg/kg
S953	CLP - Acid Digestion(Solids/A)		
s407	Inorganics(Task 2) Solids		
S552	CLP - Antimony (Sb)	13U	mg/kg
S554	CLP - Arsenic (As)	4.?	mg/kg
S560	CLP - Cadmium (Cd)	1.1U	mg/kg
S572	CLP - Lead (Pb)	7.?	mg/kg
S578	CLP - Mercury (Hg)	0.1U	mg/kg

NUS CORPORATION

Laboratory Services Group
5350 Campbells Run Road
Pittsburgh, PA 15205
412-788-1080

REMIT TO:
Park West Two
Cliff Mine Road
Pittsburgh, PA 15275

LAB ANALYSIS REPORT

CLIENT NAME:	N.Y.DEPT.OF ENVIRONMENTAL CONSERVATION	NUS CLIENT NO:	940107
ADDRESS:	BLDG.40-RM 133,UNIV.CAMPUS	NUS SAMPLE NO:	17031301
	STONY BROOK, NY 11794	VENDOR NO:	02315310
	REPORT DATE: 04/13/87	WORK ORDER NO:	55030
ATTENTION:	MR. ALEX MOSKIE	DATE RECEIVED:	03/18/87

SAMPLE IDENTIFICATION: R186-010-01 03/17

TEST	DETERMINATION	RESULTS	UNITS
S584	CLP - Selenium (Se)	1.1U	mg/kg
S590	CLP - Thallium (Tl)	2.2U	mg/kg
S592	CLP - Vanadium (V)	15%	mg/kg
S954	CLP - Acid Digestion(Sol:d/P)		

COMMENTS:

SSB 240091

NUS CORPORATION

Laboratory Services Group
5350 Campbells Run Road
Pittsburgh, PA 15205
412-788-1080

REMIT TO:
Park West Two
Cliff Mine Road
Pittsburgh, PA 15275

LAB ANALYSIS REPORT

CLIENT NAME: N.Y.DEPT.OF ENVIRONMENTAL CONSERVATION
ADDRESS: BLDG.40-RM 133,UNIV.CAMPUS
STONY BROOK, NY 11794

ATTENTION: MR. ALEX MOSKIE

REPORT DATE: 04/13/87

NUS CLIENT NO: 040107
NUS SAMPLE NO: 17031302
VENDOR NO: 02315310
WORK ORDER NO: 55830
DATE RECEIVED: 03/18/87

SAMPLE IDENTIFICATION: R186-010-02

03/17

TEST	DETERMINATION	RESULTS	UNITS
0B06	HSL - Semi-volatile analysis		
0E26	HSL - Soil BN/A Extraction		
0E27	HSL-Soil Pest/PCB Extraction		
0F19	HSL-Volatile Organic Acid-Soil		
0N96	HSL - Pesticides/PCB		
S073	CLP - Cyanide	(1	mg/kg
S121	CLP-% Moisture	12.3	%
S149	pH for HSL Organics	7.5	
S595	CLP - Tin (Sn)	8.7UN	mg/kg
S402	Inorganics(Task 1) - Solid		
S550	CLP - Aluminum (Al)	7080*	mg/kg
S556	CLP - Barium (Ba)	130	mg/kg
S558	CLP - Beryllium (Be)	1.1B	mg/kg
S562	CLP - Calcium (Ca)	21300*	mg/kg
S564	CLP - Chromium (Cr)	15	mg/kg
S566	CLP - Cobalt (Co)	8.7U	mg/kg
S568	CLP - Copper (Cu)	24	mg/kg
S570	CLP - Iron (Fe)	12700*	mg/kg
S574	CLP - Magnesium (Mg)	12000*	mg/kg
S576	CLP - Manganese (Mn)	128	mg/kg
S580	CLP - Nickel (Ni)	37N	mg/kg
S582	CLP - Potassium (K)	[313]	mg/kg
S586	CLP - Silver (Ag)	4.7	mg/kg
S588	CLP - Sodium (Na)	652U	mg/kg
S594	CLP - Zinc (Zn)	74	mg/kg
S953	CLP - Acid Digestion(Solids/A)		
S407	Inorganics(Task 2) Solids		
S552	CLP - Antimony (Sb)	13U	mg/kg
S554	CLP - Arsenic (As)	1.7	mg/kg
S560	CLP - Cadmium (Cd)	1.1U	mg/kg
S577	CLP - Lead (Pb)	44	mg/kg
S578	CLP - Mercury (Hg)	0.1U	mg/kg

NUS CORPORATION

Laboratory Services Group
5350 Campbells Run Road
Pittsburgh, PA 15205
412-788-1080

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Pittsburgh, PA 15275

LAB ANALYSIS REPORT

CLIENT NAME: N.Y.DEPT.OF ENVIRONMENTAL CONSERVATION
ADDRESS: BLDG.40-RM 133,UNIV.CAMPUS
STONY BROOK, NY 11794
ATTENTION: MR. ALEX MOSKIE

NUS CLIENT NO: 040107
NUS SAMPLE NO: 17031302
VENDOR NO: 02315310
WORK ORDER NO: 55830
DATE RECEIVED: 03/18/87
REPORT DATE: 04/13/87

SAMPLE IDENTIFICATION: R186-010-02 03/17

TEST	DETERMINATION	RESULTS	UNITS
S594	CLP - Selenium (Se)	1.1U	mg/kg
S590	CLP - Thallium (Tl)	2.2U	mg/kg
S592	CLP - Vanadium (V)	20M	mg/kg
S954	CLP - Acid Digestion(Solid/P)		

COMMENTS:

Reviewed and Approved by: WM. PAGE NO:

SSB 240093

Laboratory Name: NUS CORPORATION
Case No. NYSDEC

Sample Number
R184-010-01

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: Low
Date Extracted/Prepared: 03/20/87
Date Analyzed 03/24/87
Conc/Dil Factor: 4.0
Percent Moisture (Decanted): 16

GPC Cleanup: NO
Separatory Funnel Extraction: NO
Continuous Liquid-Liquid Extraction: NO

CAS Number		ug/kg	CAS Number		ug/kg
108-95-2	Phenol	1452 U	83-32-9	Acenaphthene	1452 U
111-44-4	bis(2-Chloroethyl)Ether	1452 U	51-28-5	2,4-Dinitrophenol	7040 U
95-57-8	2-Chlorophenol	1452 U	100-02-7	4-Nitrophenol	7040 U
541-73-1	1,3-Dichlorobenzene	1452 U	132-64-9	Dibenzofuran	1452 U
106-46-7	1,4-Dichlorobenzene	1452 U	121-14-2	2,4-Dinitrotoluene	1452 U
100-51-6	Benzyl Alcohol	1452 U	606-20-2	2,6-Dinitrotoluene	1452 U
95-50-1	1,2-Dichlorobenzene	1452 U	84-66-2	Diethylphthalate	1452 U
95-48-7	2-Methylphenol	1452 U	7005-72-3	4-Chlorophenyl-phenylether	1452 U
39638-32-9	bis(2-chloroisopropyl)Ether	1452 U	86-73-7	Fluorene	1452 U
106-44-5	4-Methylphenol	1452 U	100-01-6	4-Nitroaniline	7040 U
621-64-7	N-Nitroso-Di-n-Propylamine	1452 U	534-52-1	4,6-Dinitro-2-Methylphenol	7040 U
67-72-1	Hexachloroethane	1452 U	86-30-6	N-Nitrosodiphenylamine(1)	1452 U
98-95-3	Nitrobenzene	1452 U	101-55-3	4-Bromophenyl-phenylether	1452 U
78-59-1	Isophorone	1452 U	118-74-1	Hexachlorobenzene	1452 U
88-75-5	2-Nitrophenol	1452 U	87-86-5	Pentachlorophenol	7040 U
105-67-9	2,4-Dimethylphenol	1452 U	85-01-8	Phenanthrene	1452 U
65-85-0	Benzoic Acid	7040 U	120-12-7	Anthracene	1452 U
111-91-1	bis(2-Chloroethoxy)Methane	1452 U	84-74-2	Di-n-Butylphthalate	1452 U
120-83-2	2,4-Dichlorophenol	1452 U	206-44-0	Fluoranthene	1452 U
120-82-1	1,2,4-Trichlorobenzene	1452 U	129-00-0	Pyrene	1452 U
91-20-3	Naphthalene	1452 U	85-68-7	Butylbenzylphthalate	1452 U
106-47-8	4-Chloroaniline	1452 U	91-94-1	3,3'-Dichlorobenzidine	2904 U
87-68-3	Hexachlorobutadiene	1452 U	56-55-3	Benzo (a)Anthracene	1452 U
59-50-7	4-Chloro-3-Methylphenol	1452 U	117-81-7	bis(2-Ethylhexyl)Phthalate	370 J
91-57-6	2-Methylnaphthalene	1452 U	218-01-9	Chrysene	1452 U
77-47-4	Hexachlorocyclopentadiene	1452 U	117-84-0	Di-n-Octyl Phthalate	1452 U
88-06-2	2,4,6-Trichlorophenol	1452 U	205-99-2	Benzo(b)Fluoranthene	1452 U
95-95-4	2,4,5-Trichlorophenol	7040 U	207-08-9	Benzo(k)Fluoranthene	1452 U
91-58-7	2-Chloronaphthalene	1452 U	50-32-8	Benzo(a)Pyrene	1452 U
88-74-4	2-Nitroaniline	7040 U	193-39-5	Indeno(1,2,3-cd)Pyrene	1452 U
131-11-3	Dimethyl Phthalate	1452 U	53-70-3	Dibenz(a,h)Anthracene	1452 U
208-96-8	Acenaphthylene	1452 U	191-24-2	Benzo(g,h,i)Perylene	1452 U
99-09-2	3-Nitroaniline	7040 U			

(1)-Cannot be separated from diphenylamine

SSB 240094

Case No: NYSDEC

Sample Number
R184-010-01-

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: Low
Date Extracted/Prepared: 03/20/87
Date Analyzed: 04/02/87
Conc/Dil Factor: 10
Percent Moisture (Decanted): 10

GPC Cleanup: NO
Separatory Funnel Extraction: NO
Continuous Liquid-Liquid Extraction: NO

CAS Number		ug/kg	
319-84-6	Alpha-BHC	88.0	U
319-85-7	Beta-BHC	88.0	U
319-86-8	Delta-BHC	88.0	U
58-89-9	Gamma-BHC(Lindane)	88.0	U
76-44-8	Heptachlor	88.0	U
309-00-2	Aldrin	88.0	U
1024-57-3	Heptachlor Epoxide	88.0	U
959-98-8	Endosulfan I	88.0	U
60-57-1	Dieldrin	176.0	U
72-55-9	4,4'-DDE	176.0	U
72-20-8	Endrin	176.0	U
33213-65-9	Endosulfan II	176.0	U
72-54-8	4,4'-DDD	176.0	U
1031-07-8	Endosulfan Sulfate	176.0	U
50-29-3	4,4'-DDT	176.0	U
72-43-5	Methoxychlor	880.0	U
53494-70-5	Endrin Ketone	176.0	U
57-74-9	Chlordane	880.0	U
8001-35-2	Toxaphene	1760.0	U
12674-11-2	Aroclor-1016	880.0	U
11104-28-2	Aroclor-1221	880.0	U
11141-16-5	Aroclor-1232	880.0	U
53469-21-9	Aroclor-1242	880.0	U
12672-29-6	Aroclor-1248	880.0	U
11097-69-1	Aroclor-1254	2200	
11096-82-5	Aroclor-1260	1760.0	U

Vi = Volume of extract injected (ul)
Vs = Volume of water extracted (ml)
Ws = Weight of sample extracted (g)
Vt = Volume of total extract (ul)

Vs or Ws 27 Vt 20000 Vi 4

FORM I

SSB 240095

Laboratory Name NUS CORPORATION
Case No. NYSDEC

Sample Number
R186-010-01

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan Number	Estimated concentration ug/kg
1.		NO VOA COMPOUND FOUND			
2.		UNKNOWN	BNA	251	7100 J
3.		ALDOL CONDENSATION PRODUCT	BNA	275	120000 J,B
4.		UNKNOWN (HYDROCARBON: MW=128)	BNA	279	2900 J
5.	2216-34-4	OCTANE, 4-METHYL-	BNA	287	3200 J
6.		UNKNOWN (HYDROCARBON: MW=128)	BNA	293	4500 J,B
7		UNKNOWN	BNA	332	1300 J,B
8.		UNKNOWN	BNA	346	810 J
9		UNKNOWN (MW=112)	BNA	362	860 J
10.		TRICHLOROMETHYLPROPANOL ISOMER	BNA	390	670 J,B
11		UNKNOWN	BNA	407	780 J
12.		UNKNOWN	BNA	461	1180 J
13.		UNKNOWN	BNA	1649	4680 J
14.		UNKNOWN	BNA	1713	1180 J
15.		UNKNOWN	BNA	1779	878 J
16		UNKNOWN	BNA	1787	1900 J
17.		UNKNOWN	BNA	1798	1900 J
18.		UNKNOWN	BNA	1860	2100 J
19.		UNKNOWN	BNA	1909	998 J
20		UNKNOWN	BNA	1918	1180 J
21		UNKNOWN	BNA	1930	1500 J
22.		UNKNOWN	BNA	1953	1300 J
23.					
24					
25					
26.					
27					
28.					
29.					
30.					

SSB 240096

Laboratory Name NUS CORPORATION
Case No NYSDEC

Sample Number
R186-010-01

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: Low
Date Extracted/Prepared: 03/20/87
Date Analyzed. 03/24/87
Conc/Dil Factor: 4.0
Percent Moisture (Decanted): 18

GPC Cleanup: NO
Separatory Funnel Extraction: NO
Continuous Liquid-Liquid Extraction: NO

CAS Number		ug/kg	CAS Number		ug/kg
108-95-2	Phenol	1452 U	83-32-9	Acenaphthene	1452 U
111-44-4	bis(2-Chloroethyl)Ether	1452 U	51-28-5	2,4-Dinitrophenol	7040 U
95-57-8	2-Chlorophenol	1452 U	100-02-7	4-Nitrophenol	7040 U
541-73-1	1,3-Dichlorobenzene	1452 U	132-64-9	Dibenzofuran	1452 U
106-46-7	1,4-Dichlorobenzene	1452 U	121-14-2	2,4-Dinitrotoluene	1452 U
100-51-6	Benzyl Alcohol	1452 U	606-20-2	2,6-Dinitrotoluene	1452 U
95-50-1	1,2-Dichlorobenzene	1452 U	84-66-2	Diethylphthalate	1452 U
95-48-7	2-Methylphenol	1452 U	7005-72-3	4-Chlorophenyl-phenylether	1452 U
39638-32-9	bis(2-chloroisopropyl)Ether	1452 U	86-73-7	Fluorene	1452 U
106-44-5	4-Methylphenol	1452 U	100-01-6	4-Nitroaniline	7040 U
621-64-7	N-Nitroso-Di-n-Propylamine	1452 U	534-52-1	4,6-Dinitro-2-Methylphenol	7040 U
67-72-1	Hexachloroethane	1452 U	86-30-6	N-Nitrosodiphenylamine(1)	1452 U
98-95-3	Nitrobenzene	1452 U	101-55-3	4-Bromophenyl-phenylether	1452 U
78-59-1	Isophorone	1452 U	118-74-1	Hexachlorobenzene	1452 U
88-75-5	2-Nitrophenol	1452 U	87-86-5	Pentachlorophenol	7040 U
105-67-9	2,4-Dimethylphenol	1452 U	85-01-8	Phenanthrene	1452 U
65-85-0	Benzoic Acid	7040 U	120-12-7	Anthracene	1452 U
111-91-1	bis(2-Chloroethoxy)Methane	1452 U	84-74-2	Di-n-Butylphthalate	1452 U
120-83-2	2,4-Dichlorophenol	1452 U	206-44-0	Fluoranthene	1452 U
120-82-1	1,2,4-Trichlorobenzene	1452 U	129-00-0	Pyrene	1452 U
91-20-3	Naphthalene	1452 U	85-68-7	Butylbenzylphthalate	1452 U
106-47-8	4-Chloroaniline	1452 U	91-94-1	3,3'-Dichlorobenzidine	2904 U
87-68-3	Hexachlorobutadiene	1452 U	56-55-3	Benzo (a)Anthracene	1452 U
59-50-7	4-Chloro-3-Methylphenol	1452 U	117-81-7	bis(2-Ethylhexyl)Phthalate	370 J
91-57-6	2-Methylnaphthalene	1452 U	218-01-9	Chrysene	1452 U
77-47-4	Hexachlorocyclopentadiene	1452 U	117-84-0	Di-n-Octyl Phthalate	1452 U
88-06-2	2,4,6-Trichlorophenol	1452 U	205-99-2	Benzo(b)Fluoranthene	1452 U
95-95-4	2,4,5-Trichlorophenol	7040 U	207-08-9	Benzo(k)Fluoranthene	1452 U
91-58-7	2-Chloronaphthalene	1452 U	50-32-8	Benzo(a)Pyrene	1452 U
88-74-4	2-Nitroaniline	7040 U	193-39-5	Indeno(1,2,3-cd)Pyrene	1452 U
131-11-3	Dimethyl Phthalate	1452 U	53-70-3	Dibenz(a,h)Anthracene	1452 U
208-96-8	Acenaphthylene	1452 U	191-24-2	Benzo(g,h,i)Perylene	1452 U
99-09-2	3-Nitroaniline	7040 U			

(1)-Cannot be separated from diphenylamine

Laboratory Name NUS CORPORATION
Case No NYSDEC

Sample Number
R186-010-01--

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration: Low
Date Extracted/Prepared. 03/20/87
Date Analysed: 04/02/87
Conc/Dil Factor: 10
Percent Moisture (Decanted): 18

GPC Cleanup: NO
Separatory Funnel Extraction: NO
Continuous Liquid-Liquid Extraction: NO

CAS Number		ug/kg	
319-84-6	Alpha-BHC	88.0	u
319-85-7	Beta-BHC	88.0	u
319-86-8	Delta-BHC	88.0	u
58-89-9	Gamma-BHC(Lindane)	88.0	u
76-44-8	Heptachlor	88 0	u
309-00-2	Aldrin	88.0	u
1024-57-3	Heptachlor Epoxide	88.0	u
959-98-8	Endosulfan I	88.0	u
60-57-1	Dieldrin	176.0	u
72-55-9	4,4'-DDE	176.0	u
72-20-8	Endrin	176.0	u
33213-65-9	Endosulfan II	176.0	u
72-54-8	4,4'-DDD	176.0	u
1031-07-8	Endosulfan Sulfate	176.0	u
50-29-3	4,4'-DDT	176.0	u
72-43-5	Methoxychlor	880.0	u
53494-70-5	Endrin Ketone	176.0	u
57-74-9	Chlordane	880 0	u
8001-35-2	Toxaphene	1760.0	u
12674-11-2	Aroclor-1016	880 0	u
11104-28-2	Aroclor-1221	880.0	u
11141-16-5	Aroclor-1232	880.0	u
53469-21-9	Aroclor-1242	880.0	u
12672-29-6	Aroclor-1248	880.0	u
11097-69-1	Aroclor-1254	2200	
11096-82-5	Aroclor-1260	1760.0	u

Vi = Volume of extract injected (ul)
Vs = Volume of water extracted (ml)
Ws = Weight of sample extracted (g)
Vt = Volume of total extract (ul)

Vs or Ws 27 Vt 20000 Vi 4

SSB 240098

Sample Number

R186-010-02

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: NUS CORPORATION
Case No NYSDEC
Lab Sample ID No: 17031302
QC Report No:
Sample Matrix: Soil
Contract No:
Date Release Authorized By:
Date Sample Received: 03/18/87

Volatile Compounds
Concentration: Low
Date Extracted/Prepared: 03/24/87
Date Analyzed: 03/24/87
Conc/Dil Factor: 5.0 pH 8
Percent Moisture: 10
Percent Moisture (Not Decanted): NR

CAS Number		ug/kg	CAS Number		ug/kg
74-87-3	Chloromethane	56 U	78-87-5	1,2-Dichloropropane	28 U
74-83-9	Bromomethane	56 U	10061-02-6	Trans-1,3-Dichloropropene	28 U
75-01-4	Vinyl Chloride	56 U	79-01-6	Trichloroethene	28 U
75-00-3	Chloroethane	56 U	124-48-1	Dibromochloromethane	28 U
75-09-2	Methylene Chloride	100 B	79-00-5	1,1,2-Trichloroethane	28 U
67-64-1	Acetone	70 B	71-43-2	Benzene	28 U
75-15-0	Carbon Disulfide	28 U	10061-01-5	cis-1,3-Dichloropropene	28 U
75-35-4	1,1-Dichloroethene	28 U	110-75-8	2-Chloroethylvinylether	56 U
75-34-3	1,1-Dichloroethane	28 U	75-25-2	Bromoform	28 U
156-60-5	Trans-1,2-Dichloroethene	28 U	108-10-1	4-Methyl-2-Pentanone	56 U
67-66-3	Chloroform	28 U	591-78-6	2-Hexanone	56 U
107-06-2	1,2-Dichloroethane	28 U	127-18-4	Tetrachloroethene	760
78-93-3	2-Butanone	56 U	79-34-5	1,1,2,2-Tetrachloroethane	28 U
71-55-6	1,1,1-Trichloroethane	28 U	108-88-3	Toluene	28 U
56-23-5	Carbon Tetrachloride	28 U	108-90-7	Chlorobenzene	28 U
108-05-4	Vinyl Acetate	56 U	100-41-4	Ethylbenzene	28 U
75-27-4	Bromodichloromethane	28 U	100-42-5	Styrene	28 U
				Total Xylenes	28 U

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

ue If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U(e.g., 10U)based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U-Compound was analyzed for but not detected The number is the minimum attainable detection limit for the sample

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e g 10J) If limit of detection is 10ug/l and a concentration of 3ug/l is calculated, report as 3J

C This flag applies to pesticide parameters where the identification has been confirmed by GC/MS Single component pesticides)=10ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when the analyte is found in th blank as well as a sample It indicates possible/ probable blank contamination and warns the data user to take the appropriate action

Other Other specific flags and footnotes may be required to properly define the results If used they must be fully described and such description attached to the data summary report

S Spiked Compound

NR No value required

SSB 240099

Laboratory Name MUS CORPORATION
Case No. NYSDEC

Sample Number
R184-010-02

Organics Analysis Data Sheet
(Page 2)

Semivolatile Compounds

Concentration: Low
Date Extracted/Prepared. 03/20/87
Date Analysed 03/24/87
Conc/Dil Factor 2.0
Percent Moisture (Decanted). 10

GPC Cleanup NO
Separatory Funnel Extraction NO
Continuous Liquid-Liquid Extraction: NO

CAS Number		ug/kg	CAS Number		ug/kg
108-95-2	Phenol	726 U	83-32-9	Acenaphthene	726 U
111-44-4	bis(2-Chloroethyl)Ether	726 U	51-28-5	2,4-Dinitrophenol	3520 U
95-57-8	2-Chlorophenol	726 U	100-02-7	4-Nitrophenol	3520 U
541-73-1	1,3-Dichlorobenzene	726 U	132-64-9	Dibenzofuran	726 U
106-46-7	1,4-Dichlorobenzene	726 U	121-14-2	2,4-Dinitrotoluene	726 U
100-51-6	Benzyl Alcohol	726 U	606-20-2	2,6-Dinitrotoluene	726 U
95-50-1	1,2-Dichlorobenzene	726 U	84-66-2	Diethylphthalate	726 U
95-48-7	2-Methylphenol	726 U	7005-72-3	4-Chlorophenyl-phenylether	726 U
39638-32-9	bis(2-chloroisopropyl)Ether	726 U	86-73-7	Fluorene	726 U
106-44-5	4-Methylphenol	726 U	100-01-6	4-Nitroaniline	3520 U
621-64-7	N-Nitroso-Di-n-Propylamine	726 U	534-52-1	4,6-Dinitro-2-Methylphenol	3520 U
67-72-1	Hexachloroethane	726 U	86-30-6	N-Nitrosodiphenylamine(1)	726 U
98-95-3	Nitrobenzene	726 U	101-55-3	4-Bromophenyl-phenylether	726 U
78-59-1	Isophorone	726 U	118-74-1	Hexachlorobenzene	726 U
88-75-5	2-Nitrophenol	726 U	87-86-5	Pentachlorophenol	3520 U
105-67-9	2,4-Dimethylphenol	726 U	85-01-8	Phenanthrene	726 U
65-85-0	Benzoic Acid	3520 U	120-12-7	Anthracene	726 U
111-91-1	bis(2-Chloroethoxy)Methane	726 U	84-74-2	Di-n-Butylphthalate	726 U
120-83-2	2,4-Dichlorophenol	726 U	206-44-0	Fluoranthene	88 J
120-82-1	1,2,4-Trichlorobenzene	726 U	129-00-0	Pyrene	726 U
91-20-3	Naphthalene	726 U	85-68-7	Butylbenzylphthalate	726 U
106-47-8	4-Chloroaniline	726 U	91-94-1	3,3'-Dichlorobenzidine	1452 U
87-68-3	Hexachlorobutadiene	726 U	56-55-3	Benzo (a)Anthracene	726 U
59-50-7	4-Chloro-3-Methylphenol	726 U	117-81-7	bis(2-Ethylhexyl)Phthalate	180 J
91-57-6	2-Methylnaphthalene	726 U	218-01-9	Chrysene	726 U
77-47-4	Hexachlorocyclopentadiene	726 U	117-84-0	Di-n-Octyl Phthalate	726 U
88-06-2	2,4,6-Trichlorophenol	726 U	205-99-2	Benzo(b)Fluoranthene	726 U
95-95-4	2,4,5-Trichlorophenol	3520 U	207-08-9	Benzo(k)Fluoranthene	726 U
91-58-7	2-Chloronaphthalene	726 U	50-32-8	Benzo(a)Pyrene	726 U
88-74-4	2-Nitroaniline	3520 U	193-39-5	Indeno(1,2,3-cd)Pyrene	726 U
131-11-3	Dimethyl Phthalate	726 U	53-70-3	Dibenz(a,h)Anthracene	726 U
208-96-8	Acenaphthylene	726 U	191-24-2	Benzo(g,h,i)Perylene	726 U
99-09-2	3-Nitroaniline	3520 U			

(1)-Cannot be separated from diphenylamine

SSB 240100

Laboratory Name NUS CORPORATION
Case No NYSDEC

Sample Number
R186-010-02

Organics Analysis Data Sheet
(Page 3)

Pesticide/PCBs

Concentration Low
Date Extracted/Prepared 03/20/87
Date Analyzed 04/02/87
Conc/Dil Factor: 10
Percent Moisture (Decanted): 10

GPC Cleanup NO
Separatory Funnel Extraction. NO
Continuous Liquid-Liquid Extraction NO

CAS Number		ug/kg	
319-84-6	Alpha-BHC	88.0	u
319-85-7	Beta-BHC	88.0	u
319-86-8	Delta-BHC	88.0	u
58-89-9	Gamma-BHC(Lindane)	88.0	u
76-44-8	Heptachlor	88.0	u
309-00-2	Aldrin	88.0	u
1024-57-3	Heptachlor Epoxide	88.0	u
959-98-8	Endosulfan I	88.0	u
60-57-1	Dieldrin	176.0	u
72-55-9	4,4'-DDE	176.0	u
72-20-8	Endrin	176.0	u
33213-65-9	Endosulfan II	176.0	u
72-54-8	4,4'-DDD	176.0	u
1031-07-8	Endosulfan Sulfate	176.0	u
50-29-3	4,4'-DDT	176.0	u
72-43-5	Methoxychlor	880.0	u
53494-70-5	Endrin Ketone	176.0	u
57-74-9	Chlordane	880.0	u
8001-35-2	Toxaphene	1760.0	u
12674-11-2	Aroclor-1016	880.0	u
11104-28-2	Aroclor-1221	880.0	u
11141-16-5	Aroclor-1232	880.0	u
53469-21-9	Aroclor-1242	880.0	u
12672-29-6	Aroclor-1248	880.0	u
11097-69-1	Aroclor-1254	2380	
11096-82-5	Aroclor-1260	1760.0	u

Vi = Volume of extract injected (ul)
Vs = Volume of water extracted (ml)
Ws = Weight of sample extracted (g)
Vt = Volume of total extract (ul)

Vs or Ws 27 Vt 20000 Vi 4

Laboratory Name KUS CORPORATION
Case No. NYSDEC

Sample Number
E186-010-02

Organics Analysis Data Sheet
(Page 4)

Tentatively Identified Compounds

	CAS Number	Compound Name	Fraction	Scan Number	Estimated concentration ug/kg
1	76-13-1	ETHANE,1,1,2-TRICHLORO-1,2,2-TRIFLUORO-	VOA	145	45 J
2		UNKNOWN	BNA	256	6100 J
3		ALDOL CONDENSATION PRODUCT)	BNA	276	92000 J,B
4	2216-34-4	OCTANE, 4-METHYL-	BNA	285	2500 J
5		UNKNOWN (HYDROCARBON: MW=128)	BNA	292	3800 J,B
6		UNKNOWN	BNA	332	1100 J,B
7		UNKNOWN	BNA	346	960 J
8		UNKNOWN (MW:112)	BNA	362	720 J
9		TRICHLOROMETHYLPROPANOL ISOMER	BNA	390	580 J,B
10		UNKNOWN	BNA	1115	320 J
11	10544-50-0	SULFUR, MOL.(S6)	BNA	1233	1300 J
12		UNKNOWN	BNA	1451	9600 J
13		UNKNOWN	BNA	1695	1100 J
14		UNKNOWN	BNA	1732	2100 J
15		UNKNOWN	BNA	1763	820 J
16		UNKNOWN	BNA	1795	850 J
17		UNKNOWN	BNA	1832	1500 J
18		UNKNOWN	BNA	1864	5700 J
19		UNKNOWN	BNA	1879	1900 J
20		UNKNOWN	BNA	1894	1900 J
21		UNKNOWN	BNA	1961	1100 J
22		UNKNOWN	BNA	1977	960 J
23					
24					
25					
26					
27					
28					
29					
30					

SSB 240102

Sample Number

(R186-016-01)

Organics Analysis Data Sheet
(Page 1)

Laboratory Name: NUS CORPORATION
Lab Sample ID No 17031301
Sample Matrix: Soil
Data Release Authorized By.

Case No: NYSDEC
QC Report No
Contract No:
Date Sample Received 03/18/87

Volatile Compounds
Concentration: Low
Date Extracted/Prepared: 03/24/87
Date Analyzed: 03/24/87
Conc/Dil Factor: 5.0 pH 8
Percent Moisture: 10
Percent Moisture (Not Decanted): NR

CAS Number		ug/kg	CAS Number		ug/kg
74-87-3	Chloromethane	56 u	78-87-5	1,2-Dichloropropane	28 u
74-83-9	Bromomethane	56 u	10061-02-6	Trans-1,3-Dichloropropene	28 u
75-01-4	Vinyl Chloride	56 u	79-01-6	Trichloroethene	28 u
75-00-3	Chloroethane	56 u	124-48-1	Dibromochloromethane	28 u
75-09-2	Methylene Chloride	82 B	79-00-5	1,1,2-Trichloroethane	28 u
67-64-1	Acetone	130 B	71-43-2	Benzene	28 u
75-15-0	Carbon Disulfide	28 u	10061-01-5	cis-1,3-Dichloropropene	28 u
75-35-4	1,1-Dichloroethene	28 u	110-75-8	2-Chloroethylvinylether	56 u
75-34-3	1,1-Dichloroethane	28 u	75-25-2	Bromoform	28 u
156-60-5	Trans-1,2-Dichloroethene	28 u	108-10-1	4-Methyl-2-Pentanone	56 u
67-66-3	Chloroform	36	591-78-6	2-Hexanone	56 u
107-06-2	1,2-Dichloroethane	28 u	127-18-4	Tetrachloroethene	960
78-93-3	2-Butanone	56 u	79-34-5	1,1,2,2-Tetrachloroethane	28 u
71-55-6	1,1,1-Trichloroethane	28 u	108-88-3	Toluene	28 u
56-23-5	Carbon Tetrachloride	28 u	108-90-7	Chlorobenzene	28 u
108-05-4	Vinyl Acetate	56 u	100-41-4	Ethylbenzene	28 u
75-27-4	Bromodichloromethane	28 u	100-42-5	Styrene	28 u
				Total Xylenes	28 u

Data Reporting Qualifiers

For reporting results to EPA, the following results qualifiers are used Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value If the result is a value greater than or equal to the detection limit, report the value.

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U(e g , 10U)based on necessary concentration/dilution action. (This is not necessarily the instrument detection limit.) The footnote should read: U- Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J Indicates an estimated value This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e g 10J) If limit of detection is 10ug/l and a concentration of 3ug/l is calculated, report as 3J

C This flag applies to pesticide parameters whe the identification has been confirmed by GC/M Single component pesticides)=10ng/ul in the final extract should be confirmed by GC/MS.

B This flag is used when the analyte is found i blank as well as a sample It indicates possi probable blank contamination and warns the d user to take the appropriate action.

Other Other specific flags and footnotes may be required to properly define the results If they must be fully described and such descr attached to the data summary report

S Spiked Compound

NR No value required

SSB 240103

B

LABORATORY REPORT
CHEMICAL EXAMINATION OF INDUSTRIAL AND HAZARDOUS WASTES
Division of Laboratories and Research
Nassau County Department of Health

1 ☐ Routine
2 ☐ Resample
3 ☑ Special
4 ☐ Complaint
5 ☐ Other

Lab. No. 120

Field No. VN-3

Source Information (Please Print)

Premises Air Techniques
Address 70 Cantiague Rock Rd.
Town Hicksville
Collection Point drum in dumpster

	Month	Day	Year
Date Collected	1	7	87
Date Received	JAN	0 8	1987
Date Reported			8
Collection Time	11 : 45 am		
Collected By:	V.N.S.		

Sampler's Comments:
- liquid in drum in dumpster
- material a white paste w/a solvent odor
- EP Toxicity

Bureau :
1 ☑ Land Resources Management
9 ☐ Other (specify)

Sample Type:
A ☐ Water
B ☐ Soil
C ☑ Sludge
D ☐ Waste Solvent
E ☐ Oil
F ☐ Other

CHEMICAL EXAMINATION

Check	Metals		Result	Check	Non-Metals		Result
1	Aluminum	mg/l		15	Chloride	mg/l	
2	Arsenic	mg/l		16	Cyanide	mg/l	
3	Barium	mg/l		17	Fluoride	mg/l	
4	Cadmium	mg/l		18	MBAS	mg/l	
5	Chromium, Total	mg/l		19	pH		
6	Copper	mg/l		20	Phenols	mg/l	
7	Iron, Total	mg/l		21	Solids, Suspended	mg/l	
8	Lead	mg/l		22	Solids, Total Diss.	mg/l	
9	Manganese	mg/l		23	Sulfate	mg/l	
10	Mercury	mg/l		24	Ammonia nitrogen	mg/l	
11	Nickel	mg/l		25	Kjeldahl nitrogen	mg/l	
12	Selenium	mg/l		26	Nitrite nitrogen	mg/l	
13	Silver	mg/l		27	Nitrate nitrogen	mg/l	
14	Zinc	mg/l		28	Total Phos.	mg/l	

SPECIAL ANALYSIS

Check	Constituent		Result
29	Chromium hex.	mg/l	
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			

Examiner's Comments

INSUFFICIENT SAMPLE SUBMITTED

JAN 08 1987 JAN 0 [illegible] 1987

SSB 240104

LABORATORY WORKSHEET

CHEMICAL EXAMINATION FOR TRACE ORGANIC CONSTITUENTS IN WATER, HAZARDOUS WASTES AND SOLID WASTES

Division of Laboratories and Research

Nassau County Department of Health

1 ☐ Routine
2 ☐ Resample
3 ☑ Special
4 ☐ Complaint
5 ☐ Other

No. 870016 D

Field No. VN-3

N No. (Public Water Supply Only)

Source Information (Please Print)

Premises: AIR TECHNIQUES

Address: 73 CANTIAGUE ROAD

Town: HICKSVILLE

Collection Point: drum in dumpster

	Month	Day	Year
Date Collected	1	7	87
Date Received	1	7	87
Date Reported			8
Collection Time	11 : 45 am		
Collected By:	V. Nigro		

Sampler's Comments:

- sample mine
- sample of drum in dumpster, material a white paste
- solvent odor

Bureau

1 ☑ Land Resources Management
2 ☐ Public Water Supply
3 ☐ Water Pollution Control
4 ☐ Environmental Sanitation
9 ☐ Other (specify)

SAMPLE TYPE

AQUEOUS				NON-AQUEOUS	
1	Community Well	6	Surface Water	1	Soil
2	Non-Community Well	7	Waste Water	2	Sludge
3	Private Well	8	Industrial Effluent	3	Waste Solvent
4	Monitoring Well	9	Raw Supply Water	4	Oil
5	Drinking Water	10	Distribution Water	5	Other (specify)

ANALYSIS TYPE

A	Purgeable halogenated hydrocarbons
B	Purgeable halogenated hydrocarbons - gases
C	Purgeable nonhalogenated hydrocarbons
D	Other (specify)

Examiner's Comments:

SSB 240105

N OF CUSTODY RECORD
ision of Laboratories and Research
assau County Department of Health

1 ☐ Routine
2 ☐ Resample
3 ☑ Special
4 ☐ Complaint
5 ☐ Other

Lab. No. 870016

Field No. UN-3

Source Information (Please Print)

Premises Air Techniques

Address 70 Cantiague Rock Rd

Town Hicksville

Collection Point Location recovered drum in dumpster

Sampler's Comments
- sample mine
- material a white paste; solvent odor

Collection Date 1-7-87

Collection Time 11:45 am

No. of Containers 1

Type of Containers glass

Method of Preservation ICE

Collection Procedure

Method of Transportation to Laboratory Van

CONTAINER DISTRIBUTION

Clean sampling containers designated by field number UN-3 have been issued for collection of the sample identified on this form.

	Relinquished by:		Received by:	
Printed Name	Esther Cannella	Date 1/7/87	Printed Name Vincent P. Nigro	Date 1-7-87
Signature X	Esther Cannella	Time 10:25 am	Signature X Vincent P. Nigro	Time 10:25 am

Purpose of Transfer Collection

CUSTODY TRANSFER 1

	Relinquished by:		Received by:	
Printed Name	Vincent P. Nigro	Date 1-7-87	Printed Name ANDREW LICHTMAN	Date 1-7-87
Signature X	Vincent P. Nigro	Time 3:05 pm	Signature X Andrew Lichtman PhD	Time 15:00

Purpose of Transfer analysis

CUSTODY TRANSFER 2

	Relinquished by:		Received by:	
Printed Name		Date	Printed Name	Date
Signature X		Time	Signature X	Time

Purpose of Transfer

CUSTODY TRANSFER 3

	Relinquished by:		Received by:	
Printed Name		Date	Printed Name	Date
Signature X		Time	Signature X	Time

Purpose of Transfer

CUSTODY TRANSFER 4

	Relinquished by:		Received by:	
Printed Name		Date	Printed Name	Date
Signature X		Time	Signature X	Time

Purpose of Transfer

Comments.

719 7/84

SSB 240106

NASSAU COUNTY DEPARTMENT OF HEALTH
DIVISION OF LABORATORIES AND RESEARCH
ENVIRONMENTAL HEALTH LABORATORIES

TRACE ORGANICS

Access Number: 870016
Source: AIR TECHNIQUES, CANTIAGUE PK RD., HICKSVILLE
Matrix: SOIL
Site: DRUM IN DUMPSTER
Date Sampled: 01/07/87
Date of Report: 01/15/87

VOLATILE HALOGENATED	MRC (ng/g)		RESULT (ng/g)
TRICHLOROFLUOROMETHANE	NA		NA
METHYLENE CHLORIDE 1,1,2-TRICHLOROTRIFLUOROETHANE 1,1-DICHLOROETHYLENE	225	<	225
c & t-1,2-DICHLOROETHYLENE	100	<	100
1,1-DICHLOROETHANE	150	<	150
CHLOROFORM	25	<	25
1,1,1-TRICHLOROETHANE	50	<	50
CARBON TETRACHLORIDE	25	<	25
TRICHLOROETHYLENE	25		780
BROMODICHLOROMETHANE	50	<	50
c-1,3-DICHLOROPROPENE DIBROMOCHLOROMETHANE	75	<	75
1,1,2-TRICHLOROETHANE	100	<	100
1,2-DIBROMOETHANE	NA		NA
TETRACHLOROETHYLENE	25		2600000
BROMOFORM	7500	<	7500

VOLATILE AROMATICS	MRC (ng/g)		RESULT (ng/g)
BENZENE	75	<	75
TOLUENE	75		81
CHLOROBENZENE	100	<	100
ETHYLBENZENE	75	<	75
XYLENE (o,m,p)	100	<	100
DICHLOROBENZENE (o,m,p)	800	<	800

MRC - MINIMUM REPORTABLE CONCENTRATION NA - NOT ANALYZED
NP - NO RESULT DUE TO TECHNICAL REASONS - RESAMPLE SUGGESTED
PPB: AIR - nl/l WATER - ug/l SOIL - ng/g

B

LABORATORY REPORT
CHEMICAL EXAMINATION OF INDUSTRIAL AND HAZARDOUS WASTES
Division of Laboratories and Research
Nassau County Department of Health

1 ☐ Routine
2 ☐ Resample
3 ☐ Special
4 ☐ Complaint
5 ☐ Other

Lab. No. 121

Field No. VN-4

Source Information (Please Print)

Premises: Air Techniques
Address: 70 Cantiague Rk. Rd
Town: Hicksville
Collection Point: liquid in drum in dumpster

	Month	Day	Year
Date Collected	1	7	87
Date Received	JAN 07 1987		8
Date Reported			8

Collection Time: 11 : 50 am
Collected By: V-Nigro

Sampler's Comments:
- white cloudy liquid w/ solvent odor
- EP Toxicity

Bureau:
1 ☑ Land Resources Management
9 ☐ Other (specify)

Sample Type:
A ☑ Water
B ☐ Soil
C ☐ Sludge
D ☐ Waste Solvent
E ☐ Oil
F ☐ Other

CHEMICAL EXAMINATION

Check	Metals		Result	Check	Non-Metals		Result
1	Aluminum	mg/l		15	Chloride	mg/l	
2	Arsenic	mg/l	24.0	16	Cyanide	mg/l	
3	Barium	mg/l	<0.2	17	Fluoride	mg/l	
4	Cadmium	mg/l	0.014	18	MBAS	mg/l	
5	Chromium, Total	mg/l	2.8	19	pH		
6	Copper	mg/l		20	Phenols	mg/l	
7	Iron, Total	mg/l		21	Solids, Suspended	mg/l	
8	Lead	mg/l	<0.01	22	Solids, Total Diss.	mg/l	
9	Manganese	mg/l		23	Sulfate	mg/l	
10	Mercury	mg/l	interference	24	Ammonia nitrogen	mg/l	
11	Nickel	mg/l		25	Kjeldahl nitrogen	mg/l	
12	Selenium	mg/l	0.043	26	Nitrite nitrogen	mg/l	
13	Silver	mg/l	0.17	27	Nitrate nitrogen	mg/l	
14	Zinc	mg/l		28	Total Phos.	mg/l	

SPECIAL ANALYSIS

Check	Constituent		Result
29	Chromium hex.	mg/l	
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			

Examiner's Comments: Sample in acid bottle, metals run on filtered sample - digested

NO. EP. TOXICITY

FEB 03 1987

SSB 240108

BORATORY WORKSHEET

HEMICAL EXAMINATION FOR TRACE ORGANIC CONSTITUENTS IN WATER, HAZARDOUS WASTES AND SOLID WASTES

Division of Laboratories and Research

Nassau County Department of Health

1 ☐ Routine
2 ☐ Resample
3 ☑ Special
4 ☐ Complaint
5 ☐ Other

Lab. No. 870017 **D**

Field No. VN-4

N No. (Public Water Supply Only)

Source Information (Please Print)

Premises	AIR Techniques
Address	70 CANTIAGUE RK Rd
Town	HICKSVILLE
Collection Point	LIquid in drum in dumpster
Well No.	

	Month	Day	Year
Date Collected	1	7	87
Date Received	1	7	87
Date Reported			8
Collection Time	11:50 am		
Collected By:	V Nigw		

Sampler's Comments:

- sample on ice
- liquid sampled from recovered drum in dumpster
- cloudy white liquid
- solvent odor

Bureau

1 ☑ Land Resources Management
2 ☐ Public Water Supply
3 ☐ Water Pollution Control
4 ☐ Environmental Sanitation
9 ☐ Other (specify)

SAMPLE TYPE

AQUEOUS				NON-AQUEOUS	
1	Community Well	6	Surface Water	1	Soil
2	Non-Community Well	7	Waste Water	2	Sludge
3	Private Well	8	Industrial Effluent	3	Waste Solvent
4	Monitoring Well	9	Raw Supply Water	4	Oil
5	Drinking Water	10	Distribution Water	5	Other (specify)

ANALYSIS TYPE

A	Purgeable halogenated hydrocarbons
B	Purgeable halogenated hydrocarbons - gases
C	Purgeable nonhalogenated hydrocarbons
D	Other (specify)

Examiner's Comments:

SSB 240109

OF CUSTODY RECORD

on of Laboratories and Research

sau County Department of Health

1 ☐ Routine
2 ☐ Resample
3 ☑ Special
4 ☐ Complaint
5 ☐ Other

Lab. No. 870017

Field No. VN-4

ource Information (Please Print)

emises Air Technigues

Address 70 Cantiague Rk Rd

wn Hicksville

ollection Point Location liquid in drain in dumpster

mpler's Comments
- white cloudy liquid w/a solvent oder.

Collection Date 1-7-87

Collection Time 11:50am

No. of Containers 1 - glass vial 40ml

Type of Containers

Method of Preservation ice

Collection Procedure

Method of Transportation to Laboratory
van

NTAINER DISTRIBUTION Clean sampling containers designated by field number VN-4 have been issued for collection of the sample identified on this form.

	Relinquished by:		Received by:	
nted Name	Esther Cannella	Date 1/7/87	Printed Name Vincent P. Nigro	Date 1-7-87
ature X	Esther Cannella	Time 10:35	Signature X	Time 10:35
pose of Transfer	collection			

STODY TRANSFER 1

	Relinquished by:		Received by:	
ted Name	Vincent P. Nigro	Date 1-7-87	Printed Name Andrew Lichtman PhD	Date 1-7-87
gnature X	Vincent P. Nigro	Time 3:05pm	Signature X ANDREW LICHTMAN	Time 15:00
pose of Transfer	analysis			

STODY TRANSFER 2

	Relinquished by:		Received by:	
ted Name		Date	Printed Name	Date
nature X		Time	Signature X	Time
pose of Transfer				

STODY TRANSFER 3

	Relinquished by:		Received by:	
nted Name		Date	Printed Name	Date
ature X		Time	Signature X	Time
pose of Transfer				

STODY TRANSFER +

	Relinquished by:		Received by:	
nted Name		Date	Printed Name	Date
ature X		Time	Signature X	Time
pose of Transfer				

ments

7/84

SSB 240110

NASSAU COUNTY DEPARTMENT OF HEALTH
DIVISION OF LABORATORIES AND RESEARCH
ENVIRONMENTAL HEALTH LABORATORIES

TRACE ORGANICS

Access Number: 870017
Source: AIR TECHNIQUES, CANTIAGUE PK RD., HICKSVILLE
Matrix: WATER
Site: LIQUID IN DRUM IN DUMPSTER
Date Sampled: 01/07/87
Date of Report: 01/15/87

VOLATILE HALOGENATED	MRC (ug/l)		RESULT (ug/l)
TRICHLOROFLUOROMETHANE	NA		NA
METHYLENE CHLORIDE			
1,1,2-TRICHLOROTRIFLUOROETHANE --	9	<	9
1,1-DICHLOROETHYLENE			
c & t-1,2-DICHLOROETHYLENE	4		34
1,1-DICHLOROETHANE	6	<	6
CHLOROFORM	1	<	1
1,1,1-TRICHLOROETHANE	2		2
CARBON TETRACHLORIDE	1	<	1
TRICHLOROETHYLENE	1		180
BROMODICHLOROMETHANE	2	<	2
c-1,3-DICHLOROPROPENE			
DIBROMOCHLOROMETHANE --	3	<	3
1,1,2-TRICHLOROETHANE	4	<	4
1,2-DIBROMOETHANE	NA		NA
TETRACHLOROETHYLENE	1		33000
BROMOFORM	3000	<	3000

VOLATILE AROMATICS	MRC (ug/l)		RESULT (ug/l)
BENZENE	3		5
TOLUENE	3		7
CHLOROBENZENE	40	<	40
ETHYLBENZENE	30	<	30
XYLENE (o,m,p)	40	<	40
DICHLOROBENZENE (o,m,p)	32	<	32

MRC - MINIMUM REPORTABLE CONCENTRATION NA - NOT ANALYZED
NR - NO RESULT DUE TO TECHNICAL REASONS - RESAMPLE SUGGESTED
PPB: AIR - nl/l WATER - ug/l SOIL - ng/g

B

LABORATORY REPORT
CHEMICAL EXAMINATION OF INDUSTRIAL AND HAZARDOUS WASTES
Division of Laboratories and Research
Nassau County Department of Health

1 ☐ Routine
2 ☐ Resample
3 ☑ Special
4 ☐ Complaint
5 ☐ Other

Lab. No. 122

Field No. VN-5

Source Information (Please Print)

Premises: Air Technique

Address: 70 Cantiague Rk Rd.

Town: Hicksville

Collection Point: drum 3' below soil surface - liquid in drum

Sampler's Comments: - EP Toxicity

	Month	Day	Year
Date Collected	1	7	87
Date Received	1		8
Date Reported			8
Collection Time	12:05 pm		
Collected By:	V. Nigro		

Bureau:
1 ☑ Land Resources Management
9 ☐ Other (specify)

Sample Type:
A ☑ Water
B ☐ Soil
C ☐ Sludge
D ☐ Waste Solvent
E ☐ Oil
F ☐ Other

CHEMICAL EXAMINATION

Check	Metals		Result	Check	Non-Metals		Result
1	Aluminum	mg/l		15	Chloride	mg/l	
2	Arsenic	mg/l	36.0	16	Cyanide	mg/l	
3	Barium	mg/l	<0.2	17	Fluoride	mg/l	
4	Cadmium	mg/l	0.006	18	MBAS	mg/l	
5	Chromium, Total	mg/l	4.0	19	pH		
6	Copper	mg/l		20	Phenols	mg/l	
7	Iron, Total	mg/l		21	Solids, Suspended	mg/l	
8	Lead	mg/l	0.04	22	Solids, Total Diss.	mg/l	
9	Manganese	mg/l		23	Sulfate	mg/l	
10	Mercury	mg/l	interference	24	Ammonia nitrogen	mg/l	
11	Nickel	mg/l		25	Kjeldahl nitrogen	mg/l	
12	Selenium	mg/l	0.045	26	Nitrite nitrogen	mg/l	
13	Silver	mg/l	0.19	27	Nitrate nitrogen	mg/l	
14	Zinc	mg/l		28	Total Phos.	mg/l	

SPECIAL ANALYSIS

Check	Constituent		Result
29	Chromium hex.	mg/l	
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			

Examiner's Comments: Sample in acidified bottle, metals run on filtered sample - digested

NO EP Toxicity

FEB 03 1987

SSB 240112

LABORATORY WORKSHEET

CHEMICAL EXAMINATION FOR TRACE ORGANIC CONSTITUENTS IN WATER, HAZARDOUS WASTES AND SOLID WASTES

Division of Laboratories and Research

Nassau County Department of Health

1 ☐ Routine
2 ☐ Resample
3 ☑ Special
4 ☐ Complaint
5 ☐ Other

Lab. No. 870018 **D**

Field No. VN-5

N No. (Public Water Supply Only)

Source Information (Please Print)

Premises	AIR Technique S
Address	70 CANTIAGUE RK Rd
Town	HICKSVILLE
Collection Point	Buried drum below soil - LIQUID
Well No.	

	Month	Day	Year
Date Collected	1	7	87
Date Received	1	7	87
Date Reported			8
Collection Time	12:05pm		
Collected By:	V. Nigro		

Sampler's Comments:

- sample mice
- amber colored liquid in drum.
- drum approx 3 feet below surface.

Bureau

1 ☑ Land Resources Management
2 ☐ Public Water Supply
3 ☐ Water Pollution Control
4 ☐ Environmental Sanitation
9 ☐ Other (specify)

SAMPLE TYPE

AQUEOUS				NON-AQUEOUS	
1	Community Well	6	Surface Water	1	Soil
2	Non-Community Well	7	Waste Water	2	Sludge
3	Private Well	8	Industrial Effluent	3	Waste Solvent
4	Monitoring Well	9	Raw Supply Water	4	Oil
5	Drinking Water	10	Distribution Water	5	Other (specify)

ANALYSIS TYPE

A	Purgeable halogenated hydrocarbons
B	Purgeable halogenated hydrocarbons - gases
C	Purgeable nonhalogenated hydrocarbons
D	Other (specify)

Examiner's Comments:

SSB 240113

CUSTODY RECORD
of Laboratories and Research
County Department of Health

1 ☐ Routine
2 ☐ Resample
3 ☒ Special
4 ☐ Complaint
5 ☐ Other

Lab. No. 870018

Field No. UN-5

ce Information (Please Print)

emises Air Techniques

dress 70 Cantiague Rock Rd

own Hicksville

llection Point Location drum 3' below soil surface

- liquid in drum

mpler's Comments

- liquid amber colored
- sample on ice.

Collection Date 1-7-87

Collection Time 12:05 pm

No. of Containers 1

Type of Containers glass

Method of Preservation ice

Collection Procedure

Method of Transportation to Laboratory

van

CONTAINER DISTRIBUTION

Clean sampling containers designated by field number UN-5 have been issued for collection of the sample identified on this form.

	Relinquished by:		Received by:	
Printed Name	Esther Cannella	Date 1/7/87	Printed Name Vincent P. Nigro	Date 1-7-87
Signature X	Esther Cannella	Time 10:56 am	Signature X Vincent P. Nigro	Time 10:22 am

Purpose of Transfer collection

CUSTODY TRANSFER 1	Relinquished by:		Received by:	
Printed Name	Vincent P. Nigro	Date 1-7-87	Printed Name ANDREW LICHTMAN	Date 1-7-87
Signature X	Vincent P. Nigro	Time 3:05pm	Signature X Andrew Lichtman PhD	Time 15 or

Purpose of Transfer analysis

CUSTODY TRANSFER 2	Relinquished by:		Received by:	
Printed Name		Date	Printed Name	Date
Signature X		Time	Signature X	Time

Purpose of Transfer

CUSTODY TRANSFER 3	Relinquished by:		Received by:	
Printed Name		Date	Printed Name	Date
Signature X		Time	Signature X	Time

Purpose of Transfer

CUSTODY TRANSFER 4	Relinquished by:		Received by:	
Printed Name		Date	Printed Name	Date
Signature X		Time	Signature X	Time

Purpose of Transfer

Comments

SSB 240114

NASSAU COUNTY DEPARTMENT OF HEALTH
DIVISION OF LABORATORIES AND RESEARCH
ENVIRONMENTAL HEALTH LABORATORIES

TRACE ORGANICS

Access Number: 870018
Source: AIR TECHNIQUES, CANTIAGUE-PK RD., HICKSVILLE
Matrix: WATER
Site: BURRIED DRUM BELOW SOIL - LIQUID
Date Sampled: 01/07/87
Date of Report: 01/15/87

VOLATILE HALOGENATED	MRC (ug/l)		RESULT (ug/l)
TRICHLOROFLUOROMETHANE	NA		NA
METHYLENE CHLORIDE 1,1,2-TRICHLOROTRIFLUOROETHANE 1,1-DICHLOROETHYLENE	9	<	9
c & t-1,2-DICHLOROETHYLENE	4		93
1,1-DICHLOROETHANE	6	<	6
CHLOROFORM	1	<	1
1,1,1-TRICHLOROETHANE	2		3
CARBON TETRACHLORIDE	1	<	1
TRICHLOROETHYLENE	1		230
BROMODICHLOROMETHANE	2	<	2
c-1,3-DICHLOROPROPENE DIBROMOCHLOROMETHANE	3	<	3
1,1,2-TRICHLOROETHANE	4	<	4
1,2-DIBROMOETHANE	NA		NA
TETRACHLOROETHYLENE	1		3600
BROMOFORM	30	<	30

VOLATILE AROMATICS	MRC (ug/l)		RESULT (ug/l)
BENZENE	3		3
TOLUENE	3		8
CHLOROBENZENE	4	<	4
ETHYLBENZENE	3		4
XYLENE (o,m,p)	4		12
DICHLOROBENZENE (o,m,p)	32	<	32

MRC - MINIMUM REPORTABLE CONCENTRATION NA - NOT ANALYZED
NR - NO RESULT DUE TO TECHNICAL REASONS - RESAMPLE SUGGESTED
PPB: AIR - nl/l WATER - ug/l SOIL - ng/g

SSB 240115

B

LABORATORY REPORT
CHEMICAL EXAMINATION OF INDUSTRIAL AND HAZARDOUS WASTES
Division of Laboratories and Research
Nassau County Department of Health

1 ☐ Routine
2 ☐ Resample
3 ☑ Special
4 ☐ Complaint
5 ☐ Other

Lab. No. 123

Field No. VN-6

Source Information (Please Print)

Premises: Air Techniques
Address: 70 Cantiague Rk Rd
Town: Hicksville
Collection Point: soil 6-8 ft below surface - vacant lot rear of bldg

	Month	Day	Year
Date Collected	1	7	87
Date Received	JAN 07 1987		
Date Reported			8
Collection Time	12 : 15 pm		
Collected By:	V. Nigro		

Sampler's Comments:

- EP toxicity

Bureau:
1 ☑ Land Resources Management
9 ☐ Other (specify)

Sample Type:
A ☑ Water
B ☑ Soil
C ☐ Sludge
D ☐ Waste Solvent
E ☐ Oil
F ☐ Other

CHEMICAL EXAMINATION

Check	Metals		Result	Check	Non-Metals		Result
1	Aluminum	mg/l		15	Chloride	mg/l	
2	Arsenic	mg/l	<0.005	16	Cyanide	mg/l	
3	Barium	mg/l	<0.2	17	Fluoride	mg/l	
4	Cadmium	mg/l	0.001	18	MBAS	mg/l	
5	Chromium, Total	mg/l	<0.01	19	pH		
6	Copper	mg/l		20	Phenols	mg/l	
7	Iron, Total	mg/l		21	Solids, Suspended	mg/l	
8	Lead	mg/l	<0.01	22	Solids, Total Diss.	mg/l	
9	Manganese	mg/l		23	Sulfate	mg/l	
10	Mercury	mg/l	0.0043	24	Ammonia nitrogen	mg/l	
11	Nickel	mg/l		25	Kjeldahl nitrogen	mg/l	
12	Selenium	mg/l	<0.005	26	Nitrite nitrogen	mg/l	
13	Silver	mg/l	<0.05	27	Nitrate nitrogen	mg/l	
14	Zinc	mg/l		28	Total Phos.	mg/l	

SPECIAL ANALYSIS

Check	Constituent		Result
29	Chromium hex.	mg/l	
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			

Examiner's Comments

FEB 03 1987

SSB 240116

LABORATORY WORKSHEET

CHEMICAL EXAMINATION FOR TRACE ORGANIC CONSTITUENTS IN WATER, HAZARDOUS WASTES AND SOLID WASTES

Division of Laboratories and Research

Nassau County Department of Health

1 ☐ Routine
2 ☐ Resample
3 ☑ Special
4 ☐ Complaint
5 ☐ Other

Lab No. 870019 **D**

Field No. VN-6

N No. (Public Water Supply Only)

Source Information (Please Print)

Premises	AIR Techniques
Address	70 Cantiague RK Rd
Town	HICKSVILLE
Collection Point	SOIL 6-8 FT below surface - vacant
Well No.	

Sampler's Comments:
- sample once
- soil no odor

1st; rear of bldg.

	Month	Day	Year
Date Collected	1	7	87
Date Received	1	7	87
Date Reported			8
Collection Time	12:15 pm		
Collected By:	V. Nizzi		

Bureau
1 ☑ Land Resources Management
2 ☐ Public Water Supply
3 ☐ Water Pollution Control
4 ☐ Environmental Sanitation
9 ☐ Other (specify)

SAMPLE TYPE

AQUEOUS				NON-AQUEOUS	
1	Community Well	6	Surface Water	1	Soil
2	Non-Community Well	7	Waste Water	2	Sludge
3	Private Well	8	Industrial Effluent	3	Waste Solvent
4	Monitoring Well	9	Raw Supply Water	4	Oil
5	Drinking Water	10	Distribution Water	5	Other (specify)

ANALYSIS TYPE

A	Purgeable halogenated hydrocarbons
B	Purgeable halogenated hydrocarbons - gases
C	Purgeable nonhalogenated hydrocarbons
D	Other (specify)

Examiner's Comments:

SSB 240117

USTODY RECORD
Laboratories and Research
ounty Department of Health

1 ☐ Routine
2 ☐ Resample
3 ☒ Special
4 ☐ Complaint
5 ☐ Other

Lab. No. 870019

Field No. UN-6

Information (Please Print)

nises Air Techniques

ddress 70 Contiague Pike Rd.

wn Hicksville

llection Point Location soil 6-8 Ft. below surface
vacant lot rear of bldg.

mpler's Comments
- sample on ice
soil no odor

Collection Date 1-7-87

Collection Time 12:15pm

No. of Containers 1

Type of Containers 1-40 ml glass

Method of Preservation ice

Collection Procedure

Method of Transportation to Laboratory
Car

ONTAINER DISTRIBUTION

Clean sampling containers designated by field number UN-6 have been issued for collection of the sample identified on this form.

	Relinquished by:		Received by:	
nted Name	Esther Cannella	Date 1/7/87	Printed Name Vincent P. Nicosia	Date 1-7-87
ature X	Esther Cannella	Time 10:55am	Signature X Vincent P. Nicosia	Time 10:55am
pose of Transfer	collection			

USTODY TRANSFER 1	Relinquished by:		Received by:	
ted Name	Vincent P. Nicosia	Date 1/7/87	Printed Name ANDREW LICHTMAN	Date 1-7-87
gnature X	Vincent P. Nicosia	Time 3:05pm	Signature X Andrew Lichtman PhD	Time 15:00
pose of Transfer	analysis			

USTODY TRANSFER 2	Relinquished by:		Received by:	
ted Name		Date	Printed Name	Date
gnature X		Time	Signature X	Time
pose of Transfer				

STODY TRANSFER 3	Relinquished by:		Received by:	
nted Name		Date	Printed Name	Date
ature X		Time	Signature X	Time
pose of Transfer				

TODY TRANSFER 4	Relinquished by:		Received by:	
nted Name		Date	Printed Name	Date
ature X		Time	Signature X	Time
se of Transfer				

7/81

SSB 240118

NASSAU COUNTY DEPARTMENT OF HEALTH
DIVISION OF LABORATORIES AND RESEARCH
ENVIRONMENTAL HEALTH LABORATORIES

TRACE ORGANICS

Access Number: 870019
Source: AIR TECHNIQUES, CANTIAGUE PK RD., HICKSVILLE
Matrix: SOIL
Site: SOIL, 6-8 FT BELOW SURFACE, VACANT LOT;
Date Sampled: 01/07/87
Date of Report: 01/15/87

VOLATILE HALOGENATED	MRC (ng/g)		RESULT (ng/g)
TRICHLOROFLUOROMETHANE	NA		NA
METHYLENE CHLORIDE 1,1,2-TRICHLOROTRIFLUOROETHANE 1,1-DICHLOROETHYLENE	225	<	225
c & t-1,2-DICHLOROETHYLENE	100	<	100
1,1-DICHLOROETHANE	150	<	150
CHLOROFORM	25	<	25
1,1,1-TRICHLOROETHANE	50	<	50
CARBON TETRACHLORIDE	25	<	25
TRICHLOROETHYLENE	25	<	25
BROMODICHLOROMETHANE	50	<	50
c-1,3-DICHLOROPROPENE DIBROMOCHLOROMETHANE	75	<	75
1,1,2-TRICHLOROETHANE	100	<	100
1,2-DIBROMOETHANE	NA		NA
TETRACHLOROETHYLENE	25		11000
BROMOFORM	75	<	75

VOLATILE AROMATICS	MRC (ng/g)		RESULT (ng/g)
BENZENE	75	<	75
TOLUENE	75	<	75
CHLOROBENZENE	100	<	100
ETHYLBENZENE	75	<	75
XYLENE (o,m,p)	100	<	100
DICHLOROBENZENE (o,m,p)	800	<	800

MRC - MINIMUM REPORTABLE CONCENTRATION NA - NOT ANALYZED
NR - NO RESULT DUE TO TECHNICAL REASONS - RESAMPLE SUGGESTED
PPB: AIR - nl/l WATER - ug/l SOIL - ng/g

B

LABORATORY REPORT
CHEMICAL EXAMINATION OF INDUSTRIAL AND HAZARDOUS WASTES
Division of Laboratories and Research
Nassau County Department of Health

1 ☐ Routine
2 ☐ Resample
3 ☑ Special
4 ☐ Complaint
5 ☐ Other

Lab. No. 124

Field No. UN-7

Source Information (Please Print)

Premises: Air Technique

Address: 70 Cantiague Rock Rd

Town: Hicksville

Collection Point: Soil 12-14 ft. below surface - vacant lot rear of bldg

Sampler's Comments:
- EP Toxicity

	Month	Day	Year
Date Collected	1	7	87
Date Received	JAN 07 1987		
Date Reported			8
Collection Time	12:40 pm		
Collected By:	V. Nizzo		

Bureau :
1 ☑ Land Resources Management
9 ☐ Other (specify)

Sample Type:
A ☐ Water
B ☑ Soil
C ☐ Sludge
D ☐ Waste Solvent
E ☐ Oil
F ☐ Other

CHEMICAL EXAMINATION

Check	Metals		Result	Check	Non-Metals		Result
1	Aluminum	mg/l		15	Chloride	mg/l	
2	Arsenic	mg/l	<0.005	16	Cyanide	mg/l	
3	Barium	mg/l	<0.2	17	Fluoride	mg/l	
4	Cadmium	mg/l	<0.001	18	MBAS	mg/l	
5	Chromium, Total	mg/l	<0.01	19	pH		
6	Copper	mg/l		20	Phenols	mg/l	
7	Iron, Total	mg/l		21	Solids, Suspended	mg/l	
8	Lead	mg/l	<0.01	22	Solids, Total Diss.	mg/l	
9	Manganese	mg/l		23	Sulfate	mg/l	
10	Mercury	mg/l	<0.0005	24	Ammonia nitrogen	mg/l	
11	Nickel	mg/l		25	Kjeldahl nitrogen	mg/l	
12	Selenium	mg/l	<0.005	26	Nitrite nitrogen	mg/l	
13	Silver	mg/l	<0.05	27	Nitrate nitrogen	mg/l	
14	Zinc	mg/l		28	Total Phos.	mg/l	

SPECIAL ANALYSIS

Check	Constituent		Result
29	Chromium hex.	mg/l	
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			

Examiner's Comments

FEB 03 1987

SSB 240120

LABORATORY WORKSHEET

CHEMICAL EXAMINATION FOR TRACE ORGANIC CONSTITUENTS IN WATER, HAZARDOUS WASTES AND SOLID WASTES

Division of Laboratories and Research

Nassau County Department of Health

1 ☐ Routine
2 ☐ Resample
3 ☑ Special
4 ☐ Complaint
5 ☐ Other

Lab. No. 870020 D

Field No. VN-7

N No. (Public Water Supply Only)

Source Information (Please Print)

Premises	Air Techniques
Address	70 Cantiague Rk Rd
Town	Hicksville
Collection Point	soil 12-14 ft below surface
Well No.	

	Month	Day	Year
Date Collected	1	7	87
Date Received	1	7	87
Date Reported			8
Collection Time	12:40pm		
Collected By:	V. Nizar		

Sampler's Comments: ~ vacant lot rear of building

sample on ice

soil no odor

Bureau

1 ☑ Land Resources Management
2 ☐ Public Water Supply
3 ☐ Water Pollution Control
4 ☐ Environmental Sanitation
9 ☐ Other (specify)

SAMPLE TYPE

AQUEOUS				NON-AQUEOUS	
1	Community Well	6	Surface Water	1	Soil
2	Non-Community Well	7	Waste Water	2	Sludge
3	Private Well	8	Industrial Effluent	3	Waste Solvent
4	Monitoring Well	9	Raw Supply Water	4	Oil
5	Drinking Water	10	Distribution Water	5	Other (specify)

ANALYSIS TYPE

A	Purgeable halogenated hydrocarbons
B	Purgeable halogenated hydrocarbons - gases
C	Purgeable nonhalogenated hydrocarbons
D	Other (specify)

Examiner's Comments:

SSB 240121

CUSTODY RECORD

ion of Laboratories and Research
assau County Department of Health

1 ☐ Routine
2 ☐ Resample
3 ☒ Special
4 ☐ Complaint
5 ☐ Other

Lab. No. 870020

Field No. V.N-7

Source Information (Please Print)

Premises: Air Techniques

Address: 70 Cantiague Rk Rd

Town: Hicksville

Collection Point Location: Soil 12-14 ft below surface - vacant lot rear of bldg

Sampler's Comments: - sample on ice - soil no odor

Collection Date: 1-7-87

Collection Time: 12:40 pm

No. of Containers: 1

Type of Containers: 1-40 ml glass

Method of Preservation: ice

Collection Procedure:

Method of Transportation to Laboratory: car

CONTAINER DISTRIBUTION — Clean sampling containers designated by field number V.N-7 have been issued for collection of the sample identified on this form.

	Relinquished by:		Received by:	
Printed Name	Esther Cannella	Date 1/7/87	Printed Name Vincent P. Nigro	Date 1-7-87
Signature X	Esther Cannella	Time 10:25 am	Signature X Vincent P. Nigro	Time 10 am

Purpose of Transfer: collection

CUSTODY TRANSFER 1

	Relinquished by:		Received by:	
Printed Name	Vincent P. Nigro	Date 1/7/87	Printed Name Esther Lichtman PhD.	Date 1-7-87
Signature X	Vincent P. Nigro	Time 3:05 pm	Signature X ANDREW LICHTMAN	Time 15:00

Purpose of Transfer: analysis

CUSTODY TRANSFER 2

	Relinquished by:		Received by:	
Printed Name		Date	Printed Name	Date
Signature X		Time	Signature X	Time

Purpose of Transfer

CUSTODY TRANSFER 3

	Relinquished by:		Received by:	
Printed Name		Date	Printed Name	Date
Signature X		Time	Signature X	Time

Purpose of Transfer

CUSTODY TRANSFER 4

	Relinquished by:		Received by:	
Printed Name		Date	Printed Name	Date
Signature X		Time	Signature X	Time

Purpose of Transfer

Comments:

SSB 240122

NASSAU COUNTY DEPARTMENT OF HEALTH
DIVISION OF LABORATORIES AND RESEARCH
ENVIRONMENTAL HEALTH LABORATORIES

TRACE ORGANICS

Access Number: 870020
Source: AIR TECHNIQUES, CANTIAGUE PK RD., HICKSVILLE
Matrix: SOIL
Site: SOIL, 12-14 FT BELOW SURFACE, VACANT LOT
Date Sampled: 01/07/87
Date of Report: 01/15/87

VOLATILE HALOGENATED	MRC (ng/g)		RESULT (ng/g)
TRICHLOROFLUOROMETHANE	NA		NA
METHYLENE CHLORIDE 1,1,2-TRICHLOROTRIFLUOROETHANE 1,1-DICHLOROETHYLENE	225	<	225
c & t-1,2-DICHLOROETHYLENE	100	<	100
1,1-DICHLOROETHANE	150	<	150
CHLOROFORM	25	<	25
1,1,1-TRICHLOROETHANE	50	<	50
CARBON TETRACHLORIDE	25	<	25
TRICHLOROETHYLENE	25	<	25
BROMODICHLOROMETHANE	50	<	50
c-1,3-DICHLOROPROPENE DIBROMOCHLOROMETHANE	75	<	75
1,1,2-TRICHLOROETHANE	100	<	100
1,2-DIBROMOETHANE	NA		NA
TETRACHLOROETHYLENE	25		7100
BROMOFORM	75	<	75

VOLATILE AROMATICS	MRC (ng/g)		RESULT (ng/g)
BENZENE	75	<	75
TOLUENE	75	<	75
CHLOROBENZENE	100	<	100
ETHYLBENZENE	75	<	75
XYLENE (o,m,p)	100	<	100
DICHLOROBENZENE (o,m,p)	800	<	800

MRC - MINIMUM REPORTABLE CONCENTRATION NA - NOT ANALYZED
NR - NO RESULT DUE TO TECHNICAL REASONS - RESAMPLE SUGGESTED
PPB: AIR - nl/l WATER - ug/l SOIL - ng/g

DRUM-CONTENTS SAMPLES AND SOIL SAMPLES COLLECTED BY NCDH ON JANUARY 7, 1987. DRUM-CONTENTS SAMPLES INCLUDE: WHITE-COLORED FLUIDS (NCDH LAB. NOS. 120 AND 870016), (NCDH LAB. NOS. 121 AND 870017); AND AMBER-COLORED FLUIDS (NCDH LAB. NOS. 122 AND 870018). SOIL SAMPLES INCLUDE: EXCAVATION BOTTOM AT 6-8 FEET (NCDH LAB. NOS. 123 AND 870019); AND EXCAVATION BOTTOM AT 12-14 FEET (NCDH LAB. NOS. 124 AND 870020).

APPENDIX C

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

July 27, 1987

ERM Northeast
88 Sunnyside Boulevard
Plainview, New York 11803

Attention: Glen Wygant

SUBJECT: RESULTS OF ANALYSES FOR AIR TECHNIQUES, SAMPLES RECEIVED 7/1/87, LAB NUMBER 55482.

Dear Mr. Wygant:

Enclosed please find the subject data for your review. All analyses were performed according to EPA accepted methodologies.

If there are any questions regarding this data, please do not hesitate to contact my office.

Very truly yours,

ENVIROTEST LABORATORIES, INC.

Ronald A. Bayer
President

RAB/pkd

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

LAB#: 55482A DATE REC'D: 8/07/01 DATE COLL'D: [illegible] STATUS: closed
FNAME: ERM - Northeast FNAME:
STREET: CITY: STATE: ZIP
SPL LOCATION: B 1 15 to 17

REPORT TO: same
BILL TO: same

T COLI	:	Cr+6	:	COD	:
F COLI	:	Phenol	:	HARD-T	:
SPL	:	CN	:	Ca Hard	:
F	:	B	:	SO3	:
NO3	:	Br	:	Cl	:
NO2	:	Color	:	Alk	:
T-PO4	:	Odor	:	COD-Inf	:
O-PO4	:	Turb	:	BOD-Eff	:
SO4	:	pH	:	BOD-S	:
MBAS	:	LT	:	TSS-Inf	:
SiO2	:	Cond	:	TSS-Eff	:
H2S	:	NH3-T	:	MLSS	:
NH3-C	:	TKN	:	MLVSS	:

VSS	:	Ca	:	K	:
TS	:	Cr	: [illegible]	Se	: [illegible]
VS	:	Co	:	Ag	: 7.9
TDS	:	Cu	:	Na	:
SS	:	Au	:	Tl	:
% SOL	: [illegible]	Fe	:	Sn	:
G & O	:	Pb	: [illegible]	Ti	:
Al	:	Mg	:	V	:
Sb	:	Mn	:	Zn	:
As	: [illegible]	Hg	:	THM	:
Ba	: [illegible]	Mo	:	TOC	:
Be	:	Ni	:		
Cd	: [illegible]	Pd	:		

[illegible]

[illegible]
Ronald A. [illegible]
Laboratory Director [illegible]

New York State Department of Health Approved

SSB 240127

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

New York State Department of Health Approved

SSB 240128

LAB # 55482A

Client: ERM Northeast

Spl Location: B-1 15-17'

Spl Coll'd: 6/30/87

Sample Rec'd: 7/1/87

EPA Method 608 PCBs GC/EC

COMPOUND	RESULTS Sample Concen. ug/kg	MDL ug/kg	BLANK Conc.
1) PCB-1242	ND	930	ND
2) PCB-1254	15,000	930	ND
3) PCB-1221	ND	930	ND
4) PCB-1232	ND	930	ND
5) PCB-1248	ND	930	ND
6) PCB-1260	ND	930	ND
7) PCB-1016	ND	930	ND

For Enviro[illegible] Laboratories, Inc.

Ronald A. [illegible]
President

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

LAB#: 55492B DATE REC'D: 87/07/01 DATE COLL'D: 87/05/30 STATUS: closed
NAME: ERM - Northeast FNAME:
STREET: CITY: STATE: ZIP:
SPL LOCATION: B-1 25 to 27'

REPORT TO: same
BILL TO: same

T COLI:		Phenol:		COD :	
F COLI:		CN :		HARD-T :	
SPC :		Cl :		Ca Hard:	
F :		Br :		SO3 :	
NO2 :		Color :		Cl :	
NO3 :		Odor :		Alk :	
T-PO4 :		Turb :		BOD Int:	
O-PO4 :		pH :		BOD-Eff:	
SO4 :		Ef :		BOD-5 :	
NBAS :		Cond :		TSS Int:	
SiO2 :		NH3-T :		TSS-Eff:	
H2S :		TKN :		MLSS :	
NH3-C :				MLVSS :	
VSS :		Cs :		K :	
Ts :		Cr :	22	Se :	0.25
VS :		Co :		Ag :	1.2
TDS :		Cu :		Na :	
SS :		Au :		Tl :	
% SOL :	84	Fe :		Sn :	
H2O :		Pb :	29	Ti :	
Al :		Mg :		V :	
Sb :		Mn :		Zn :	
Ni :	0.[illegible]	Hg :	0.10	THM :	
Ba :	12	Mo :		TOC :	
Cr :		Ni :			
Cd :	0.[illegible]	Zn :			

Remarks: all results are on the dry weight

Ronald A. Fayer
Laboratory Director 7/3/87

New York State Department of Health Approved

SSB 240130

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

New York State Department of Health Approved

SSB 240131

LAB # 55482B

Client: ERM Northeast

Spl Location: B-1 25-27

Spl Coll d: 6/30/87

Sample Rec d: 7/1/87

EPA Method 608 PCBs GC/EC

COMPOUND	RESULTS Sample Concen. ug/kg	MDL ug/kg	BLANK Conc.
1) PCB-1242	ND	760	ND
2) PCB-1254	15,000	760	ND
3) PCB-1221	ND	760	ND
4) PCB-1232	ND	760	ND
5) PCB-1248	ND	760	ND
6) PCB-1260	ND	760	ND
7) PCB-1016	ND	760	ND

For EnviroTest Laboratories, Inc.

Ronald A. Bayer
President

/ 9 2

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

LAB#: 55482C DATE REC'D: 87/07/01 DATE COLL'D: 87/06/30 STATUS: Closed
CNAME: ERM - Northeast FNAME:
STREET: CITY: STATE: ZIP:
SPL LOCATION: B-1 35 to 37

REPORT TO: same
BILL TO: same

T COLI:		Cr+6 :		COD :	
F COLI:		Phenol:		HARD-T :	
S.C :		CN :		Ca Hard:	
F :		B :		SO3 :	
NO3 :		Br :		Cl :	
NO2 :		Color :		Alk :	
T-PO4 :		Odor :		BOD-Inf:	
O-PO4 :		Turb :		BOD-Eff:	
SO4 :		pH :		BOD-S :	
MBAS :		Cl :		TSS-Inf:	
SiO2 :		Cond :		TSS-Eff:	
H2S :		NH3-T :		MLSS :	
NH3-C :		TKN :		MLVSS :	
VSS :		Ca :		K :	
TS :		Cr :	1[illegible]	Se :	0.2
VS :		Co :		Ag :	0.9[illegible]
TDS :		Cu :		Na :	
SS :		Au :		Tl :	
% SOL :	98	Fe :		Sn :	
G & O :		Pb :	15	Ti :	
Al :		Mg :		V :	
Sb :		Mn :		Zn :	
[illegible] :	[illegible]	Hg :	[illegible] 10	TOM :	
Ba :	6.4	Mo :		TOC :	
B :		Ni :			
Cd :	0.[illegible]	Pd :			

Item 1 - All results in mg/l dry weight.

Ronald M. Boyer
Laboratory Director

New York State Department of Health Approved

SSB 240133

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

[illegible]

New York State Department of Health Approved

SSB 240134

LAB # 55482C

Client: ERM Northeast

Spl Location: B-1 35-37'

Spl Coll'd: 6/30/87

Sample Rec'd: 7/1/87

EPA Method 608 PCBs GC/EC

COMPOUND	RESULTS Sample Concen. ug/kg	MDL ug/kg	BLANK Conc.
1) PCB-1242	ND	82	ND
2) PCB-1254	160	82	ND
3) PCB-1221	ND	82	ND
4) PCB-1232	ND	82	ND
5) PCB-1248	ND	82	ND
6) PCB-1260	ND	82	ND
7) PCB-1016	ND	82	ND

For Envirotest Laboratories, Inc.

Ronald A. Bover
President

7/7/87

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

LAB#: 55482D DATE REC'D: 87/07/01 DATE COLL D: 87/06/30 STATUS: closed
FNAME: ERM - Northeast FNAME:
STREET: CITY: STATE: ZIP:
SPL LOCATION: Test pit area B 10 below grade

REPORT TO: same
BILL TO: same

T COLI:		Cr+6 :		COD :	
F COLI:		Phenol:		HARD-T :	
SPC :		CN :		Ca Hard:	
F :		B :		SO3 :	
NO3 :		Br :		Cl :	
NO2 :		Color :		Alk :	
T PO4 :		Odor :		BOD-Inf:	
O-PO4 :		Turb :		BOD-Eff:	
SO4 :		pH :		BOD-S :	
MBAS :		LI :		TSS-Inf:	
SiO2 :		Cond :		TSS-Eff:	
H2S :		NH3-T :		MLSS :	
NH3-C :		TKN :		MLVSS :	
VSS :		Ca :		K :	
TS :		Cr :	8.7	Se :	0.2
VS :		Co :		Ag :	4.4
TDS :		Cu :		Na :	
SS :		Au :		Tl :	
% SOL :	93	Fe :		Sn :	
G & O :		Pb :	17	Ti :	
Al :		Mg :		V :	
Sb :		Mn :		Zn :	
As :	0.54	Hg :	0.04	THM :	
Ba :	9.0	Mo :		TOC :	
Be :		Ni :			
Cd :	0.2	Pd :			

Remarks: All results in mg [illegible]

Ronald A. Bayer
Laboratory Director [illegible]/87

New York State Department of Health Approved

SSB 240136

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

[illegible]

[illegible]

Bromodichloromethane	:	1,2-trans-dichloroethylene	[illegible] mg/kg
Bromoform	-	trans-1,3-dichloropropene	
Bromomethane	-	Trichlorofluoromethane	
Carbon tetrachloride	.	1,1,1-trichloroethane	
Chlorobenzene	-	1,1,2-trichloroethane	-
Chloroethane	:	Trichloroethylene	
2-chloroethylvinyl ether	:	[illegible]	
Chloroform	-	[illegible]	
Chloromethane	:	Tetrachloroethylene	
cis-1,3-dichloropropene	.	Vinyl chloride	.
Dibromochloromethane	:		
1,1-dichloroethane	:	Benzene	
1,2-dichloroethane	-	1,2-dichlorobenzene	:
1,1-dichloroethylene	-	1,3-dichlorobenzene	
1,2-dichloropropane	:	1,4-dichlorobenzene	
Methylene chloride	-	Ethylbenzene	
1,1,2,2-tetrachloroethane	.	Toluene	
		Total Xylene	

[illegible]

[illegible] mg/kg

Treese for

LAB # 55482D

Client: ERM Northeast

Spl Location: Test Pit Area B
~10' below grade

Spl Coll'd: 6/30/87

Sample Rec'd: 7/1/87

EPA Method 608 PCBs GC/EC

COMPOUND	RESULTS Sample Concen. ug/kg	RESULTS MDL ug/kg	BLANK Conc.
1) PCB-1242	ND	160	ND
2) PCB-1254	770	160	ND
3) PCB-1221	ND	160	ND
4) PCB-1232	ND	160	ND
5) PCB-1248	ND	160	ND
6) PCB-1260	ND	160	ND
7) PCB-1016	ND	160	ND

For Envirotest Laboratories, Inc.

Ronald A. Baver
President

7/7/87

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

July 27, 1987

ERM Northeast
88 Sunnyside Boulevard
Plainview, New York 11803

Attention: Glen Wygant

SUBJECT: RESULTS OF ANALYSES FOR AIR TECHNIQUES, SAMPLES RECEIVED 7/11/87, LAB NUMBER 55856.

Dear Mr. Wygant:

Enclosed please find the subject data for your review. All analyses were performed according to EPA accepted methodologies.

If there are any questions regarding this data, please do not hesitate to contact my office.

Very truly yours,

ENVIROTEST LABORATORIES, INC.

Ronald A. Bayer
President

RAB/pkd

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

LAB#: 55856A DATE REC'D: 87/07/11 DATE COLL'D: 87/07/10 STATUS: CLOSED
LNAME: ERM - Northeast FNAME:
STREET: CITY: STATE: ZIP:
SPL LOCATION: B-2 15' to 17'

REPORT TO: same
BILL TO: same

T COLI:		Cr+6 :		COD :	
F COLI:		Phenol:		HARD-T :	
SPC :		CN :		Ca Hard:	
F :		B :		SO3 :	
NO3 :		Br :		Cl :	
NO2 :		Color :		Alk :	
T-PO4 :		Odor :		BOD-Inf:	
O-PO4 :		Turb :		BOD-Eff:	
SO4 :		pH :		BOD-S :	
MBAS :		LI :		TSS-Inf:	
SiO2 :		Cond :		TSS-Eff:	
H2S :		NH3-T :		MLSS :	
NH3-C :		TKN :		MLVSS :	
VSS :		Ca :		F :	
TS :		Cr :	8.6	Se :	0.2
VS :		Co :		Ag :	0.32
TD :		Cu :		Na :	
SS :		Au :		Tl :	
% SOL :	94%	Fe :		Sn :	
G & O :		Pb :	32	Ti :	
Al :		Mg :		V :	
Sb :		Mn :		Zn :	
As :	0.5	Hg :	0.04	THM :	
Ba :	1.1	Mo :		TOC :	
Be :		Ni :			
Cd :	1.4	Pd :			

Remarks: RESULTS IN MG/KG DRY WEIGHT.

Ronald A. Bayer
Laboratory Director 7/23/87

New York State Department of Health Approved

SSB 240140

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

New York State Department of Health Approved

SSB 240141

LAB # 55856A

Client: ERM Northeast

Spl Location: B-2 15'-17'

Spl Coll d: 7/10/87

Sample Rec'd: 7/11/87

EPA Method 608 Pesticide/PCB GC/EC

COMPOUND	RESULTS Sample Concen. ug/kg	MDL ug/kg	BLANK Conc.
1) Aldrin	ND	25	ND
2) Alpha-BHC	ND	25	ND
3) Beta-BHC	ND	25	ND
4) Gamma-BHC	ND	25	ND
5) Delta-BHC	ND	25	ND
6) Chlordane	ND	200	ND
7) 4,4'-DDT	ND	25	ND
8) 4,4'-DDE	ND	25	ND
9) 4,4'-DDD	ND	25	ND
10) Dieldrin	ND	25	ND
11) Alpha-Endosulfan	ND	25	ND
12) Beta-Endosulfan	ND	25	ND
13) Endosulfan sulfate	ND	25	ND
14) Endrin	ND	25	ND
15) Endrin aldehyde	ND	25	ND
16) Heptachlor	ND	25	ND
17) Heptachlor epoxide	ND	25	ND
18) PCB-1242	ND	200	ND
19) PCB-1254	1700	200	ND
20) PCB-1221	ND	200	ND
21) PCB-1232	ND	200	ND
22) PCB-1248	ND	200	ND
23) PCB-1260	ND	200	ND
24) PCB-1016	ND	200	ND
25) Toxaphene	ND	200	ND

For EnviroTest Laboratories, Inc.

Ronald A. Beaver
President

7/28/87

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

LAB#: 558568 DATE REC'D: 87/07/11 DATE COLL'D: 87/07/10 STATUS: CLOSED
LNAME: ERM - Northeast FNAME:
STREET: CITY: STATE: ZIP:
SPL LOCATION: B-2 25' to 27'

REPORT TO: same
BILL TO: same

T COLI	:	Cr+6	:	COD	:
F COLI	:	Phenol	:	HARD-T	:
SPC	:	CN	:	Ca Hard	:
F	:	B	:	SO3	:
NO3	:	Br	:	Cl	:
NO2	:	Color	:	Alk	:
T-PO4	:	Odor	:	BOD-Inf	:
O-PO4	:	Turb	:	BOD-Eff	:
SO4	:	pH	:	BOD-S	:
MBAS	:	LI	:	TSS-Inf	:
SiO2	:	Cond	:	TSS-Eff	:
H2S	:	NH3-T	:	MLSS	:
NH3-C	:	TKN	:	MLVSS	:
VSS	:	Ca	:	F	:
TS	:	Cr	: 4.4	Se	: 0.2
VS	:	Co	:	Ag	: 0.32
TDS	:	Cu	:	Na	:
SS	:	Au	:	Tl	:
% SOL	: 94%	Fe	:	Sn	:
G & O	:	Pb	: 23	Ti	:
Al	:	Mg	:	V	:
Sb	:	Mn	:	Zn	:
As	: 0.5	Hg	: <0.04	THM	:
Ba	: 7.7	Mo	:	TOC	:
Be	:	Ni	:		
Cd	: 0.43	Pd	:		

Remarks: ALL RESULTS IN MG/KG DRY WEIGHT.

Ronald A. Baver
Laboratory Director 7/23/87

New York State Department of Health Approved

SSB 240143

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

New York State Department of Health Approved

SSB 240144

LAB # 55856B

Client: ERM Northeast

Spl Location: B-2 25-27'

Spl Coll'd: 7/10/87

Sample Rec'd: 7/11/87

EPA Method 608 Pesticide/PCB GC/EC

COMPOUND	RESULTS Sample Concen. ug/kg	MDL ug/kg	BLANK Conc.
1) Aldrin	ND	2.6	ND
2) Alpha-BHC	ND	2.6	ND
3) Beta-BHC	ND	2.6	ND
4) Gamma-BHC	ND	2.6	ND
5) Delta-BHC	ND	2.6	ND
6) Chlordane	ND	26	ND
7) 4,4'-DDT	ND	2.6	ND
8) 4,4'-DDE	ND	2.6	ND
9) 4,4'-DDD	ND	2.6	ND
10) Dieldrin	ND	2.6	ND
11) Alpha-Endosulfan	ND	2.6	ND
12) Beta-Endosulfan	ND	2.6	ND
13) Endosulfan sulfate	ND	2.6	ND
14) Endrin	ND	2.6	ND
15) Endrin aldehyde	ND	2.6	ND
16) Heptachlor	ND	2.6	ND
17) Heptachlor epoxide	ND	2.6	ND
18) PCB-1242	ND	26	ND
19) PCB-1254	ND	26	ND
20) PCB-1221	ND	26	ND
21) PCB-1232	ND	26	ND
22) PCB-1248	ND	26	ND
23) PCB-1260	ND	26	ND
24) PCB-1016	ND	26	ND
25) Toxaphene	ND	26	ND

For Envirotest Laboratories, Inc.

Ronald A. Beaver
President

7/20/87

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

LAB#: 55856C DATE REC'D: 87/07/11 DATE COLL'D: 87/07/10 STATUS: CLOSED
LNAME: M - Northeast FNAME:
STREET: CITY: STATE: ZIP:
SPL LOCATION: B-3 15' to 17'

REPORT TO: same
BILL TO: same

T COLI	:	Cr+6	:	COD	:
F COLI	:	Phenol	:	HARD-T	:
SPC	:	CN	:	Ca Hard	:
F	:	B	:	SO3	:
NO3	:	Br	:	Cl	:
NO2	:	Color	:	Alk	:
T-PO4	:	Odor	:	BOD-Inf	:
O-PO4	:	Turb	:	BOD-Eff	:
SO4	:	pH	:	BOD-S	:
MBAS	:	LT	:	TSS-Inf	:
SiO2	:	Cond	:	TSS-Eff	:
H2S	:	NH3-T	:	MLSS	:
NH3-C	:	TKN	:	MLVSS	:
VSS	:	Ca	:	K	:
IS	:	Cr	: 2.4	Se	: 0.2
VS	:	Co	:	Ag	: 0.35
TDS	:	Cu	:	Na	:
SS	:	Au	:	Tl	:
% SOL	: 85%	Fe	:	Sn	:
G & O	:	Pb	: 34	Ti	:
Al	:	Mg	:	V	:
Sb	:	Mn	:	Zn	:
As	: <0.5	Hg	: 0.04	THM	:
Ba	: 6.7	Mo	:	TOC	:
Be	:	Ni	:		
Cd	: 1.2	Pd	:		

Remarks: ALL RESULTS IN MG/KG DRY WEIGHT

Ronald A. Bauer
Laboratory Director 7/21/87

New York State Department of Health Approved

SSB 240146

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

New York State Department of Health Approved

SSB 240147

LAB # 55856C

Client: ERM Northeast

Spl Location: B-3 15-17'

Spl Coll'd: 7/10/87

Sample Rec'd: 7/11/87

EPA Method 608 Pesticide/PCB GC/EC

COMPOUND	RESULTS Sample Concen. ug/kg	MDL ug/kg	BLANK Conc.
1) Aldrin	ND	2.8	ND
2) Alpha-BHC	ND	2.8	ND
3) Beta-BHC	ND	2.8	ND
4) Gamma-BHC	ND	2.8	ND
5) Delta-BHC	ND	2.8	ND
6) Chlordane	ND	28	ND
7) 4,4'-DDT	ND	2.8	ND
8) 4,4'-DDE	ND	2.8	ND
9) 4,4'-DDD	ND	2.8	ND
10) Dieldrin	ND	2.8	ND
11) Alpha-Endosulfan	ND	2.8	ND
12) Beta-Endosulfan	ND	2.8	ND
13) Endosulfan sulfate	ND	2.8	ND
14) Endrin	ND	2.8	ND
15) Endrin aldehyde	ND	2.8	ND
16) Heptachlor	ND	2.8	ND
17) Heptachlor epoxide	ND	2.8	ND
18) PCB-1242	ND	28	ND
19) PCB-1254	ND	28	ND
20) PCB-1221	ND	28	ND
21) PCB-1232	ND	28	ND
22) PCB-1248	ND	28	ND
23) PCB-1260	ND	28	ND
24) PCB-1016	ND	28	ND
25) Toxaphene	ND	28	ND

For Envirotest Laboratories, Inc.

Ronald A. Bayer
President

7/23/87

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

LAB#: 55856D DATE REC'D: 87/07/11 DATE COLL'D: 87/07/10 STATUS: CLOSED
LNAME: ERM - Northeast FNAME:
STREET: CITY: STATE: ZIP:
SPL LOCATION: B-3 25' to 27'

REPORT TO: same
BILL TO: same

T COLI:		Cr+6 :		COD :	
F COLI:		Phenol:		HARD-T :	
SPC :		CN :		Ca Hard:	
F :		B :		SO3 :	
NO3 :		Br :		Cl :	
NO2 :		Color :		Alk :	
T-PO4 :		Odor :		BOD-Inf:	
O-PO4 :		Turb :		BOD-Eff:	
SO4 :		pH :		BOD-5 :	
MBAS :		LI :		TSS-Inf:	
S=2 :		Cond :		TSS-Eff:	
H2S :		NH3-T :		MLSS :	
NH3-C :		TKN :		MLVSS :	
VSS :		Ca :		F :	
TS :		Cr :	6.1	Se :	0.2
VS :		Co :		Ag :	0.52
TDS :		Cu :		Na :	
SS :		Au :		Tl :	
% SOL :	96%	Fe :		Sn :	
G & O :		Pb :	39	Ti :	
Al :		Mg :		V :	
Sb :		Mn :		Zn :	
As :	0.5	Hg :	0.04	THM :	
Ba :	6.1	Mo :		TOC :	
Be :		Ni :			
Cd :	0.94	Pd :			

Remarks: ALL RESULTS IN MG/KG DRY WEIGHT

Ronald A. Bayer
Laboratory Director 7/22/87

New York State Department of Health Approved

SSB 240149

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

New York State Department of Health Approved

SSB 240150

LAB # 55856D

Client: ERM Northeast

Spl Location: B-3 25-27'

Spl Coll'd: 7/10/87

Sample Rec'd: 7/11/87

EPA Method 608 Pesticide/PCB GC/EC

COMPOUND	RESULTS Sample Concen. ug/kg	MDL ug/kg	BLANK Conc.
1) Aldrin	ND	2.5	ND
2) Alpha-BHC	ND	2.5	ND
3) Beta-BHC	ND	2.5	ND
4) Gamma-BHC	ND	2.5	ND
5) Delta-BHC	ND	2.5	ND
6) Chlordane	ND	25	ND
7) 4,4'-DDT	ND	2.5	ND
8) 4,4'-DDE	ND	2.5	ND
9) 4,4'-DDD	ND	2.5	ND
10) Dieldrin	ND	2.5	ND
11) Alpha-Endosulfan	ND	2.5	ND
12) Beta-Endosulfan	ND	2.5	ND
13) Endosulfan sulfate	ND	2.5	ND
14) Endrin	ND	2.5	ND
15) Endrin aldehyde	ND	2.5	ND
16) Heptachlor	ND	2.5	ND
17) Heptachlor epoxide	ND	2.5	ND
18) PCB-1242	ND	25	ND
19) PCB-1254	ND	25	ND
20) PCB-1221	ND	25	ND
21) PCB-1232	ND	25	ND
22) PCB-1248	ND	25	ND
23) PCB-1260	ND	25	ND
24) PCB-1016	ND	25	ND
25) Toxaphene	ND	25	ND

For Envirotest Laboratories, Inc.

Ronald A. Hoyer
President

7/17/87

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

LAB#: 55856E DATE REC'D: 87/07/11 DATE COLL'D: 87/07/10 STATUS: CLOSED
LNAME: ERM - Northeast FNAME:
STREET: CITY: STATE: ZIP:
SPL LOCATION: B-3 35' to ~~27'~~ 37'

REPORT TO: same
BILL TO: same

T COLI	:	Cr+6	:	COD	:
F COLI	:	Phenol	:	HARD-T	:
S'C	:	CN	:	Ca Hard	:
F	:	B	:	SO3	:
NO3	:	Br	:	Cl	:
NO2	:	Color	:	Alk	:
T-PO4	:	Odor	:	BOD-Inf	:
O-PO4	:	Turb	:	BOD-Eff	:
SOL	:	pH	:	BOD-S	:
MBAS	:	Ll	:	TSS-Inf	:
SiO2	:	Cond	:	TSS-Eff	:
H2S	:	NH3-T	:	MLSS	:
NH3-C	:	TKN	:	MLVSS	:
VSS	:	Ca	:	F	:
TS	:	Cr	: 12	Se	: 0.2
VS	:	Co	:	Ag	: 0.31
TDS	:	Cu	:	Na	:
SS	:	Au	:	Tl	:
% SOL	: 96%	Fe	:	Sn	:
G & O	:	Pb	: .52	Ti	:
Al	:	Mg	:	V	:
Sb	:	Mn	:	Zn	:
As	: <0.5	Hg	: 0.04	THM	:
Ba	: 6.3	Mo	:	TOC	:
Be	:	Ni	:		
Cd	: 0.94	Pd	:		

Remarks: ALL RESULTS IN MG/KG DRY WEIGHT

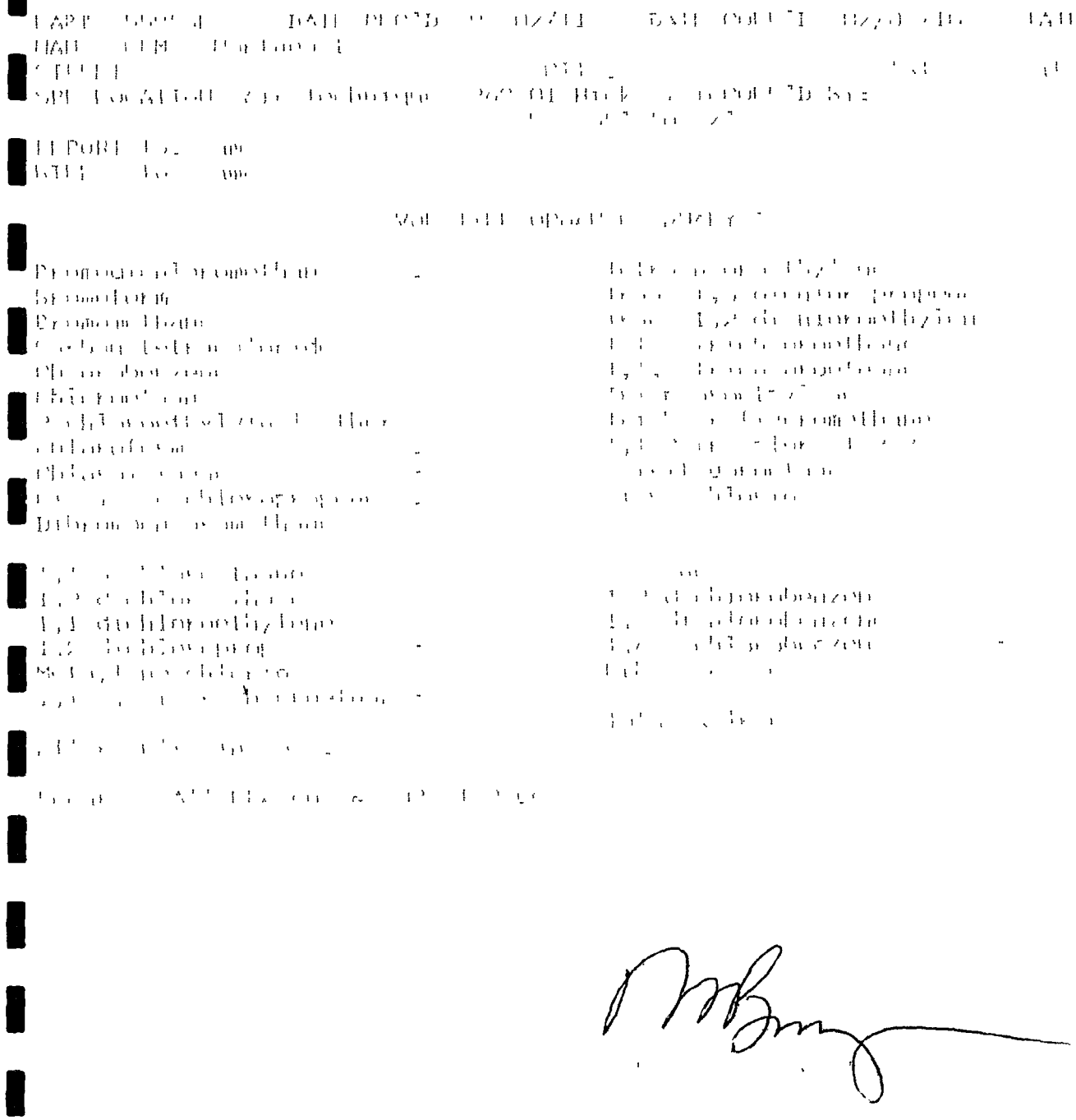
Ronald A. Baver
Laboratory Director 7/20/87

New York State Department of Health Approved

SSB 240152

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890



LAB # 55856E

Client: ERM Northeast

Spl Location: B-3 35-37'

Spl Coll'd: 7/10/87

Sample Rec'd: 7/11/87

EPA Method 608 Pesticide/PCB GC/EC

COMPOUND	RESULTS Sample Concen. ug/kg	RESULTS MDL ug/kg	BLANK Conc.
1) Aldrin	ND	2.6	ND
2) Alpha-BHC	ND	2.6	ND
3) Beta-BHC	ND	2.6	ND
4) Gamma-BHC	ND	2.6	ND
5) Delta-BHC	ND	2.6	ND
6) Chlordane	ND	26	ND
7) 4,4'-DDT	ND	2.6	ND
8) 4,4'-DDE	ND	2.6	ND
9) 4,4'-DDD	ND	2.6	ND
10) Dieldrin	ND	2.6	ND
11) Alpha-Endosulfan	ND	2.6	ND
12) Beta-Endosulfan	ND	2.6	ND
13) Endosulfan sulfate	ND	2.6	ND
14) Endrin	ND	2.6	ND
15) Endrin aldehyde	ND	2.6	ND
16) Heptachlor	ND	2.6	ND
17) Heptachlor epoxide	ND	2.6	ND
18) PCB-1242	ND	26	ND
19) PCB-1254	ND	26	ND
20) PCB-1221	ND	26	ND
21) PCB-1232	ND	26	ND
22) PCB-1248	ND	26	ND
23) PCB-1260	ND	26	ND
24) PCB-1016	ND	26	ND
25) Toxaphene	ND	26	ND

For EnviroTest Laboratories, Inc.

Ronald A. Bayer
President

7/23/87

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

LAB#: 55856F DATE REC'D: 87/07/11 DATE COLL'D: 87/07/10 STATUS: CLOSED
LNAME: ERM Northeast FNAME:
STREET: CITY: STATE: ZIP:
SAMPLE LOCATION: B-4 15' to 17'

REPORT TO: same
BILL TO: same

T COLI:		Cr+6 :		COD :	
F COLI:		Phenol:		HARD-T :	
SAL :		CN :		Ca Hard:	
F :		B :		SO3 :	
NO3 :		Br :		Cl :	
NO2 :		Color :		Alk :	
T-PO4 :		Odor :		BOD-Inf:	
O-PO4 :		Turb :		BOD-Eff:	
SO4 :		pH :		BOD-S :	
MBAS :		Li :		TSS-Inf:	
SiO2 :		Cond :		TSS-Eff:	
H2S :		NH3-T :		MLSS :	
NH3-C :		TKN :		MLVSS :	
VSS :		Ca :		I :	
TS :		Cr :	5.6	Se :	0.2
VS :		Co :		Ag :	0.31
TDS :		Cu :		Na :	
SS :		Au :		Tl :	
% SOL :	97%	Fe :		Sn :	
G & O :		Pb :	29	Ti :	
Al :		Mg :		V :	
Sb :		Mn :		Zn :	
As :	0.5	Hg :	0.04	THM :	
Ba :	6.2	Mo :		TOL :	
Be :		Ni :			
Cd :	0.10	Pd :			

Remarks: ALL RESULTS IN MG/KG DRY WEIGHT.

Ronald A. Bayer
Laboratory Director 7/23/87

New York State Department of Health Approved

SSB 240155

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

LAB # 55856F

Client: ERM Northeast

Spl Location: B-4 15-17'

Spl Coll d: 7/10/87

Sample Rec'd: 7/11/87

EPA Method 608 Pesticide/PCB GC/EC

COMPOUND	RESULTS Sample Concen. ug/kg	MDL ug/kg	BLANK Conc.
1) Aldrin	ND	2.6	ND
2) Alpha-BHC	ND	2.6	ND
3) Beta-BHC	ND	2.6	ND
4) Gamma-BHC	ND	2.6	ND
5) Delta-BHC	ND	2.6	ND
6) Chlordane	ND	26	ND
7) 4,4'-DDT	ND	2.6	ND
8) 4,4'-DDE	ND	2.6	ND
9) 4,4 -DDD	ND	2.6	ND
10) Dieldrin	ND	2.6	ND
11) Alpha-Endosulfan	ND	2.6	ND
12) Beta-Endosulfan	ND	2.6	ND
13) Endosulfan sulfate	ND	2.6	ND
14) Endrin	ND	2.6	ND
15) Endrin aldehyde	ND	2.6	ND
16) Heptachlor	ND	2.6	ND
17) Heptachlor epoxide	ND	2.6	ND
18) PCB-1242	ND	26	ND
19) PCB-1254	ND	26	ND
20) PCB-1221	ND	26	ND
21) PCB-1232	ND	26	ND
22) PCB-1248	ND	26	ND
23) PCB-1260	ND	26	ND
24) PCB-1016	ND	26	ND
25) Toxaphene	ND	26	ND

For EnviroTest Laboratories, Inc.

Ronald A. Bayer
President

7/23/87

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

LAB#: 55856G DATE REC'D: 87/07/11 DATE COLL'D: 87/07/10 STATUS: CLOSED
LNAME: ERM - Northeast FNAME:
STREET: CITY: STATE: ZIP:
SPL LOCATION: B-4 25' to 27'

REPORT TO: same
BILL TO: same

T COLI	:	Cr+6	:	COD	:
F COLI	:	Phenol	:	HARD-T	:
SPC	:	CN	:	Ca Hard	:
F	:	B	:	SO3	:
NO3	:	Br	:	Cl	:
NO2	:	Color	:	Alk	:
T-PO4	:	Odor	:	BOD-Inf	:
O-PO4	:	Turb	:	BOD-Eff	:
SO4	:	pH	:	BOD-S	:
MBAS	:	Li	:	TSS-Inf	:
SiO2	:	Cond	:	TSS-Eff	:
H2S	:	NH3-T	:	MLSS	:
NH3-C	:	TKN	:	MLVSS	:

VSS	:	Ca	:	F	:
TS	:	Cr	: 12	Se	: 0.2
VS	:	Co	:	Ag	: 0.42
TDS	:	Cu	:	Na	:
SS	:	Au	:	Tl	:
% SOL	: 96%	Fe	:	Sn	:
O & G	:	Pb	: 34	Ti	:
Al	:	Mg	:	V	:
Sb	:	Mn	:	Zn	:
As	: 0.5	Hg	: 0.04	THM	:
Ba	: 11	Mo	:	TOC	:
Be	:	Ni	:		
Cd	: 0.20	Pd	:		

Remarks: ALL RESULTS IN MG/KG DRY WEIGHT

Ronald A. Beyer
Laboratory Director 7/20/87

New York State Department of Health Approved

SSB 240158

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

New York State Department of Health Approved

SSB 240159

LAB # 558566

Client: ERM Northeast

Spl Location: B-4 25-27'

Spl Coll d: 7/10/87

Sample Rec'd: 7/11/87

EPA Method 608 Pesticide/PCB GC/EC

COMPOUND	RESULTS Sample Concen. ug/kg	RESULTS MDL ug/kg	BLANK Conc.
1) Aldrin	ND	3.0	ND
2) Alpha-BHC	ND	3.0	ND
3) Beta-BHC	ND	3.0	ND
4) Gamma-BHC	ND	3.0	ND
5) Delta-BHC	ND	3.0	ND
6) Chlordane	ND	30	ND
7) 4,4'-DDT	ND	3.0	ND
8) 4,4'-DDE	ND	3.0	ND
9) 4,4'-DDD	ND	3.0	ND
10) Dieldrin	ND	3.0	ND
11) Alpha-Endosulfan	ND	3.0	ND
12) Beta-Endosulfan	ND	3.0	ND
13) Endosulfan sulfate	ND	3.0	ND
14) Endrin	ND	3.0	ND
15) Endrin aldehyde	ND	3.0	ND
16) Heptachlor	ND	3.0	ND
17) Heptachlor epoxide	ND	3.0	ND
18) PCB-1242	ND	30	ND
19) PCB-1254	ND	30	ND
20) PCB-1221	ND	30	ND
21) PCB-1232	ND	30	ND
22) PCB-1248	ND	30	ND
23) PCB-1260	ND	30	ND
24) PCB-1016	ND	30	ND
25) Toxaphene	ND	30	ND

For Envirotest Laboratories, Inc.

Ronald A. Bayer
President

7/23/87

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

LAB#: 55856H DATE REC'D: 87/07/11 DATE COLL'D: 87/07/10 STATUS: CLOSED
LNAME: ERM - Northeast FNAME:
STREET: CITY: STATE: ZIP:
SPL LOCATION: B-5 15' to ~~27'~~ 17'

REPORT TO: same
BILL TO: same

T COLI:		Cr+6 :		COD :	
F COLI:		Phenol:		HARD-T :	
SPC :		CN :		Ca Hard:	
F :		B :		SO3 :	
NO3 :		Br :		Cl :	
NO2 :		Color :		Alk. :	
T-PO4 :		Odor :		BOD-Inf:	
O-PO4 :		Turb :		BOD-Eff:	
SO4 :		pH :		BOD-S :	
MBAS :		Ll :		TSS-Inf:	
SiO2 :		Cond :		TSS-Eff:	
H2S :		NH3-T :		MLSS :	
NH3-C :		TKN :		MLVSS :	
VSS :		Ca :		F :	
Ts :		Cr :	11	Se :	0.2
VS :		Co :		Ag :	0.31
TDS :		Cu :		Na :	
SS :		Au :		Tl :	
% SOL :	96%	Fe :		Sn :	
G & O :		Pb :	24	Ti :	
Al :		Mg :		V :	
Sb :		Mn :		Zn :	
As :	0.5	Hg :	0.04	THM :	
Ba :	8.4	Mo :		TOC :	
Be :		Ni :			
Cd :	0.10	Pd :			

Remarks: ALL RESULTS IN MG/KG DRY WEIGHT

Ronald A. Bayer
Laboratory Director 7/23/87

New York State Department of Health Approved

SSB 240161

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

New York State Department of Health Approved

SSB 240162

LAB # 55856H

Client: ERM Northeast

Spl Location: B-5 15-17'

Spl Coll'd: 7/10/87

Sample Rec'd: 7/11/87

EPA Method 608 Pesticide/PCB GC/EC

	RESULTS		BLANK
COMPOUND	Sample Concen. ug/kg	MDL ug/kg	Conc.
1) Aldrin	ND	2.5	ND
2) Alpha-BHC	ND	2.5	ND
3) Beta-BHC	ND	2.5	ND
4) Gamma-BHC	ND	2.5	ND
5) Delta-BHC	ND	2.5	ND
6) Chlordane	ND	25	ND
7) 4,4'-DDT	ND	2.5	ND
8) 4,4'-DDE	ND	2.5	ND
9) 4,4'-DDD	ND	2.5	ND
10) Dieldrin	ND	2.5	ND
11) Alpha-Endosulfan	ND	2.5	ND
12) Beta-Endosulfan	ND	2.5	ND
13) Endosulfan sulfate	ND	2.5	ND
14) Endrin	ND	2.5	ND
15) Endrin aldehyde	ND	2.5	ND
16) Heptachlor	ND	2.5	ND
17) Heptachlor epoxide	ND	2.5	ND
18) PCB-1242	ND	25	ND
19) PCB-1254	ND	25	ND
20) PCB-1221	ND	25	ND
21) PCB-1232	ND	25	ND
22) PCB-1248	ND	25	ND
23) PCB-1260	ND	25	ND
24) PCB-1016	ND	25	ND
25) Toxaphene	ND	25	ND

For Envirotest Laboratories, Inc.

Ronald A. Beaver
President

7/27/87

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

LAB#: 55856I DATE REC'D: 87/07/11 DATE COLL'D: 87/07/10 STATUS: CLOSED
LNAME: ERM - Northeast FNAME:
STREET: CITY: STATE: ZIP:
SPL LOCATION: B-5 25' to 27'

REPORT TO: same
BILL TO: same

T COLI:		Cr+6 :		COD :	
F COLI:		Phenol:		HARD-T :	
SPC :		CN :		Ca Hard:	
F :		B :		SO3 :	
NO3 :		Br :		Cl :	
NO2 :		Color :		Alk :	
T-PO4 :		Odor :		BOD-Inf:	
O-PO4 :		Turb :		BOD-Eff:	
SO4 :		pH :		BOD-S :	
MBAS :		LI :		TSS-Inf:	
SiO2 :		Cond :		TSS-Eff:	
H2S :		NH3-T :		MLSS :	
NH3-C :		TKN :		MLVSS :	
VSS :		Ca :		F :	
TS :		Cr :	14	Se :	0.2
VS :		Co :		Ag :	0.42
TDS :		Cu :		Na :	
SS :		Au :		Tl :	
% SOL :	94%	Fe :		Sn :	
G & O :		Pb :	40	Ti :	
Al :		Mg :		V :	
Sb :		Mn :		Zn :	
As :	0.5	Hg :	0.04	THM :	
Ba :	9.3	Mo :		TOC :	
Be :		Ni :			
Cd :	1.2	Pd :			

Remarks: ALL RESULTS IN MG/KG DRY WEIGHT

Ronald M. Baver
Laboratory Director 7/23/87

New York State Department of Health Approved

SSB 240164

EnviroTest Laboratories Inc.

315 Fullerton Avenue
Newburgh, NY 12550
(914) 562-0890

New York State Department of Health Approved

SSB 240165

LAB # 55856I

Client: ERM Northeast

Spl Location: B-5 25-27'

Spl Coll'd: 7/10/87

Sample Rec'd: 7/11/87

EPA Method 608 Pesticide/PCB GC/EC

COMPOUND	RESULTS Sample Concen. ug/kg	MDL ug/kg	BLANK Conc.
1) Aldrin	ND	2.5	ND
2) Alpha-BHC	ND	2.5	ND
3) Beta-BHC	ND	2.5	ND
4) Gamma-BHC	ND	2.5	ND
5) Delta-BHC	ND	2.5	ND
6) Chlordane	ND	25	ND
7) 4,4'-DDT	ND	2.5	ND
8) 4,4'-DDE	ND	2.5	ND
9) 4,4'-DDD	ND	2.5	ND
10) Dieldrin	ND	2.5	ND
11) Alpha-Endosulfan	ND	2.5	ND
12) Beta-Endosulfan	ND	2.5	ND
13) Endosulfan sulfate	ND	2.5	ND
14) Endrin	ND	2.5	ND
15) Endrin aldehyde	ND	2.5	ND
16) Heptachlor	ND	2.5	ND
17) Heptachlor epoxide	ND	2.5	ND
18) PCB-1242	ND	25	ND
19) PCB-1254	ND	25	ND
20) PCB-1221	ND	25	ND
21) PCB-1232	ND	25	ND
22) PCB-1248	ND	25	ND
23) PCB-1260	ND	25	ND
24) PCB-1016	ND	25	ND
25) Toxaphene	ND	25	ND

For Envirotest Laboratories, Inc.

Ronald A. Beyer
President

7/20/87

SYSTEMATIC SUBSURFACE SOIL SAMPLING AND ANALYSIS REPORT

WEST OF THE 140 AND 100 BUILDINGS AND SOUTHWEST OF THE 100 BUILDING

(SURVEY UNIT 01 AND SURVEY UNIT 02)

FORMER SYLVANIA ELECTRIC PRODUCTS INCORPORATED FACILITY

HICKSVILLE, NEW YORK

SITE NUMBER V 00089-1

Prepared by
URS Corporation
and
Envirocon, Inc.

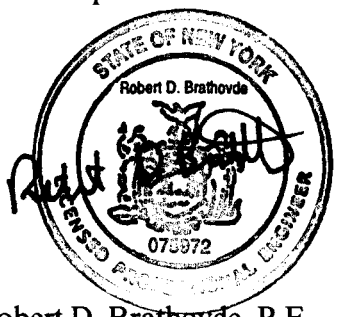
For:

GTE Operations Support Incorporated
600 Hidden Ridge Drive
Irving, Texas 75038

August 2005 (Revision 1: November 2005)

This West of the 140 and 100 Buildings and Southwest of the 100 Building (Survey Unit 01 and Survey Unit 02) Report has been reviewed by URS Corporation – New York, and I am in agreement with the conclusions.

URS Corporation – New York



Robert D. Brathovde, P.E.
Engineer of Record

This West of the 140 and 100 Buildings and Southwest of the 100 Building (Survey Unit 01 and Survey Unit 02) Report has been reviewed by Professional Radiation Consulting, Inc. (PRCI), and I am in agreement with the conclusions.

Professional Radiation Consulting, Inc.

Shane Brightwell, CHP
President

This West of the 140 and 100 Buildings and Southwest of the 100 Building (Survey Unit 01 and Survey Unit 02) Report has been reviewed by Envirocon, Inc. and I am in agreement with the conclusions.

Envirocon, Inc.

Richard Hafner
Radiation Safety Officer

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Severn Trent Laboratories, Inc.

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Appendix A: Systematic Subsurface Soil Sampling and Analysis Plan, West of the 140 and 100 Buildings and Southwest of the 100 Building, September 2004
Appendix B: Correspondence regarding the Systematic Subsurface Soil Sampling and Analysis Plan, West of the 140 and 100 Buildings and Southwest of the 100 Building, September 2004
Appendix C: Boring Logs (Boring Logs are included as Appendix C on the enclosed CD. The enclosed CD includes a complete electronic copy of this report.)
Appendix D: MARSSIM and *COMPASS Software* Evaluations

1.0 INTRODUCTION

This report provides the results, data assessments and conclusions made with respect to the characterization of surface and subsurface soils pursuant to the *Systematic Subsurface Soil Sampling and Analysis Plan, West of the 140 and 100 Buildings and Southwest of the 100 Building* (SSSA Plan), dated September 2004 (**Appendix A**) at the Former Sylvania Electric Products Incorporated (Sylvania) facility located at 140, 100 and 70 Cantiague Rock Road, Hicksville, New York (the Site). The SSSA Plan was approved by the New York State Department of Environmental Conservation (NYSDEC) in a letter dated October 8, 2004. This letter is included in **Appendix B**.

The areas investigated were designated as Survey Units (SUs) as defined in NUREG 1575, *Multi-Agency Radiation Survey and Site Investigation Manual* (the MARSSIM). The area designated as SU01 is west of the 140 and 100 Buildings. The area designated as SU02 is south of the 100 Building and west of Cell 9 (**Figure 1**). This investigation commenced on October 13, 2004 and sampling was completed on January 20, 2005.

Included in this report are sample analytical results, data assessments and conclusions regarding radiological, volatile organic compounds (VOCs) and nickel (Ni) data. Also reported herein are the analytical results for beryllium (Be).

2.0 SCREENING AND SAMPLING

A systematic triangular sampling pattern was used to provide uniform lateral coverage of the SUs. Soil borings were advanced and soil samples were collected continuously, beginning at ground surface to 30 feet below ground surface (bgs). The sampling pattern grid, rows and boring locations are shown in **Figure 1**.

A 2-foot (ft) long split spoon sampling device was advanced for soil retrieval. The recovered soils were screened using a photoionization detector (PID) for VOCs and a 3-inch sodium iodide (NaI) detector for radioactivity prior to sample collection.

The samples designated as sample point (SP) samples were collected at intervals that were vertically staggered by 1 meter (m) (approximately 3 ft). SP samples were collected in 2-ft increments to maximize sample volume. This additional volume of soil was needed to perform both on-Site and off-Site analyses. Row 1 borings had SP samples at 1 ft, 11 ft and 21 ft; Row 2 borings had SP samples at 4 ft, 14 ft and 24 ft; and Row 3 borings had SP samples at 7 ft, 17 ft and 27 ft. In addition, each boring had an SP sample at 30 ft (**Figure 2**).

Samples designated as delineation (DL) samples were collected in 1-ft increments between the staggered SP sample intervals.

Samples were analyzed both on Site for timely response to guide investigation and off Site at Severn Trent Laboratories, Inc. (STL) of Earth City, Missouri for final verification. The sample analytical results were compared to the Site cleanup levels specified in the approved *Comprehensive Soil Remediation Program Work Plan, Former Sylvania Electric Products*

Facility, January 18, 2002 (Revision 5: June 2003) (Work Plan). Intervals, increments and analyses for each row type are summarized on **Figure 2**.

A field geologist classified the soils in general accordance with the Unified Soil Classification System (USCS). Sample descriptions included soil type, color, moisture, and visual observations. Boring Logs are provided in **Appendix C**.

2.1 RADIONUCLIDES

DL samples were homogenized and analyzed on Site by gamma spectroscopy for thorium (Th-232) and uranium (U-238).

SP samples were homogenized and split. One portion was analyzed on Site by gamma spectroscopy and the other portion was sent off Site to STL for alpha spectroscopy analysis. STL performed isotopic thorium analysis using National Academy of Science (NAS)/Department of Energy (DOE) 3004/RP-725 and isotopic uranium analysis using NAS/DOE 3050/RP-725 (which includes U-234).

2.2 VOLATILE ORGANIC COMPOUNDS

DL samples were collected and analyzed for VOCs if PID readings were greater than 25 parts per million (ppm) or if visual observations (e.g., staining) warranted. DL samples were to be analyzed on Site by Stone Environmental Inc. (SEI) for trichloroethene (TCE) and tetrachloroethene (PCE) using solid phase microextraction and capillary gas chromatography. Based on field screening results, as noted in the boring logs (**Appendix C**), no DL samples were identified for analysis on Site.

Two samples were collected at each SP interval for VOC analysis. One sample was analyzed on Site by SEI. The other sample was sent off Site to STL for VOC analysis using United States Environmental Protection Agency (USEPA) Method 8260B.

2.3 METALS

DL samples were collected for Ni analysis at alternating 1-ft intervals between SP samples. If sample recovery was insufficient, analysis could not be performed. In such an event, a sample for Ni was collected at the next available interval and at alternate intervals thereafter. Ni DL samples were analyzed on Site using x-ray fluorescence spectroscopy (XRF) by SEI.

Two samples were collected at each SP interval for metals analysis. One sample was analyzed on Site by SEI for Ni. The other sample was sent off Site to STL for analysis of Ni and Be using USEPA Method 6010B.

2.4 SAMPLING SUMMARY

The SSSA Plan was designed to allow flexibility to respond to field conditions (e.g., boring relocation and insufficient sample recovery). Eight soil borings had to be moved from their

proposed locations due to limited access (e.g., utilities and obstructions). The relocations were within the limits specified in the SSSA Plan. Each soil boring location was surveyed using the laser positioning system (LPS).

In SU01 a total of 26 soil borings were advanced resulting in the recovery of 104 SP samples, 569 radionuclide DL samples, and 288 Ni DL samples. In SU02 a total of 23 soil borings were advanced resulting in the recovery of 90 SP samples, 501 radionuclide DL samples, and 260 Ni DL samples.

3.0 ANALYTICAL RESULTS/ASSESSMENTS

The results of the DL and SP sample analyses from SU01 and SU02 are summarized in **Table 1**. The results of the SP sample analyses from SU01 and SU02 are summarized in **Table 2.** Statistical assessments of radiological off-Site SP data were performed with applicable methods specified in the MARSSIM and analytical results were also compared to Site cleanup levels. VOC and Ni results were compared to the Site cleanup levels. Be results were compared to the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4046 values and other published literature sources for New York State soils. These assessments are described herein.

3.1 RADIOLOGICAL

A statistical assessment of radiological SP data (with the exception of samples from the final depth) was performed using the MARSSIM methods. SP samples at the final depth were compared to the Site cleanup levels in the Work Plan.

3.1.1 Survey Unit Assessment

Each SU was characterized vertically at 3-m (10-ft) staggered depths. Since the MARSSIM provides characterization and final verification guidance primarily on surface soils, each 3-m (10-ft) SU interval was evaluated independently as if that SU interval was representative of an undulating soil surface. For the purposes of the assessment, the 0- to 3-m (0- to 10-ft) SU interval was labeled SU Interval 1, the 3- to 6-m (11- to 20-ft) was SU Interval 2, and the 6- to 9-m (21- to 30-ft) was SU Interval 3. Thus, for the 26 borings advanced in SU01, 77 samples were used in the MARSSIM assessment of the three SU intervals. For the 23 borings advanced in SU02, 66 samples were used in the MARSSIM assessment of the three SU intervals.

The assessment of the SU interval data sets was performed using the *Compass Software*. The *Compass Software* allows the user to set up the analytical data for all radiological analytes in a readable input file format, and then evaluate the data set using the applicable MARSSIM methods. The *Compass Software* evaluations of each of the three SU intervals are in **Appendix D**.

The Work Plan specifies Site cleanup levels for three radionuclides (Th-232, U-234 and U-238). The MARSSIM addresses evaluation of multiple radionuclides by employing the Sum of Ratios (SOR) Method. First, for SP samples, the ratio of the concentration for each radionuclide to its

corresponding Site cleanup level is calculated. The ratios for all three radionuclides are then summed for a single sample. This results in a single unitless SOR value for each sample. The samples in a given SU interval are then evaluated using the statistical methods inherent in the *Compass Software*.

3.1.2 Decision Analysis

The decision analysis for the radiological analytical results was based on the default null hypothesis recommended in the MARSSIM, which states: "The residual radioactivity in the survey unit exceeds the release criterion." The MARSSIM "Sign Test" (assuming no contribution from background radionuclides) was used to reject the null hypothesis. When the null hypothesis is rejected, the SU passes and qualifies for release. If the null hypothesis cannot be rejected, further investigation or remedial action may be necessary.

As stated earlier, each of the three intervals was evaluated independently. Therefore, there were a total of six independent evaluations (three intervals within each SU). The following table summarizes the results of the *Compass Software* evaluations.

SU	SU Interval	Depth Range (ft)	# Samples (N)		Sum of Ratios		Null Hypothesis	SU Interval Status
			Required	Actual	Avg	Max		
01	1	0-10	13	26	0.21	0.43	Rejected	Passes
	2	11-20	13	26	0.07	0.15	Rejected	Passes
	3	21-30	13	25	0.06	0.12	Rejected	Passes
02	1	0-10	13	21	0.31	0.86	Rejected	Passes
	2	11-20	13	23	0.07	0.10	Rejected	Passes
	3	21-30	13	22	0.06	0.13	Rejected	Passes

The evaluation of the SP analytical results for SU01 and SU02 using the *Compass Software* indicated that the average concentrations of Th-232, U-234, and U-238 are below the Site cleanup levels.

3.2 VOLATILE ORGANIC COMPOUNDS

The VOC analytical results for TCE and PCE were compared to the Site cleanup levels of 0.7 milligrams per kilogram (mg/kg) and 1.82 mg/kg, respectively. The following table provides the highest concentrations of VOC results from **Table 1**.

SU	Depth Range (ft)	TCE (mg/kg)	PCE (mg/kg)
01	0-10	0.00045 J	0.0079 J
	11-20	0.0027	0.085 J
	21-30	0.0029 U	0.0078
02	0-10	0.00098 J	0.011 J
	11-20	0.0026 U	0.0026 U
	21-30	0.0027 U	0.0027 U

Notes: U – not detected J – estimated value

Based on a review of DL and SP analytical data, TCE and PCE were not detected above Site cleanup levels.

3.3 METALS

The Ni analytical results were compared to the Site cleanup level (560 mg/kg) while the Be results were compared to NYSDEC TAGM #4046 values (0.16 mg/kg or Site background) and other published literature sources for New York State soils. The following table provides the highest concentrations of Ni and Be from **Table 1**.

SU	Depth Range (ft)	Ni (mg/kg)	Be (mg/kg)
01	0-10	49.0 J	0.69
	11-20	41.0 J	0.32 J
	21-30	43.0 J	0.37 J
02	0-10	184	1.4
	11-20	3.5 J	0.44 J
	21-30	6.4	0.24 J

Based on a review of DL and SP analytical data, Ni was not detected above the Site cleanup level. Several samples had concentrations of Be above the TAGM level of 0.16 mg/kg. However, Be concentrations in New York soils are reported to range between 0 to 7 mg/kg[1, 2]. The Be soil results are interpreted to be within the anticipated range in soils for New York State.

4.0 ADDITIONAL INVESTIGATIONS

In addition to the systematic characterization of soils in SU01 and SU02, an investigation of soils was implemented concurrently to identify and delineate contaminants associated with historic

[1] Schacklette, H.T., and J.G. Boerngen. 1984. *Elemental Concentrations in Soils and Other Surficial Materials of the Conterminous United States*. US Geological Survey. Pub. 1270.

[2] Dragun, J. and A. Chiasson. 1991. *Elements in North American Soils*. Hazardous Materials Control Resources Institute. Greenbelt, Maryland.

leach pools (LPH). That investigation was implemented under the *Systematic Subsurface Soil Sampling and Analysis Plan Historic Leach Pools, September 2004, Revision 1: October 2004* (LPH Plan). The purpose of the LPH investigation was to identify and delineate contaminants, if any, associated with suspected LPHs. LPH16 and LPH17 located in subcell R69 fell within the boundaries of SU01. LPH12 in subcell A19, LPH13 in subcell Z68, LPH14 in subcell Z71, and LPH15 in subcell S69 fell within the boundaries of SU02. The findings of these LPHs did not indicate contaminants above Site cleanup levels. The results of the LPH investigation are detailed in the *Systematic Subsurface Soil Sampling and Analysis Report, Historic Leach Pools*.

5.0 CONCLUSIONS

The SP and DL results for SU01 or SU02 had no analytical results above the Site cleanup levels for radionuclides, TCE, PCE, or Ni. Several locations had Be in excess of the TAGM values but are within the anticipated range in soils for New York State. The soils within the boundaries of SU01 and SU02 meet the requirements to be released for unrestricted use.

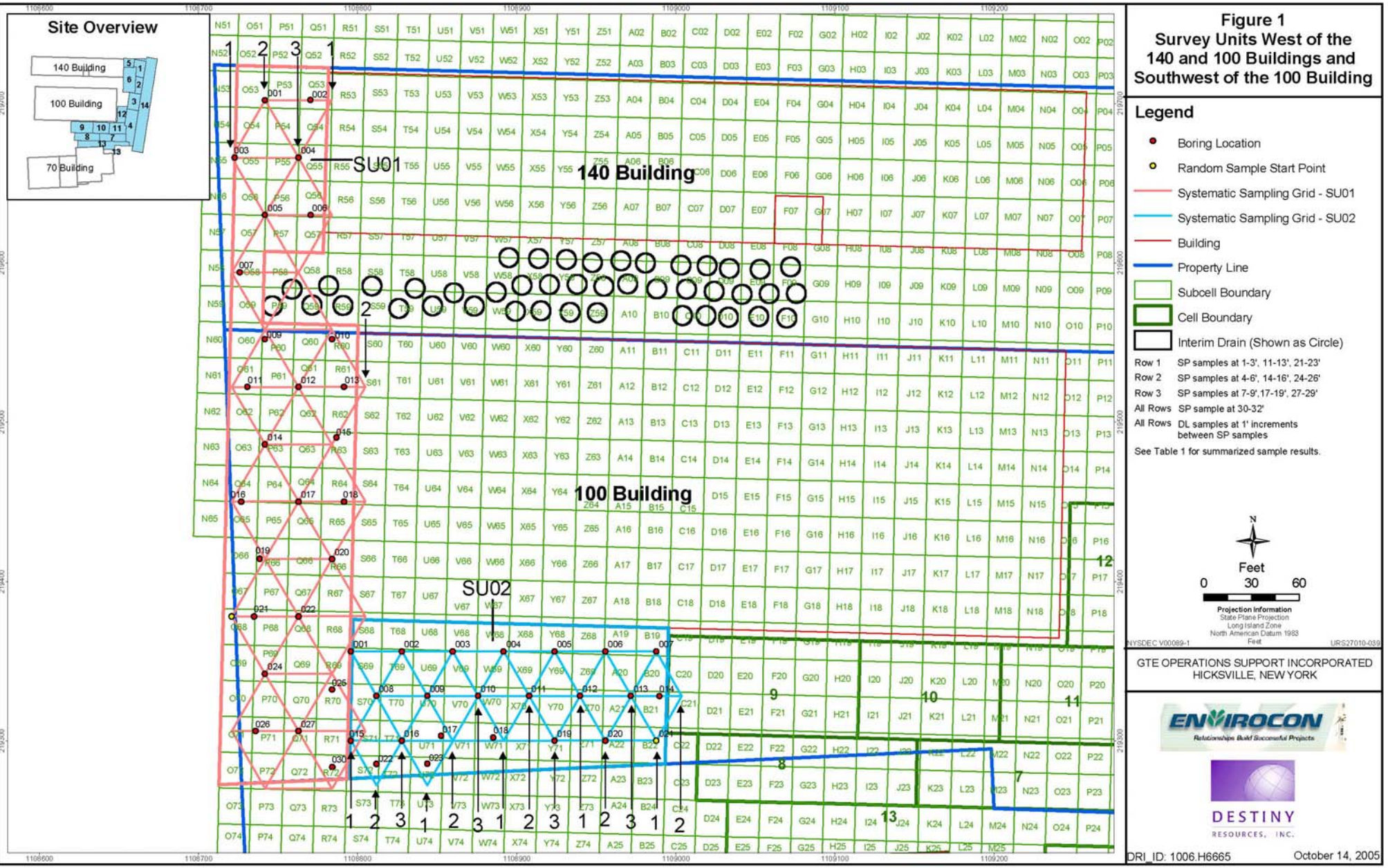
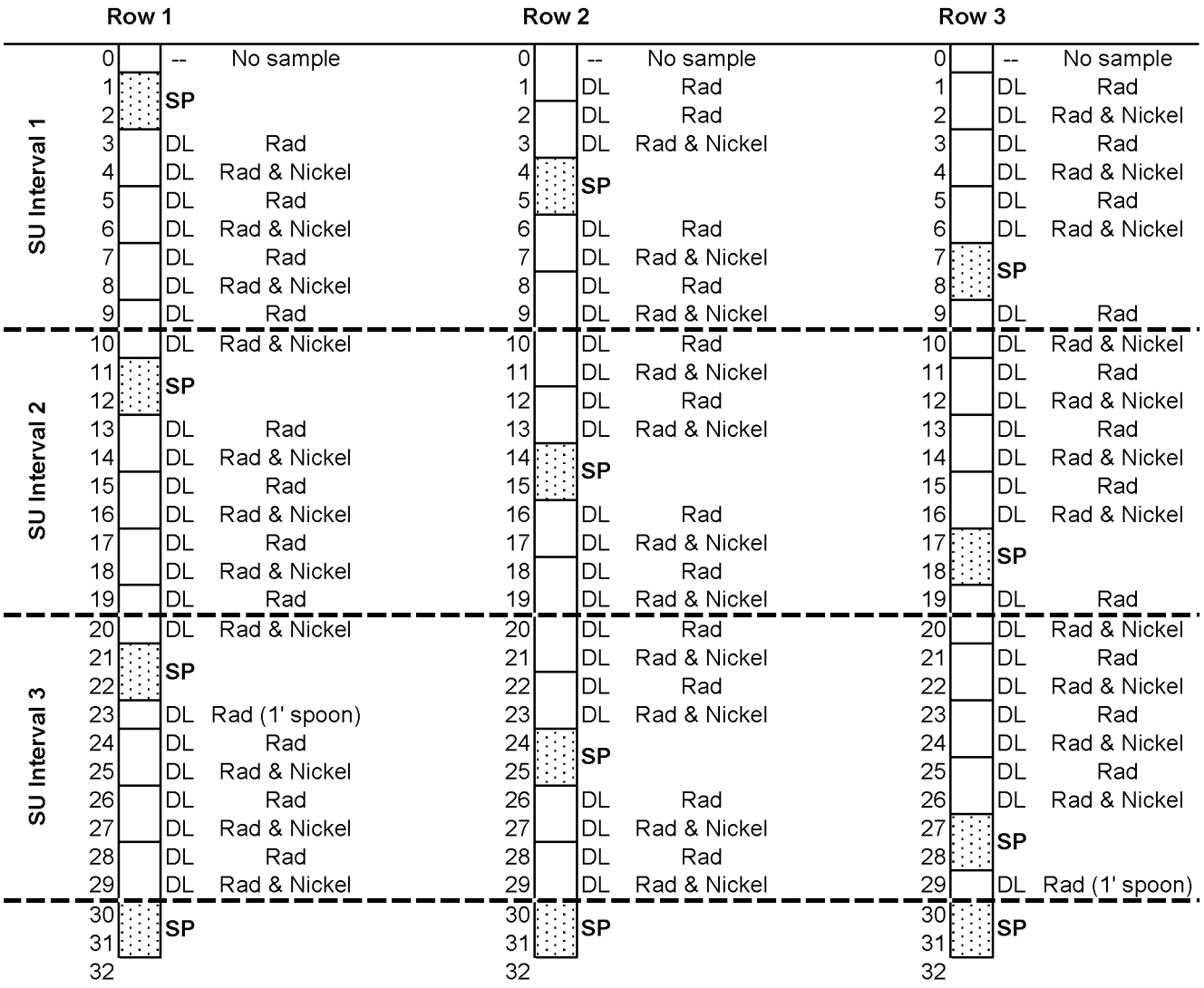

Site Overview
140 Building
100 Building
70 Building
SU01
SU02
140 Building
100 Building
Figure 1
Survey Units West of the 140 and 100 Buildings and Southwest of the 100 Building
Legend
Boring Location
Random Sample Start Point
Systematic Sampling Grid - SU01
Systematic Sampling Grid - SU02
Building
Property Line
Subcell Boundary
Cell Boundary
Interim Drain (Shown as Circle)
Row 1 SP samples at 1-3', 11-13', 21-23'
Row 2 SP samples at 4-6', 14-16', 24-26'
Row 3 SP samples at 7-9',17-19', 27-29'
All Rows SP sample at 30-32'
All Rows DL samples at 1' increments between SP samples
See Table 1 for summarized sample results.
N
Feet
0 30 60
Projection Information
State Plane Projection
Long Island Zone
North American Datum 1983
Feet
NYSDEC V00089-1
URS27010-039
GTE OPERATIONS SUPPORT INCORPORATED
HICKSVILLE, NEW YORK
ENVIROCON
Relationships Build Successful Projects
DESTINY
RESOURCES, INC.
DRI_ID: 1006.H6665
October 14, 2005
P:\GIS\GIS_NY\mxdfiles\West100_140\Survey_Unit_01_02_Final.mxd

Figure 2

Intervals, Increments and Analyses for Samples



Notes:

Solid lines indicate the spoon increment (2')
Zero indicates the ground surface
Maximum depth at 30' bgs

Overview:

Row 1 = SP's (1-3', 11-13', 21-23' and 30-32')
Row 2 = SP's (4-6', 14-16', 24-26' and 30-32')
Row 3 = SP's (7-9', 17-19', 27-29' and 30-32')
All Rows = DL's at 1' increments between SP's

Analyses Intervals:

SU Interval 01:
All SP samples from rows 1, 2 and 3 that were collected between 0 - 10' bgs
SU Interval 02:
All SP samples from rows 1, 2 and 3 that were collected between 11 -20' bgs
SU Interval 03:
All SP samples from rows 1, 2 and 3 that were collected between 21 -30' bgs

Systematic Subsurface Soil Sampling and Analysis Plan

West of the 140 and 100 Buildings
and Southwest of the 100 Building

Former Sylvania Electric Products Incorporated Facility
Hicksville, New York
GTE Operations Support Incorporated

September 2004

This Systematic Subsurface Soil Sampling and Analysis Plan has been reviewed by URS Corporation – New York, and I am in agreement with the methods and procedures to be used in this investigation.

URS Corporation – New York

Robert D. Brathovde, P.E.
Engineer of Record

This Systematic Subsurface Soil Sampling and Analysis Plan has been reviewed by Professional Radiation Consulting, Inc. (PRCI), and I am in agreement with the methods and procedures to be used in this investigation.

Shane Brightwell, CHP
President, PRCI

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FIGURES

Figure 1 – Survey Units West of the 140 and 100 Buildings and Southwest of the 100 Building

1.0 INTRODUCTION

This Systematic Subsurface Soil Sampling and Analysis Plan (SSSA Plan) has been prepared to characterize the area west of the 140 and 100 Buildings and southwest of the 100 Building **(Figure 1)**. This SSSA Plan describes applicable guidance, characterization (i.e., survey, design and sampling protocols), and laboratory analysis. The results of this SSSA Plan will allow GTE Operations Support Incorporated (GTEOSI) to determine whether any remedial activities are necessary on the Western portion of the property.

Because the available documents relating to the Former Sylvania Electric Products Incorporated Facility (Sylvania) in Hicksville, New York (the Site) indicate that historical operations were not conducted on the western portion of the Site, the soil remediation activities at the Site to date have focused primarily on the eastern portions of the 100 and 140 Properties. Only limited subsurface characterization occurred on the western areas of the Site. While the lack of evidence of operations on the western side of the Site indicates that there should not be substantial impacts to that part of the Site relating to the operations of Sylvania, GTEOSI has decided to take a conservative approach and make a more thorough investigation of this area.

The various sections of this Plan will present the steps to be implemented in order to characterize the subsurface soils in the area west of the 140 and 100 Buildings and southwest of the 100 Building. Modifications to the steps will be permitted when field conditions or sample results indicate the modifications would better support the intent and objective of this plan as stated in Section 2.0 below. All modifications to steps in this Plan shall be made with the prior concurrence of the Radiation Safety Officer (or his designated alternate) and the prior approval of the Project Coordinator.

2.0 OBJECTIVE

The objective of this SSSA Plan is to characterize soils in specified areas as shown in **Figure 1**. For radiological characterization purposes, these areas are referred to as "survey units" (SUs) as defined in NUREG 1575, *Multi-Agency Radiation Survey and Site Investigation Manual* (MARSSIM). The area designated as SU01 is west of the 140 and 100 Buildings. The majority of this area is paved for parking, with a border of landscaping adjacent to the buildings. The area designated as SU02 is off the southwestern wall of the 100 Building and adjacent to the west end of Cell 9. This area is also paved for parking.

3.0 APPLICABLE GUIDANCE

Remediation at the Site is being performed in accordance with a Voluntary Cleanup Agreement, Site V-00089-1, Index W1-0903-01-12, between New York State Department of Environmental Conservation (NYSDEC) and GTEOSI. Field procedures and analytical methods identified in the Site's approved *Comprehensive Soil Remediation Work Plan (Revision 5: June 2003)* (Work Plan) have been incorporated in this SSSA Plan where appropriate. Guidance specific to radiological and chemical characterization are described in their associated sections, as applicable.

4.0 CHARACTERIZATION

The soils within the SUs are expected to contain radioactivity at or slightly above regional background concentrations or residual radioactivity well below the cleanup levels (note: the target cleanup levels are defined in the Work Plan). This expectation is based on the information listed below.

- **Historic maps, aerial photos, and historic documents** - These sources show that facility operations were not performed in the SUs, rather the areas were dedicated to vehicle parking and administration offices;

- **Interim drainage system documents** - Radiological and chemical results were not detected above cleanup levels during investigations conducted during the installation of the interim drainage system between the 140 and 100 Buildings. The interim drainage system was installed during February and March 2003. The interim drainage system is depicted by the circles in **Figure 1**. This area has a Site history similar to that of SU01 and SU02; and

- **Soil borings performed within the SUs during previous investigations** - The results from a limited soil boring investigation conducted during the Fourth Quarter of 2002. The analytical results of this investigation did not exceed the cleanup levels.

The radiological characterization is designed using guidance provided in MARSSIM as discussed below (Section 4.1). Concurrently, volatile organic compounds (VOCs) and Nickel (Ni) will be characterized as described in Section 4.2.

4.1 RADIOLOGICAL

The following sections describe the radiological guidance and sampling parameters to be used to execute this SSSA Plan. This SSSA Plan has been developed using a combination of applicable MARSSIM guidance, historic documents, and knowledge of Site subsurface conditions gained during investigations and remediation.

4.1.1 Applicable Radiological Guidance

The investigation of soils to determine the presence (if any), concentrations, extent, and boundaries of contaminants is termed a *characterization* survey. The principles for a characterization survey described in Chapter 5 of MARSSIM have been considered in developing this SSSA Plan. Specific methods recommended in MARSSIM for subsurface soil sampling have also been incorporated in this SSSA Plan.

4.1.2 Survey Unit

Classification

The SUs were designated as MARSSIM Class 3 since they are not expected to contain soils with impacts at concentrations that exceed a small fraction of the cleanup levels. Although MARSSIM suggests a random sampling pattern for Class 3 SUs, it was decided that a more conservative, systematic triangular sampling pattern would be used to provide uniform lateral coverage of the SUs. This triangular grid based system, as prescribed by MARSSIM for Class 1 and 2 SUs, is useful as it accommodates both the radiological and chemical sampling.

Layout

SU01 is approximately 3,100 square meters (m^2) or 33,370 square feet (ft^2). SU02 is approximately 1,840 m^2 or 19,805 ft^2. A MARSSIM Class 3 SU has no areal limit requirement. As indicated in Section 4.1.3, a triangular grid system will be used and nomenclature will be adopted from the Site grid system described below.

The Site is on a northing/easting planar grid coordinate system. The Site grid pattern was developed to accommodate excavation cells, and each cell is divided into subcells. Each subcell has a north-south length of 6.7 meters (m) or 22 feet (ft) and an east-west width of 6.1 m (20 ft). The subcells are uniquely identified by letter designations for north-south columns and number designations for east-west rows. This grid coordinate system will be extended and used for defining the SUs.

4.1.3 Sample Locations

Number of Horizontal Sample Location

MARSSIM bases the number of samples (N) in a SU on how close the average concentration in the SU is to the cleanup level, how much variation there is in the observed or expected concentrations, and the sensitivity of scanning capabilities with respect to the cleanup levels. For a Class 3 SU where concentrations are expected to be well below the cleanup levels, the minimum number of samples is 13. Although MARSSIM indicates only 13 samples is sufficient, up to 20 sample locations were selected to provide lateral coverage and in the event field conditions do not allow collection of soil samples at all locations. If sample locations fall outside the SU boundary due to the grid orientation, they may be relocated inside the grid.

Sample Start Point

MARSSIM suggests establishing a systematic sampling pattern using a random start point. A random number generator was used to select planar coordinates within the footprint of each of the SU boundaries. The associated systematic sample pattern, as described below, was established in the SU by placing one of the sample locations at the start point coordinates.

Horizontal Sample Locations

For each SU, once N, the SU size, the grid system pattern, and the start point were established, the sample locations were then selected and mapped. The calculated maximum distance between sampling locations (L_N) and distance between sampling rows (L'_N) are defined below.

N (samples)	L_N SU01 (meters)	L'_N SU01 (meters)	L_N SU02 (meters)	L'_N SU02 (meters)
20	13.4	11.6	10.3	8.9

Some of the sample locations may have to be modified to avoid obstructions encountered in the field (i.e., utilities). Any sample location that must be relocated up to one-third of the diagonal distance between planned sample locations [≤4.5 m (14.75 ft) in SU01 or ≤3.5 m (11.5 ft) in SU02] will be relocated accordingly. Any sample location that must be relocated a distance greater than the applicable distance specified above will be either eliminated or randomly relocated using the method for generating random coordinates as described previously.

If a sample location falls just outside of the SU boundary, the sample may be evaluated for relocation to within the SU boundary, depending on the required distance and obstructions. The result may be that the SU has more than 20 sampling locations in order to provide as uniform coverage as practical. The addition of sample points does not reduce the effectiveness of the methods described in MARSSIM.

Vertical Sampling Depth

Vertical sampling and excavation depths on Site have been measured in feet below ground surface (bgs); therefore, vertical units are expressed here in both meters and feet (in parentheses). Based on the results of subsurface soil investigations and excavations, most impacts occur from the surface down to about 7.3 m (24 ft) bgs, with infrequent impacts identified greater than 7.3 m (24 ft) bgs. Impacts below 7.3 m (24 ft) bgs were usually identified based on shallow indicators. Given this history, a target maximum sampling depth of approximately 9 m (30 ft) bgs has been established to provide an additional 2-m (6-ft) buffer and to accommodate the pattern of the vertical sampling intervals as described above.

Vertical Sample Intervals

Based on the results of excavation and subsurface soil investigations performed during remediation on Site, impacts, if present, may occur in relatively thin soil veins. Specifically, concentrations may increase from not detected to greater than the cleanup levels in the next lower 0.3-m (1-ft) interval. Within the same boring, the concentrations may then decrease rapidly over the next 0.3- or 0.6-m (1- or 2-ft) intervals. Note that the measured depths of the soil layers with elevated radiological impacts may vary due to both depositional nature of the impacts and the assumption that the surface is a uniform elevation (measured bgs).

Based on the above information, the following subsurface soil sampling parameters were established.

- Confirmation/Verification caliber samples will be collected at 3-m (10-ft) intervals. These samples will be collected, documented, labeled, and analyzed by on-Site and off-Site analytical methods as Sample Point (SP) samples. The SP samples are treated the same as Confirmation/Verification (CF/VF) samples as described in the Work Plan.

- The SP sample pattern was established so that each sample at the corner of an equilateral triangle is vertically staggered by 1 m (3.3 ft), for example:

    1. The first triangle corner (#1) sampling location will have SP samples collected from the top 1-ft segment of the 1-, 4-, and 7-m (1-, 11-, and 21-ft) intervals.

    2. The second triangle corner (#2) sampling location will have SP samples collected from the top 1-ft segment of the 2-, 5-, and 8-m (4-, 14-, and 24-ft) intervals.

    3. The third triangle corner (#3) sampling location will have SP samples collected from the top 1-ft segment of the 3-, 6-, and 9-m (7-, 17-, and 27-ft) intervals.

The staggered vertical sample pattern result for a single set of three adjacent sample locations resembles a triangular "staircase" or helical pattern. This pattern works as follows*:

a) The sample locations in the westernmost north-south oriented column are all sampled at the intervals outlined in #1 above.

b) The sample locations in the second north-south oriented column to the east are all sampled at intervals outlined in #2 above.

c) The sample locations in the third north-south oriented column to the east are all sampled at the intervals outlined in #3 above.

* The pattern repeats after every third column.

- The 0.3-m (1-ft) interval samples between the SP Sample intervals will be collected and analyzed on Site as Delineation (DL) Samples. This will provide additional assurance that relatively thin veins of impacts present between the SP interval samples will be identified.

4.2 CHEMICAL

As indicated in the introduction of this SSSA Plan, the potential for residual VOCs and Ni in the SUs will be evaluated concurrently with the radiological impacts. The triangular grid system established under MARSSIM and the vertical interval sampling were evaluated and accepted. This system provides both vertical and lateral coverage to adequately evaluate the potential for chemical impacts. If elevated concentrations of VOCs and/or Ni are detected, a biased sampling approach would then be implemented.

4.3 MATERIALS AND METHODS

The following narrative describes the sample collection, analysis, and evaluation methodology to be used to execute this SSSA Plan.

4.3.1 Soil Sampling Equipment

A hollow-stem auger drill rig with split-spoon sampling capabilities will be used to collect soil samples. The split spoon [0.6 m (2 ft) in length and 0.08 m (3 inches) in diameter] will be advanced in 0.6-m (2-ft) intervals. Two, 1-foot interval samples will be collected per split-spoon.

4.3.2 Sample Field Screening and Preparation

Each sample will be initially field-screened with a 3-inch sodium iodide (NaI) gamma detector to evaluate potential residual radiological impacts and a photoionization detector (PID) to evaluate the presence of VOCs. In addition, an x-ray fluorescence (XRF) spectrometer will be used on Site to screen samples for Ni. Sample descriptions and field observations will be documented on the boring logs.

4.3.3 Sample Collection

A minimum of two samples will be collected per split spoon barring loss or incomplete recovery. These samples will be designated as either DL or SP, as applicable. The DL samples will be collected at the intervals between SP samples from the surface down to the bottom sampling depth of approximately 9 m (30 ft) bgs.

Radiological samples collected will be placed in 1-liter Marinelli containers. The DL samples will be used for radiological screening and analyzed on Site using gamma spectroscopy. The SP samples will be analyzed for radionuclides on Site and off Site, consistent with the Work Plan criteria for CF/VF sampling.

Chemical samples collected will be placed in both pre-preserved methanol vials and non-preserved 40-ml vials. The DL samples will not be analyzed for VOCs or Ni unless field screening/observations support collection and analysis of a chemical sample. The SP samples will be analyzed for VOCs, both on Site and off Site, consistent with the Work Plan criteria for CF/VF sampling.

A geologist will describe the samples in general accordance with the Unified Soil Classification System (USCS). Sample descriptions will include soil type, color, moisture, and other visual observations and field readings. This information will be documented on soil boring logs.

All samples will be logged into the Site sample tracking and barcode system.

4.3.4 Sample Analysis

Each DL sample will be analyzed for 10 minutes by on-Site gamma spectroscopy (providing a nominal detection limit of approximately 0.014 pCi/g for Th-232 and 3.6 pCi/g for U-238, both of which are far below the Site cleanup levels) to quantify the concentrations of target radionuclides of U and Th. Each SP sample will be analyzed for 30 minutes by on-Site gamma spectroscopy (providing a nominal detection limit of approximately 0.008 pCi/g for Th-232 and 2.0 pCi/g for U-238, both of which are far below the Site cleanup levels) as well as by alpha spectroscopy (alpha-spec) at the off-Site laboratory [Severn Trent Laboratories, Earth City, Missouri (STL)] for isotopic U and Th.

If DL samples are collected for chemical analyses, they will be analyzed for VOCs on Site by Stone Environmental. Each SP sample will be analyzed for VOCs and Ni on Site by Stone Environmental as well as by STL for VOCs and Ni.

5.0 SAMPLING/ANALYSIS PROCEDURE

The following is the step-by-step procedure for sample collection and subsequent analysis. It is the responsibility of each technician to read, understand, and question if they do not understand, the following procedures.

1. The applicable Chemical/Radiological Work Permit (C/RWP) and Activity Hazards Analysis (AHA) will be in place prior to commencement of sampling.

2. The field crew will be briefed on this procedure prior to commencement of sampling.

3. Each sampling location will be located and surveyed in the field using either a laser positioning system (LPS) or global positioning system (GPS) surveying system.

4. Each sample location will be investigated for utilities and obstructions prior to saw cutting any pavement or commencement of sampling. If a sample location is in an area where utilities or obstructions have been identified, then the sample location shall be adjusted to a safe, practical location as close to the proposed location as possible, but no more distant than 4.5 m (13 ft) in SU01, or 3.5 m (11.5 ft) in SU02. Any sample location that cannot be relocated within these criteria will be eliminated or randomly relocated per Section 4.1.3.

5. The split-spoon sampler will be advanced to the predetermined maximum depth range of approximately 9 m (30 ft) bgs, in 0.6-m (2-ft) intervals, collecting two, 0.3-m (1-ft) samples per sampling cycle.

6. Radiological field screening of samples will be conducted on each sample using a NaI gamma detector.

7. Chemical field screening of samples for VOCs will be conducted on each sample using a PID. An XRF spectrometer will be used for on-Site Ni screening of every other sample beginning with the second sample in the boring, continuing with the fourth sample, sixth sample, etc. Soil samples (~100g) for Ni screening by XRF will be collected in Ziploc® bags if the soils are relatively dry and in glass jars if the moisture content is 20% or higher. The samples will be delivered to Stone Environmental for either direct screening by XRF, or for drying in an oven, and then screening by XRF. DL samples not forwarded to STL for analyses will be archived on Site. For those DL QC samples to be submitted to STL, the soils will be transferred from the Ziploc® bags to 40-ml glass vials in the sample preparation area. For QC purposes, every tenth sample will be screened by XRF and then submitted to STL for duplicate analyses.

8. A geologist will log the borings and record observations and measurements consistent with the USCS nomenclature and procedures, noting indications of soil impacts by chemicals and other potential contributors to contamination.

9. DL screening samples will be collected at the intervals between SP samples prescribed in Section 4.1.3. Radiological DL samples will be analyzed by on-Site gamma spectroscopy for a 10-minute count time. If field conditions warrant and chemical DL samples are collected, they will be analyzed for VOCs on Site by Stone Environmental.

10. SP samples will be collected at the intervals prescribed in Section 4.1.3 and will be treated in the same manner as a CF/VF samples. Radiological SP samples will be analyzed by on-Site gamma spectroscopy for a 30-minute count time as well as off-Site isotopic analyses by STL. Chemical SP samples will be collected and placed in vials with methanol for on-Site analysis by Stone Environmental and in 40-ml vials for submission to STL for analysis of VOCs. For those soils designated as SP samples, following the XRF screening, the soils will be transferred from the Ziploc® bag and placed in 40-ml glass vials in the sample preparation area and submitted to STL for Ni analysis.

11. After the completion of sampling from a given location, the borehole will be backfilled with clean cuttings and/or on-Site clean backfill material to within 0.1 to 0.15 m (4 to 6 inches) of the top of the borehole. The remaining 0.1 to 0.15 m (4 to 6 inches) will be filled with asphalt or other applicable surfacing material.

12. Decontamination of sampling equipment will be performed in accordance with SOP-RAD-011, *Equipment Decontamination* and in accordance with the chemical decontamination procedures.

6.0 TARGET CONCENTRATIONS

The soil concentrations for all samples will be compared to the Site cleanup levels as defined in the Work Plan.

7.0 ASSESSMENT

Since the SUs are covered with asphalt, concrete, landscaping (in few smaller areas near the buildings), performing surface radiation scans as surveys are not practical to detect the presence of surface or subsurface radiological impacts in excess of cleanup criteria. MARSSIM allows for modifications to the survey design to address subsurface soils. However, in order to classify SUs as non-impacted, subsurface characterization is required. In addition, the data quality objectives process also allows that, based on the data needs for a survey, the decision can be made that sampling and analysis are necessary.

7.1 RADIOLOGICAL

7.1.1 Survey Unit Assessment

Each SU will be characterized/verified vertically at 3-m (10-ft) staggered intervals. This approach for subsurface soils is not directly addressed in MARSSIM, which provides characterization and final verification guidance primarily on surface soils. Therefore, each 3-m (10-ft) depth interval will be evaluated independently as if that interval were representative of an undulating soil surface, using the MARSSIM approach to surface soils. The SP samples within each 3-m (10-ft) depth interval will be treated as if they were collected from a continuous varying surface that existed at their corresponding depths [i.e., all samples in the 0 to 3-m (0 to 10-ft) interval will be evaluated independently using a MARSSIM statistical test and all samples in the 3 to 6-m (10 to 20-ft) interval will be evaluated independently using the MARSSIM statistical test]. This approach will be used for each of the 3-m (10-ft) intervals.

7.1.2 Decision Analysis

The radiological analytical results will be evaluated using the default null hypothesis recommended in MARSSIM, which states: "The residual radioactivity in the survey unit exceeds the release criterion." The MARSSIM "Sign Test" (assuming no contribution from background radionuclides) will be used to reject the null hypothesis. When the null hypothesis is rejected, then the SU will pass and qualify for release. If the null hypothesis cannot be rejected, further investigation or remedial action may be necessary.

As stated earlier, each 3-m (10-ft) sampling interval data set will be evaluated independently as a soil (undulating planar) surface sample set generated from all SP samples within that 3-m (10-ft) interval. Therefore, there will be at least three independent evaluations of the surface and subsurface soils within each SU.

7.2 CHEMICAL

The chemical analytical results will be evaluated independently and compared to the Site Cleanup levels specified in the Work Plan. Exceedences will be considered for additional investigation or remedial action, as appropriate.

8.0 SCHEDULE

The work described in this SSSA Plan will be initiated in October 2004.

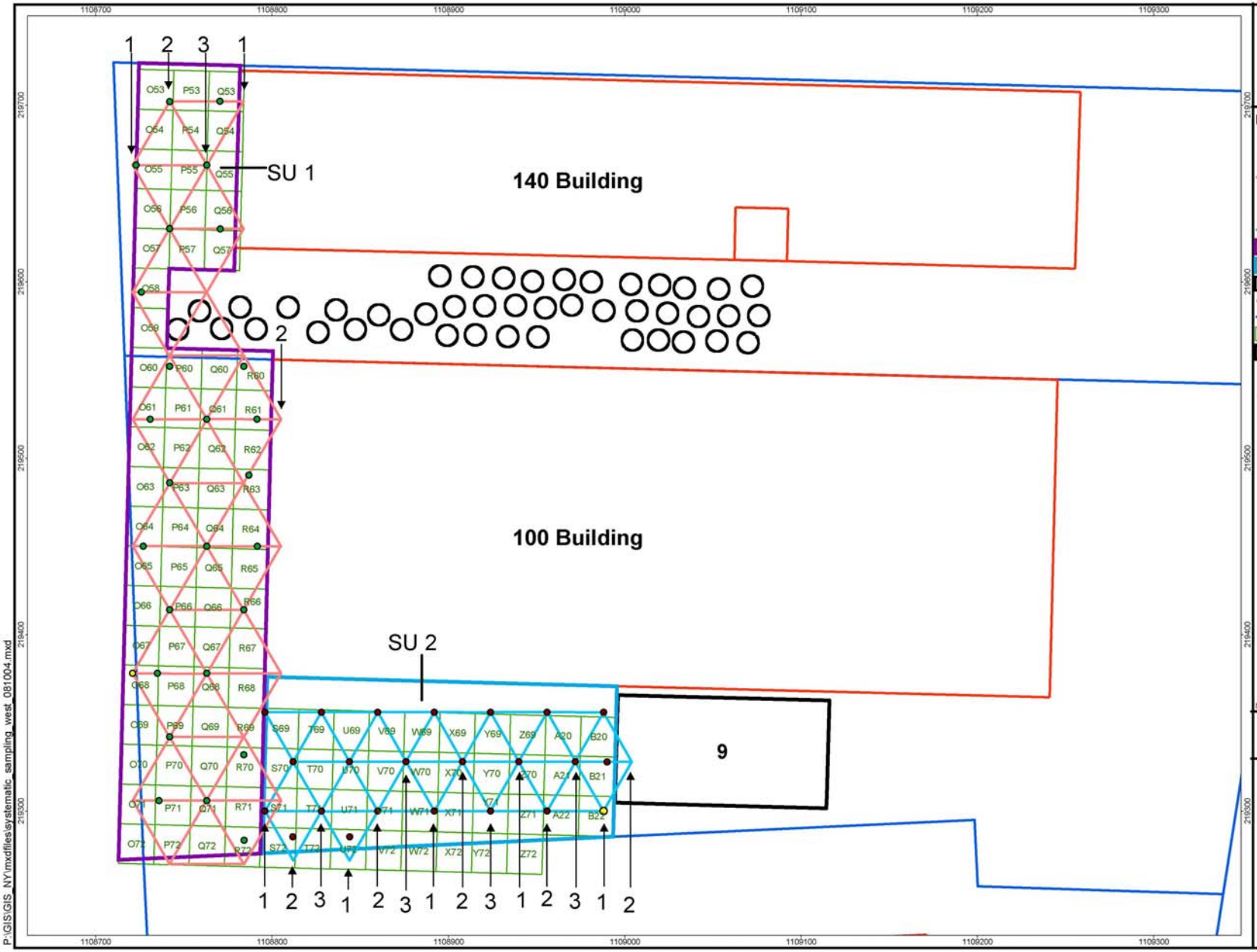

Figure 1
West/Southwest of 100 and 140 Buildings Systematic Sampling

Legend

- Proposed Random Sample Start Point- SU 1
- Systematic Sampling Locations-SU1
- Systematic Sampling Grid - SU 1
- Proposed Random Sample Start Point- SU 2
- Systematic Sampling Locations- SU 2
- Systematic Sampling Grid - SU 2
- SU 1 Boundary
- SU 2 Boundary
- Interim Drains
- Building
- Property Line
- Subcell Boundaries
- Cell Boundaries
- 1 1-Meter Vertical Sampling Start Interval
- 2 2-Meter Vertical Sampling Start Interval
- 3 3-Meter Vertical Sampling Start Interval

N

DRAFT

Feet
0 30 60

Projection Information
Stateplane Projection
Long Island Zone
North American Datum 1983
Feet

NYSDEC V00089-1 URS27010-039

GTE OPERATIONS SUPPORT INCORPORATED
HICKSVILLE, NEW YORK

ENVIROCON
Relationships Build Successful Projects

DESTINY
RESOURCES, INC.

DRI_ID: 1006.H6223 August 10, 2004

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New York State Department of Environmental Conservation
Division of Environmental Remediation, Region One
Building 40 - SUNY, Stony Brook, New York 11790-2356
Phone: (631) 444-0240 • **FAX:** (631) 444-0248
Website: www.dec.state.ny.us

Erin M. Crotty
Commissioner

RECEIVED
OCT 18 2004
By

October 8, 2004

Jean Agostinelli
Vice President - Controller
GTE Operations Support Inc.
600 Hidden Ridge Drive (HQE03E75)
Irving, TX 75038

Re: Systematic Subsurface Soil Sampling and Analysis Plan (SSSSAP), September 2004
Former Sylvania Electric Products Facility, Site # V00089-1

Dear Ms. Agostinelli:

The Department finds the subject SSSSAP to be acceptable under the following conditions:

1) Any of the samples that are sent to STL for nickel analysis should also be analyzed for beryllium.

2) The methods for data evaluation and the sampling protocols and procedures specificd in the previously approved remedial work plan will be followed.

3) Any of the DL samples which exhibit high field screening readings for VOCs (a direct reading of the soil core greater than 50 ppm on the PID) will also be sent to STL labs for off-site VOC analysis.

4) The Department will be notified of any anomalies discovered during the utility evaluation (Bullet #4 in Section 5.0). Any discovered anomalies, which suggest the potential presence of a historical structure such as an UST or leaching pool, will require further evaluation.

If you accept these conditions, no revisions to the work plan are required. However, please attach a copy of this letter to the front of the approved work plan. If you disagree with these conditions, please do not hesitate to contact me by telephone at (631) 444-0244.

Sincerely,

Robert R. Stewart
Environmental Engineer I

cc: W. Parish
J. Riggi
K. Carpenter
J. Nealon, NYSDOH

Appendix C – Boring Logs

This section provides the boring logs from the systematic subsurface soil sampling West of the 140 and 100 buildings and Southwest of the 100 building. Borings were advanced using hollow-stem auger drilling rigs. Boring logs are provided in sequential order; first by survey unit number (SU01 SU02), then by sampling identification number (001 through 030).

The main lithologic group name with the appropriate group symbol is described at the top of each stratum. The main lithologic group is in capital letters and bold font. Minor variations within the soil stratum are called out at the approximate elevation in which they occur, and the main lithologic group is not repeated nor any variations above the one identified.

Fill is defined as non-native material (evidenced by color, texture, structure, or miscellaneous debris), other than the material GTEOSI used to backfill excavations, which is noted as 'backfill' in the logs.

A plus sign (+) is used in the 'Notes' or 'Remarks' column of the boring logs and indicates a depth above ground surface. A minus sign (-) displayed in the 'Depth (feet)' column has the same meaning (depth above ground surface) but is used due to program restrictions.

MAJOR DIVISIONS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS — MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS — MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS — MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS — MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

SOIL CLASSIFICATION CHART

MATERIAL SIZE	PARTICLE SIZE			
	LOWER LIMIT		UPPER LIMIT	
	MILLIMETERS	SIEVE SIZE*	MILLIMETERS	SIEVE SIZE*
SAND				
FINE	.074	#200*	0.42	#40*
MEDIUM	0.42	#40*	2.00	#10*
COARSE	2.00	#10*	4.76	#4*
GRAVEL				
FINE	4.76	#4*	19.1	3/4"•
COARSE	19.1	3/4"•	76.2	3"•
COBBLES	76.2	3"•	304.8	12"•
BOULDERS	304.8	12"•	914.4	36"

*U.S. STANDARD •CLEAR SQUARE OPENINGS

GRADATION CHART

Notes:

1. Dual symbols are used to indicate borderline classifications or intermixed strata.

2. Soil descriptions and classification are based on field observations, not on laboratory testing of soil physical properties.

3. When used on the boring logs, the following terms are used to describe the consistency of cohesive soils and the relative compactness of cohesionless soils:

Cohesive Soils	Cohesionless Soils
Very Soft	*Very Loose*
Soft	*Loose*
Medium Stiff	*Medium Dense*
Stiff	*Dense*
Very Stiff	*Very Dense*
Hard	

4. When used on the boring logs, the following terms indicate the volume percentage of the minor soil components estimated in the field based on visual observations:
trace: 1 to 10% little: 10 to 20% some: 20 to 35% and: 35 to 50%.

5. Moisture Content:
Dry: Absence of moisture, dusty, dry to the touch
Moist: Damp but no visible water
Wet: Visible free water, usually soil is below the water table

UNIFIED SOIL CLASSIFICATION SYSTEM AND KEY TO BORING LOGS

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 001 - O53
Date Drilled: 11/5/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

URS
5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						Asphalt	
1			8	22	0.0	**FILL**, dark tan, sandy silt, trace gravel Light tan, some sand	
2							
3	SP		45	19	0.0	Tan, fine to medium **SAND**, some coarse sand, trace fine gravel, dense	
4							
5			41	20	0.0		
6						Very dense	
7			90	21	0.0	1" reddish brown layer at 7' followed by dark tan sand Coarse sand and gravel grade out	
8	SW					Tan, fine to coarse **SAND**, trace gravel, occasional cobbles, dense	
9			41	23	0.0	Dark orange-tan, fine to medium **SAND**, trace coarse sand and fine gravel, very dense	
10	SP						
11	SW		65	23	0.0	Light tan (10.5-10.75') to dark orange-tan (10.75-11'), fine to coarse **SAND**, some gravel, very dense	
12	SP					Tan, fine to medium **SAND**, some coarse sand, trace gravel, dense	
13	SW		45	24	0.0	Tan, fine to coarse **SAND**, some gravel, dense	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 001 - O53
Date Drilled: 11/5/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

URS
5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14						Tan, fine to medium **SAND**, some coarse sand, trace gravel, dense Dark orange-tan, some gravel	
15	SP		36	22	0.0	Trace coarse sand, gravel grades out	
16							
17	SW		24	24	0.0	Dark orange-tan, fine to coarse **SAND**, some gravel, trace cobbles, medium dense	
18						Dark orange-tan, fine to medium **SAND**, trace coarse sand, medium dense Tan, some coarse sand and gravel	
19			16	20	0.0		
20						Trace coarse sand, gravel grades out 1" dark orange-tan layer at 20'	
21	SP		19	19	0.0	Some coarse sand, trace gravel 1" dark brown layer at 21'	
22							
23			21	22	0.0	Trace coarse sand, gravel grades out Some coarse sand, trace gravel	
24							
25	SW		24	18	0.0	Tan, fine to coarse **SAND**, some gravel, medium dense	
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 001 - O53
Date Drilled: 11/5/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

URS
5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
	SW					Tan, fine to coarse **SAND**, some gravel, dense	
27	SP		40	19	0.0	Tan, fine to medium **SAND**, some coarse sand, trace fine gravel, dense	
28						2" reddish brown layer at 28'	
29			45	18	0.0	Dark tan, trace coarse sand	
30						Tan Dark tan Tan	
31			38	19	0.0		
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 11/5/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 11/8/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every odd numbered foot 5. SP samples collected at 4', 14', 24', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 002 - Q53
Date Drilled: 11/5/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

URS
5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						Asphalt	
1						**FILL**, brown, sandy silt, trace fine gravel	
2			9	12	0.0	Tan, fine sand, some medium sand, trace coarse sand and fine gravel	
3	SM					Light orange-tan, silty **SAND**, trace fine gravel, medium dense	
	ML					Light gray, sandy **SILT**, medium dense	
4	SM		28	16	0.0	Light orange-tan, silty **SAND**, trace fine gravel, medium dense	
	ML					Light gray, sandy **SILT**, medium dense	
5							
6	SP		51	21	0.0	Tan, fine to medium **SAND**, some coarse sand and gravel, very dense Coarse sand and gravel grade out	
	SW					Reddish tan, fine to coarse **SAND**, trace fine gravel, very dense	
7	SP					Tan, fine to medium **SAND**, trace coarse sand and fine gravel, very dense	
8			59	20	0.0		
9						Tan, fine to coarse **SAND**, some gravel, very dense Some cobbles	
10			50	11	0.0		
11	SW					Light tan, dense	
12			41	23	0.0		
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 002 - Q53
Date Drilled: 11/5/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

URS
5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SW		40	19	0.0	Orange-tan, fine to coarse **SAND**, some gravel and cobbles, dense 1" brown layer at 13.5'	
15						Medium dense	
16			22	19	0.0		
17	SP					Orange-tan, fine to medium **SAND**, trace coarse sand and gravel, medium dense Light tan, coarse gravel grades out	
18			17	18	0.0		
19						Some coarse sand and fine gravel, trace coarse gravel	
20			20	20	0.0		
21						Some coarse gravel	
22			24	20	0.0		
23						Coarse gravel grades out	*1' spoon driven from 23-24' in order to return to even numbered sampling intervals
24			*20	*12	0.0	Trace coarse sand, gravel grades out Some coarse sand and gravel	
25			19	19	0.0		
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 002 - Q53
Date Drilled: 11/5/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
	SP					Tan, fine to medium **SAND**, some coarse sand and gravel, dense	
27	SW		42	22	0.0	Orange-tan, fine to coarse **SAND**, some fine gravel, dense	
28							
29			33	19	0.0	Orange-tan, fine to medium **SAND**, trace coarse sand and fine gravel, dense	
30	SP					Reddish brown laminations from 29.75-30'	
31			34	20	0.0	Reddish brown laminations from 30.5-31'	
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 11/8/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 11/8/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 1', 11', 21', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 003 - N55
Date Drilled: 11/3/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						Asphalt	
1						**FILL**, dark brown, sandy silt, some gravel	
2	SP		11	19	0.0	Dark orange-tan, fine to medium **SAND**, some coarse sand and gravel, medium dense	
3							
4			10	23	0.0	Grayish tan, some silt and clay, trace gravel, coarse sand grades out	
5							
6			39	22	0.0	Tan, some coarse sand and gravel, silt grades out, dense	
7							
8			50	24	0.0	Trace coarse sand and fine gravel, coarse gravel grades out	
9							
10			45	15	0.0	Some coarse sand, some gravel and cobbles	
11							
12			48	18	0.0	Cobbles grade out	
13						Trace coarse sand and fine gravel, coarse gravel grades out	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 003 - N55
Date Drilled: 11/3/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SP		33	22	0.0	Tan, fine to medium **SAND**, trace coarse sand and fine gravel, dense Dark laminations from 13.25-13.5'	
						3" dark brown, medium to coarse layer at 14.75'	
15	SW					Tan, fine to coarse **SAND**, some fine gravel, trace coarse gravel, medium dense	
16			26	20	0.0	Light tan, fine to medium **SAND**, some coarse sand, trace fine gravel, medium dense	
17	SP					Light brown, some gravel	
18			16	22	0.0		
19						Light tan, trace fine gravel, coarse gravel grades out	
20	SW		20	20	0.0	Tan, fine to coarse **SAND**, some fine to coarse gravel, medium dense	
21							
22	SP		20	19	0.0	Tan, fine to medium **SAND**, some coarse sand, trace gravel, medium dense	
23			*15	*12	0.0	Trace coarse sand and fine gravel, coarse gravel grades out	*1' spoon driven from 23-24' in order to return to even numbered sampling intervals
24						Dark brown, medium to coarse, some fine sand from 24-24.5'	
	SW					Tan, fine to coarse **SAND**, trace fine gravel	
25	SP		21	23	0.0	Dark brown, medium to coarse **SAND**, some fine sand	
						Tan, fine to coarse **SAND**, trace fine gravel	
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 003 - N55
Date Drilled: 11/3/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SW					Brown, fine to coarse **SAND**, trace fine gravel, dense	
	SP		35	21	0.0	3" light tan followed by orange-tan, fine to medium **SAND**, trace coarse sand and fine gravel, dense	
28	SW					Orange-tan, fine to coarse **SAND**, some fine gravel, dense	
	SP					Tan, fine to medium **SAND**, trace coarse sand and fine gravel, dense	
29	SW		33	22	0.0	Dark orange-tan, fine to coarse **SAND**, some gravel, dense	
30	SP					Tan, fine to medium **SAND**, some coarse sand and gravel, dense Trace coarse sand and fine gravel, coarse gravel grades out	
31			37	20	0.0	Some coarse sand and gravel	
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 11/3/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 11/8/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 1', 11', 21', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 004 - P55
Date Drilled: 11/3/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						Asphalt	
1						**FILL**, brown, sandy silt	
2			5	15	0.0	Dark tan, trace fine gravel	
3						Tan, gravel grades out	
4	SP		7	16	0.0	Tan, fine to medium **SAND**, trace silt and coarse sand, loose	
5	ML					Tan, sandy **SILT**, some fine gravel, loose Brown, medium dense	
6	CL		14	20	0.0	Light tan, silty **CLAY**, trace coarse sand, stiff	
7	SP					Tan, fine to medium **SAND**, some coarse sand, trace fine gravel, medium dense Trace coarse sand, dense	
8			40	22	0.0	Some coarse sand and gravel Trace coarse sand, course gravel grades out	
9						Some coarse sand and gravel	
10	ML		22	23	0.0	Tan **SILT**, some clay, trace sand, trace fine to coarse gravel, medium dense	
11							
12	SW		24	23	0.0	Reddish tan, fine to coarse **SAND**, some fine gravel	
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 004 - P55
Date Drilled: 11/3/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SP		20	20	0.0	Tan, fine to medium **SAND**, some coarse sand and fine gravel, medium dense 1" reddish brown, medium to coarse sand layer at 14'	
15	SW					Tan, fine to coarse **SAND**, some fine gravel	
16	SP		32	23	0.0	Tan, fine to medium **SAND**, some coarse sand and gravel, trace cobbles, dense	
17						1" dark brown, medium to coarse sand layer at 17.25'	
18	SW		15	22	0.0	Tan, fine to coarse **SAND**, some gravel, trace cobbles, medium dense	
19							
20			25	24	0.2	1" dark brown layer at 19.25'	
21	SP		25	22	0.3	Tan, fine to medium **SAND**, trace coarse sand and gravel, medium dense Dark tan, some coarse sand and fine gravel, trace coarse gravel and cobbles Tan	
22							
23							
24	SW		17	23	0.0	Light tan, fine to coarse **SAND**, trace gravel	
25							
26	SP		18	24	0.0	Tan, fine to medium **SAND**, some coarse sand and fine gravel	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 004 - P55
Date Drilled: 11/3/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
	SP					Tan, fine to medium **SAND**, some coarse sand and fine gravel	
27	SW					Light tan, fine to coarse **SAND**, trace gravel, dense	
28	SP		32	24	0.0	Tan, fine to medium **SAND**, trace coarse sand, dense Dark tan laminations at 28.5'	
29			*32	*12	0.0	Some coarse sand	*1' spoon driven from 29-30' in order to return to even numbered sampling intervals
30						Trace coarse sand, trace fine gravel	
31			NA	20	0.0	1" reddish brown, fine to coarse sand layer at 31.75'	
32	EOB						NA = Not available (blow counts not recorded)
33						NOTES: 1. Boring completed to a depth of 32' below reference on 11/3/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 11/8/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 7', 17', 27', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 005 - O56
Date Drilled: 11/3/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						Asphalt	
1			9	20	0.0	**FILL**, red-brown, sandy silt, trace fine gravel Light brown, some coarse sand	
2						Orange-tan, fine to medium sand	
3			12	20	0.0		
4	ML					Light gray, clayey **SILT**, trace sand and gravel at 3.75-4' grading to brown silt, some sand at 4-4.5', stiff	
5	SP		9	22	0.0	Tan, fine to medium **SAND**, some coarse sand and gravel, loose	
6	ML					Light gray, clayey **SILT**, stiff	
7	SP		36	18	0.0	Dark tan to reddish tan at 5.75-6' followed by tan, fine to medium **SAND**, some to trace coarse sand and fine gravel, dense	
8							
9	ML		30	17	0.0	Tan, sandy **SILT**, dense	
10						Some gravel Some cobbles, trace gravel	
11			40	15	0.0		
12						Dark tan	
13			42	20	0.0		

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 005 - O56
Date Drilled: 11/3/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SP					Reddish brown, fine to medium **SAND**, some silt and cobbles, trace coarse sand, dense	
						Trace gravel, silt and cobbles grade out, very dense	
	SW					Tan, fine to coarse **SAND**, trace gravel	
15			63	22	0.0	Tan, fine to medium **SAND**, trace coarse sand and gravel, very dense	
16						Dense	
17	SP		34	22	0.0		
18						Medium dense	
	SW					Tan, fine to coarse **SAND**, some gravel, medium dense	
19	SP		18	21	0.0	Tan, fine to medium **SAND**, trace coarse sand and gravel, medium dense	
20						Tan, fine to coarse **SAND**, some gravel, medium dense	
21	SW		18	22	0.0		
22						Tan, fine to medium **SAND**, trace coarse sand, medium dense, medium dense	
23	SP		24	22	0.0		
24						2" brown, fine to coarse sand, trace fine gravel layer at 24'	
25	SW		24	21	0.0	3" reddish tan followed by tan, fine to coarse **SAND**, trace fine gravel, medium dense	
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 005 - O56
Date Drilled: 11/3/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SP		32	18	0.0	Tan, fine to medium **SAND**, trace coarse sand and fine gravel, dense Dark tan	
28						Some coarse sand and fine gravel, medium dense	
29			26	23	0.0	1" dark brown, medium to coarse sand layer at 29'	
30						Dense	
31			32	19	0.0		
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 11/4/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 11/8/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every odd numbered foot 5. SP samples collected at 4', 14', 24', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 006 - Q56
Date Drilled: 11/2/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

URS
5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						Asphalt	
1						**FILL**, dark brown to black, silty, sandy soil, trace fine to coarse gravel, moist Grades to brown by 0.75'	
2			6	19	0.0	Brown, fine to medium sand, trace coarse sand and fine gravel, dry	
3						Some coarse sand and fine gravel	
4	ML		6	18	0.4	Gray, clayey **SILT**, medium stiff, moist	
	SP					Brown, fine to medium **SAND**, some coarse sand and fine gravel, loose, dry	
5						Gray clayey **SILT**, soft, moist, alternating with light yellow-brown fine sand, loose, moist	
6	ML		23	16	0.0	Sand grades out	
7						Light brown to tan, fine **SAND**, trace coarse sand and fine gravel, medium dense, moist	
8			56	21	0.8	Light brown, some medium to coarse sand and fine gravel, trace coarse gravel, very dense, dry	
9						Brown, fine to medium sand, coarse gravel grades out, moist Trace coarse gravel, dense	
10	SP		42	17	0.0	Dark brown to brown, fine to coarse,gravlley sand, trace cobbles	
11						Brown	
12			42	19	0.0		
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 006 - Q56
Date Drilled: 11/2/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SP		24	24	1.3	Brown grading to reddish brown, fine **SAND**, some medium to coarse sand, trace fine gravel, medium dense, moist Brown, fine to medium sand, some coarse sand	
15						Orange-brown	
16	SW		24	24	1.1	Orange-brown, fine to coarse **SAND**, trace fine gravel, medium dense, moist	
17						Tan, moist	
18			12	16	0.0		
19	SP					Tan, fine to medium **SAND**, trace coarse sand and fine gravel, medium dense, moist	
20	SW		19	22	0.0	Reddish brown, fine to coarse gravelly, fine to coarse **SAND**, medium dense, moist	
21	SP					Tan with dark brown laminations to 21', fine **SAND**, medium dense, moist	
22			25	18	0.0	Light brown, fine to medium sand, trace coarse sand and fine gravel 2" of dark brown laminations at 22'	
23	SW					Light brown, fine to coarse **SAND**, trace fine gravel, medium dense, moist	*1' spoon driven from 23-24' in order to return to even numbered sampling intervals
24	SP		*30	*9	0.0	Light brown, fine to medium **SAND**, some coarse sand and fine gravel, trace coarse gravel, medium dense, moist	
25	SW		24	19	0.0	Light brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense, moist Trace fine gravel, coarse gravel grades out	
26	SP					Tan to light brown, fine to medium **SAND**, trace coarse sand, moist	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 006 - Q56
Date Drilled: 11/2/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SP		43	23	0.0	Tan to light brown, fine to medium **SAND**, some coarse sand, trace fine to coarse gravel, dense, moist Trace coarse sand Brown	
28							
29	SW		40	19	0.0	Light brown, fine to coarse **SAND**, some fine gravel, trace coarse gravel, dense, moist	
30							
31			37	19	0.0		
	SP					Light brown, fine to medium **SAND**, dense, moist	
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 11/2/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 11/4/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 1', 11', 21', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 007 - O58
Date Drilled: 11/2/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

URS
5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
1						Asphalt	
2			10	15	1.9	**FILL**, brown silt, trace fine gravel	
3	SM					Light brown, silty, fine **SAND**, trace fine gravel, medium dense	
4			13	12	1.0	Some fine gravel, increasing gravel with depth	
5							
6	ML		13	19	1.6	Tan, sandy **SILT**, trace fine gravel, medium dense Some fine gravel	
7						Trace fine gravel	
8	SP		38	20	0.0	Tan, fine to medium **SAND**, some fine gravel, trace coarse gravel, dense	
9						Dark tan	
10	SM		63	20	0.0	Light brown, fine silty **SAND**, trace gravel, very dense	
11	SP					Tan, fine to medium **SAND**, some fine gravel, very dense Dense	
12	SW		46	20	0.0	Tan, fine to coarse **SAND**, some fine gravel, dense	
13	SP					Brown, fine to medium **SAND**, some silt, trace coarse sand	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 007 - O58
Date Drilled: 11/2/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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5 Penn Plaza
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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SP		27	19	0.0	Tan, fine to medium **SAND**, trace coarse sand and gravel, medium dense Dark tan Tan, some coarse sand and fine gravel, coarse gravel grades out	
15						Light tan, gravel grades out	
16			26	18	0.0	4" dark tan sand, some fine gravel, trace silt layer at 15.5' Tan, coarse sand grades out	
17						Some to trace coarse sand and gravel	
18			18	22	0.0		
19						Trace coarse sand and gravel	
20	SW		24	18	0.4	Tan, fine to coarse **SAND**, some fine gravel, trace coarse gravel, medium dense	
21						Dark tan to orange-tan	
22	SP		22	20	0.0	Tan, fine to medium **SAND**, trace coarse sand, medium dense <1" dark orange-tan, medium to coarse seam at 22'	
23	SW		*22	*11	0.0	3" dark tan followed by tan, fine to coarse **SAND**, some fine gravel, medium dense	*1' spoon driven from 23-24' in order to return to even numbered sampling intervals
24						Trace fine gravel	
25			20	20	0.7		
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 007 - O58
Date Drilled: 11/2/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SP		44	19	0.5	Orange-tan, fine to medium **SAND**, some coarse sand, trace gravel, dense Light tan, some fine gravel, coarse gravel grades out Orange-tan	
28						Tan Trace coarse sand, fine gravel grades out, medium dense	
29	SW		24	22	0.0	Tan, fine to coarse **SAND**, trace fine gravel	
30	SP					Tan, fine to medium **SAND**, trace coarse sand 1" dark orange layer at 30', some coarse sand, trace gravel	
31	SW		50	22	0.0	Tan, fine to coarse **SAND**, some gravel, very dense	
32	SP					Tan, fine to medium **SAND**, trace coarse sand	
	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 11/2/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 11/4/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 1', 11', 21', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 009 - P60
Date Drilled: 10/29/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

URS
5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						Asphalt	
1			12	24	0.0	**FILL**, black, gravelly, sandy soil and fine to coarse gravel, trace construction debris, dry	
2						Brown, sandy silt to silty sand, some fine to medium sand, trace gravel, medium moist	
3			11	17	0.0		
4	SP					Brown, fine to medium **SAND**, trace coarse sand and fine gravel, medium dense, dry	
5			16	18	0.0	Some coarse sand and fine gravel, trace coarse gravel	
6						Trace coarse sand and fine gravel	
7			14	21	0.0	Light brown	
8						Brown, dense	
9	CL		39	22	0.0	Grayish brown, silty **CLAY**, hard, moist	
10	SP					Brown, fine to medium **SAND**, some coarse sand and fine gravel, dense, dry	
11			39	24	0.0		
12	CL					Grayish brown, silty **CLAY**, trace coarse gravel and cobbles, hard, moist	
13			12	24	0.0	Brown, occasional cobbles, gravel grades out, stiff, moist	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 009 - P60
Date Drilled: 10/29/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	CL					Brown, silty **CLAY**, occasional cobbles, stiff, moist	
15	SP		38	22	0.0	Light brown to brown, fine to medium **SAND**, some coarse sand and fine gravel, dense, moist Orange-reddish brown, trace medium to coarse sand	
16	CL					Brown, silty **CLAY**, very stiff, moist	
17	SW		23	21	0.0	Brown, fine to coarse **SAND**, trace fine gravel, medium dense, moist	
	SP					Brown, fine **SAND**, medium dense, moist	
18	SW					Brown, fine to coarse **SAND**, trace fine gravel, medium dense, moist	
	SC					Brown to light brown, fine to coarse **SAND** and brown, silty **CLAY**, medium dense sand, stiff clay, dry	
19	SW		24	21	0.0	Brown to light brown, fine to coarse **SAND**, trace fine to coarse gravel, medium dense, dry	
20							
21	SP		24	21	0.0	Brown to light brown, fine to medium **SAND**, trace fine to coarse gravel, medium dense, dry	
22	SW		17	20	0.0	Brown to light brown, fine to coarse **SAND**, trace fine to coarse gravel, medium dense, dry Brown, some fine gravel	
23	SP					Brown, fine to medium **SAND**, medium dense, dry	
24	SW		24	20	0.0	Brown, fine to coarse **SAND**, some fine gravel, trace coarse gravel, medium dense, dry Moist	
25							
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 009 - P60
Date Drilled: 10/29/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SW		36	19	0.0	Brown, fine to coarse **SAND**, some fine gravel, trace coarse gravel, dense, moist	
28	SP					Brown, fine to medium **SAND**, trace coarse sand, medium dense, moist	
29	SW		26	22	0.0	Brown, fine to coarse **SAND**, trace fine gravel, medium dense, dry	
30	SP					Brown, fine to medium **SAND**, trace coarse sand, medium dense, dry Dense	
31	SW		36	24	0.0	Brown, fine to coarse **SAND**, some fine gravel, trace coarse gravel, dense, moist	
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 10/29/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 11/1/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every odd numbered foot 5. SP samples collected at 4', 14', 24', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 010 - R60
Date Drilled: 11/1/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
0						Asphalt	
1						**FILL**, dark brown to black, sandy, silty soil with fine to coarse gravel, dry	
2			7	24	1.9	Brown, fine to medium sand, trace fine gravel, dry Dark brown grading to light brown, silty clay, trace fine to coarse gravel, moist	
3							
4			10	24	1.0	Brown, fine to medium **SAND**, some coarse sand and fine gravel, trace coarse gravel, medium dense, dry	
5	SP						
6			13	12	1.6		
7	ML					Gray **SILT**, trace fine gravel, moist	
	SP					Brown, fine to medium **SAND**, some coarse sand and fine gravel, trace coarse gravel, dense, dry	
8	SM		45	24	0.0	Grayish brown, silty **SAND**, trace fine to coarse gravel, dense, moist	
9	SP					Light brown, fine to medium **SAND**, trace coarse sand and fine gravel, dense, dry Some coarse sand, trace coarse gravel	
10	SW		50	17	0.0	Light brown, fine to coarse **SAND**, trace fine gravel, dense, dry	
11	SP					Light brown, fine to medium **SAND**, trace coarse sand and fine gravel, dense, moist Some fine to coarse gravel, dry	
12			46	24	0.0	Gravel grades out	
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 010 - R60
Date Drilled: 11/1/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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5 Penn Plaza
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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SP		52	21	0.0	Light brown, fine to medium **SAND**, some coarse sand and fine gravel, trace coarse gravel, very dense, dry	
	SW					Light brown, fine to coarse **SAND**, very dense, moist	
15	SP					Brown with trace dark brown, fine to medium **SAND**, trace coarse sand and fine gravel, very dense, moist	
16			43	12	0.0	Light brown, occasional fine to coarse gravel and cobbles, dense, moist	
17						Brown, some coarse sand and fine gravel, cobbles grade out	
18			37	22	0.0	Trace coarse sand and fine gravel	
19						Medium dense	
20			16	24	0.4		
21						Some coarse sand	
22			16	24	0.0		
23			*23	*9	0.0	Trace coarse sand	*1' spoon driven from 23-24' in order to return to even numbered sampling intervals
24	SW					Light brown, fine to coarse **SAND**, trace fine gravel, medium dense, moist	
25			24	21	0.7		
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 010 - R60
Date Drilled: 11/1/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SP		26	24	0.5	Brown to light brown, fine to medium **SAND**, some coarse sand and fine gravel, trace cobbles, medium dense, moist Trace coarse sand and fine gravel	
28						Some coarse sand and fine gravel, dry	
29	SW		29	24	0.0	Light brown, fine to coarse **SAND**, trace fine to coarse gravel, medium dense, dry	
30							
31	SP		44	24	0.0	Light brown, fine to medium **SAND**, some coarse sand and fine gravel, dense, moist	
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 11/2/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 11/4/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 1', 11', 21', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 011 - O61
Date Drilled: 10/26/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						Asphalt	
1			11	19	0.0	**FILL**, dark brown, silty, fine sand with fine, subrounded gravel, dry	
2						Light brown, silty, fine sand with fine to coarse, subrounded gravel, dry	
3						Coarse gravel grades out	
4			9	19	0.0		
	ML					Light brown **SILT** with fine, subrounded gravel, loose, dry	
5	SM					Light brown, silty, fine **SAND** with fine, subrounded gravel, loose, dry Orange-brown, fine to medium sand, medium dense	
6	ML		15	19	0.0	Light brown **SILT**, trace organic material, medium dense, dry	
7	SM					Light brown, silty fine **SAND** with fine, subrounded gravel, medium dense, dry Trace fine, subangular gravel from 7-7.6', very dense	
8	SP		57	24	0.0	Yellowish brown, fine to medium **SAND** with fine, subangular gravel, trace silt, very dense, dry	
9	ML					Brown **SILT**, trace fine, subangular gravel, dense, moist	
10	SP		30	19	0.0	Brown grading to light brown, fine to medium **SAND** with fine, subrounded gravel, medium dense, moist Gravel grades out from 10-10.4'	
11						With coarse gravel	
12			30	21	0.0		
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 011 - O61
Date Drilled: 10/26/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
	SP					Light brown, fine **SAND**, medium dense, moist	
	SW					Brown, fine to coarse **SAND**, trace fine, subangular gravel, medium dense, moist	
14	SP		28	22	0.0	Yellowish brown, fine to medium **SAND** with fine, subrounded gravel, medium dense, moist	
15						With coarse gravel, dense	
16			42	24	0.0		
17						Medium dense	
18			22	24	0.0	Light brown, fine sand, gravel grades out layer from 18-18.3'	
19						Rounded to subangular gravel	
20			19	24	0.0		
21						Trace cobbles to 23'	
22			22	24	0.0		
23						Trace fine, subrounded gravel, coarse gravel grades out	*1' spoon driven from 23-24' in order to return to even numbered sampling intervals
24			*18	*12	0.0	With fine, subrounded gravel	
25							
26			18	24	0.0		

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 011 - O61
Date Drilled: 10/26/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SP					Light brown and yellowish brown, fine to medium **SAND** with fine to coarse, subrounded gravel, medium dense, moist	
28			32	24	0.0	Dense	
29			31	24	0.0		
30						Trace dark brown laminations to 31', medium dense	
31			28	20	0.0		
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 10/26/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 11/1/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 1', 11', 21', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 012 - Q61
Date Drilled: 10/26/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						Asphalt	
1						**FILL**, dark brown, fine sandy silt grading to brown, silty, fine sand, trace fine, subrounded gravel, grading to yellowish brown, fine to medium sand with fine, subrounded gravel, moist	
2			14	20	0.0		
3							
4	SP		8	15	0.0	Yellowish brown, fine to medium **SAND** with fine to coarse, rounded to subrounded gravel, loose, moist	
5							
	SM					Orange-brown, silty, fine **SAND**, trace fine, subrounded gravel, loose, moist	
6			6	19	0.0		
	ML					Light gray, clayey **SILT**, loose, moist	
7						Dense	
8	SP		36	19	0.0	1" reddish brown to light brown, fine to medium **SAND**, trace fine, subrounded gravel, dense, moist	
	SW					Light brown, fine to coarse **SAND**, trace fine, subrouned gravel, dense, moist	
9							
	ML					Light gray, **SILT**, trace clay, dense, moist	
10	SP		31	22	0.0	Reddish brown, medium to coarse **SAND**, dense, moist Brown with dark brown laminations, fine sand with fine, subrounded gravel Brown, fine to medium sand with fine to coarse, subrounded gravel, trace cobbles	
11							
12	SW		47	21	0.0	Light brown, fine to coarse **SAND** and fine to coarse, subangular to subrounded gravel, trace cobbles	
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 012 - Q61
Date Drilled: 10/26/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SW		37	24	0.0	Light brown, fine to coarse **SAND**, trace fine to coarse, subrounded gravel, trace cobbles, dense	
15							
16	SP		33	19	0.0	Yellowish brown with orange laminations to 15.4', fine to medium **SAND**, trace fine to coarse, subrounded gravel, dense, moist Increasing gravel content with depth	
17						With fine to coarse gravel, trace cobbles, medium dense	
18	SW		18	24	0.0	Light brown, fine to coarse **SAND**, trace fine, subrounded gravel, medium dense, moist	
	SP					Light brown, fine to medium **SAND** with fine to coarse, subrounded gravel, trace cobbles, medium dense, moist	
19	SW					Light brown, fine to coarse **SAND**, trace fine, subrounded gravel, medium dense, moist	
20			18	21	0.0	Light brown, fine to medium **SAND** with fine to coarse, subrounded gravel, trace cobbles, medium dense, moist	
21	SP						
22			24	24	0.0		
23							
24	SW		19	20	0.0	Light brown, fine to coarse **SAND**, trace fine, subrounded gravel, medium dense, moist	
25	SP					Light brown, fine to medium **SAND** with fine to coarse, subrounded gravel, medium dense, moist	
26			23	24	0.0		

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 012 - Q61
Date Drilled: 10/26/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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5 Penn Plaza
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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SP					Light brown, fine to medium **SAND** with fine to coarse, subrounded gravel, medium dense, moist	
	SW					Light brown, fine to coarse **SAND**, trace fine, subrounded gravel, medium dense, moist	
28	SP		25	24	0.0	Light brown, fine to medium **SAND** with fine to coarse, subrounded gravel, medium dense, moist	
	SW					Light brown, fine to coarse **SAND**, trace fine, subrounded gravel, medium dense, moist	
29			*25	*12	0.0		*1' spoon driven from 29-30' in order to return to even numbered sampling intervals
30						Light brown, fine to medium **SAND** with fine to coarse, subrounded gravel, medium dense, moist	
31	SP		25	24	0.0		
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 10/27/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 10/29/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 7', 17', 27', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 013 - R61
Date Drilled: 10/27/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						Asphalt	
1			*8	*12	0.0	**FILL**, brown, silty, fine to medium sand with fine to coarse, subrounded gravel, moist	*1' spoon driven from 1-2'
2	SP		20	17	0.0	Yellowish brown to light brown, fine to medium **SAND** with fine to coarse, subrounded gravel, medium dense, moist	
3							
4			30	19	0.0		
5							
6			28	24	0.0	Brown, trace fine, subangular gravel, coarse gravel grades out from 6.5-6.7'	
7						Light brown with trace dark brown laminations, with fine to coarse, subrounded gravel, medium sand grades out	
8			46	24	0.0	Brown, gravel grades out, dense	
9						Yellowish brown to light brown, fine to medium sand with fine to coarse, subrounded gravel	
10			50	19	0.0	1/2" reddish brown, medium to coarse seam at 8.9'	
11						Trace cobbles	
12			42	22	0.0	Brown and light brown with some dark brown, with fine to coarse, subangular to subrounded gravel	
13						Light brown	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 013 - R61
Date Drilled: 10/27/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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5 Penn Plaza
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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SP					1" dark brown, medium to coarse sand seam followed by brown, fine to medium **SAND** and fine to coarse, subrounded to subangular gravel, dense, moist	
15			33	16	0.0	Yellowish brown, trace gravel, medium sand grades out	
16	SW					Yellowish brown, fine to coarse **SAND** with fine, angular gravel, dense, moist	
17			15	20	0.0	Subrounded gravel, trace cobbles, dense	
18							
19			15	24	0.0		
20	SP					Light brown, fine **SAND**, trace fine, angular gravel, trace cobbles, medium dense, moist	
21	SW		15	16	0.0	Light brown, fine to coarse **SAND** with fine to coarse, subrounded gravel, medium dense, moist	
22							
23			21	19	0.0		
24	SP					Light brown, fine **SAND**, medium dense, moist	
25	GW		14	19	0.0	Light brown, fine to coarse **SAND** and fine to coarse, rounded **GRAVEL**, medium dense, moist	
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 013 - R61
Date Drilled: 10/27/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	GW		18	24	0.0	Light brown, fine to coarse **SAND** and fine to coarse, rounded **GRAVEL**, medium dense, moist	
	SP					Light brown, fine **SAND**, medium dense, moist	
28	GW		19	23	0.0	Light brown, fine to coarse **SAND** and fine to coarse, rounded **GRAVEL**, medium dense, moist	
30			32	19	0.0	Dense	
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 10/27/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 11/1/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every odd numbered foot 5. SP samples collected at 4', 14', 24', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 014 - P63
Date Drilled: 10/26/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
0						Asphalt	
1			*9	*12	0.0	**FILL**, reddish brown, fine to medium sand with fine to coarse, subrounded gravel, dry	*1' spoon driven from 1-2'
2	SM		11	15	0.0	Light brown, silty, fine **SAND** with fine to coarse, rounded gravel, medium dense, dry	
3							
4						Reddish brown, trace fine, subrounded gravel, loose	
5	ML		8	18	0.0	Light brown, **SILT**, loose, dry	
6	SM					Reddish brown, silty, fine **SAND**, trace fine, subrounded gravel, loose, dry	
7	SP		30	21	0.0	Yellowish brown with brown laminations, fine to medium **SAND**, trace fine, subrounded gravel, dense, moist	
8						Trace coarse gravel and cobbles, medium dense	
9			21	18	0.0		
10						Dark brown layer from 9.7-10'	
11	SW		46	24	0.0	Brown, fine to coarse **SAND** with fine to coarse, subangular gravel, trace cobbles, dense, moist	
12	SP					Yellowish brown with brown laminations, fine to medium **SAND**, trace fine, subrounded gravel, dense, moist	
13			33	24	0.0	Fine gravelly layer from 12.7-13'	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 014 - P63
Date Drilled: 10/26/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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5 Penn Plaza
13th Floor
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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SP					Yellowish brown with brown laminations, fine to medium **SAND**, trace fine, subrounded gravel, dense, moist	
15			26	24	0.0	Medium dense Fine gravelly layer from 14.6-14.9'	
16						With fine to coarse, subrounded gravel, trace cobbles	
17			24	24	0.0	Red-brown seam at 16.4' Red-brown layer from 17-17.4'	
18	SW					Yellowish brown with brown laminations, fine to coarse **SAND**, trace fine, subrounded gravel, medium dense, moist	
19			23	18	0.0		
20							
21			20	24	0.0	Red-brown layer from 21-21.4'	
22	SP					Light brown, fine to medium **SAND**, trace fine, subangular gravel, medium dense, moist	
23			18	21	0.0	Brown, with gravel, trace cobbles Light brown Brown	
24							
25			16	24	0.0	Light brown, cobbles grade out Brown Light brown	
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 014 - P63
Date Drilled: 10/26/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SP		31	24	0.0	Light brown, fine to medium **SAND** with fine, subangular gravel, dense, moist	
28							
29			21	24	0.0	Light brown with dark brown laminations, trace gravel, medium sand grades out from 28-28.5', medium dense Dark brown mottling from 28.5-29'	
30							
31			25	24	0.0	Yellowish brown, fine to coarse, subangular gravel	
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 10/26/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 11/1/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every odd numbered foot 5. SP samples collected at 4', 14', 24', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 015 - R63
Date Drilled: 10/25/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
1						Asphalt **FILL**, dark brown, silty, fine sandy, fine to medium gravel	
2			6	18	0.0	Dark brown, fine sandy, silt, trace fine subangular gravel, dry	
3	SP					Brown, fine to medium **SAND**, trace fine subrounded gravel and silt, loose, moist	
4			5	16	0.0		
5						Light brown, trace fine rounded gravel, medium sand grades out	
6			14	14	0.0	Medium dense	
7							
8			27	24	0.0		
9						Fine to medium sand with fine to coarse subrounded gravel	
10			26	21	0.0		
11						Stratified layers of light brown, fine sand, trace fine subangular to subrounded gravel, dense	
12			40	24	0.0		
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 015 - R63
Date Drilled: 10/25/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SP		44	24	0.0	Light brown to reddish brown to yellowish brown, fine to medium **SAND**, with fine to coarse subrounded gravel, stratified layers of light brown, fine sand, trace subangular to subrounded gravel, dense	
15							
16			27	19	0.0	Medium dense	
17							
18			17	17	0.0		
19	SW					Brown, fine to coarse **SAND**, medium dense, moist	
20	SP		15	24	0.0	Light brown, fine to medium **SAND**, trace fine to coarse subrounded gravel, with stratified layers of light brown fine sand, trace fine subangular to subrounded gravel, medium dense, moist	
21							
22			17	22	0.0		
23			*21	*12	0.0	Trace cobble fragments	*1' spoon driven from 23-24' in order to return to even numbered sampling intervals
24						Some subangular fine gravel	
25			17	24	0.0		
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 015 - R63
Date Drilled: 10/25/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SP		29	21	0.0	Light brown, fine to medium **SAND**, some fine to coarse subangular to subrounded gravel, with stratified layers of light brown, fine sand, trace fine subangular to subrounded gravel, medium dense, moist	
28							
29			24	24	0.0		
30						Yellow-brown, with fine to coarse subrounded gravel and cobble fragments, dense	
31			32	21	0.0		
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 10/25/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil 11/1/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 1', 11', 21', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 016 - O65
Date Drilled: 10/21/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
0						Asphalt	
1						**FILL**, brown, silt, trace fine to coarse gravel, dry	
2			9	24	0.0		
3						Brown, fine to coarse **SAND**, some fine to coarse gravel, loose, dry	
4			48	24	0.0	Dense Dark orange-brown	
5	SW					1-2" black layer at 4.5'	
6			34	20	0.0	Some 1" fine sand layers from 6-7'	
7						Very dense	
8	SP		62	24	0.0	Dark brown, fine to medium **SAND**, very dense, dry Dark orange-brown, fine to coarse **SAND**, some fine to coarse gravel, very dense, dry	
9						Occasional cobbles, dense	
10	SW		30	23	0.0		
11						Light brown, trace gravel	
12			46	19	0.0		
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 016 - O65
Date Drilled: 10/21/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SW		29	22	0.4	Brown, fine to coarse **SAND**, some fine to coarse gravel, occasional cobbles, medium dense, dry	
15							
						Trace coarse gravel	
16			28	23	0.0		
17							
18	SP		29	11	0.0	Brown, fine to medium **SAND**, some coarse sand and fine gravel, medium dense, dry	
19						Some yellow-orange coloration, moist	
20			16	20	0.0	Light brown, fine to coarse **SAND**, trace fine gravel, medium dense	
21						Occasional cobbles, trace yellow-orange coloration from 21-21.3'	
22			20	24	0.0		
23	SW		*18	*8	0.0		*1' spoon driven from 23-24' in order to return to even numbered sampling intervals
24							
25			27	22	0.5		
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 016 - O65
Date Drilled: 10/21/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SW					Light brown, fine to coarse **SAND**, trace fine gravel, occasional cobbles, medium dense, moist	
	SP		27	24	0.0	Light brown to orange-brown, fine to medium **SAND**, some coarse sand, trace fine to coarse gravel, medium dense, moist	
28							
29	SW		30	22	0.4	Light brown to brown, fine to coarse **SAND**, some fine to coarse gravel, trace cobbles, medium dense, moist	
30							
31	SP		30	19	0.3	Brown to light brown, fine to medium **SAND**, some to trace coarse sand and fine gravel, medium dense, moist	
	SW					Brown to light brown, fine to coarse **SAND**, trace fine gravel, medium dense, moist	
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 10/21/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 10/25/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 1', 11', 21', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 017 - Q64
Date Drilled: 10/21/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
0						Asphalt	
1						**FILL**, dark brown to brown, silty sand, trace gravel, moist	
2			11	24	0.0		
3	SP					Brown to orange-brown, fine to medium **SAND**, some to trace coarse sand and fine gravel, medium dense, dry	
4			14	20	0.0		
5	CL					Light brown, silty **CLAY**, stiff, moist	
6			11	8	0.0		
7	SW					Brown, fine to coarse **SAND**, some fine gravel, trace coarse gravel, medium dense, moist	
8	SP		37	24	3.4	Light brown, fine **SAND**, some medium sand, trace coarse sand and fine gravel, dense, moist	
9	CL					Light brown, silty **CLAY**, very stiff, moist	
10	SW		28	22	0.0	Light brown with trace orange, fine to coarse **SAND**, some fine gravel, trace coarse gravel and cobbles, medium dense, moist	
11						Brown	
12	SP		30	24	0.0	Brown, fine to medium **SAND**, trace fine gravel, medium dense, moist	
13						Black to gray, medium to coarse sand, fine sand grades out	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 017 - Q64
Date Drilled: 10/21/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
	SP					Black to gray, medium to coarse **SAND**, medium dense, moist	
14	SW		29	23	0.0	Brown with orange, fine to coarse **SAND**, some fine gravel, trace coarse gravel, medium dense, moist	
15							
16	SP		22	19	0.0	Brown, fine to medium **SAND**, some coarse sand and fine gravel, trace coarse gravel, medium dense, moist	
17							
18	SW		20	24	0.0	Brown, fine to coarse **SAND**, some fine gravel, trace coarse gravel, medium dense, moist	
19							
20			34	19	0.0	Dense	
21							
22	SP		28	12	0.0	Light brown, fine to medium **SAND**, some coarse sand and fine gravel, occasional cobbles, medium dense, moist	
23							
24	SW		34	12	0.0	Light brown with orange, fine to coarse **SAND**, trace fine gravel, dense, moist	
25							
26	SP		32	8	0.0	Light brown with orange, fine to medium **SAND**, trace fine to coarse gravel, dense, moist	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 017 - Q64
Date Drilled: 10/21/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27						Light brown with orange, fine to medium **SAND**, some coarse sand, trace fine to coarse gravel, dense, moist	
28	SP		29	12	0.0	Medium dense	
29			*27	*12	0.0	Light brown	*1' spoon driven from 29-30' in order to return to even numbered sampling intervals
30						Dense	
31	SW		32	20	0.0	Light brown, fine to coarse **SAND**, some fine gravel, trace coarse gravel, dense, moist	
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 10/21/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 10/25/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 7', 17', 27', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 018 - R64
Date Drilled: 10/22/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
1			19	24	0.0	Asphalt **FILL**, dark brown grading to brown grading to black/brown, silty sand, trace fine to coarse gravel and cobbles, moist	
2							
3			7	24	0.0		
4							
5	SP		10	24	0.0	Brown, fine to medium **SAND**, some coarse sand and fine gravel, loose, dry	
6							
7	CL		7	24	0.0	Brown, silty **CLAY**, medium stiff, moist	
8							
9	SP		43	21	0.5	Brown, fine to medium **SAND**, some coarse sand, trace fine to coarse gravel, occasional cobbles, dense, dry 1-2" brown, silty clay layer at 8.5'	
10							
11	SW		84	24	1.2	Brown, fine to coarse **SAND**, some fine to coarse gravel, trace cobbles, very dense, dry	
12						Dense	
13			41	24	0.0	Light brown, moist	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 018 - R64
Date Drilled: 10/22/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SW					Light brown, fine to coarse **SAND**, some fine to coarse gravel, trace cobbles, dense, moist	
						2" fine sand layer at 14.3' 2" dark brown to black layer at 14.8'	
15	SP		31	24	0.0	Brown, fine to medium **SAND**, trace coarse sand and fine to coarse gravel, dense, moist	
16						Light brown to brown, coarse gravel grades out, medium dense	
17			24	24	0.0	1" coarse sand layer at 17'	
18						Some coarse sand and fine gravel, trace coarse gravel	
19			22	19	0.0		
20							
21	SW		48	24	0.0	Light brown to brown, fine to coarse **SAND**, trace fine gravel, dense, moist	
22	SP					Light brown to brown, fine to medium **SAND**, trace coarse sand and fine gravel, dense, moist	
23			32	19	0.0	Trace cobbles	
24						Medium dense	
25	SW		26	24	0.0	Brown to light brown, fine to coarse **SAND**, trace fine to coarse gravel, medium dense, moist	
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 018 - R64
Date Drilled: 10/22/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SP		24	19	0.0	Brown, fine to medium **SAND**, some coarse sand and fine gravel, trace coarse gravel, medium dense, moist	
28							
29			54	0	NA	No recovery from 28-30' due to presence of cobbles at tip of spoon; lithology assumed to be the same as above and below	NA = Not available (no recovery)
30							
31			48	5	0.0	Trace coarse sand and fine gravel, coarse gravel grades out, dense, dry	
32							
33			54	4	0.0	Very dense	
34	EOB						
35						NOTES: 1. Boring completed to a depth of 34' below reference on 10/22/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 10/29/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every odd numbered foot 5. SP samples collected at 4', 14', 24', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 019 - P66
Date Drilled: 10/18/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
0						Asphalt	
1			15	18	0.0	**FILL**, Brown, silty, fine to medium sandy gravel Dark brown to light brown, fine to medium sandy, silt, little fine to coarse gravel, dry	
2							
3			38	16	0.0	Light brown to dark brown, fine to coarse sand with fine to coarse gravel, dry	
4	SM					Brown to light brown, silty, fine to medium **SAND**, trace fine gravel, dense, dry	
5	SP		37	24	0.0	Light brown, fine to medium **SAND** with fine to coarse gravel, trace silt, dense, dry	
6	SM					Brown, silty, fine to medium **SAND** with gravel, dense, moist	
7	ML		40	24	0.0	Light gray, fine sandy, **SILT**, trace fine gravel	
8	SP					Yellowish brown, fine to medium **SAND**, with fine gravel, dense, moist Light brown, trace fine gravel, medium dense	
9			28	24	0.0		
10						Some fine to coarse gravel, trace cobbles, dense	
11			30	24	0.0		
12						Little fine gravel, trace coarse gravel Trace black	
13			35	24	0.0		

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 019 - P66
Date Drilled: 10/18/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14						Light brown, fine to medium **SAND**, little fine gravel, trace coarse gravel, dense	
15	SP		40	17	0.0	Dark brown, fine sand seams at 15-16'	
16						Little fine to coarse gravel	
17			35	24	0.0		
18							
19			37	24	0.0	Yellowish brown, fine to coarse **SAND** with fine to coarse gravel, dense, moist	
20						Grades to little fine to coarse gravel, medium dense	
21			27	23	0.0		
22	SW					Trace cobbles	
23			17	24	0.0		
24							
25			19	24	0.0		
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 019 - P66
Date Drilled: 10/18/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SW		17	23	0.0	Yellowish brown, fine to coarse **SAND**, little fine to coarse gravel, trace cobbles, medium dense, moist	
28							
29			18	24	0.0		
30							
31			19	24	0.0		
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 10/18/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 10/25/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every odd numbered foot 5. SP samples collected at 4', 14', 24', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 020 - R66
Date Drilled: 10/20/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber, Carrie Olsen

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
0						Asphalt	
1						**FILL**, dark brown grading to brown, fine to medium sandy, silt, trace fine, subangular gravel	
2			9	17	0.0		
3						Brown grading to dark brown	
4			13	15	0.0		
5	SP					Yellowish brown, fine to medium **SAND** with fine to coarse, subrounded gravel, medium dense, moist	
6	ML		5	23	0.0	Brown, fine sandy **SILT**, some fine, subrounded to subangular gravel, loose, moist, interbedded with 3-6" fine to medium sand layers	
7							
8			43	18	0.0	Interbedded layers of yellowish brown, fine **SAND**, trace fine, subrounded gravel and fine to medium sand with fine to coarse, subrounded gravel, dense, moist	
9							
10	SP		31	24	0.0		
11						Light brown, fine to medium sand, some fine subangular to subrounded gravel	
12			38	24	0.0		
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 020 - R66
Date Drilled: 10/20/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber, Carrie Olsen

URS
5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SP		27	17	0.0	Light brown, fine to medium **SAND**, some fine, subangular to subrounded gravel, medium dense	
15						Dense	
16			31	24	0.0		
17						Medium dense	
18			24	22	0.0	1" reddish brown layer at 18'	
19							
20			16	24	0.0		
21						Yellowish brown	
22			26	24	0.0		
23	SW		*18	*7	0.0	Yellowish brown, fine to coarse **SAND**, some fine, subangular to subrounded gravel, medium dense, moist	*1' spoon driven from 23 - 24' in order to return to even numbered sampling intervals
24	SP					Yellowish brown, fine to medium **SAND**, some fine, subangular to subrounded gravel, medium dense, moist Trace cobbles	
25			29	16	0.0		
26	SW					Brown to light brown, fine to coarse **SAND**, trace fine to coarse gravel, medium dense, moist	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 020 - R66
Date Drilled: 10/20/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber, Carrie Olsen

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13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SW		53	22	0.0	Brown, fine to coarse **SAND**, some fine gravel, trace coarse gravel, very dense, dry	
28						Dense	
29	SP		38	22	0.0	Brown, fine **SAND**, dense, dry	
30	SW					Brown, fine to coarse **SAND**, some fine gravel, trace coarse gravel, dense, dry Trace fine gravel, coarse gravel grades out, medium dense	
31	SP		21	24	0.0	Light brown, fine to medium **SAND**, trace coarse sand and fine gravel, medium dense, dry	
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 10/21/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 10/25/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 1', 11', 21', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
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37							
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39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 021 - O68
Date Drilled: 10/15/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
0						Asphalt	
1						**FILL**, dark brown, silty, fine to medium sand with fine to coarse, subangular gravel	
2			13	24	0.0		
3						Light brown, silt, trace fine to coarse, subangular gravel	
4	~~SM~~ SP		43	18	0.0	Light brown, fine to medium **SAND** with fine to coarse, subrounded gravel, trace cobbles, dry, dense 1" light brown, silty, fine sand at 3' 1" coarse sand layers at 3.3' and 3.6'	
5	SW					Dark brown, fine to ocarse **SAND**, trace fine, subrounded gravel, dry, dense	
6			26	21	0.0	Light brown, fine to medium **SAND**, some fine to coarse, subrounded gravel, trace cobbles, medium dense, dry	
7	SP					Dense	
8			40	22	0.0	1-2" red-brown layers at 8.2' and 8.5'	
9							
10	SW		25	24	0.0	Light brown, fine to coarse **SAND**, some fine to coarse, subrounded gravel, medium dense, moist	
11							
12	GW		24	24	0.0	Light brown, fine to coarse **SAND**, and fine, subangular **GRAVEL**, trace coarse, subrounded gravel	
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 021 - O68
Date Drilled: 10/15/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	GW		40	24	0.0	Light brown, fine to coarse **SAND** and fine, subangular **GRAVEL**, trace coarse, subrounded gravel and cobbles, dense, moist	
15						Medium dense	
16			25	24	0.0		
17						And fine to coarse, subangular gravel	
18			25	24	0.0		
19						Trace coarse, subrounded gravel	
20			19	24	0.0		
21							
22			15	24	0.0		
23	SP					Light brown, fine **SAND**, medium dense, moist	
24	GW		*19	*12	0.0	Light brown, fine to coarse **SAND** and fine, subangular **GRAVEL**, trace coarse, subrounded gravel, medium dense, moist	*1' spoon driven from 23-24' in order to return to even numbered sampling intervals
25			27	24	0.0		
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 021 - O68
Date Drilled: 10/15/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	GW		36	24	0.0	Light brown, fine to coarse **SAND** and fine, subangular **GRAVEL**, trace coarse, subrounded gravel, dense, moist	
28						Medium dense	
29			24	24	0.0		
30						Trace cobbles	
31			20	24	0.0		
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 10/18/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 10/19/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 1', 11', 21', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 022 - Q68
Date Drilled: 10/15/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
1						Asphalt	
2			13	24	0.0	**FILL**, brown grading to dark brown, silty, fine to medium sand with fine to coarse, subangular gravel	
3	GP					Brown, fine to medium **SAND** and fine to coarse, subrounded **GRAVEL**, dense, moist	
4	SW		35	20	0.0	Brown, fine to coarse **SAND** with fine to coarse, subrounded gravel, dense, moist	
	SP					Yellowish brown, fine to medium **SAND**, trace fine to coarse, subrounded gravel, dense, moist	
5	SW					Yellowish brown, fine to coarse **SAND** with fine to coarse, subrounded to subangular gravel	
6	SP		42	24	0.0	Light brown, fine **SAND**, trace fine, subangular gravel	
	SW					Light brown, fine to coarse **SAND**, some fine to coarse, subrounded gravel, dense, moist	
7						Light brown, fine **SAND**, trace fine, subangular gravel, dense	
8	SP		50	24	0.0	Yellowish brown, fine to medium sand with fine to coarse, subrounded gravel	
9						Trace cobbles	
10			31	17	0.0		
11	SW		36	14	0.0	Light brown, fine to coarse **SAND** with fine to coarse, subrounded gravel, trace cobbles, dense, moist	
12							
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 022 - Q68
Date Drilled: 10/15/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14			32	24	0.0	Light brown, fine to coarse **SAND** with fine to coarse, subrounded gravel, trace cobbles, dense, moist	
15							
						Medium dense	
16			27	14	0.0		
17	SW						
18			21	17	0.0		
19							
20			11	17	0.0		
21	SP					Yellowish brown, fine to medium **SAND** with fine to coarse, subrounded gravel, medium dense, moist	
	GW						
22	SP		22	20	0.0	Light brown, fine to coarse **SAND** and fine to coarse, subrounded **GRAVEL**, medium dense, moist	
23						Light brown, fine **SAND**, trace fine, subrounded gravel, medium dense, moist	
24	GW		18	24	0.0	Light brown, fine to coarse **SAND** and fine to coarse, subrounded **GRAVEL**, medium dense, moist	
25						Trace cobbles, dense	
26			38	16	0.0		

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 022 - Q68
Date Drilled: 10/15/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27						Light brown, fine to coarse **SAND** and fine to coarse, subrounded **GRAVEL**, trace cobbles, dense, moist	
28	GW		27	24	0.0	Cobbles grade out, medium dense	
29			*32	*10	0.0	Dense 2" reddish brown layer	*1' spoon driven from 29-30' in order to return to even numbered sampling intervals
30							
31	SP		20	18	0.0	Yellowish brown, fine to medium **SAND**, little fine, subrounded gravel, medium dense, moist	
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 10/20/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 10/25/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 7', 17', 27', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 024 - P69
Date Drilled: 10/14/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
1			*WR	12	0.0	Asphalt **FILL**, 1' terra cotta debris followed by black to gray with brown, medium to coarse sand and concrete debris, dry	*WR =weight of rods
2						Dark brown, silty sand and fine gravel	
3			7	24	0.0	Terra cotta and concrete debris, trace sand	
4						Dark brown, fine to medium sand with fine to coarse, subrounded gravel, some terra cotta and concrete debris, moist	
5			7	16	0.0		
6							
7			21	13	0.0		
8						Brown, fine to coarse **SAND** with fine to coarse, subangular gravel, medium dense, moist	
9			27	15	0.0		
10	SW					Occasional cobbles	
11			24	15	0.0		
12							
13			25	16	0.0		

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 024 - P69
Date Drilled: 10/14/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14						1-2" dark brown coarse sand/fine gravel layer followed by brown, fine to coarse **SAND** with fine to coarse, subangular gravel, medium dense, moist	
15	SW		27	17	0.0	Yellowish brown, little subrounded, fine to coarse gravel 1-2" dark brown to black, medium to coarse sand layer at 15'	
16						Occasional cobbles	
17			18	20	0.0	Trace dark brown at 16.4' and 16.7'	
18							
19	GW		25	14	0.0	Light brown, **SAND** and subrounded, fine to coarse **GRAVEL** 1-2" orange-yellow, coarse sand/fine gravel layer at 18.7'	
20							
21	SW		*WR	17	0.0	Yellowish brown, fine to coarse **SAND**, some subrounded, fine to coarse gravel	*WR =weight of rods
22							
23	GW		26	14	0.0	Light brown **SAND** and fine to coarse, subrounded **GRAVEL**, medium dense	
24							
25	SP		36	19	0.0	Yellowish brown, fine to medium **SAND**, dense, moist	
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 024 - P69
Date Drilled: 10/14/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SP					Yellowish brown, fine to medium **SAND**, medium dense, moist	
	GW		28	16	0.0	Brown, fine to coarse **SAND** and fine to coarse, subrounded **GRAVEL**, medium dense, moist	
	SP					Yellowish brown, fine to medium **SAND**, medium dense, moist	
	GW					Brown, fine to coarse **SAND** and fine to coarse, subrounded **GRAVEL**, medium dense, moist	
28	SP					Yellowish brown, fine to medium **SAND**, medium dense, moist	
	GW					Brown, fine to coarse **SAND** and fine to coarse, subrounded **GRAVEL**, medium dense, moist	
	SP					Yellowish brown, fine to medium **SAND**, medium dense, moist	
29	GW		26	19	0.0	Brown, fine to coarse **SAND** and fine to coarse, subrounded **GRAVEL**, medium dense, moist	
	SP					Yellowish brown, fine to medium **SAND**, medium dense, moist	
30						Brown, fine to coarse **SAND** and fine to coarse, subrounded **GRAVEL**, medium dense, moist	
	SW					Yellowish brown, fine to medium **SAND**, medium dense, moist	
31			24	21	0.0	Yellow-brown at 29.6-30' to light brown at 30-32', fine to coarse **SAND**, some fine to coarse, subrounded gravel	
32	EOB						

NOTES:
1. Boring completed to a depth of 32' below reference on 10/15/04
2. Groundwater not encountered
3. Boring backfilled to grade with clean soil on 10/19/04
4. Analytical samples collected where sufficient recovery from 1-30':
   a. On-Site radiological every foot
   b. On-Site nickel every odd numbered foot
5. SP samples collected at 4', 14', 24', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 025 - R70
Date Drilled: 10/20/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
1						Asphalt	
2			22	14	0.0	**FILL**, dark brown, fine sandy, silt, trace fine to coarse, subrounded gravel and cobbles, moist	
3							
4	SP		28	18	0.0	Brown, fine to medium **SAND** with fine to coarse, rounded to subrounded gravel, trace silt, medium dense, moist	
5	SW					Reddish brown, fine to coarse **SAND** with fine to coarse, angular gravel, dense, moist	
6			37	24	0.0	Light brown, fine **SAND** with fine, subrounded gravel, dense, moist	
7						Fine to medium sand with fine to coarse, subangular gravel	
8	SP		44	24	0.0		
9						Brown, very dense	
10			53	24	0.0	Light brown, fine sand, trace subrounded gravel, medium sand grades out	
11	GW					Brown, fine to coarse **SAND** and fine to coarse, subrounded **GRAVEL**, trace cobbles, very dense, moist Dense	
12			40	18	0.0		
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 025 - R70
Date Drilled: 10/20/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	GW		30	18	0.0	Brown, fine to coarse **SAND** and fine to coarse, subrounded **GRAVEL**, dense, moist	
15							
16			30	24	0.0	Grades to dark brown	
17							
18			23	15	0.0	Brown, medium dense Orange-brown, fine sand seam	
19							
20	SW		22	18	0.0	Brown, fine to coarse **SAND**, some fine to coarse, subrounded gravel, medium dense	
21							
22			15	17	0.0		
23			*15	*4	0.0	Trace cobbles	*1' spoon driven from 23 - 24' in order to return to even numbered sampling intervals
24						Grades to angular to subangular gravel	
25			21	24	0.0	1" black layer at 25'	
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 025 - R70
Date Drilled: 10/20/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SW		33	16	0.0	Brown, fine to coarse **SAND**, some fine to coarse, angular to subangular gravel grading to little fine, subangular gravel, dense, moist	
28							
29	GW		25	19	0.0	Brown, fine to coarse **SAND** and fine to coarse, subrounded **GRAVEL**, medium dense	
30							
31	SP		25	21	0.0	Light brown, fine to medium **SAND**, trace fine, subangular gravel, medium dense, moist	
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 10/20/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 10/22/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 1', 11', 21', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 026 - P71
Date Drilled: 10/13/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						Asphalt	
1						**FILL**, dark brown, fine sandy silt with fine, subangular gravel, trace organics, dry	
2			8	18	0.0	Brown	
3						Dark brown	
4			19	21	0.0	Light brown, fine to medium **SAND** and fine to coarse, subrounded **GRAVEL**, trace silt, medium dense, moist	
5	GP					Dark orange-brown layer from 4.6-5'	
6			22	18	0.0	Subangular gravel	
7							
8	SP		40	20	0.0	Light brown, fine to medium **SAND**, some gravel, dense	
9							
	GW					Light brown with trace dark brown, fine to coarse **SAND** and fine to coarse, subangular **GRAVEL**, trace cobbles, dense, moist	
10	SP		44	13	0.0	Yellow-orange, fine **SAND**, dense, moist	
11	GW					Yellow-brown to light brown, fine to coarse **SAND** and fine to coarse, subangular **GRAVEL**, dense, moist	
12			43	20	0.0		
	SP					Light brown, fine **SAND**, dense, moist	
13	GW					Light brown, fine to coarse **SAND** and fine to coarse **GRAVEL**, moist	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 026 - P71
Date Drilled: 10/13/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SW		22	23	0.4	Light brown with trace dark brown, fine to coarse **SAND**, some fine to coarse, subangular gravel, medium dense, moist	
15							
16			16	20	0.0	Yellowish brown, subrounded gravel	
17							
18			22	19	0.0	Light brown with trace dark red-brown laminations and intermittent orange layers	
19							
20			17	20	0.0		
21							
22			14	24	0.0	Light brown	
23			*13	*8	0.0	Orange-layer from 22.6-23.5'	*1' spoon driven from 23-24' in order to return to even numbered sampling intervals
24	SP		17	22	0.0	Light brown with orange-brown laminations, fine **SAND**, medium dense, moist 1" coarse sand, fine gravel layer with dark brown at 24.6', 1" fine gravel layer at 24.8' followed by yellowish brown, fine to medium sand, some fine to coarse, subrounded gravel; 1" orange, coarse sand, fine gravel layer at 25'	
25							
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 026 - P71
Date Drilled: 10/13/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SP		16	21	0.0	Yellowish brown with trace orange layers, fine to medium **SAND**, some fine to coarse, subrounded gravel, medium dense, moist	
28	SW					Light brown, fine to coarse **SAND**, some fine to coarse, subrounded gravel, medium dense, moist	
29	SP		21	18	0.0	Yellowish brown with orange-brown lamination, fine **SAND**, medium dense, moist	
30	SW					Light brown, fine to coarse **SAND**, some fine to coarse, subrounded gravel, medium dense, moist	
31			28	22	0.0		
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 10/14/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 10/19/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 1', 11', 21', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 027 - Q71
Date Drilled: 10/14/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
1						Asphalt	
						FILL, dark brown to brown to dark brown, silty, fine to medium sand and fine to coarse, subrounded gravel, concrete debris, moist	*WR =weight of rods
2			*WR	17	0.6		
3							
4			20	12	0.0	Yellowish brown to light brown, fine to medium **SAND**, some fine to coarse, subrounded gravel, medium dense, moist	
5							
6	SP		26	14	0.0		
7						Dense	
8			41	19	0.6		
9							
	SW					Yellowish brown with trace dark brown, fine to coarse **SAND**, some fine to coarse, subrounded gravel, dense, moist	
10			40	20	0.0		
						Yellowish brown to light brown, fine to medium **SAND**, some fine to coarse, subrounded gravel, dense, moist	
11	SP						
12			41	20	0.0		
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 027 - Q71
Date Drilled: 10/14/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

URS
5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	GW		32	19	0.0	Light brown, fine to coarse **SAND** and fine to coarse, subangular **GRAVEL**, dense, moist	
15	SP					Yellowish brown, fine grading to fine to medium **SAND**, some to trace fine to coarse, dense Brown, coarse gravel grades out, medium dense	
16	SW		21	24	0.0	Yellowish red grading to yellowish brown grading to light brown, fine to coarse **SAND**, some fine to coarse, subrounded to subangular gravel, medium dense, moist	
17							
18			18	17	0.0	Light brown, trace cobbles to 19'	
19							
20			18	16	0.0		
21						Yellowish brown, subrounded gravel	
22	SP		25	19	0.0	Light brown with trace orange-brown laminations, fine **SAND**, medium dense, moist	
23							
24	GW		42	20	0.0	Light brown to brown, fine to coarse **SAND** and fine to coarse, subangular to subrounded **GRAVEL**, dense, moist	
25	SP					Yellowish brown, fine to medium **SAND**, some fine to coarse, subrounded gravel, dense, moist	
26			34	24	0.0		

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 027 - Q71
Date Drilled: 10/14/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SP					Yellowish brown, fine to medium **SAND**, some fine to coarse, subrounded gravel, dense, moist	
28			20	15	0.0	Grading to light brown, medium dense	
29	SW		*22	*12	0.0	Light brown with orange-red coloration to 29', fine to coarse **SAND**, some fine gravel, medium dense, moist Some coarse gravel	*1' spoon driven from 29-30' in order to return to even numbered sampling intervals
30						Trace red-orange, coarse gravel grades out, dense	
31	SP		35	24	0.0	Light brown with dark reddish brown laminations, fine to medium **SAND**, some coarse sand, dense, moist	
32	SW EOB					Light brown, fine to coarse **SAND**, some fine gravel, dense, moist	
33						NOTES: 1. Boring completed to a depth of 32' below reference on 10/14/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 10/18/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 7', 17', 27', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 030 - R72
Date Drilled: 10/13/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
0						Asphalt	
1						**FILL**, dark brown, silty, fine to medium sand and gravel	
2			12	18	1.4	Trace fine, subrounded gravel, dry Brown, little fine, subrounded gravel	
3							
4	SP		24	14	0.0	Dark brown, fine **SAND**, trace silt and fine, subrounded gravel, medium dense, dry Light brown at 3.8-4.1' followed by yellowish brown	
5							
6			32	18	1.5	Light brown, fine to medium sand, little grading to some fine, subrounded gravel, dense Trace cobbles	
7						Yellowish brown to light brown, some fine to coarse gravel, moist	
8			31	23	0.3		
9							
10	GW		38	1	0.0	Light brown, fine to coarse **SAND** and fine to coarse, subrounded to subangular **GRAVEL**, dense, moist	
11							
12			38	20	0.0	Dark brown layer from 12-12.2'	
	SP					Yellowish brown, fine **SAND**, dense, moist	
13	GW					Orange-brown, fine to coarse **SAND** and fine **GRAVEL**, dense, moist	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 030 - R72
Date Drilled: 10/13/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SW		32	13	0.2	Light brown, fine to coarse **SAND**, some fine to coarse, subangular gravel, trace cobbles, dense, moist	
15	SP					Yellowish brown, fine **SAND**, trace fine, subangular gravel, trace silt, medium dense, moist	
16	SW		21	18	0.0	Light brown with trace dark reddish brown, fine to coarse **SAND**, some fine to coarse, subangular to subrounded gravel, trace silt to 17', medium dense, moist	
17						Trace orange	
18			19	18	0.1		
19							
20			12	12	0.0		
21							
22			17	6	0.0		
23							*1' spoon driven from 23-24' in order to return to even numbered sampling intervals
24			*23	*6	0.0	Trace cobbles, very dense	
25			52	3	0.0		
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU01 - 030 - R72
Date Drilled: 10/13/04
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Gary Webber

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SW		28	24	0.0	Brown grading to light brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense, moist 1" red-orange layer at 27.5'	
28	SP		15	16	0.0	1/2" dark brown seam followed by light brown with intermittent orange layers, fine to medium **SAND**, some coarse sand and fine gravel, trace coarse gravel, medium dense, moist	
30	GW		21	20	0.2	Light brown grading to brown, fine to coarse **SAND** and fine **GRAVEL**, medium dense, moist 4-5' orange grading to light brown Trace gravel	
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 10/13/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 10/18/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 1', 11', 21', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 001 - S69
Date Drilled: 1/11/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
1–3						**BACKFILL** Previously excavated to 4' bgs during LPH investigations	
4	ML		6	12	0.0	Brown, sandy **SILT**, trace gravel, loose, moist	
5–6	SP		5	14	0.0	Brown to light brown, fine to medium **SAND**, some coarse sand and fine gravel, loose, moist	
7							
8	CL		3	16	0.0	Light gray, silty **CLAY**, some fine gravel, soft	
9	SP					Orange-brown, fine to medium **SAND**, some fine to coarse gravel, trace coarse sand, loose, moist	
10			12	16	0.1	Light brown, trace gravel, medium dense	
11	SW					Orange-brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense	
12	SP		22	18	0.2	Orange-brown, fine to medium **SAND**, some coarse sand, trace fine gravel	
13						Light brown, trace coarse sand	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 001 - S69
Date Drilled: 1/11/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
	SW					Light brown, fine to coarse **SAND**, trace fine gravel, medium dense, moist	
14			22	22	0.0	Light brown, fine to medium **SAND**, trace coarse sand and fine gravel, medium dense, moist	
15							
			24	22	0.0	Light brown to orange-brown, some coarse sand	
16							
17	SP						
			18	18	0.1	1" dark brown, medium to coarse sand layer at 17.5'	
18							
						1" orange-brown, medium to coarse sand layer at 18.5'	
19						Light brown	
			11	20	0.1		
20							
						1/4" dark brown, fine sand seam followed by 1" orange-brown, medium to coarse sand layer at 20.5'	
21						Light brown to orange-brown, gravel grades out	
			12	18	0.0		
22						Dark orange-brown to orange-brown, fine to coarse **SAND**, some fine gravel, medium dense, moist	
	SW						
23						Light brown to brown, fine to medium **SAND**, some coarse sand, trace fine gravel, loose, moist	*1' spoon driven from 23-24' in order to return to even numbered sampling intervals
			*7	*12	0.0		
24						Gravel and coarse sand grade out from 23.75-24'	
	SP						
25			9	22	0.0	2" brown, fine to coarse sand, some fine gravel layer at 25'	
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 001 - S69
Date Drilled: 1/11/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SP		15	22	0.0	Light brown, fine to medium **SAND**, some fine to coarse gravel, trace coarse sand, medium dense, moist 2" brown, fine to coarse sand layer at 27'	
28							
29	SW		13	22	0.1	Orange-brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense, moist	
	SP					Light brown, fine to medium **SAND**, trace coarse sand and fine gravel	
30							
31	SW		14	23	0.2	Light brown, fine to coarse **SAND**, trace fine gravel, medium dense, moist	
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 1/11/05 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 1/12/05 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 1', 11', 21', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 002 - T69
Date Drilled: 1/10/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
1						Asphalt	
2			21	22	0.0	**FILL**, dark brown, silty, fine to coarse sand, some fine to coarse gravel, dry Light brown to dark brown to light brown, fine to coarse sand, some silt, trace fine gravel, dry	
3							
4			11	20	0.0	Brown, silty fine to coarse sand, some to trace fine to coarse gravel, dry	
5	CL					Light brown, silty **CLAY**, trace fine gravel, stiff, moist	
6	CL		7	12	0.0	Light brown to orange-brown, fine to coarse **SAND**, trace fine to coarse gravel and clay lenses to 7', loose, moist	
7	CL					Medium dense	
8			24	18	0.0		
9	SW					Light brown, some gravel	
10			20	24	0.1		
11						Orange-brown to light brown, some gravel	
12			25	22	0.7		
13						Light brown, trace fine gravel, coarse gravel grades out	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 002 - T69
Date Drilled: 1/10/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SW		26	18	1.1	Light brown to tan, fine to coarse **SAND**, some fine gravel, trace cobbles, medium dense, moist	
15							
16			22	20	0.2	Brown to light brown, some fine to coarse gravel, cobbles grade out	
17							
18			14	24	0.2	Light brown	
19							
20			12	20	0.5	Light brown to orange-brown	
21						Loose	
22			9	24	0.1		
23						Dark brown, silty sand lens at 22.5'	
24			12	22	0.3	Light brown, medium dense	
25							
26			13	22	0.8		

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 002 - T69
Date Drilled: 1/10/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt

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13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27						Light brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense, moist	
28	SW		18	20	0.7	Light brown to orange-brown, coarse gravel grades out	
29			*9	*12	0.2	Trace fine gravel	*1' spoon driven from 29-30' in order to return to even numbered sampling intervals
30						Some fine to coarse gravel Trace fine gravel, coarse gravel grades out	
31	SP		13	NA	0.6	Light brown, fine to medium **SAND**, trace coarse sand and fine gravel, medium dense, moist	
32	EOB						NA = Not available (recovery not available)
33						NOTES: 1. Boring completed to a depth of 32' below reference on 1/10/05 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 1/12/05 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 7', 17', 27', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 003 - V69
Date Drilled: 1/10/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt

URS
5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						Asphalt	
1			20	20	0.3	**FILL**, dark brown, silty, fine to coarse sand, trace fine to coarse gravel at 1-1.3' followed by brown, fine to coarse sand, some silt, trace fine to coarse gravel, dry	
2						dark brown, silty, fine to coarse sand, trace fine to coarse gravel, dry	
3			16	16	0.5		
	ML					Brown, clayey **SILT**, some sand and fine gravel, very stiff, dry	
4						Brown to orange-brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense to loose, moist	
5	SW		6	20	0.1		
6	CL					Brownish gray, silty **CLAY**, trace fine gravel, medium stiff, moist	
7			17	20	0.3	Orange-brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense, moist	
8	SW					Brown to light brown	
9			20	22	0.1		
10	ML					Brown **SILT**, trace fine gravel and sand, medium dense, moist Some fine to coarse gravel	
11			25	22	0.2	Light brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense, moist	
12	SW						
13			13	18	0.4		

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 003 - V69
Date Drilled: 1/10/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt

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5 Penn Plaza
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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SW					Light brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense, moist	
15			20	22	1.0		
16						Dense	
17			31	22	0.3		
18						Medium dense	
19			13	NA	0.1		NA = Not available (recovery not recorded)
20							
21			13	20	0.6		
22							
23			12	24	0.9		
24	GW					Tan to light brown, fine to coarse **SAND** and **GRAVEL**, medium dense, moist	
25			10	24	0.1		
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 003 - V69
Date Drilled: 1/10/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	GW		16	22	0.7	Tan to light brown, fine to coarse **SAND** and **GRAVEL**, medium dense, moist	
28	SW		11	24	0.3	Light brown, fine to coarse **SAND**, some fine gravel, medium dense, moist Trace fine gravel	
30			10	20	0.4	Some fine gravel	
32	EOB						

NOTES:
1. Boring completed to a depth of 32' below reference on 1/11/05
2. Groundwater not encountered
3. Boring backfilled to grade with clean soil on 1/12/05
4. Analytical samples collected where sufficient recovery from 1-30':
   a. On-Site radiological every foot
   b. On-Site nickel every odd numbered foot
5. SP samples collected at 4', 14', 24', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 004 - W69
Date Drilled: 1/11/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						Asphalt	
1							
2			33	24	0.6	**FILL**, dark brown, silty, fine to coarse sand, some fine gravel, dry Light brown, trace gravel Dark brown, some fine to coarse gravel	
3							
4			9	24	0.0	Brown Light brown, silty clay, trace fine gravel and sand, moist	
5						Dark brown, silty, fine to coarse sand, some fine gravel, dry	
6	CL		19	24	0.3	Light brownish gray, silty **CLAY**, trace fine gravel, very stiff, dry	
7	SW					Orange-brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense, dry Light brown, moist	
8			15	22	0.3		
9	SP					Light brown, fine to medium **SAND**, trace coarse sand and fine gravel, medium dense, moist	
10	ML		17	24	0.0	Brown, fine sandy, **SILT**, trace fine gravel, medium dense, moist	
11	SW					Light brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense, moist	
12			23	22	0.4		
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 004 - W69
Date Drilled: 1/11/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SW		14	20	0.3	Light brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense, moist	
15						Orange-brown	
16			18	20	0.5		
17						No recovery from 17-23'; lithology assumed to be the same as above and below zone of no recovery	NA = Not available (no recovery)
18			31	0	NA		
19							
20			27	0	NA		
21							
22			27	0	NA		
23						Light brown	*1' spoon driven from 23-24' in order to return to even numbered sampling intervals
24			*10	*12	0.4	With gravel	
25			12	20	0.4		
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 004 - W69
Date Drilled: 1/11/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SW		18	24	1.5	Brown to light brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense, moist	
28						Light brown	
29	SP		11	20	0.6	Light brown, fine to medium **SAND**, trace coarse sand and fine gravel, medium dense, moist	
30							
31	SW		15	24	1.3	Light brown, fine to coarse **SAND**, trace fine to coarse gravel, medium dense, moist	
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 1/11/05 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 1/12/05 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 1', 11', 21', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 005 - Y68
Date Drilled: 1/12/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Chris Ortolano

URS
5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
1						Asphalt	
2			50	21	0.0	**FILL**, dark brown, silty, fine to medium sand, some fine to coarse gravel, dry	
3							
4	ML		9	18	0.0	Brown **SILT** with fine to medium sand, some fine gravel, loose, dry	
5							
6			25	18	0.0	Light brown, fine **SAND**, some fine gravel, medium dense, dry	
7							
8			21	18	0.0	Light brown to tan, trace medium sand and fine gravel, moist	
9	SP						
10			22	22	0.0	Orange-brown, fine to medium sand, some fine to coarse gravel	
11							
12			25	22	0.0		
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 005 - Y68
Date Drilled: 1/12/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Chris Ortolano

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SP		24	24	0.0	Brown, fine to medium **SAND**, some fine to coarse gravel, trace cobbles, medium dense, moist	
15							
16			24	24	0.0		
17						Light brown to tan, cobbles grade out	
18			13	24	0.0		
19							
20			10	24	0.0		
21							
22			16	24	0.0		
23							
24			16	24	0.0		
25	SW					Light brown to brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense, moist	
26			20	24	0.0		

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 005 - Y68
Date Drilled: 1/12/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Chris Ortolano

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SW					Light brown to brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense, moist	*1' spoon driven from 29-30' in order to return to even numbered sampling intervals
28			20	24	0.0		
29			*16	*12	0.0		
30							
31			18	24	0.0		
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 1/12/05 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 1/12/05 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 7', 17', 27', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 006 - A19
Date Drilled: 1/12/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Kyle Strumfels

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
0						Asphalt	
1			44	18	0.0	**FILL**, dark brown to black, silty sand with fine to coarse gravel, moist Dark brown to black, fine to coarse sand with gravel, silt and trace cobbles, moist	
2						Dark brown to black, silty, fine to coarse sand with fine to coarse gravel, moist	
3			18	22	0.0	Brown, fine to coarse **SAND** with silt, some fine to coarse gravel, medium dense, moist	
4						Trace silt, little fine gravel, coarse gravel grades out	
5			13	14	0.0		
6	SW					Trace cobbles	
7			28	16	0.0		
8	ML					Cobbles grade out, loose Interbedded with light gray, sandy silt	
9	ML		6	20	0.0		
10	SM ML					Reddish brown, silty **SAND**, some gravel, loose, moist Brown, sandy **SILT**, little fine gravel, medium dense, moist	
11	SW		24	22	0.0	Reddish-brown, fine to coarse **SAND**, trace coarse gravel, medium dense, moist Tan to light brown, some fine to coarse gravel	
12						Dense	
13			42	20	0.0		

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 006 - A19
Date Drilled: 1/12/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Kyle Strumfels

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14						Light brown to tan, fine to coarse **SAND**, some fine to coarse gravel, dense, moist	
15			40	20	0.0		
16							
17			42	20	0.0	3" reddish brown, coarse sand and fine gravel lens at 17.2	
18						Light brown to brown, trace cobbles to 20'	
19	SW		27	12	0.0	Medium dense	
20							
21			18	14	0.0		
22							
23			18	20	0.0		
24						Trace cobbles to 26'	
25			24	18	0.0		
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 006 - A19
Date Drilled: 1/12/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Kyle Strumfels

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SW		39	39	0.0	Light brown to brown, fine to coarse **SAND**, some fine to coarse gravel, dense, moist Light brown to dark brown, trace cobbles to 28'	
28						Medium dense	
29			19	19	0.0		
30						Dense	
31			32	32	0.0		
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 1/12/05 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 1/13/05 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every odd numbered foot 5. SP samples collected at 4', 14', 24', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 007 - B19
Date Drilled: 1/11/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
1						Asphalt	
2			34	18	0.0	**FILL**, black grading to orange-brown, sandy silt with fine to coarse gravel, some asphalt debris, moist	
3						Dark brown to black, moist	
4			8	21	0.0	Yellow-brown, clayey silt with fine to coarse gravel, moist	
5						Orange-brown, fine to coarse sand, some silt, and fine to coarse gravel, moist	
6			12	19	0.0	Gray-brown, clayey silt, with fine to coarse gravel, moist	
7						Orange-brown, fine to coarse sand, some silt and fine to coarse gravel, loose, moist	
8	SW		78	24	0.0	Gray-brown, clayey silt, moist Light orange-brown with trace red, fine to coarse **SAND** with fine to coarse gravel, very dense, dry	
9						Decreasing gravel with depth, medium dense, moist	
10			16	16	0.0		
11	SP					Orange-brown with some dark brown seams, fine **SAND**, medium dense, moist	
12	SW		38	19	0.0	Trace dark red-brown, dense Orange-brown and dark brown mottled, trace red, fine to coarse **SAND**, trace fine to coarse gravel, dense, moist	
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 007 - B19
Date Drilled: 1/11/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SP		58	19	0.0	Light orange-brown, fine to medium **SAND**, some coarse sand and fine to coarse gravel, very dense, moist	
15	SW						
16			32	23	0.0	Light orange-brown, fine to coarse **SAND**, trace fine gravel, dense, moist	
17							
18			33	20	0.0	Light brown with trace red, some fine to coarse gravel	
19							
20			21	16	0.0	Medium dense	
21							
22			20	19	0.0		
23			*23	*12	0.0	Red grades out, trace coarse gravel	*1' spoon driven from 23-24' in order to return to even numbered sampling intervals
24						Dense	
25			44	19	0.0		
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 007 - B19
Date Drilled: 1/11/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SW		53	19	0.0	Light orange-brown with dark reddish brown seams, fine to coarse **SAND**, some fine gravel, trace coarse gravel, very dense, moist	
28						Trace gravel	
29			30	19	0.0	Some fine gravel, trace coarse gravel, dense	
30						Dark reddish brown laminations from 29.25' to 29.33' Trace fine gravel, coarse gravel grades out, medium dense	
31			27	19	0.0		
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 1/12/05 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 1/12/05 4. Analytical samples collected where sufficient recovery from 2-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 1', 11', 21', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 008 - S70
Date Drilled: 1/13/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt

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13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						Asphalt	
1			30	20	0.0	**FILL**, grayish brown, silty, fine to coarse, sand, some fine to coarse gravel, dry	
2						Gray silt, some fine to coarse gravel, dry Brown, fine to coarse sand, trace fine gravel, dry Brown, silty, fine to coarse sand, some fine gravel, moist	
3			8	24	0.4		
4						Gray brown, silty clay, trace fine gravel, moist	
5			7	16	0.4		
6	SW					Orange-brown, fine to coarse **SAND**, some fine gravel, loose, moist	
7			25	24	0.6	Light brown, trace fine gravel, medium dense	
8							
9	GW		18	20	0.5	Light brown to brown, fine to coarse **SAND** and **GRAVEL**, trace cobbles	
10							
11	SW		18	24	0.4	Light brown, fine to coarse **SAND,** some fine to coarse gravel, medium dense, moist	
12						Trace gravel	
13			14	20	0.5		

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 008 - S70
Date Drilled: 1/13/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14						Light brown, fine to coarse **SAND**, trace fine to coarse gravel, medium dense, moist	
15	SW		13	24	0.4		
16							
17			14	22	0.5		
	SP					Light brown, fine to medium **SAND**, medium dense, moist	
	GW					Light brown, fine to coarse **SAND** and **GRAVEL**, medium dense, moist	
18							
19			10	22	0.6	Light brown to orange-brown, fine to coarse **SAND,** trace fine to coarse gravel	
20							
21			11	22	0.7		
22	SW					Some gravel	
23			16	24	1.0		
24						Tan to light brown	
25			11	20	0.8		
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 008 - S70
Date Drilled: 1/13/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SW		20	20	1.1	Light brown, fine to coarse **SAND**, trace fine gravel, medium dense, moist	
28						Some fine to coarse gravel	
29			13	22	0.9		
30						Brown to light brown, coarse sand grades out	
31			13	22	1.1		
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 1/13/05 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 1/14/05 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every odd numbered foot 5. SP samples collected at 4', 14', 24', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 009 - U70
Date Drilled: 1/13/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt, Chris Ortolano

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						Asphalt	
1							
2			10	24	0.3	**FILL**, dark brown to brown, sandy silt, some fine to coarse gravel, trace cobbles, moist	
3							
4			8	16	0.0	Brown to orange-brown, silty clay, some fine to coarse gravel, trace fine sand, dry	
5							
6	SP		23	20	0.0	Orange-brown, fine **SAND**, some fine gravel, medium dense, moist	
7							
8	SW		24	20	0.0	Light brown, fine to coarse **SAND**, some fine gravel, medium dense, moist	
9						Dark brown, silty **SAND**, medium dense, moist	
10	SM		20	20	0.0	Trace fine gravel	
11							
12	SW		28	24	0.4	Light brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense, moist	
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 009 - U70
Date Drilled: 1/13/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt, Chris Ortolano

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SW		19	20	0.0	Light brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense, moist	
15	SP					Orange-brown, fine to medium **SAND**, trace fine gravel, medium dense, moist	
16			18	20	0.2		
17						Orange-brown to light brown, loose	
18			8	20	0.2		
19	SW					Light brown, fine to coarse **SAND**, some fine gravel, loose, moist	NA = Not available (recovery not recorded)
20			9	NA	0.2		
21						Some coarse gravel, medium dense	
22			12	20	0.4		
23			*14	*0	NA	No recovery	*1' spoon driven from 23-24' in order to return to even numbered sampling intervals No recovery
24	SW					Light brown, fine to coarse **SAND**, some fine to coarse gravel, loose, moist	
25			8	22	0.0		
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 009 - U70
Date Drilled: 1/13/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt, Chris Ortolano

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SW		17	20	0.5	Light brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense, moist	
28							
29			9	22	0.2	Loose	
30							
31			14	24	0.3	Medium dense	
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 1/13/05 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 1/14/05 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 1', 11', 21', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 010 - W70
Date Drilled: 1/13/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt, Chris Ortolano

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						Asphalt	
1							
2			15	24	0.4	**FILL**, dark gray, silty, fine to coarse sand, some fine to coarse gravel, moist	
3						Gray-brown, clayey silt, trace fine gravel, moist	
4			21	18	0.4	Light brown Light brown to orange-brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense, moist	
5						Orange-brown to light brown	
6			29	22	0.5		
7						Light brown, some fine to coarse gravel	
8	SW		16	20	0.4		
9						Trace cobbles	
10			14	20	0.3		
11						Light brown to tan, fine to coarse **SAND** and **GRAVEL**, medium dense, moist	
12	GW		26	24	0.4	Light brown to orange-brown	
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 010 - W70
Date Drilled: 1/13/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt, Chris Ortolano

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						No recovery	
14			38	12	0.3	Tan to light brown, fine to coarse **SAND**, some fine to coarse gravel, trace cobbles, dense, moist	
15	SW					Orange-brown, trace fine to coarse gravel, medium dense	
16			19	20	0.3		
17	SP					Light brown, fine **SAND**, trace coarse sand, medium dense, moist	
18	SW		14	24	0.3	Light brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense, moist	
19						Light brown to tan, trace fine to coarse gravel	
20	GW		12	24	0.5	Light brown, fine to coarse **SAND** and **GRAVEL**	
21							
22	SW		25	24	0.1	Light brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense, moist	
23						3" layer light brown, fine to medium sand Trace cobbles	
24			12	22	0.3		
25							
26			22	24	0.4		

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 010 - W70
Date Drilled: 1/13/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt, Chris Ortolano

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SW					Light brown, fine to coarse **SAND**, trace fine gravel, medium dense, moist	*1' spoon driven from 29-30' in order to return to even numbered sampling intervals
28						Trace coarse gravel	
			16	22	0.7		
29						Some fine gravel, loose	
			*8	*11	0.5		
30						Some coarse gravel, medium dense	
31			13	22	0.6		
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 1/14/05 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 1/17/05 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 7', 17', 27', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 011 - X70
Date Drilled: 1/17/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						Asphalt	
1			62	22	0.0	**FILL**, medium brown, silty, fine to medium sand, some coarse sand, some fine to coarse gravel, moist	
2							
3			16	18	0.0	Light brown, clayey, fine to medium sand, some fine to coarse gravel	
4						Light brown to orange brown, fine to medium **SAND**, trace coarse sand, and fine gravel, medium dense, moist	
5			23	24	0.0	3" light brown, sandy silt, trace fine gravel layer	
6	SP					Some coarse sand and fine gravel, trace coarse gravel and cobbles, dense, moist	
7			48	22	0.0		
8						Light brown, trace coarse sand and fine gravel	
9			39	20	0.0	Some coarse sand and fine gravel	
10							
11	SW		31	18	0.9	Light brown, fine to coarse **SAND**, some fine gravel, trace coarse gravel, dense, moist	
12							
13			44	22	0.4	Dark brown, trace fine gravel, coarse gravel grades out	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 011 - X70
Date Drilled: 1/17/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14						Light brown to orange brown, fine to medium **SAND**, trace coarse sand, and fine gravel, medium dense, moist	
15			51	18	0.0	Some coarse sand and fine gravel, very dense	
16							
17			42	18	0.0	Light brown to tan, trace coarse sand, and fine gravel, dense	
18	SP						
19			22	20	0.0	Some coarse sand, trace fine to coarse gravel, medium dense	
20							
21			23	20	0.2	Light brown to light orange-brown	
22							
23			27	22	0.0	Trace coarse sand	
24							
25	SW		23	22	0.0	Light brown, fine to coarse **SAND**, trace fine gravel, medium dense, moist	
26						Medium brown	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 011 - X70
Date Drilled: 1/17/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SP		35	18	0.0	Light brown, fine to medium **SAND**, trace coarse sand, and fine gravel, medium dense, moist Light brown to light orange-brown	
28						Some coarse sand and fine gravel, medium dense	
29			29	18	0.0	2" brown fine to medium sand layer	
30							
31			30	24	0.0		
32						3" orange-brown, fine to coarse sand, some fine gravel layer	
	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 1/17/05 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 1/19/05 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every odd numbered foot 5. SP samples collected at 4', 14', 24', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 012 - Z70
Date Drilled: 1/18/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						Asphalt	
1							
2			19	12	0.5	**FILL**, dark brown, silty, fine to coarse sand with fine to coarse gravel, moist	
3							
4			10	14	0.0	Orange-brown, fine sandy, silt, to coarse sand, with fine to coarse gravel, moist	
5							
6			19	24	0.0	Dark brown	
7	SM					Red-orange to brown, silty, fine **SAND**, trace coarse sand and fine gravel, medium dense, moist	
8	ML		14	19	0.0	Yellow-brown, fine to coarse sandy, **SILT** with fine gravel, medium dense, moist Orange-brown, some clay, medium dense Gray, clayey silt, some fine gravel and coarse sand, dry	
9	SM					Dark brown to brown, silty, fine to coarse **SAND** with fine to coarse gravel, dense, moist	
10	ML		32	20	0.0	Gray, clayey **SILT**, hard, dry	
11	SW					Light brown, fine to coarse gravelly, fine to coarse **SAND**, dense, dry	
12	SP		45	22	0.0	Light orange-brown, fine to medium **SAND**, dense, moist	
13	SW					Light orange-brown, gravelly, fine to coarse **SAND**, fine to coarse gravel, dense, dry	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 012 - Z70
Date Drilled: 1/18/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
	SW					Light orange-brown, fine to coarse gravelly, fine to coarse **SAND**, dense, dry, decreasing gravel with depth	
14	SP		39	19	0.0	Light brown, fine to medium **SAND**, some coarse sand, trace fine to coarse gravel, dense, dry	
15							
						Light brown, fine gravelly, fine to coarse **SAND**, trace coarse gravel, dense, dry	
16			32	18	0.0		
17							
						Trace red at 17.5'	
18			39	20	0.0		
19	SW					Fine to coarse gravelly, medium dense	
20			22	18	0.0		
21						Trace coarse gravel, fine gravel grades out, moist	
22			28	21	0.0		
23			*19	*11	0.0		*1' spoon driven from 23-24' in order to return to even numbered sampling intervals
24							
25			23	19	0.0	Some coarse gravel	
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 012 - Z70
Date Drilled: 1/18/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SW					Light brown, fine gravelly, fine to coarse **SAND**, medium dense, moist	
	SP		30	24	0.0	Light brown with dark red-brown laminations, fine to medium **SAND**, some coarse sand, trace fine gravel, medium dense, moist	
28						Light brown with trace dark reddish brown, fine to coarse **SAND** with fine to coarse gravel, medium dense, moist	
29	SW		21	24	0.0	Light brown Coarse gravel, fine gravel grades out to 28.75' Trace fine gravel from 29-30'	
30							
31			22	24	0.0		
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 1/18/05 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 1/19/05 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 1', 11', 21', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 013 - A21
Date Drilled: 1/13/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						Asphalt	
1							
2			24	12	0.0	**FILL**, medium brown, sandy silt, some fine gravel, moist Medium brown to light brown, silty, fine to coarse sand, some fine gravel, moist	
3							
4			11	16	0.0		
5						Medium brown	
6			4	23	0.0		
7						Light brown, fine to medium **SAND**, some fine gravel, coarse sand, and silt, loose, moist Trace coarse gravel	
8			4	20	0.0		
9						Trace cobbles	
10	SP		8	12	0.0		
11						Light brown to orange-brown, some coarse gravel	
12			4	20	0.0	Orange-brown to medium brown	
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 013 - A21
Date Drilled: 1/13/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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13th Floor
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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SW		11	20	0.0	Light brown, fine to coarse **SAND**, trace fine gravel, medium dense, moist	
15	SP		18	18	0.0	Light brown to tan, fine to medium **SAND**, trace coarse sand, and fine gravel, medium dense, moist Trace coarse gravel	
16							
17							
18			17	16	0.0		
19						2" tan, fine to coarse sand layer	
20	SW		13	16	0.0	Light brown to tan, fine to coarse **SAND**, trace fine to coarse gravel, medium dense, moist	
21							
22			15	20	0.0		
23							
24			24	16	0.0		
25							
26			30	18	0.0	Orange-brown	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 013 - A21
Date Drilled: 1/13/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SP					Light brown, fine to medium **SAND**, trace coarse sand, and fine gravel, medium dense, moist	*1' spoon driven from 29-30' in order to return to even numbered sampling intervals
28			20	18	0.0	Some coarse sand	
29							
30			*14	*11	0.0	Trace coarse sand	
31			24	20	0.0	2" fine to coarse sand layer	
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 1/13/05 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 1/17/05 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 7', 17', 27', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 014 - B21
Date Drilled: 1/14/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Kyle Strumfels

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
1			25	9	0.0	Asphalt **FILL**, Dark brown to black, silty sand, some fine to coarse gravel, moist	
2							
3			20	20	0.0	Asphalt Brown to dark brown, silty sand, some fine to coarse gravel, trace cobbles, moist	
4							
5			56	16	0.0		
6							
7	SW		64	20	0.0	Light brown to brown, fine to coarse **SAND**, some fine gravel, very dense, moist	
8	SP					Light brown, fine to medium **SAND**, trace fine gravel, very dense, moist	
9	SW		40	20	0.0	Brown to dark brown grading to light brown to brown, fine to coarse **SAND**, some fine to coarse gravel grading to little fine gravel, dense, moist	
10							
11			37	12	0.0	Light brown to brown, with fine to coarse gravel	
12							
13			34	22	0.0	Little gravel	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 014 - B21
Date Drilled: 1/14/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Kyle Strumfels

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SW					Light brown to brown, fine to coarse **SAND**, little fine to coarse sand, dense, moist	
						Brown, with fine to coarse gravel	
15			36	20	0.0	Light brown, little fine gravel, coarse gravel grades out	
16							
17			36	20	0.0		
18						Medium dense	
19			24	16	0.0		
20						With fine to coarse gravel	
21			24	20	0.0		
22						Trace coarse gravel, dense, moist	
23			40	20	0.0		
24	SP					Light brown, fine to medium **SAND**, trace fine gravel and coarse sand, dense, moist	
						Trace cobbles, medium dense	
25			20	16	0.0		
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 014 - B21
Date Drilled: 1/14/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Kyle Strumfels

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SP		61	20	0.0	Light brown, fine to medium **SAND** with fine gravel, trace coarse sand, very dense, moist 4" brown coarse sand with fine gravel lens at 27'	
28							
29			24	19	0.0	With fine to coarse gravel, medium dense	
30							
31			69	20	0.0	Very dense	
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 1/14/05 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 1/18/05 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every odd numbered foot 5. SP samples collected at 4', 14', 24', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 015 - S71
Date Drilled: 1/20/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
1						**FILL**, dark brown, silty, fine to coarse sand, trace fine gravel, loose, dry	
2			12	24	0.0	Yellow-brown, sandy silt with fine gravel, loose, moist Brown, with clay, trace fine gravel	
3						Yellow-brown, silty clay, soft, moist	
4			21	24	0.0	Light brown with trace red in first 4", fine to coarse sand, with fine gravel, trace coarse gravel, medium dense, moist	
5	ML					Brown, **SILT** with trace fine gravel, loose, moist	
6	SP		20	22	0.0	Light brown with brown laminations, fine to medium **SAND**, some coarse sand and fine gravel, dense, moist	
7							
8			56	20	0.0		
9	SW					Light brown, fine to coarse **SAND** with fine gravel, dense, moist	
10	SP		39	24	0.0	Light brown, fine to medium **SAND**, trace coarse sand and fine gravel Gravelly from 9.9-10.2' 3" dark brown layer at 10.2' followed by light brown with trace red	
11							
12	SW		44	24	0.0	Light brown, fine gravelly, fine to coarse **SAND**, decreasing gravel with depth, dense, moist Trace dark brown at 11.9'	
13						Trace red from 12.8-13"	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 015 - S71
Date Drilled: 1/20/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SW		45	24	0.0	Brown, fine to coarse **SAND**, trace fine to coarse gravel, dense, moist	
15							
16			29	18	0.0	Light orange-brown to reddish brown, moist, medium dense	
17							
18			20	24	0.0	Some gravel	
19						Light brown with red, fine gravelly , trace coarse gravel	
20			18	20	0.0		
21						Coarse gravel grades out	
22			28	21	0.0		
23			*20	*10	0.0	Some coarse gravel and cobbles at 23'	*1' spoon driven from 23-24' in order to return to even numbered sampling intervals
24	SP					Tan, fine to medium **SAND**, some coarse sand and fine gravel, moist Trace coarse sand, gravel grades out	
25	SW		25	24	0.0	Dark brown, fine to coarse **SAND** with fine gravel, medium dense, moist	
26	SP					Tan, fine to medium **SAND**, trace coarse sand, moist	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 015 - S71
Date Drilled: 1/20/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SW		25	24	0.0	Dark brown, fine to coarse **SAND** with fine gravel, medium dense, moist Tan with trace red, trace fine gravel	
28	SP					Tan, fine to medium **SAND**, some coarse sand, medium dense	
29	SW		25	24	0.0	Tan, fine to coarse **SAND**, trace fine gravel, medium dense, moist	
30							
31			36	14	0.0		
32	SP					Tan, fine to medium **SAND**, some coarse sand, dense, moist	
	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 1/20/05 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 1/21/05 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 1', 11', 21', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 016 - T71
Date Drilled: 1/17/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt, Kyle Jackson

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5 Penn Plaza
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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						Asphalt	
1						**FILL**, dark brown to brown, sandy silt, trace fine gravel, moist	
2			20	22	0.0	Brown to light brown	
3							
4	SW		34	24	0.0	Brown to orange-brown, fine to coarse **SAND**, some fine to coarse gravel, trace silt, and cobbles, dense, dry	
5						Very dense	
6	SP		62	24	0.0	Light brown to tan, fine to medium **SAND**, trace fine gravel, and coarse sand, very dense, dry	
	SW					Light brown to tan, fine to coarse **SAND**, some fine gravel, very dense, dry	
7	SP					Light brown to tan, fine to medium **SAND**, trace fine gravel, and coarse sand, very dense, dry	
8			26	22	0.0	Brown to light brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense, moist	
9	SW					Light brown to tan, fine to coarse sand with gravel, dense	
10			36	24	0.0		
11							
12			52	24	0.1	Brown to dark gray, very dense Light brown, some fine gravel	
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 016 - T71
Date Drilled: 1/17/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt, Kyle Jackson

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SW		47	20	0.1	Light brown to orange-brown, fine to coarse **SAND**, some fine to coarse gravel, dense, moist	
15							
16			34	20	0.3		
17						Light brown, medium dense	
18			26	22	0.4		
19						Light brown to tan, coarse gravel grades out	
20			15	20	0.0		
21						Brown to light brown, some fine to coarse gravel	
22			15	22	0.2		
23							
24			19	18	0.0		
25						Light brown to tan	
26	SP		29	22	0.2	Light brown to tan, fine **SAND**, medium dense, moist	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 016 - T71
Date Drilled: 1/17/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt, Kyle Jackson

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SP					Light brown to brown, fine **SAND**, medium dense, moist	
	SW					Light brown to tan, fine to coarse **SAND**, some fine gravel	
28	SP		20	18	0.4	Light brown to tan, fine to medium **SAND**, trace fine gravel, and coarse sand, medium dense, moist	
29	SW					Light brown, fine to coarse **SAND**, trace fine gravel, loose, moist	*1' spoon driven from 29-30' in order to return to even numbered sampling intervals
	SP		*6	*12	0.0	Light brown, silty, fine **SAND**, loose, moist	
30	SW					Light brown, fine to coarse **SAND,** trace fine gravel, loose, moist Medium dense	
31	SP		19	24	0.3	Light brown to tan, fine to medium **SAND**, trace fine gravel, and coarse sand, medium dense, moist	
	SW					Light brown to tan, fine to coarse **SAND**, some fine to coarse gravel, medium dense, moist	
32	EOB						
33							
34							
35							
36							
37							
38							
39							

NOTES:
1. Boring completed to a depth of 32' below reference on 1/17/05
2. Groundwater not encountered
3. Boring backfilled to grade with clean soil
4. Analytical samples collected where sufficient recovery from 1-30':
   a. On-Site radiological every foot
   b. On-Site nickel every even numbered foot
5. SP samples collected at 7', 17', 27', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 017 - V71
Date Drilled: 1/19/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Kyle Jackson, Brian Stoudt

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
1			21	20	0.6	**FILL**, dark brown, fine to coarse sand, trace coarse gravel, asphalt and base coarse material, moist	
2						Light brown, fine to coarse sand, trace fine to coarse gravel, silty clay layer, moist	
3			12	20	0.3	Dark brown to light brown, some fine to coarse gravel	
4							
5	CL		11	20	0.0	Light brown, silty **CLAY**, some fine to coarse gravel, stiff, moist	
6						Light brown, fine to coarse **SAND**, some fine to coarse gravel, trace silty clay layer, medium dense, moist	
7			27	22	0.2	Red-brown, silty clay grades out Dark to light brown	
8	SW						
9			18	20	0.3	Light brown Brown, sandy silt layer at 8.3-8.5'	
10							
11	GW		29	24	0.2	Brown, fine to coarse **SAND** and **GRAVEL**, medium dense, moist	
12						Dark brown layer at 11.9-12'	
13	SW		19	24	0.1	Brown to light brown, fine to coarse **SAND**, trace fine to coarse gravel	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 017 - V71
Date Drilled: 1/19/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Kyle Jackson, Brian Stoudt

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14						Brown to light brown, fine to coarse **SAND**, trace fine to coarse gravel, medium dense, moist	
15	SW		12	22	0.0		
16							
17	GW		25	24	0.0	Orange-brown to light brown, fine to coarse **SAND** and **GRAVEL**, medium dense, moist	
18							
19			9	24	0.0	Light brown to tan, fine to coarse **SAND**, loose, moist Trace dark brown seam 18.3-18.4'	
20							
21			11	22	0.0	Brown to light brown, some fine to coarse gravel, medium dense	
22	SW						
23			11	24	0.2	Orange-brown seam 20.2-20.3' Dark brown to brown, trace fine gravel, coarse gravel grades out Light brown to tan, trace coarse gravel	
24							
25			22	13	0.1	Dark brown to light brown Light brown to tan, coarse gravel grades out Orange-brown to light brown, trace coarse gravel	
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 017 - V71
Date Drilled: 1/19/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Kyle Jackson, Brian Stoudt

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SW		17	24	0.5	Light brown, fine to coarse **SAND**, trace fine to coarse gravel, medium dense, moist Trace dark brown to brown seam at 26.3'	
28						Brown to light brown	
29			11	24	0.4	Orange-brown to light brown, some fine gravel, coarse gravel grades out	
30						Brown to light brown, trace fine to coarse gravel	
31			14	24	0.1		
32	SP					Light brown, fine **SAND**, medium dense, moist	
33	EOB					NOTES: 1. Boring completed to a depth of 32' below reference on 1/19/05 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 1/21/05 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every odd numbered foot 5. SP samples collected at 4', 14', 24', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 018 - W71
Date Drilled: 1/19/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt

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5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
0						Asphalt	
1						**FILL**, dark brown, silty, fine to coarse sand, trace fine gravel, dry	
2			11	24	0.2	Brown to light brown, fine to coarse sand, some fine to coarse gravel, moist	
3							
4			7	16	0.4	Brown, silty, fine to coarse sand, moist	
5						Brown to light brown, fine to coarse sand, some fine to coarse gravel, trace concrete debris, moist	
6	SW		8	16	0.2	Brown to light brown, fine to coarse **SAND**, some fine to coarse gravel, loose, moist	
7							
8			15	18	0.3	Light brown, medium dense	
9							
10			10	18	0.3	With gravel, trace cobbles	
11							
12			22	24	0.8	Trace fine gravel, coarse gravel grades out Dark brown layer from 11.9-12'	
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 018 - W71
Date Drilled: 1/19/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SW		19	22	0.4	Light brown to orange-brown, fine to coarse **SAND**, some fine gravel, medium dense, moist	
15							
16			19	24	0.2	Light brown, some fine to coarse gravel	
17						Light brown to tan	
18	SP		17	22	0.3	Tan to light brown, fine to medium **SAND**, trace fine gravel, trace coarse sand, moist	
19	SW					Light brown, fine to coarse **SAND**, trace fine to coarse gravel, medium dense, moist	
20			8	22	0.3	Light brown to tan, some gravel, loose Light brown to brown, with gravel	
21						Some fine gravel, coarse gravel grades out	
22			8	24	0.2		
23	SP					Brown to light brown, fine to medium **SAND**, loose, moist	
24	SW		*5	*11	0.0	Light, fine to coarse **SAND**, trace fine gravel, loose moist With gravel	*1' spoon driven from 23-24' in order to return to even numbered sampling intervals
25	SP		15	24	0.2	Light brown to brown, medium to coarse **SAND**, some fine sand, trace fine gravel, medium dense, moist	
26	SW					Light brown, fine to coarse **SAND**, trace fine gravel, medium dense, moist	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 018 - W71
Date Drilled: 1/19/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SP		16	20	0.2	Light brown, fine to medium **SAND**, some fine gravel, trace coarse sand, medium dense, moist	
28	SW		12	22	0.1	Light brown, fine to coarse **SAND**, some fine gravel, medium dense, moist Trace fine to coarse gravel	
29							
30							
31			16	24	0.4		
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 1/20/05 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 1/21/05 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 1', 11', 21', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 019 - Y71
Date Drilled: 1/19/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Kyle Strumfels

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13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
1						Asphalt	
2			10	14	0.0	**FILL**, brown to dark brown, fine to coarse sand, little fine gravel, trace silt, moist	
3						Light brown to brown, some fine to coarse gravel, silt grades out	
4			5	14	0.0	Brown to dark brown, little fine gravel, trace silt	
5							
6			4	12	0.0		
7							
8			4	4	0.0		
9							
10			4	14	0.0	Light brown to brown, fine to coarse **SAND**, little fine to coarse gravel, loose, moist	
11	SW						
12			13	22	0.0	Brown, some fine to coarse gravel, medium dense	
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 019 - Y71
Date Drilled: 1/19/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Kyle Strumfels

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13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SW		27	20	0.0	Brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense, moist Light brown to brown, with fine gravel	
15						Brown, little gravel	
16			27	18	0.0	Light brown to brown, some fine to coarse gravel	
17							
18			23	20	0.0		
19	SP					Brown, fine to medium **SAND**, trace fine gravel, medium dense, moist	
20	SW		16	12	0.0	Light brown to brown, fine to coarse **SAND** with fine to coarse gravel, trace cobbles, medium dense, moist	
21							
22			17	18	0.0		
23						3" tan, fine sand layer Light brown to dark brown, trace cobbles	
24			20	22	0.0		
25						Dense	
26			33	16	0.0		

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 019 - Y71
Date Drilled: 1/19/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Kyle Strumfels

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SP					Dark brown grading to brown, fine to medium **SAND**, trace fine gravel, dense, moist	
28	SW		24	20	0.0	Tan to brown, fine to coarse **SAND**, little fine gravel, medium dense, moist	
29			*18	*11	0.0		*1' spoon driven from 29-30' in order to return to even numbered sampling intervals
30						Brown, trace fine gravel	
31			23				
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 1/20/04 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 1/21/04 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 7', 17', 27', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 020 - A22
Date Drilled: 1/18/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						Asphalt	
1			14	20	0.0	**FILL**, dark orange-brown, fine to medium sand, trace coarse sand and fine gravel	
2						Brown to dark brown silt, some fine to medium sand, trace fine gravel	
3			11	20	0.0	Light brown, sandy silt, some fine gravel Dark orange-brown, fine to medium sand, trace coarse sand and fine gravel	
4							
5	ML		5	13	0.0	Dark brown to brown, **SILT**, loose, moist Light brown to orange-brown, sandy silt, trace fine gravel	
6						Tan, some clay	
7	CL		4	24	0.0	Orange-brown, silty **CLAY**, medium stiff, moist	
8						Red-brown mottling from 7.5-8' Hard	
9	SP		66	14	0.0	Orange-brown, fine to medium **SAND**, trace fine gravel and cobbles, very dense	
10						Medium dense	
11	ML		22	18	0.0	Light brown, sandy **SILT**, some fine gravel	
12	SW					Orange-brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense	
13	ML		27	24	0.0	Light brown, clayey **SILT**, trace coarse gravel, moist	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 020 - A22
Date Drilled: 1/18/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
	ML					Light brown, clayey **SILT**, trace coarse gravel, medium dense, moist	
	SW					Orange-brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense	
14	SP					Orange-brown, fine to medium **SAND**, some coarse sand, trace gravel, dense	
15			42	22	0.0	Orange-brown, gravelly, fine to coarse **SAND**, dense Some fine to coarse gravel	
16						Trace cobbles	
17			32	18	0.0	Orange-brown, fine to medium sand, some fine to coarse gravel, trace coarse sand layer at 17-17.25'	
18	SW						
19			22	17	0.0		
20						Medium dense	
21			23	16	0.0		
22						Trace coarse gravel, cobbles grade out, moist	
23			23	20	0.0		
24						Light brown, fine to medium **SAND**, trace coarse sand and fine gravel, medium dense, moist	
25	SP		26	18	0.0	Light orange-brown, gravel grades out	
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 020 - A22
Date Drilled: 1/18/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Aimee Clark

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SP		29	18	0.0	Light brown, fine to medium **SAND**, trace fine gravel, medium dense, moist	
28	SW		30	16	0.0	Light brown, fine to coarse **SAND**, trace fine gravel, medium dense, moist 2" medium brown, fine to medium sand layer at 28.25' Medium brown, some fine gravel, trace coarse gravel	
31	SP		28	22	0.0	Light brown, fine to medium **SAND**, trace coarse sand and fine gravel, medium dense, moist	
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 1/18/05 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 1/19/05 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every odd numbered foot 5. SP samples collected at 4', 14', 24', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 021 - B22
Date Drilled: 1/19/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
						Asphalt	
1						**FILL**, black grading to dark brown, silty, fine to coarse sand with fine to coarse gravel, dry	
2			NA	22	0.0	Dark brown, sandy silt, trace gravel, moist	NA = Not available (blow counts not recorded)
3						Dark brown, silty sand with fine gravel, trace coarse gravel and cobbles, moist	
4			14	15	0.0	Orange-brown to red-brown, fine to coarse **SAND**, some silt, trace fine gravel, medium dense, moist	
5	SW					Loose	
6			7	24	0.0		
7	CL					Greenish gray, silty **CLAY**, trace fine to coarse gravel, medium stiff, moist	
8	SW		NA	24	0.0	Orange-brown to reddish brown, fine to coarse **SAND** with fine to coarse gravel, medium dense, moist	
9						Light brown with trace red, trace fine gravel, coarse gravel grades out	
10			32	0	NA	No recovery (cobbles stuck in spoon tip)	NA = Not available (no recovery)
11	SP					Brown, fine to medium **SAND**, some coarse sand, trace fine to coarse gravel, medium dense, dry	
12			29	24	0.0	Light brown to tan	
13	SW					Light brown, fine to coarse **SAND** with fine gravel, medium dense, dry	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 021 - B22
Date Drilled: 1/19/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SW		31	18	0.0	Light brown, fine to coarse **SAND** with fine gravel, trace coarse gravel, dense, moist	
	SP					Light brown, fine to medium **SAND**, some coarse sand, dense, moist	
15	SW		28	17	0.0	Light brown fine to coarse **SAND** with fine gravel, dense, moist Medium dense	
16							
17	SP		26	18	0.0	Light orange-brown, fine to medium **SAND**, some coarse sand, medium dense, moist	
18						Light orange-brown, fine to coarse **SAND** with fine gravel, trace coarse gravel, medium dense, moist	
19	SW		18	15	0.0	Fine to coarse gravelly	
20							
21			19	21	0.0	Some fine gravel, trace coarse gravel	
22							
23			*23	*11	0.0	Fine to coarse gravelly, dry	*1' spoon driven from 23-24' in order to return to even numbered sampling intervals
24			25	19	0.0	Coarse gravel grades out	
25							
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 021 - B22
Date Drilled: 1/19/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Carrie Olsen

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SW		27	20	0.0	Light orange-brown, fine to coarse **SAND**, some fine gravel, decreasing gravel with depth, medium dense, dry	
28							
29			19	24	0.0	Fine gravelly, trace coarse gravel	
30							
31			17	20	0.0	Trace fine gravel, coarse gravel grades out	
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 1/19/05 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 1/20/05 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 1', 11', 21', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 022 - S72
Date Drilled: 1/14/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt and Chris Ortolano

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
1			18	20	0.0	Asphalt **FILL**, dark brown, sandy silt, trace fine gravel, dry	
2							
3			8	22	0.0		
4							
5	SP		15	12	0.0	Dark brown to light brown, fine to medium **SAND**, trace fine to coarse gravel, medium dense, moist	
6							
7			30	24	0.2		
8							
9	SW		37	22	0.0	Light brown, fine to coarse **SAND**, some fine to coarse gravel, dense, moist	
10						Trace cobbles	
11			40	18	0.0		
12						Brown to dark brown, coarse gravel grades out, medium dense	
13			22	20	0.0	Light brown, trace fine gravel	

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 022 - S72
Date Drilled: 1/14/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt and Chris Ortolano

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SW					Light brown, fine to coarse **SAND**, trace fine gravel, medium dense, moist	
	SP					Light brown, fine to medium **SAND**, trace coarse sand, medium dense, moist	
15			15	20	0.0		
	SW					Light brown, fine to coarse **SAND**, some fine gravel, medium dense, moist	
16							
			17	24	0.0		
17							
18						Some coarse gravel	
			10	20	0.3		
19							
20						Trace fine to coarse gravel	
			22	22	0.2		
21							
22						Tan to light brown, some fine to coarse gravel	
			17	18	0.3		
23							
24						Trace cobbles	
			16	16	0.8		
25							
	SP					Light brown, fine to medium **SAND**, medium dense, moist	
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 022 - S72
Date Drilled: 1/14/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Brian Stoudt and Chris Ortolano

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SW		28	24	0.2	Tan to light brown, fine to coarse **SAND**, trace fine gravel, medium dense, moist	
28							
29			12	20	0.2	Some fine to coarse gravel	
30							
31			12	24	0.3	Light brown, trace fine gravel, coarse gravel grades out	
32	EOB						
33						NOTES: 1. Boring completed to a depth of 32' below reference on 1/17/05 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 1/21/05 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every odd numbered foot 5. SP samples collected at 4', 14', 24', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 023 - U72
Date Drilled: 1/18/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Kyle Jackson, Brian Stoudt

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New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
1						Asphalt and base material	
2			19	22	0.0	**FILL**, dark brown to brown, silty, fine to coarse sand, some fine to coarse gravel, dry Dark to light brown, fine to coarse sand, some silt, and fine gravel, dry	
3						Light brown to orange-brown, trace clayey silt layers, moist	
4			16	16	0.0		
5							
6			41	18	0.0	Dark to light brown, fine to coarse **SAND**, some silt, and fine gravel, dense, dry	
7	SW					Light brown to tan, some coarse gravel, medium dense	
8			29	20	0.0		
9							
10	GW		43	18	0.0	Fine to Coase **SAND** and **GRAVEL**, dense	
11							
12	SW		59	24	0.0	Dark brown, fine to coarse **SAND**, trace cobbles, very dense Dark brown, some fine gravel, coarse gravel grades out Orange-brown, some fine to coarse gravel	
13							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 023 - U72
Date Drilled: 1/18/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Kyle Jackson, Brian Stoudt

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Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
14	SW		22	22	0.0	Light brown to orange-brown, fine to coarse **SAND**, trace fine to coarse gravel, medium dense, moist	
15						Dense	
16			45	24	0.0		
17						Light brown to tan, some fine to coarse gravel, medium dense	
18			27	20	0.0		
19						Light brown	
20	SP		14	18	0.0	Light brown, fine to medium **SAND**, trace coarse sand and fine gravel, medium dense, moist	
21						Light brown, fine to coarse **SAND**, some fine to coarse gravel, medium dense, moist	
22			>100	16	0.0	Very dense	
23	SW					Medium dense	* 1' spoon driven from 23-24' in order to return to even numbered sampling intervals
24			*17	*12	0.0	Light brown to tan, dense	
25			32	24	0.0		
26							

Project No.: NYSDEC: V-00089-1; URS: 27010-039
Project: Survey Units Drilling Program
Client: GTEOSI, Hicksville, NY
Log of Boring: SU02 - 023 - U72
Date Drilled: 1/18/05
Sampler Type: 3-inch split spoon driven by 300-lb hammer
Logged By: Kyle Jackson, Brian Stoudt

URS
5 Penn Plaza
13th Floor
New York, NY 10001

Depth (feet)	USCS Letter Symbol	USCS Lithologic Symbol	Blows/Foot (center ft only)	Recovery (in per 2-ft interval)	PID Sample Screen (ppm)	Description	Remarks
27	SW		38	24	0.4	Light brown to tan, fine to coarse **SAND**, some fine to coarse gravel, dense, moist Light brown, trace fine to coarse gravel	
28							
29			11	22	0.3	Medium dense	
30							
31			21	24	0.8		
32	SP					Light brown, fine to medium **SAND**, trace fine gravel, medium dense, moist	
33	EOB					NOTES: 1. Boring completed to a depth of 32' below reference on 1/18/05 2. Groundwater not encountered 3. Boring backfilled to grade with clean soil on 1/21/05 4. Analytical samples collected where sufficient recovery from 1-30': a. On-Site radiological every foot b. On-Site nickel every even numbered foot 5. SP samples collected at 1', 11', 21', and 30', analyzed on and off Site for radioactivity, VOCs, and nickel and off Site for beryllium	
34							
35							
36							
37							
38							
39							

SU01 MARSSIM Evaluation Results Using Severn Trent Laboratories, Inc. Sample Results

SU01, Intervals 1, 2, and 3 passed the MARSSIM[1] Sign Test and the associated soils are considered releasable from a radiological perspective. These intervals consist of SP samples collected and analyzed in the 0 to 3-m (0 to 10-ft), 3 to 6-m (10 to 20-ft), and 6 to 9-m (20 to 30-ft) depth ranges, respectively. The MARSSIM protocol uses a non-parametric statistical analysis test that evaluates all of the SP sample results for a single interval separately. Therefore, there were three independent evaluations within the three-dimensional footprint of SU01.

There were a total of 26 SP sample results in Interval 1, 26 in Interval 2, and 25 in Interval 3. All samples were analyzed for radiological analytes of interest (Th-232, U-234, and U-238) for purposes of this evaluation. The sample results for each of the samples are presented in **Table 2** and are the results reported by STL.

The charts on the subsequent pages of this appendix were generated by the COMPASS[2] software. As shown on the first page of the *Surface Soil Survey Plan* for each interval, a minimum of 13 soil sample analyses were sufficient for the MARSSIM-based analysis to be statistically significant. As stated earlier, the MARSSIM-based analysis for Intervals 1, 2, and 3 in this SU were based on 26, 26, and 25 soil sample analyses, respectively.

Included in the assessment of SU01 are three reports. The cover report is titled *Site Report* and provides information the radiological contaminants and their respective DCGLw[3] (the Site cleanup levels specified in the Work Plan) used in the evaluation of each interval.

Each interval assessment is comprised of two COMPASS reports. The first report is titled *Surface Soil Survey Plan*. This report contains information that was used in the planning phase of the survey or soil sample collection. This information was based on the Site's cleanup levels and cell parameters or is information that was derived from these parameters. The last section of this report contains information that, by design, was an estimate of the average concentration and the standard deviation anticipated to be present in the survey unit interval for each radionuclide. The values in this report were based on the actual average concentration and standard deviation of each radionuclide as calculated from the sample results.

The second report is titled *DQA Surface Soil Report*. This report presents the results of performing a non-parametric statistical analysis called the Sign Test on the samples results. On the first page of this report is given the *Assessment Conclusion* which is *Reject Null Hypothesis (Survey Unit PASSES)* for all three intervals. The only other possible conclusion is if the survey unit did not pass. Other information presented in the report is either input information that is echoed back in the report or is information related to the performance of the Sign Test. Also included in the report is a table titled *Basic Statistical Quantities Summary*. The average or mean SOR is shown in this table. This SOR value is high (conservative) by approximately a factor of 2 due to the use of individual uranium radionuclides in the evaluation and the limitations on the flexibility of this version of COMPASS. The information in this table supports the earlier stated conclusion as it demonstrates that the average concentration of radiological contaminants is significantly below the cleanup levels.

[1] NUREG-1575, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), August 2000.
[2] *COMPASS Code* Version 1.0.0 was developed under the sponsorship of the U. S. Nuclear Regulatory Commission for implementing the MARSSIM in support of the decommissioning license termination rule (10 CFR Part 20, Subpart E).
[3] For these purposes, the term DCGL is synonymous with the term cleanup level.

Site Report

Site Summary

Site Name: GTEOSI, Hicksville Site

Planner(s): Shane Brightwell

Contaminant Summary

NOTE: Surface soil DCGLw units are pCi/g.
Building surface DCGLw units are dpm/100 cm².

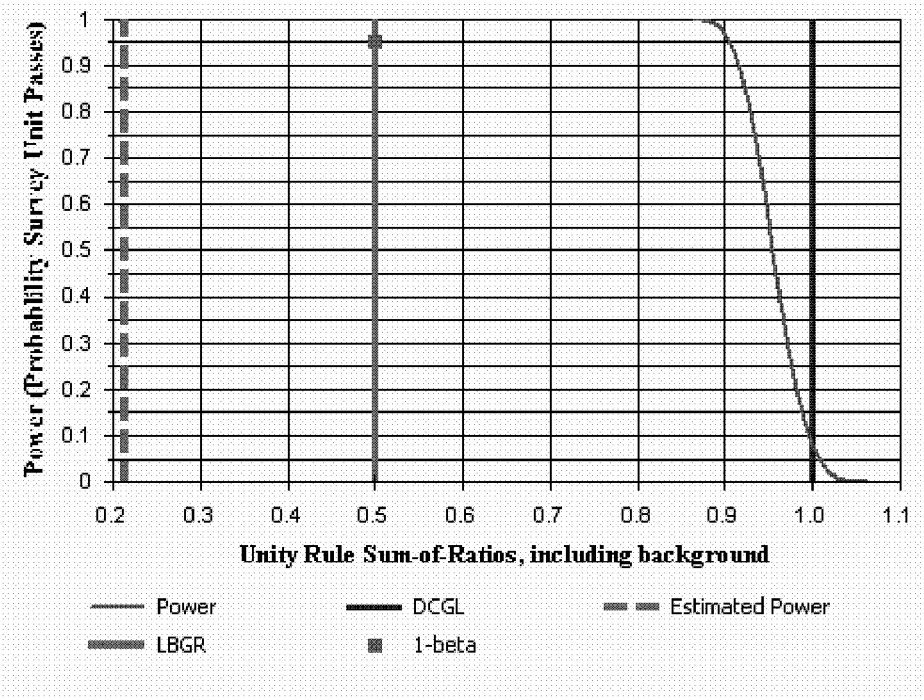
Contaminant	Type	DCGLw	Screening Value Used?	Area (m²)	Area Factor
Th-232	Surface Soil	2.80	No	1	12.3
				3	6.08
				10	3.12
				30	2.24
				100	1.75
				300	1.47
				1,000	1.05
				3,000	1.03
				10,000	1
U-234	Surface Soil	50.00	No	1	30.5
				3	18.3
				10	11.1
				30	5.73
				100	2.27
				300	1.43
				1,000	1.04
				3,000	1.01
				10,000	1
U-238	Surface Soil	50.00	No	1	30.5
				3	18.3
				10	11.1
				30	5.73
				100	2.27
				300	1.43
				1,000	1.04
				3,000	1.01
				10,000	1

Surface Soil Survey Plan

Survey Plan Summary

Site:	GTEOSI, Hicksville Site		
Planner(s):	Shane Brightwell		
Survey Unit Name:	SU01 Interval 1 02		
Comments:	SU01 Interval 1 Run 02		
Area (m²):	3,100	Classification:	3
Selected Test:	Sign	Estimated Sigma (SOR):	0.09
DCGL (SOR):	1	Sample Size (N):	13
LBGR (SOR):	0.5	Estimated Conc. (SOR):	0.21
Alpha:	0.050	Estimated Power:	1
Beta:	0.050		

Prospective Power Curve



Surface Soil Survey Plan

Contaminant Summary

Contaminant	DCGLw (pCi/g)	Inferred Contaminant	Ratio	Modified DCGLw (pCi/g)	Scan MDC (pCi/g)
Th-232	2.80	N/A	N/A	N/A	N/A
U-234	50.00	N/A	N/A	N/A	N/A
U-238	50.00	N/A	N/A	N/A	N/A

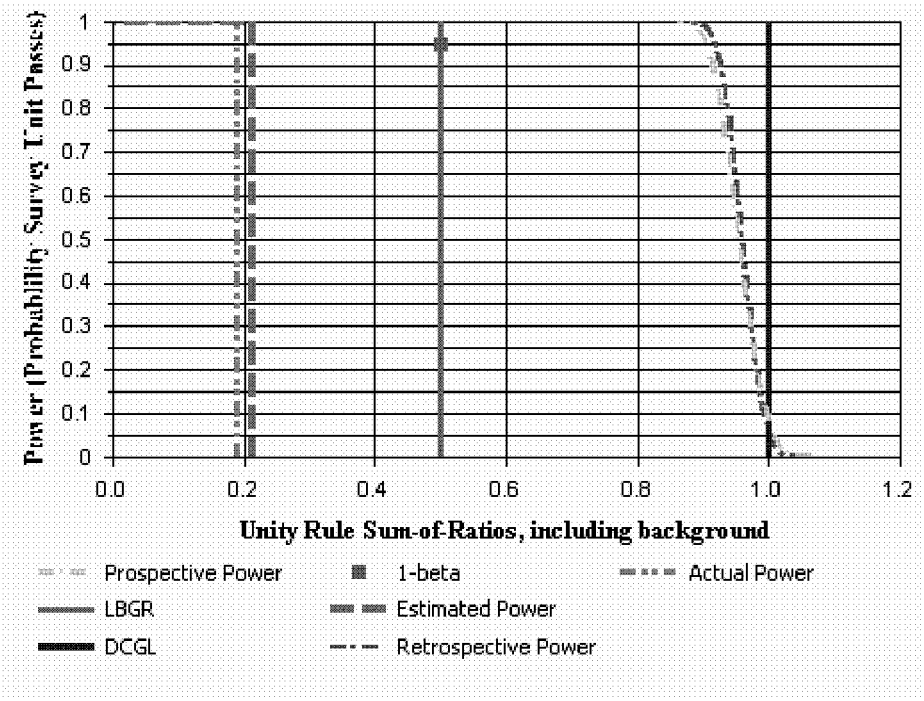
Contaminant	Survey Unit Estimate (Mean ± 1-Sigma) (pCi/g)	Reference Area Estimate (Mean ± 1-Sigma) (pCi/g)
Th-232	0.541 ± 0.262	N/A
U-234	0.505 ± 0.395	N/A
U-238	0.498 ± 0.368	N/A

DQA Surface Soil Report

Assessment Summary

Site:	GTEOSI, Hicksville Site		
Planner(s):	Shane Brightwell		
Survey Unit Name:	SU01 Interval 1 02		
Report Number:	1		
Survey Unit Samples:	26		
Reference Area Samples:	0		
Test Performed:	Sign	Test Result:	Not Performed
Judgmental Samples:	0	EMC Result:	Not Performed
Assessment Conclusion:	***Reject Null Hypothesis (Survey Unit PASSES)***		

Retrospective Power Curve



DQA Surface Soil Report

Survey Unit Data

NOTE: Type = "S" indicates survey unit sample.
Type = "R" indicates reference area sample.

Sample Number	Type	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)
20697	S	0.44	0.4	0.4
20390	S	0.44	0.33	0.31
20267	S	0.5	0.37	0.36
20201	S	0.51	0.39	0.43
20150	S	0.78	0.37	0.36
19710	S	0.46	0.38	0.28
19533	S	0.55	0.42	0.45
19368	S	1.08	0.7	0.71
19298	S	0.54	1.64	1.58
19080	S	0.79	0.94	0.99
19214	S	0.64	1.66	1.42
18886	S	1.12	0.66	0.8
18809	S	0.62	0.6	0.64
20616	S	0.2	0.19	0.28
20462	S	0.78	0.56	0.57
20048	S	0.25	0.16	0.14
19864	S	0.44	0.16	0.23
19650	S	1.07	0.85	0.81
19477	S	0.25	0.26	0.28
19122	S	0.28	0.24	0.22
19034	S	0.43	0.5	0.39
20315	S	0.28	0.26	0.21
19788	S	0.55	0.43	0.45
19427	S	0.41	0.2	0.16
19273	S	0.48	0.32	0.33
18956	S	0.19	0.14	0.14

Modified Data (Unity Rule SOR)

NOTE: Type = "S" indicates survey unit sample.
Type = "R" indicates reference area sample.

Sample Number	Type	Sum-of-Ratios (SOR)
20697	S	0.17
20390	S	0.17
20267	S	0.19
20201	S	0.2
20150	S	0.29
19710	S	0.18
19533	S	0.21
19368	S	0.41
19298	S	0.26
19080	S	0.32
19214	S	0.29
18886	S	0.43
18809	S	0.25
20616	S	0.08

DQA Surface Soil Report

Modified Data (Unity Rule SOR)

NOTE: Type = "S" indicates survey unit sample.
Type = "R" indicates reference area sample.

Sample Number	Type	Sum-of-Ratios (SOR)
20462	S	0.3
20048	S	0.09
19864	S	0.17
19650	S	0.42
19477	S	0.1
19122	S	0.11
19034	S	0.17
20315	S	0.11
19788	S	0.21
19427	S	0.16
19273	S	0.18
18956	S	0.07

DQA Surface Soil Report

Basic Statistical Quantities Summary

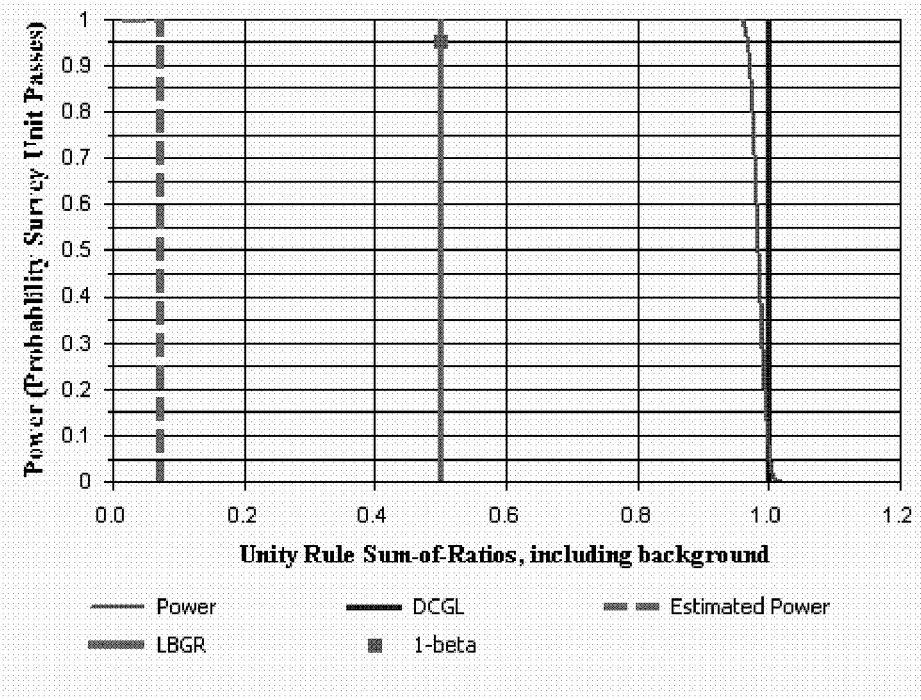
Statistic	Survey Unit	Background	DQO Results
Sample Number	26	N/A	N=13
Mean (SOR)	0.21	N/A	0.21
Median (SOR)	0.19	N/A	N/A
Std Dev (SOR)	0.10	N/A	0.09
High Value (SOR)	0.43	N/A	N/A
Low Value (SOR)	0.07	N/A	N/A

Surface Soil Survey Plan

Survey Plan Summary

Site:	GTEOSI, Hicksville Site		
Planner(s):	Shane Brightwell		
Survey Unit Name:	SU01 Interval 2 02		
Comments:	SU01 Interval 2 Run 02		
Area (m²):	3,100	Classification:	3
Selected Test:	Sign	Estimated Sigma (SOR):	0.03
DCGL (SOR):	1	Sample Size (N):	13
LBGR (SOR):	0.5	Estimated Conc. (SOR):	0.07
Alpha:	0.050	Estimated Power:	1
Beta:	0.050		

Prospective Power Curve



Surface Soil Survey Plan

Contaminant Summary

Contaminant	DCGLw (pCi/g)	Inferred Contaminant	Ratio	Modified DCGLw (pCi/g)	Scan MDC (pCi/g)
Th-232	2.80	N/A	N/A	N/A	N/A
U-234	50.00	N/A	N/A	N/A	N/A
U-238	50.00	N/A	N/A	N/A	N/A

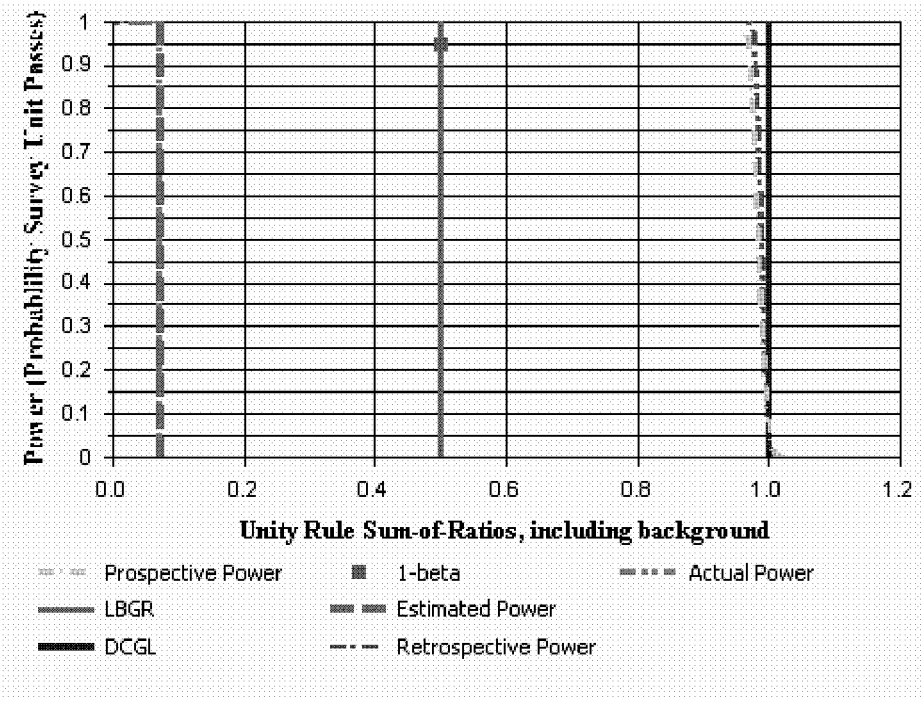
Contaminant	Survey Unit Estimate (Mean ± 1-Sigma) (pCi/g)	Reference Area Estimate (Mean ± 1-Sigma) (pCi/g)
Th-232	0.181 ± 0.07	N/A
U-234	0.185 ± 0.072	N/A
U-238	0.189 ± 0.065	N/A

DQA Surface Soil Report

Assessment Summary

Site:	GTEOSI, Hicksville Site		
Planner(s):	Shane Brightwell		
Survey Unit Name:	SU01 Interval 2 02		
Report Number:	1		
Survey Unit Samples:	26		
Reference Area Samples:	0		
Test Performed:	Sign	Test Result:	Not Performed
Judgmental Samples:	0	EMC Result:	Not Performed
Assessment Conclusion:	***Reject Null Hypothesis (Survey Unit PASSES)***		

Retrospective Power Curve



DQA Surface Soil Report

Survey Unit Data

NOTE: Type = "S" indicates survey unit sample.
Type = "R" indicates reference area sample.

Sample Number	Type	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)
20715	S	0.16	0.19	0.15
20420	S	0.15	0.2	0.14
20278	S	0.25	0.24	0.22
20215	S	0.38	0.23	0.31
20158	S	0.28	0.18	0.18
19732	S	0.18	0.16	0.14
19545	S	0.14	0.12	0.19
19383	S	0.12	0.1	0.12
19317	S	0.1	0.12	0.17
19092	S	0.12	0.14	0.16
19232	S	0.22	0.21	0.25
18904	S	0.22	0.25	0.17
18826	S	0.11	0.23	0.38
20647	S	0.14	0.11	0.17
20491	S	0.2	0.17	0.14
20056	S	0.29	0.24	0.24
19891	S	0.14	0.19	0.19
19667	S	0.14	0.22	0.18
19486	S	0.19	0.15	0.18
19137	S	0.25	0.42	0.3
19055	S	0.21	0.16	0.17
20345	S	0.24	0.22	0.18
19806	S	0.08	0.06	0.09
19436	S	0.14	0.24	0.22
19284	S	0.16	0.15	0.13
18985	S	0.11	0.1	0.14

Modified Data (Unity Rule SOR)

NOTE: Type = "S" indicates survey unit sample.
Type = "R" indicates reference area sample.

Sample Number	Type	Sum-of-Ratios (SOR)
20715	S	0.07
20420	S	0.06
20278	S	0.1
20215	S	0.15
20158	S	0.11
19732	S	0.07
19545	S	0.06
19383	S	0.05
19317	S	0.04
19092	S	0.05
19232	S	0.09
18904	S	0.09
18826	S	0.05
20647	S	0.06

DQA Surface Soil Report

Modified Data (Unity Rule SOR)

NOTE: Type = "S" indicates survey unit sample.
Type = "R" indicates reference area sample.

Sample Number	Type	Sum-of-Ratios (SOR)
20491	S	0.08
20056	S	0.11
19891	S	0.06
19667	S	0.06
19486	S	0.07
19137	S	0.1
19055	S	0.08
20345	S	0.09
19806	S	0.03
19436	S	0.06
19284	S	0.06
18985	S	0.04

DQA Surface Soil Report

Basic Statistical Quantities Summary

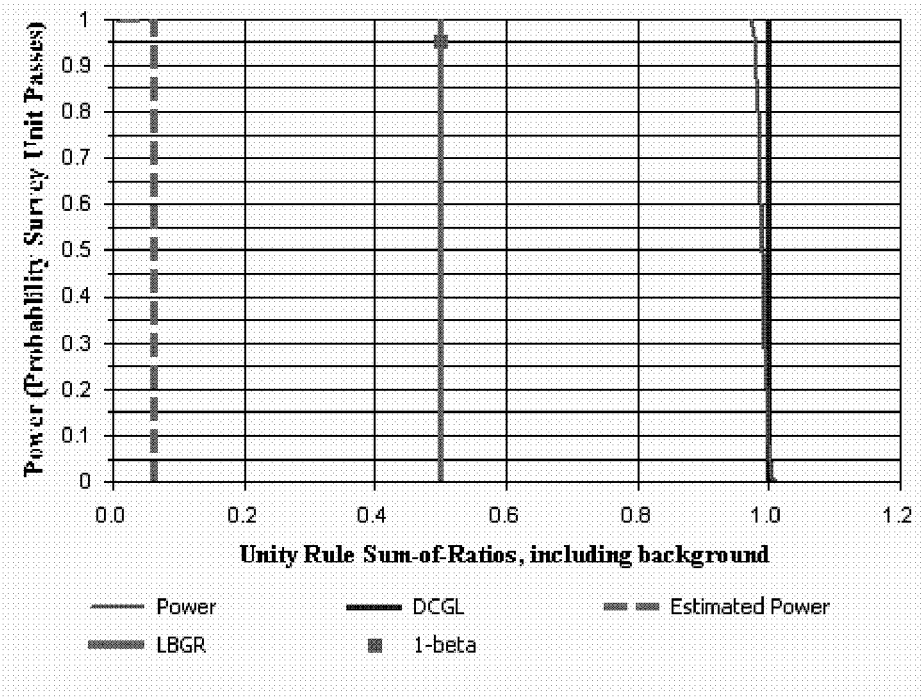
Statistic	Survey Unit	Background	DQO Results
Sample Number	26	N/A	N=13
Mean (SOR)	0.07	N/A	0.07
Median (SOR)	0.07	N/A	N/A
Std Dev (SOR)	0.03	N/A	0.03
High Value (SOR)	0.15	N/A	N/A
Low Value (SOR)	0.03	N/A	N/A

Surface Soil Survey Plan

Survey Plan Summary

Site:	GTEOSI, Hicksville Site		
Planner(s):	Shane Brightwell		
Survey Unit Name:	SU01 Interval 3 01		
Comments:	SU01 Interval 3 Run 01		
Area (m²):	3,100	Classification:	3
Selected Test:	Sign	Estimated Sigma (SOR):	0.02
DCGL (SOR):	1	Sample Size (N):	13
LBGR (SOR):	0.5	Estimated Conc. (SOR):	0.06
Alpha:	0.050	Estimated Power:	1
Beta:	0.050		

Prospective Power Curve



Surface Soil Survey Plan

Contaminant Summary

Contaminant	DCGLw (pCi/g)	Inferred Contaminant	Ratio	Modified DCGLw (pCi/g)	Scan MDC (pCi/g)
Th-232	2.80	N/A	N/A	N/A	N/A
U-234	50.00	N/A	N/A	N/A	N/A
U-238	50.00	N/A	N/A	N/A	N/A

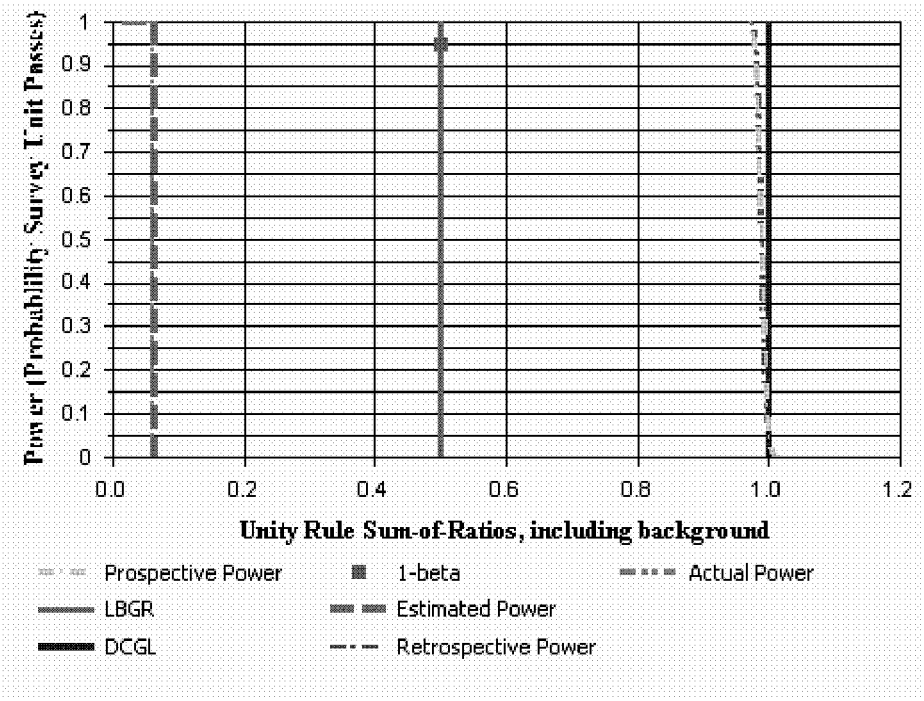
Contaminant	Survey Unit Estimate (Mean ± 1-Sigma) (pCi/g)	Reference Area Estimate (Mean ± 1-Sigma) (pCi/g)
Th-232	0.154 ± 0.055	N/A
U-234	0.176 ± 0.1	N/A
U-238	0.17 ± 0.089	N/A

DQA Surface Soil Report

Assessment Summary

Site:	GTEOSI, Hicksville Site		
Planner(s):	Shane Brightwell		
Survey Unit Name:	SU01 Interval 3 01		
Report Number:	1		
Survey Unit Samples:	25		
Reference Area Samples:	0		
Test Performed:	Sign	Test Result:	Not Performed
Judgmental Samples:	0	EMC Result:	Not Performed
Assessment Conclusion:	***Reject Null Hypothesis (Survey Unit PASSES)***		

Retrospective Power Curve



DQA Surface Soil Report

Survey Unit Data

NOTE: Type = "S" indicates survey unit sample.
Type = "R" indicates reference area sample.

Sample Number	Type	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)
20733	S	0.14	0.1	0.15
20426	S	0.22	0.25	0.23
20288	S	0.27	0.54	0.51
20240	S	0.21	0.11	0.14
20173	S	0.12	0.08	0.17
19751	S	0.22	0.23	0.18
19562	S	0.13	0.18	0.12
19406	S	0.12	0.16	0.16
19334	S	0.13	0.41	0.34
19102	S	0.15	0.18	0.17
19249	S	0.19	0.21	0.2
18935	S	0.22	0.14	0.15
20681	S	0.14	0.14	0.16
20069	S	0.25	0.13	0.14
19903	S	0.16	0.13	0.1
19684	S	0.07	0.13	0.13
19505	S	0.09	0.17	0.09
19156	S	0.14	0.16	0.14
19071	S	0.1	0.13	0.1
20517	S	0.1	0.13	0.09
20362	S	0.13	0.12	0.14
19833	S	0.2	0.2	0.23
19444	S	0.08	0.12	0.12
19293	S	0.16	0.17	0.18
19003	S	0.1	0.1	0.1

Modified Data (Unity Rule SOR)

NOTE: Type = "S" indicates survey unit sample.
Type = "R" indicates reference area sample.

Sample Number	Type	Sum-of-Ratios (SOR)
20733	S	0.05
20426	S	0.09
20288	S	0.12
20240	S	0.08
20173	S	0.05
19751	S	0.09
19562	S	0.05
19406	S	0.05
19334	S	0.06
19102	S	0.06
19249	S	0.08
18935	S	0.08
20681	S	0.05
20069	S	0.09
19903	S	0.06

DQA Surface Soil Report

Modified Data (Unity Rule SOR)

NOTE: Type = "S" indicates survey unit sample.
Type = "R" indicates reference area sample.

Sample Number	Type	Sum-of-Ratios (SOR)
19684	S	0.03
19505	S	0.04
19156	S	0.06
19071	S	0.04
20517	S	0.04
20362	S	0.05
19833	S	0.08
19444	S	0.03
19293	S	0.07
19003	S	0.04

DQA Surface Soil Report

Basic Statistical Quantities Summary

Statistic	Survey Unit	Background	DQO Results
Sample Number	25	N/A	N=13
Mean (SOR)	0.06	N/A	0.06
Median (SOR)	0.06	N/A	N/A
Std Dev (SOR)	0.02	N/A	0.02
High Value (SOR)	0.12	N/A	N/A
Low Value (SOR)	0.03	N/A	N/A

SU02 MARSSIM Evaluation Results Using Severn Trent Laboratories, Inc. Sample Results

SU02, Intervals 1, 2, and 3 passed the MARSSIM[1] Sign Test and the associated soils are considered releasable from a radiological perspective. These intervals consist of SP samples collected and analyzed in the 0 to 3-m (0 to 10-ft), 3 to 6-m (10 to 20-ft), and 6 to 9-m (20 to 30-ft) depth ranges, respectively. The MARSSIM protocol uses a non-parametric statistical analysis test that evaluates all of the SP sample results for a single interval separately. Therefore, there were three independent evaluations within the three-dimensional footprint of SU02.

There were a total of 21 SP sample results in Interval 1, 23 in Interval 2, and 22 in Interval 3. All samples were analyzed for radiological analytes of interest (Th-232, U-234, and U-238) for purposes of this evaluation. The sample results for each of the samples are presented in **Table 2** and are the results reported by STL.

The charts on the subsequent pages of this appendix were generated by the COMPASS[2] software. As shown on the first page of the COMPASS Surface Soil Survey Plan for each interval, a minimum of 13 soil sample analyses were sufficient for the MARSSIM-based analysis to be statistically significant. As stated earlier, the MARSSIM-based analysis for Intervals 1, 2, and 3 in this SU were based on 21, 23, and 22 soil sample analyses, respectively.

Included in the assessment of SU02 are three reports. The cover report is titled *Site Report* and provides information the radiological contaminants and their respective DCGLw[3] (the Site cleanup levels specified in the Work Plan) used in the evaluation of each interval.

Each interval assessment is comprised of two COMPASS reports. The first report is titled *Surface Soil Survey Plan*. This report contains information that was used in the planning phase of the survey or soil sample collection. This information was based on the Site's cleanup levels and cell parameters or is information that was derived from these parameters. The last section of this report contains information that, by design, was an estimate of the average concentration and the standard deviation anticipated to be present in the survey unit interval for each radionuclide. The values in this report were based on the actual average concentration and standard deviation of each radionuclide as calculated from the sample results.

The second report is titled *DQA Surface Soil Report*. This report presents the results of performing a non-parametric statistical analysis called the Sign Test on the samples results. On the first page of this report is given the *Assessment Conclusion* which is *Reject Null Hypothesis (Survey Unit PASSES)* for all three intervals. The only other possible conclusion is if the survey unit did not pass. Other information presented in the report is either input information that is echoed back in the report or is information related to the performance of the Sign Test. Also included in the report is a table titled *Basic Statistical Quantities Summary*. The average or mean SOR is shown in this table. This SOR value is high (conservative) by approximately a factor of 2 due to the use of individual uranium radionuclides in the evaluation and the limitations on the flexibility of this version of COMPASS. The information in this table supports the earlier stated conclusion as it demonstrates that the average concentration of radiological contaminants is significantly below the cleanup levels.

[1] NUREG-1575, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), August 2000.
[2] *COMPASS Code* Version 1.0.0 was developed under the sponsorship of the U. S. Nuclear Regulatory Commission for implementing the MARSSIM in support of the decommissioning license termination rule (10 CFR Part 20, Subpart E).
[3] For these purposes, the term DCGL is synonymous with the term cleanup level.

Site Report

Site Summary

Site Name: GTEOSI, Hicksville Site

Planner(s): Shane Brightwell

Contaminant Summary

NOTE: Surface soil DCGLw units are pCi/g.
Building surface DCGLw units are dpm/100 cm².

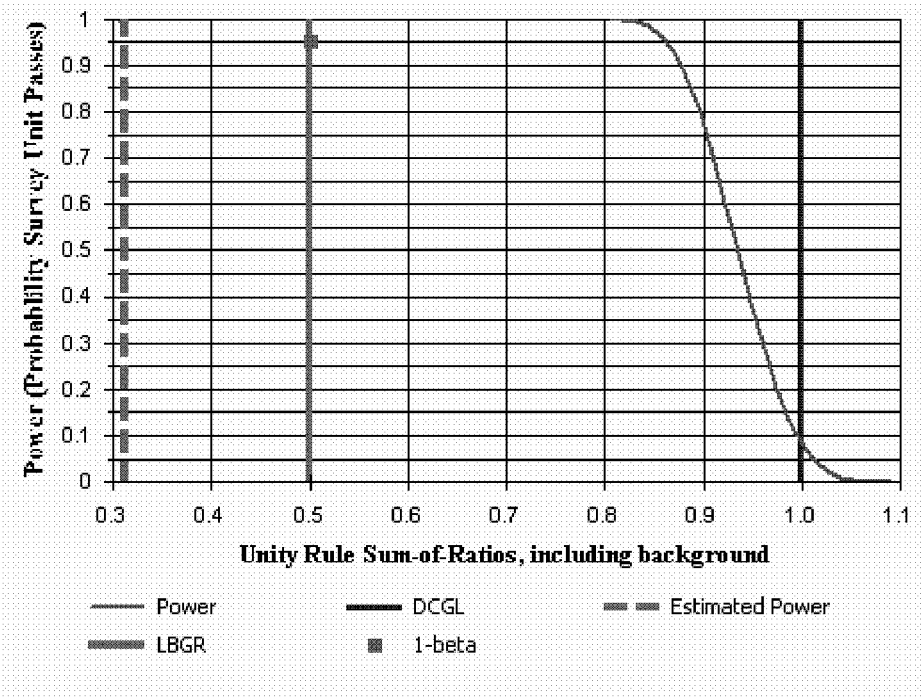
Contaminant	Type	DCGLw	Screening Value Used?	Area (m²)	Area Factor
Th-232	Surface Soil	2.80	No	1	12.3
				3	6.08
				10	3.12
				30	2.24
				100	1.75
				300	1.47
				1,000	1.05
				3,000	1.03
				10,000	1
U-234	Surface Soil	50.00	No	1	30.5
				3	18.3
				10	11.1
				30	5.73
				100	2.27
				300	1.43
				1,000	1.04
				3,000	1.01
				10,000	1
U-238	Surface Soil	50.00	No	1	30.5
				3	18.3
				10	11.1
				30	5.73
				100	2.27
				300	1.43
				1,000	1.04
				3,000	1.01
				10,000	1

Surface Soil Survey Plan

Survey Plan Summary

Site:	GTEOSI, Hicksville Site		
Planner(s):	Shane Brightwell		
Survey Unit Name:	SU02 Interval 1 01		
Comments:	SU02 Interval 1 Run 01		
Area (m²):	1,840	Classification:	3
Selected Test:	Sign	Estimated Sigma (SOR):	0.13
DCGL (SOR):	1	Sample Size (N):	13
LBGR (SOR):	0.5	Estimated Conc. (SOR):	0.31
Alpha:	0.050	Estimated Power:	1
Beta:	0.050		

Prospective Power Curve



Surface Soil Survey Plan

Contaminant Summary

Contaminant	DCGLw (pCi/g)	Inferred Contaminant	Ratio	Modified DCGLw (pCi/g)	Scan MDC (pCi/g)
Th-232	2.80	N/A	N/A	N/A	N/A
U-234	50.00	N/A	N/A	N/A	N/A
U-238	50.00	N/A	N/A	N/A	N/A

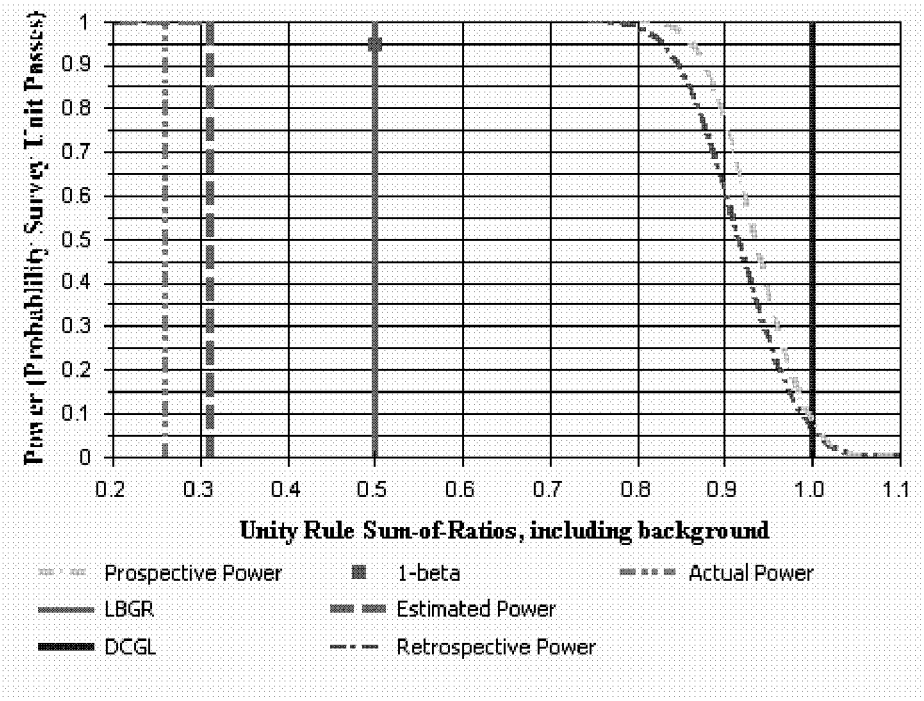
Contaminant	Survey Unit Estimate (Mean ± 1-Sigma) (pCi/g)	Reference Area Estimate (Mean ± 1-Sigma) (pCi/g)
Th-232	0.559 ± 0.201	N/A
U-234	2.889 ± 4.168	N/A
U-238	2.701 ± 3.898	N/A

DQA Surface Soil Report

Assessment Summary

Site:	GTEOSI, Hicksville Site		
Planner(s):	Shane Brightwell		
Survey Unit Name:	SU02 Interval 1 01		
Report Number:	1		
Survey Unit Samples:	21		
Reference Area Samples:	0		
Test Performed:	Sign	Test Result:	Not Performed
Judgmental Samples:	0	EMC Result:	Not Performed
Assessment Conclusion:	***Reject Null Hypothesis (Survey Unit PASSES)***		

Retrospective Power Curve



DQA Surface Soil Report

Survey Unit Data

NOTE: Type = "S" indicates survey unit sample.
Type = "R" indicates reference area sample.

Sample Number	Type	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)
24016	S	0.54	10.1	9.05
24179	S	0.56	1.23	1.26
24392	S	0.77	10.1	9.36
24665	S	1.06	1.35	1.21
24591	S	0.59	6.21	5.94
24530	S	0.73	15.3	14.5
24435	S	0.51	0.89	0.85
23997	S	0.5	2.28	1.96
24541	S	0.76	0.57	0.45
23888	S	0.8	0.56	0.5
24084	S	0.34	0.36	0.31
24138	S	0.69	0.45	0.48
24335	S	0.28	0.23	0.25
24267	S	0.33	1.45	1.36
24468	S	0.53	3.46	3.15
24302	S	0.51	0.41	0.3
23831	S	0.53	0.34	0.32
24058	S	0.54	0.36	0.45
24239	S	0.18	0.19	0.15
24171	S	0.6	4.59	4.62
24383	S	0.36	0.24	0.27

Modified Data (Unity Rule SOR)

NOTE: Type = "S" indicates survey unit sample.
Type = "R" indicates reference area sample.

Sample Number	Type	Sum-of-Ratios (SOR)
24016	S	0.58
24179	S	0.25
24392	S	0.66
24665	S	0.43
24591	S	0.46
24530	S	0.86
24435	S	0.22
23997	S	0.26
24541	S	0.29
23888	S	0.31
24084	S	0.14
24138	S	0.26
24335	S	0.11
24267	S	0.17
24468	S	0.32
24302	S	0.2
23831	S	0.2
24058	S	0.21
24239	S	0.07

DQA Surface Soil Report

Modified Data (Unity Rule SOR)

NOTE: Type = "S" indicates survey unit sample.
Type = "R" indicates reference area sample.

Sample Number	Type	Sum-of-Ratios (SOR)
24171	S	0.4
24383	S	0.14

DQA Surface Soil Report

Basic Statistical Quantities Summary

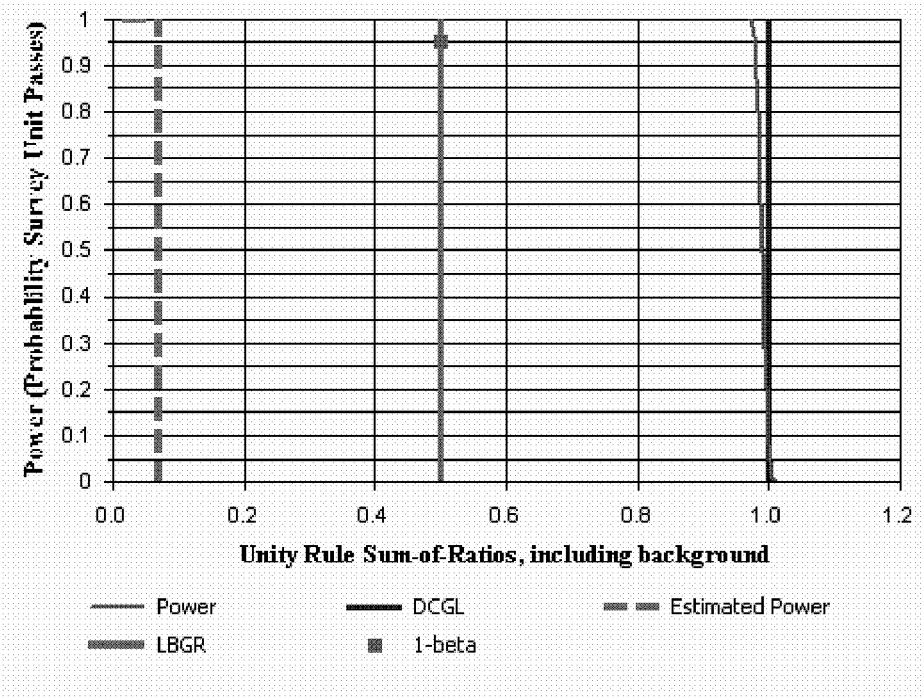
Statistic	Survey Unit	Background	DQO Results
Sample Number	21	N/A	N=13
Mean (SOR)	0.31	N/A	0.31
Median (SOR)	0.26	N/A	N/A
Std Dev (SOR)	0.20	N/A	0.13
High Value (SOR)	0.86	N/A	N/A
Low Value (SOR)	0.07	N/A	N/A

Surface Soil Survey Plan

Survey Plan Summary

Site:	GTEOSI, Hicksville Site		
Planner(s):	Shane Brightwell		
Survey Unit Name:	SU02 Interval 2 01		
Comments:	SU02 Interval 2 Run 01		
Area (m²):	1,840	Classification:	3
Selected Test:	Sign	Estimated Sigma (SOR):	0.02
DCGL (SOR):	1	Sample Size (N):	13
LBGR (SOR):	0.5	Estimated Conc. (SOR):	0.07
Alpha:	0.050	Estimated Power:	1
Beta:	0.050		

Prospective Power Curve



Surface Soil Survey Plan

Contaminant Summary

Contaminant	DCGLw (pCi/g)	Inferred Contaminant	Ratio	Modified DCGLw (pCi/g)	Scan MDC (pCi/g)
Th-232	2.80	N/A	N/A	N/A	N/A
U-234	50.00	N/A	N/A	N/A	N/A
U-238	50.00	N/A	N/A	N/A	N/A

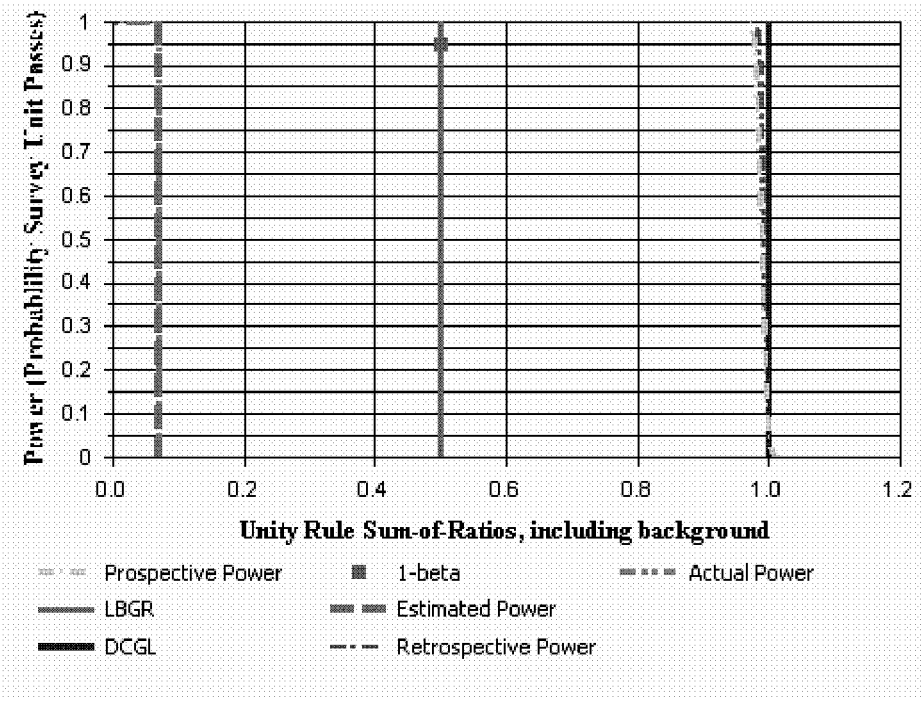
Contaminant	Survey Unit Estimate (Mean ± 1-Sigma) (pCi/g)	Reference Area Estimate (Mean ± 1-Sigma) (pCi/g)
Th-232	0.172 ± 0.045	N/A
U-234	0.222 ± 0.138	N/A
U-238	0.206 ± 0.126	N/A

DQA Surface Soil Report

Assessment Summary

Site:	GTEOSI, Hicksville Site		
Planner(s):	Shane Brightwell		
Survey Unit Name:	SU02 Interval 2 01		
Report Number:	1		
Survey Unit Samples:	23		
Reference Area Samples:	0		
Test Performed:	Sign	Test Result:	Not Performed
Judgmental Samples:	0	EMC Result:	Not Performed
Assessment Conclusion:	***Reject Null Hypothesis (Survey Unit PASSES)***		

Retrospective Power Curve



DQA Surface Soil Report

Survey Unit Data

NOTE: Type = "S" indicates survey unit sample.
Type = "R" indicates reference area sample.

Sample Number	Type	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)
23963	S	0.23	0.21	0.18
24048	S	0.2	0.35	0.28
24199	S	0.19	0.12	0.15
24415	S	0.21	0.42	0.36
24685	S	0.24	0.23	0.27
24609	S	0.14	0.19	0.15
24538	S	0.12	0.16	0.16
24451	S	0.18	0.18	0.18
24010	S	0.12	0.13	0.14
24567	S	0.19	0.19	0.17
23908	S	0.22	0.2	0.2
24100	S	0.15	0.14	0.14
24151	S	0.18	0.24	0.2
24352	S	0.15	0.16	0.13
24275	S	0.16	0.77	0.72
24480	S	0.22	0.13	0.17
24316	S	0.1	0.22	0.15
23846	S	0.18	0.18	0.13
24074	S	0.14	0.21	0.15
24249	S	0.14	0.22	0.24
24196	S	0.07	0.16	0.12
24393	S	0.22	0.14	0.14
24630	S	0.21	0.17	0.2

Modified Data (Unity Rule SOR)

NOTE: Type = "S" indicates survey unit sample.
Type = "R" indicates reference area sample.

Sample Number	Type	Sum-of-Ratios (SOR)
23963	S	0.09
24048	S	0.08
24199	S	0.07
24415	S	0.09
24685	S	0.1
24609	S	0.06
24538	S	0.05
24451	S	0.07
24010	S	0.05
24567	S	0.07
23908	S	0.09
24100	S	0.06
24151	S	0.07
24352	S	0.06
24275	S	0.09
24480	S	0.08
24316	S	0.04

DQA Surface Soil Report

Modified Data (Unity Rule SOR)

NOTE: Type = "S" indicates survey unit sample.
Type = "R" indicates reference area sample.

Sample Number	Type	Sum-of-Ratios (SOR)
23846	S	0.07
24074	S	0.06
24249	S	0.06
24196	S	0.03
24393	S	0.08
24630	S	0.08

DQA Surface Soil Report

Basic Statistical Quantities Summary

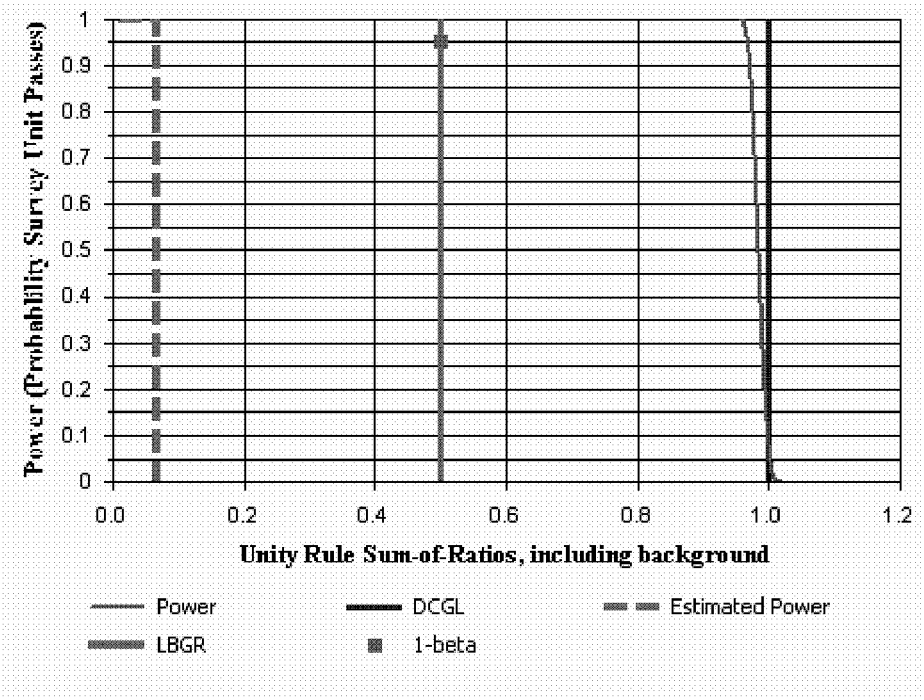
Statistic	Survey Unit	Background	DQO Results
Sample Number	23	N/A	N=13
Mean (SOR)	0.07	N/A	0.07
Median (SOR)	0.07	N/A	N/A
Std Dev (SOR)	0.02	N/A	0.02
High Value (SOR)	0.10	N/A	N/A
Low Value (SOR)	0.03	N/A	N/A

Surface Soil Survey Plan

Survey Plan Summary

Site:	GTEOSI, Hicksville Site		
Planner(s):	Shane Brightwell		
Survey Unit Name:	SU02 Interval 3 01		
Comments:	SU02 Interval 3 Run 01		
Area (m²):	1,840	Classification:	3
Selected Test:	Sign	Estimated Sigma (SOR):	0.03
DCGL (SOR):	1	Sample Size (N):	13
LBGR (SOR):	0.5	Estimated Conc. (SOR):	0.07
Alpha:	0.050	Estimated Power:	1
Beta:	0.050		

Prospective Power Curve



Surface Soil Survey Plan

Contaminant Summary

Contaminant	DCGLw (pCi/g)	Inferred Contaminant	Ratio	Modified DCGLw (pCi/g)	Scan MDC (pCi/g)
Th-232	2.80	N/A	N/A	N/A	N/A
U-234	50.00	N/A	N/A	N/A	N/A
U-238	50.00	N/A	N/A	N/A	N/A

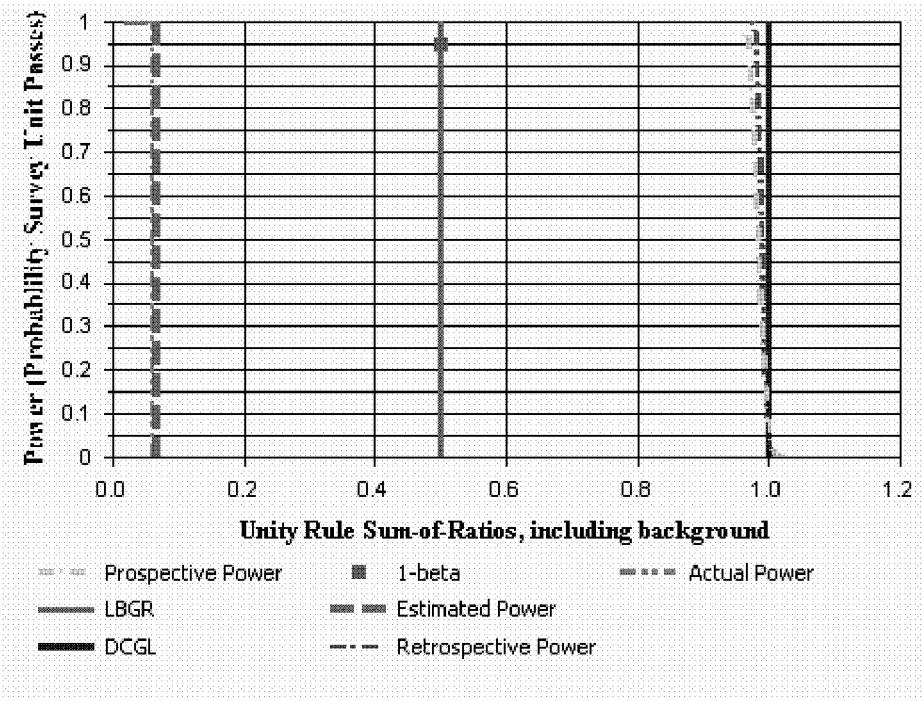
Contaminant	Survey Unit Estimate (Mean ± 1-Sigma) (pCi/g)	Reference Area Estimate (Mean ± 1-Sigma) (pCi/g)
Th-232	0.165 ± 0.077	N/A
U-234	0.185 ± 0.098	N/A
U-238	0.176 ± 0.08	N/A

DQA Surface Soil Report

Assessment Summary

Site:	GTEOSI, Hicksville Site		
Planner(s):	Shane Brightwell		
Survey Unit Name:	SU02 Interval 3 01		
Report Number:	1		
Survey Unit Samples:	22		
Reference Area Samples:	0		
Test Performed:	Sign	Test Result:	Not Performed
Judgmental Samples:	0	EMC Result:	Not Performed
Assessment Conclusion:	***Reject Null Hypothesis (Survey Unit PASSES)***		

Retrospective Power Curve



DQA Surface Soil Report

Survey Unit Data

NOTE: Type = "S" indicates survey unit sample.
Type = "R" indicates reference area sample.

Sample Number	Type	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)
23980	S	0.14	0.2	0.19
24054	S	0.13	0.14	0.14
24217	S	0.1	0.12	0.09
24434	S	0.14	0.33	0.34
24693	S	0.35	0.23	0.22
24633	S	0.21	0.2	0.25
24553	S	0.14	0.15	0.13
24472	S	0.08	0.17	0.2
24579	S	0.12	0.17	0.09
23936	S	0.18	0.11	0.12
24115	S	0.1	0.16	0.2
24165	S	0.17	0.13	0.16
24366	S	0.09	0.1	0.1
24285	S	0.17	0.18	0.15
24499	S	0.16	0.16	0.14
24328	S	0.22	0.18	0.18
23867	S	0.17	0.16	0.2
24087	S	0.16	0.1	0.14
24264	S	0.11	0.19	0.14
24206	S	0.14	0.17	0.1
24405	S	0.15	0.14	0.11
24643	S	0.18	0.22	0.2

Modified Data (Unity Rule SOR)

NOTE: Type = "S" indicates survey unit sample.
Type = "R" indicates reference area sample.

Sample Number	Type	Sum-of-Ratios (SOR)
23980	S	0.06
24054	S	0.05
24217	S	0.04
24434	S	0.06
24693	S	0.13
24633	S	0.09
24553	S	0.06
24472	S	0.04
24579	S	0.05
23936	S	0.07
24115	S	0.04
24165	S	0.07
24366	S	0.04
24285	S	0.07
24499	S	0.06
24328	S	0.09
23867	S	0.07
24087	S	0.06

DQA Surface Soil Report

Modified Data (Unity Rule SOR)

NOTE: Type = "S" indicates survey unit sample.
Type = "R" indicates reference area sample.

Sample Number	Type	Sum-of-Ratios (SOR)
24264	S	0.05
24206	S	0.05
24405	S	0.06
24643	S	0.07

DQA Surface Soil Report

Basic Statistical Quantities Summary

Statistic	Survey Unit	Background	DQO Results
Sample Number	22	N/A	N=13
Mean (SOR)	0.06	N/A	0.07
Median (SOR)	0.06	N/A	N/A
Std Dev (SOR)	0.02	N/A	0.03
High Value (SOR)	0.13	N/A	N/A
Low Value (SOR)	0.04	N/A	N/A

SYSTEMATIC SUBSURFACE SOIL SAMPLING AND ANALYSIS REPORT

HISTORIC LEACH POOLS

FORMER SYLVANIA ELECTRIC PRODUCTS INCORPORATED FACILITY

HICKSVILLE, NEW YORK

SITE NUMBER V 00089-1

Prepared by
URS Corporation
and
Envirocon, Inc.

For:

GTE Operations Support Incorporated
600 Hidden Ridge Drive
Irving, Texas 75038

March 2006

This Historic Leach Pools Report has been reviewed by URS Corporation – New York, and I am in agreement with the conclusions.

URS Corporation – New York

Robert D. Brathovde, P.E.
Engineer of Record

This Historic Leach Pools Report has been reviewed by Professional Radiation Consulting, Inc. (PRCI), and I am in agreement with the conclusions.

Professional Radiation Consulting, Inc.

Shane Brightwell, CHP
President

This Historic Leach Pools Report has been reviewed by Envirocon, Inc., and I am in agreement with the conclusions.

Envirocon, Inc.

Richard Hafner
Radiation Safety Officer

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Figure 1: Historic Leach Pools Investigated
Figure 2: Spring 2004 Investigation and LPH Investigation Soil Boring Locations
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Figure 7: Historic Leach Pools Investigation of LPH15, LPH16 and LPH17
Figure 8: Historic Leach Pools Investigation of LPH20 and LPH21
Figure 9: Historic Leach Pools Investigation of LPH34

Appendices

Appendix A: Subsurface Soil Sampling and Analysis Plan Historic Leach Pools
Appendix B: Correspondence regarding the Systematic Subsurface Soil Sampling and Analysis Plan Historic Leach Pools, September 2004 and October 2004
Appendix C: Boring Logs (Boring Logs are included as Appendix C on the enclosed CD. The enclosed CD includes a complete electronic copy of this report.)

1.0 INTRODUCTION

This report provides the results, data assessments, and conclusions made with respect to the delineation of subsurface soils pursuant to the *Subsurface Soil Sampling and Analysis Plan Historic Leach Pools, September 2004, Revision 1: October 2004* (LPH Plan) (**Appendix A**) at the Former Sylvania Electric Products Incorporated (Sylvania) facility located at 140, 100 and 70 Cantiague Rock Road, Hicksville, New York (the Site). This work plan was conditionally approved by the New York State Department of Environmental Conservation (NYSDEC) in a letter dated September 17, 2004 (**Appendix B**). GTE Operations Support Incorporated (GTEOSI) responded to the NYSDEC comments in a letter dated October 8, 2004 (**Appendix B**). As discussed in this correspondence, the historic leach pool investigation included only the 140 and the 100 Properties. This investigation began on September 29, 2004 and was completed on April 15, 2005 ("the LPH Investigation").

Prior to the LPH investigation reported herein, GTEOSI performed an investigation to assess conditions beneath the 100 Building and assess if further investigation was warranted ("the Spring 2004 Investigation"). This earlier investigation was conducted from March 25, 2004 to April 9, 2004 and included reviewing historic documents and investigating areas where residual concentrations of radiological and volatile organic compounds (VOCs) may be present. During the Spring 2004 Investigation, focused sampling was conducted in and around suspected historic features including building footprints, building floor drains, catch basins and leach pools. This report includes the portions of data collected during the Spring 2004 Investigation that directly relate to the historic leach pools (LPHs) (installation of nine soil borings), the results of which are provided in **Table 1** of this report. The sampling protocols and analytical program for the Spring 2004 Investigation are reported in their entirety in the *Systematic Subsurface Soil Sampling and Analysis Report, Investigation Beneath the 100 Building (Survey Units 03, 04, and 05), Former Sylvania Electric Products Incorporated Facility, Hicksville, New York*, November 2005.

The LPH Investigation addressed in this report includes fifteen suspected LPHs, specifically LPH01, LPH02, LPH03, LPH04, LPH05, LPH06, LPH12, LPH13, LPH14, LPH15, LPH16, LPH17, LPH20, LPH21 and LPH34. While not identified in the LPH Plan, LPH34 was added to this investigation after it was identified during the systematic investigation of Building 140. LPHs on the 70 Property were not accessible during the time of this LPH Investigation as this location was an active manufacturing facility.

The location of each LPH is shown on **Figure 1**. The suspected LPHs were investigated to delineate the extent and boundaries of potential contaminants. Included in this report are sample analytical results, data assessments and conclusions regarding the radiological, VOCs and nickel (Ni) data. Also reported herein are the analytical results for beryllium (Be).

2.0 SCREENING AND SAMPLING

A radial sampling pattern was used to provide uniform lateral coverage of each LPH investigated in this assessment (**Figure 2 of Appendix A**). Once the geometric center or a close approximation was located, soil borings were performed as follows:

- Soil borings on the 2-meter and 6-meter radii were performed on rays at 0°, 90°, 180° and 270°; and
- Soil borings on the 4-meter radii were performed on rays at 45°, 135°, 225° and 315°.

This pattern continued until analytical data demonstrated that the radial (horizontal) boundary of identified contaminants was defined.

A 2-foot (ft) long split spoon sampling device was advanced for soil retrieval. The recovered soils were screened using a photoionization detector (PID) for VOCs and a 3-inch sodium iodide (NaI) detector for radioactivity prior to sample collection.

Soil borings for the Spring 2004 Investigation were advanced to various depths ranging from ground surface to 30 ft below ground surface (bgs). The radial pattern described above was not employed. Soil borings for the LPH Investigation were advanced to 30 ft bgs based on the results of the Spring 2004 Investigation, with the following exceptions:

- In LPH34, soil boring 05 was terminated at 5 ft bgs when a concrete footing was encountered that blocked further advancement; and
- In LPH05, soil boring 01 and in LPH34, soil boring 04 were advanced to 64 ft bgs to provide data in support of a lithological investigation.

Samples designated as sample point (SP) samples were collected at 30 ft bgs, 64 ft bgs and at intervals where either PID screening or visual and/or olfactory observations warranted collecting a sample. SP samples were collected in 2-ft increments to provide sufficient sample volume for on- and off-Site laboratory analyses. Samples, other than the SP samples, were designated as delineation (DL) samples and, in general, were collected in 1-ft increments from the top of the boring (details provided in **Tables 1 through 8**) to the total depth of 30 ft bgs (exceptions to the 30 ft total depth are noted in the paragraphs above).

Samples were analyzed on Site by Stone Environmental Inc. (SEI) and the on-Site gamma spectroscopy system to guide investigation and off Site at Severn Trent Laboratories, Inc. (STL) of Earth City, Missouri for final verification. The sample analytical results were compared to the Site cleanup levels specified in the approved *Comprehensive Soil Remediation Program Work Plan, Former Sylvania Electric Products Facility, January 18, 2002 (Revision 5: June 2003)* (Work Plan).

A total of nine soil borings were advanced for the Spring 2004 Investigation and a total of 75 soil borings were advanced for the LPH Investigation**. Figure 2** illustrates the soil boring locations advanced as part of the Spring 2004 Investigation and the LPH Investigation for the LPHs depicted on the figure. **Figures 3** through **9** show the soil boring locations. Proposed soil boring locations were determined by referencing historical maps, visually inspecting shallow excavation areas, and through the use of ground penetrating radar data. Actual soil boring locations were determined once the LPH center starting point or close approximation was determined. Boring locations were referenced in the sample barcode based on the subcell where the center of each LPH was believed to be located, not the subcell where the boring was located as is typical of boring notations in other Site investigations. For example, all borings associated with LPH15 are referenced to subcell S68, the location of the center of LPH15. (Due to the proximity of LPH16 and LPH17, all soil borings associated with these LPHs were given the designation LPH16.) The

one exception to the practice of referencing the sample barcode based on the center of the LPH location is LPH34, where all boring locations are barcode referenced to their actual mapped subcell locations. Variations from the radial design pattern were a result of physical measurements in the field. Each soil boring location was surveyed using the global positioning system (GPS) or laser positioning system (LPS).

A field geologist classified the soils in general accordance with the Unified Soil Classification System (USCS). Sample descriptions included soil type, color, moisture, and visual observations. Boring Logs are provided in **Appendix C**.

2.1 RADIOLOGICAL

DL samples were homogenized and analyzed on Site by gamma spectroscopy for thorium (Th-232) and uranium (U-238).

SP samples were homogenized and split. One portion was analyzed on Site by gamma spectroscopy and the other portion was sent off Site to STL for alpha spectroscopy analysis. STL performed isotopic thorium analysis using National Academy of Science (NAS)/Department of Energy (DOE) Method 3004/RP-725 and isotopic uranium analysis using NAS/DOE Method 3050/RP-725.

2.2 VOLATILE ORGANIC COMPOUNDS

DL samples were collected and analyzed for VOCs if PID readings were greater than 25 parts per million (ppm) or if visual and/or olfactory observations (e.g., staining) warranted. In such an event, DL samples were analyzed on Site by SEI for trichloroethene (TCE) and tetrachloroethene (PCE) using solid phase microextraction and capillary gas chromatography. PID field screening, results and field observations are noted in the boring logs in **Appendix C**.

Two samples were collected at each SP interval for VOC analysis. One sample was analyzed on Site by SEI. The other sample was sent off Site to STL for VOC analysis using United States Environmental Protection Agency (USEPA) Method 8260B. In the case of LPH03, soil boring 01, the glass container for the SP sample at 30 ft bgs was broken during transfer to STL; an on-Site VOC analysis was used to replace the lost sample.

2.3 METALS

DL samples were collected for Ni analysis at alternating depth intervals (i.e., 1, 3, 5, 7 ft etc.) and analyzed on Site using x-ray fluorescence spectroscopy (XRF) by SEI.

Two samples were collected at each SP interval for metals analysis. One sample was analyzed on Site by SEI for Ni. The other sample was sent off Site to STL for analysis of Ni and Be using USEPA Method 6010B. On occasion, some DL samples were sent to STL for Ni analysis for additional confirmation.

3.0 ANALYSIS RESULTS/ASSESSMENTS

The results of the DL and SP samples are summarized in **Tables 1** through **8**. A summary of the soil boring sample results above the Site cleanup levels are summarized in **Table 9**. The results of the off-Site STL sample analysis are in bold print. All other sample analyses were conducted on-Site and listed in regular print. In this discussion, on-Site analytical results are generally rounded to two significant figures. Radiological, VOC and Ni analytical results were compared to the Site cleanup levels specified in the Work Plan. Results for Be were compared to the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4046 values and other published literature sources for New York State soils. A discussion of the LPH investigation and the related prior Spring 2004 Investigation results are presented below.

3.1 RADIOLOGICAL

The Th-232, U-234 and U-238 analytical results were compared to the Site cleanup levels of 2.8 picoCuries per gram (pCi/g) above background concentrations, 50 pCi/g, and 50 pCi/g, respectively. Residual radionuclides were detected above Site cleanup levels in LPH04 (U-238), LPH05 (U-238), LPH06 (U-238), and LPH21 (Th-232, U-234 and U-238). Based on the results from many Site samples, a Th-232 Site background concentration of approximately 0.6 pCi/g has been assumed. The text assessment discussion and tables reflect this assumption.

LPH04 **(Table 3)** had U-238 above the Site cleanup level in the central boring location (soil boring 01) at 22 ft bgs. The on-Site gamma spectroscopy analysis results for the radiological DL sample indicated U-238 at 79 pCi/g. Radiological DL samples of soils collected in the other four soil boring locations in LPH04 surrounding soil boring 01 did not indicate the presence of residual U-238 above Site cleanup level.

LPH05 **(Table 1)** had U-238 above the Site cleanup level in the central boring location (soil boring DL07) at 24 ft bgs and 24.5 ft bgs at concentrations of approximately 125 pCi/g and 119 pCi/g, respectively. Radiological samples from 25 to 30 ft bgs in this boring did not indicate the presence of residual U-238 above Site cleanup level.

LPH06 **(Table 1)** had U-238 above the Site cleanup level in soil boring locations DL10 and DL13 at depths ranging from 10 to 15 ft bgs and concentrations ranging from approximately 51 pCi/g to 83 pCi/g. Deeper samples at 20.5 ft bgs in both borings did not indicate the presence of residual U-238 above the Site cleanup level. LPH06 is believed to have been excavated during the remediation of Cell 12. The area of the borings DL10 and DL13 are located between the sheet pile boundary of Cell 12 and the 100 Building east wall, consequently excavation was not possible.

LPH21 **(Table 7)**, soil boring 01, had contaminants above the Site cleanup levels for Th-232 (20 pCi/g), U-234 (612 pCi/g) and U-238 (82 pCi/g) at 16 ft bgs (estimated bottom of the LPH). The isotopic ratios of U-234 to U-238 indicate that the radiological contaminants associated with LPH21 are from enriched uranium. The soil boring analytical results indicated no contaminants above the Site cleanup levels below 20 feet bgs. Soil boring 05 had contaminants above the Site cleanup levels for U-238 at 10 ft bgs at a concentration of 59 pCi/g. The soil samples above and below this depth did not indicate contaminants above the Site cleanup levels.

3.2 VOLATILE ORGANIC COMPOUNDS

The VOC analytical results of TCE and PCE were compared to the Site cleanup levels of 0.70 milligrams per kilogram (mg/kg) and 1.82 mg/kg, respectively. PCE was detected above Site cleanup levels in LPH03, LPH04, LPH05, and LPH21. TCE was detected above Site cleanup levels in LPH21; however, the concentration of PCE was much greater than the TCE concentration at the location.

LPH03 (**Table 3**) had PCE above Site cleanup levels at 6 and 16 ft bgs. Field screening for VOCs prompted DL sample collection in the central boring location (soil boring 01) at 6 ft bgs for on-Site VOC analysis. The results indicated a PCE concentration of 2.0 mg/kg. Additionally, field screening for VOCs prompted DL sample collection in soil boring 05 at 16 ft bgs for on-Site VOC analysis. The results indicated a PCE concentration of 12 mg/kg. Field screening of soils collected in the other LPH03 soil boring locations at 6 ft bgs or at 16 ft bgs did not indicate the presence of residual VOCs.

LPH04 (**Table 3**) had PCE above Site cleanup levels in the central boring location (soil boring 01) at 22 ft bgs. Field screening for VOCs prompted DL sample collection for on-Site VOC analysis. The results indicated a PCE concentration of 6.4 mg/kg. Field screening of soils collected in the other soil boring locations in LPH04 at 22 ft bgs did not indicate the presence of residual VOCs.

LPH05 (**Table 1**) had PCE above the Site cleanup level at 25 ft bgs in boring DL07 at approximately 6.1 mg/kg. The sample from 27 ft bgs in this boring did not indicate the presence of residual VOCs.

LPH21 (**Table 7**), soil boring 01, had contaminants above the Site cleanup levels for TCE and PCE at 16 ft bgs (estimated bottom of the LPH) and 19 ft bgs. Field screening for VOCs prompted SP sample collection in the central boring location (soil boring 01) at 16 ft bgs and DL sample collection at 19 ft bgs for VOC analysis. The SP results indicated an estimated PCE concentration of 40,000 mg/kg and a TCE concentration of 1600 mg/kg. The DL results indicated a PCE concentration estimated greater than approximately 1,300 mg/kg and a TCE concentration of 33 mg/kg. The soil boring analytical results indicated no contaminants above the Site cleanup levels below 20 ft bgs.

3.3 METALS

The Ni analytical results were compared to the Site cleanup level (560 mg/kg) while the Be results were compared to the NYSDEC TAGM #4046 values (0.16 mg/kg or Site background) and other published literature values for New York State soils.

LPH05 (**Table 1**) had Ni above the Site cleanup levels at 24 ft bgs in boring DL07 at approximately 955 mg/kg. The sample from 27 ft bgs in this boring did not indicate the presence of residual Ni above Site cleanup level.

Ni was detected above Site cleanup levels in LPH20 (**Table 7**), soil boring 04, at 1 ft bgs. The DL result indicated an estimated Ni concentration of 1,100 mg/kg. At 3 ft bgs in this boring, the Ni concentration was below the Site cleanup level. The samples at 1 to 2 ft bgs from three soil

borings (01, 03 and 05) north of soil boring 04 in LPH20 indicated Ni concentrations below the Site cleanup level.

The Ni concentration above the Site cleanup level indicates the presence of contaminants in shallow soils (fill) beneath the concrete slab. However, the Ni concentration in the fill does not indicate a potential for the presence of Ni in the undisturbed subsurface soils from LPH20.

Several locations had concentrations of Be above the TAGM level. However, Be concentrations in New York State soils are reported to range between 0 to 7 mg/kg[1, 2]. The Be soil results are interpreted to be within the reported range for soils in New York State.

4.0 CONCLUSIONS

As indicated in **Table 9**, six (LPH03, LPH04, LPH05, LPH06, LPH20 and LPH21) of the fifteen LPHs had soil sample boring results that indicated concentrations above the Site cleanup levels for radionuclides, TCE, PCE and/or Ni.

- LPH 03 had a sample from each of two soil borings (01 at 6 ft bgs and 05 at 16 ft bgs) that indicated PCE at concentrations above Site cleanup levels at 2.0 and 12 mg/kg, respectively;
- LPH 04 had a sample from one soil boring (01 at 22 ft bgs) that indicated U-238 at 79 pCi/g and a PCE concentration of 6.4 mg/kg;
- LPH05 had samples from one boring (DL07 at 24 ft bgs and 24.5 ft bgs) that indicated U-238 concentrations of approximately 125 pCi/g and 119 pCi/g, respectively. This same boring had PCE concentrations at 25 ft bgs at approximately 6.1 mg/kg and Ni concentrations at 24 ft bgs at approximately 955 mg/kg;
- LPH06 had samples from two borings located between the sheet pile boundary of Cell 12 and the 100 Building east wall, (DL10 and DL13 at depths ranging from 10 to 15 ft bgs) with U-238 concentrations ranging from approximately 51 pCi/g to 83 pCi/g;
- LPH 020 had one soil boring (04 at 1 ft bgs), that indicated an estimated Ni concentration of 1,100; and
- LPH 021 had two soil borings (01 and 05) that indicated contaminants above the Site cleanup levels for radionuclides and VOCs.
    - Soil boring 01, at 16 ft bgs, indicated a concentration of Th-232 at 20 pCi/g, a concentration of U-234 at 612 pCi/g, a concentration of U-238 at 82 pCi/g, an estimated concentration of PCE of 40,000 mg/kg, and a concentration of TCE at 1,600 mg/kg; and at 19 ft bgs, results indicated an estimated concentration of PCE above 1,300 mg/kg, and a concentration of TCE above 33 mg/kg,
    - Soil boring 05, at 10 ft bgs, indicated a concentration of U-238 at 59 pCi/g.

This information will be used to determine whether additional remedial activity is warranted.

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[1]Schacklette, H.T., and J.G. Boerngen. 1984. *Elemental Concentrations in Soils and Other Surficial Materials of the Conterminous United States*. US Geological Survey. Pub. 1270.

[2]Dragun, J. and A. Chiasson. 1991. *Elements in North American Soils*. Hazardous Materials Control Resources Institute. Greenbelt, Maryland.

Table 1
Spring 2004 Investigation Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)
I11	01	DL03	12142	0.0	0.84		< 4.80			
I11	01	DL03	12143	1.0	0.85		< 4.65			
I11	01	DL03	12166	2.0	0.55		< 4.63			
I11	01	DL03	12167	3.0	0.34		< 3.30			
I11	01	DL03	12168	4.0	0.42		< 3.43			
I11	01	DL03	12169	5.0	0.44		8.55			
I11	01	DL03	12172	6.0	0.40		6.34			
I11	**01**	**DL03**	**12359**	**17.0**	0.34		8.96			**2.3 J**
I11	01	DL03	12360	18.0	0.21		< 3.09			
I11	01	DL03	12361	19.0	0.16		< 2.43			
K14	03	DL14	12396	1.0	1.03		< 5.08			
K14	03	DL14	12397	2.0	0.78		7.46			
K14	03	DL14	12398	3.0	1.35		12.46			
K14	03	DL14	12399	4.0	0.72		< 4.95			
K14	03	DL14	12400	5.0	0.59		< 4.22			
L14	03	DL05	12352	1.0	0.76		< 5.52			
L14	03	DL05	12353	2.0	0.88		< 4.94			
L14	03	DL05	12354	3.0	1.76		12.21			
L14	03	DL05	12372	4.0	1.46		17.22			
L14	03	DL05	12373	5.0	0.93 J		11.67			
L14	03	DL05	12374	6.0	0.56		10.16 J			
L14	03	DL05	12375	7.0	0.41		6.31 J			
L14	03	DL05	12376	8.0	0.46		3.53 UJ			
L14	03	DL05	12377	9.0	0.39		3.45 UJ			
L14	03	DL05	12378	10.0	0.54		6.68 J			
L14	03	DL05	12379	11.0	0.40		3.37 UJ			
L14	03	DL05	12380	12.0	0.38		3.86 UJ			
L14	03	DL05	12381	13.0	0.44		3.89			
L14	03	DL05	12382	14.0	0.28		3.45			
L14	03	DL05	12383	15.0	0.28		3.14 UJ			
L14	03	DL05	12384	16.0	0.32		5.84 J	0.105 U	0.105 U	
L14	03	DL05	12385	17.0	0.32		4.26 J			
L14	03	DL05	12388	18.0	0.19		3.08 UJ			
L14	03	DL05	12391	19.0	0.06 UJ		< 3.66			
L14	**03**	**DL05**	**12392**	**20.0**	**0.30 J**	**1.42**	**0.74**	**0.0025 U**	**0.0013 J**	**0.38 J**
L14	03	DL19	12481	0.0	0.51		< 3.34			
L14	03	DL19	12482	1.0	1.13		< 4.94			
L14	03	DL19	12484	2.0	1.05		< 6.59			
L14	03	DL19	12488	3.0	0.97		10.47			
L14	03	DL19	12494	4.0	1.47		19.76			
L14	03	DL19	12546	6.0	1.15		10.14			
L14	03	DL19	12547	7.0	0.32		< 3.32			
L14	03	DL19	12548	8.0	0.36		< 3.69			
L14	03	DL19	12549	9.0	0.45		< 3.82			
L14	03	DL19	12553	10.0	0.39		4.01 J			
L14	03	DL19	12554	11.0	0.46		< 4.62			
L14	03	DL19	12555	12.0	0.31		< 2.86			
L14	03	DL19	12556	13.0	0.29		< 2.50			
L14	03	DL19	12557	14.0	0.27		< 3.15			
L14	03	DL19	12558	15.0	0.30		< 3.15			
L14	**03**	**DL19**	**12586**	**15.5**	**0.36 J**	**11.6**	**0.91**	**0.0026 U**	**0.0077 J**	**2.5 J**
M14	04	DL06	11830	1.0	0.74		< 4.30			
M14	04	DL06	11831	2.0	0.66		8.42 J			
M14	04	DL06	11832	3.0	1.00		< 5.42			

Table 1
Spring 2004 Investigation Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)
M14	04	DL06	11843	4.0	0.76		6.38			
M14	04	DL06	12293	5.0	0.93		10.26 J			
M14	04	DL06	12297	6.0	1.47 J		11.61			
M14	04	DL06	12299	7.0	0.81 J		9.65			
M14	04	DL06	12300	8.0	0.93		15.07			
M14	04	DL06	12309	9.0	0.79		< 4.15			
M14	04	DL06	12310	10.0	0.93 J		7.30			
M14	04	DL06	12402	11.0	0.65		< 5.40			
M14	04	DL06	12406	12.0	0.71		9.01			
M14	04	DL06	12407	13.0	0.62		< 5.81			
M14	04	DL06	12410	14.0	0.76		7.23			
M14	04	DL06	12415	15.0	0.67		8.30			
M14	04	DL06	12416	16.0	0.57		< 5.16			
M14	04	DL06	12417	17.0	0.63		6.13			
N15	05	DL07	12364	0.0	0.57 J		< 4.35			
N15	05	DL07	12365	1.0	0.65		< 4.26			
N15	05	DL07	12366	2.0	1.05 J		10.90			
N15	05	DL07	12367	3.0	0.96		22.00			
N15	05	DL07	12368	4.0	0.92		10.27 J			
N15	05	DL07	12369	5.0	0.40		< 3.14			
N15	05	DL07	12370	6.0	0.52		6.68			
N15	05	DL07	12371	7.0	0.65		5.60			
N15	**05**	**DL07**	**12386**	**24.0**	1.68		124.79 J			**955 J**
N15	05	DL07	12387	24.5	1.53		119.27			
N15	05	DL07	12389	25.0	0.47		9.38	0.095 U	6.132 D	
N15	05	DL07	12390	26.0	0.26		6.85 J			
N15	**05**	**DL07**	**12393**	**27.0**	**0.41**	**8.26**	**8.31**	**0.00064 J**	**0.190 J**	**10.0**
N15	05	DL07	12413	27.5	0.21		5.48			
N15	05	DL07	12414	28.0	0.29		< 3.51			
N15	05	DL07	12418	29.0	0.14		< 2.52			
N15	**05**	**DL07**	**12421**	**30.0**	**0.34 J**	**3.49**	**3.25**	**0.0026 U**	**0.015 J**	**2.1 J**
O15	05	DL16	12457	1.0	0.90		7.87			
O15	05	DL16	12458	2.0	0.76		< 4.19			
O15	05	DL16	12459	3.0	1.21		< 7.60			
O15	05	DL16	12460	4.0	0.79 J		< 5.44			
O15	05	DL16	12461	5.0	0.75		8.06 J			
O15	05	DL16	12462	6.0	0.40 J		4.73 J			
O15	05	DL16	12463	7.0	0.26		< 2.72			
O15	05	DL16	12464	8.0	0.31		< 3.72			
O15	05	DL16	12465	9.0	0.40		< 3.15			
O15	05	DL16	12466	10.0	0.24		< 2.53			
O15	05	DL16	12470	11.0	0.25		< 3.32			
O15	05	DL16	12469	12.0	0.12		< 2.25			
O15	05	DL16	12476	13.0	0.20 J		< 2.77			
O18	06	DL10	12199	0.0	0.64		< 3.99			
O18	06	DL10	12200	1.0	0.54		5.41			
O18	06	DL10	12204	2.0	0.95		17.99			
O18	06	DL10	12209	3.0	0.94		19.96			
O18	06	DL10	12210	4.0	0.79		8.02			
O18	06	DL10	12218	5.0	0.44		< 3.37			
O18	06	DL10	12219	6.0	0.62		15.47			
O18	06	DL10	12231	7.0	0.59		8.31			
O18	06	DL10	12232	8.0	1.10		13.93			
O18	06	DL10	12237	9.0	0.69		24.17			

Table 1
Spring 2004 Investigation Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)
O18	06	DL10	12238	10.0	0.73		74.78			
O18	06	DL10	12239	11.0	0.69		81.39			
O18	06	DL10	12255	12.0	0.57 J		51.24			
O18	06	DL10	12258	13.0	0.47		37.52			
O18	06	DL10	12273	14.0	0.30		40.30			
O18	06	DL10	12274	15.0	0.40		51.62			
O18	06	DL10	12285	16.0	0.31		42.36			
O18	06	DL10	12286	17.0	0.19		36.72			
O18	06	DL10	12291	18.0	0.20		23.02			
O18	06	DL10	12292	19.0	0.19 J		11.03			
O18	06	DL10	12298	20.0	0.20		11.15			
O18	**06**	**DL10**	**12313**	**20.5**	**0.50**	**32.7**	**34.4**	**0.0026 U**	**0.0084 J**	**17.3**
O18	06	DL13	12311	0.0	0.72		12.03			
O18	06	DL13	12312	1.0	0.94 J		19.60			
O18	06	DL13	12316	2.0	0.65		7.34			
O18	06	DL13	12317	3.0	0.76 J		10.91			
O18	06	DL13	12336	4.0	0.70		< 4.23			
O18	06	DL13	12337	5.0	0.76		5.87			
O18	06	DL13	12342	6.0	0.46		< 4.31			
O18	06	DL13	12343	7.0	0.72		4.45			
O18	06	DL13	12344	8.0	0.38		6.31			
O18	06	DL13	12345	9.0	0.39		9.66			
O18	06	DL13	12346	10.0	0.51		11.09			
O18	06	DL13	12347	11.0	0.71		19.26			
O18	06	DL13	12348	12.0	0.43		20.72			
O18	06	DL13	12349	13.0	0.45		21.96			
O18	06	DL13	12350	14.0	0.24		82.70			
O18	06	DL13	12351	15.0	0.24		71.52			
O18	06	DL13	12355	16.0	0.19		13.07			
O18	06	DL13	12356	17.0	0.29		18.42			
O18	06	DL13	12357	18.0	0.38		24.56			
O18	06	DL13	12358	19.0	0.23		7.95			
O18	06	DL13	12362	20.0	0.20		9.28			
O18	**06**	**DL13**	**12363**	**20.5**	**0.23 J**	**24.4**	**24.3**	**0.0026 U**	**0.0039 J**	**4.4**

Table 1
Spring 2004 Investigation Soil Boring Sample Results

Analytes:

Th-232 - Thorium-232
U-234 - Uranium-234
U-238 - Uranium-238
TCE - Trichloroethene
PCE - Tetrachloroethene
Ni - Nickel

Units:

pCi/g - picoCurie/gram
mg/kg - milligram/kilogram

Qualifiers:

U - Validation qualifier used to indicate that the result was qualified as non-detect.
J - Validation qualifier used to indicate that the result is considered an estimate.
UJ - Validation qualifier used to indicate that the result was qualified as non-detect and the associated reporting limit is considered an estimate.
D - Validation qualifier used to indicate that analysis was performed on a sample requiring dilution.
< - Validation qualifier (for on-Site radiological constituents) used to indicate that the result was qualified as non-detect.

Notes:

See Figure 2 for boring locations.
On-Site sample results are in plain font and include radionuclides (Th-232 and U-238) analyzed by the gamma spectroscopy system; volatile organic compounds (TCE and PCE) by solid phase microextraction and capillary gas chromatography by Stone Environmental, Inc.
Off-Site sample results are in **bold font** and indicate that the analysis was performed by Severn Trent Laboratories, Inc.
Due to an artifact in the laboratory data reporting program, the on-Site analytical data should be interpreted to two significant figures.
Blank cell indicates analysis was not performed.
Result is above Site cleanup level.

Table 2
LPH Investigation,
LPH01 and LPH02 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
I11	01	01	20994	15.0	NS		NS			100 U	
I11	**01**	**01**	**21018**	**16.0**	**1.60**	**0.166**	**0.185**	**0.0027 U**	**0.0028**	**12.5**	**0.53 UJ**
I11	01	01	21019	19.0	0.29		2.08			100 U	
I11	01	01	21020	21.0	NS		NS			100 U	
I11	01	01	21021	22.0	0.36		2.11				
I11	01	01	21022	23.0	0.21		< 0.31			100 U	
I11	01	01	21032	25.0	0.35		1.11			100 U	
I11	01	01	21033	26.0	0.34		0.73 J				
I11	01	01	21034	27.0	0.22		1.18 J			100 U	
I11	01	01	21043	28.0	0.20		1.64				
I11	01	01	21044	29.0	0.20		0.47 J			100 U	
I11	**01**	**01**	**21059**	**30.0**	**0.145**	**0.202**	**0.165**	**0.0026 U**	**0.0026 U**	**1.5 J**	**0.51 UJ**
I11	01	02	21064	1.0	1.03		0.86 J			100 U	
I11	01	02	21067	3.0	0.78		6.27			100 U	
I11	01	02	21073	5.0	1.00		2.54			100 U	
I11	01	02	21078	6.0	0.43		1.42				
I11	01	02	21079	7.0	0.49		1.83 J			40.5 J	
I11	01	02	21086	9.0	0.54		2.55			100 U	
I11	01	02	21087	11.0	0.36 J		1.42			100 U	
I11	01	02	21116	13.0	0.37		1.02 J			100 U	
I11	01	02	21117	15.0	0.72 J		5.11			100 U	
I11	01	02	21118	16.0	0.36 J		2.09				
I11	01	02	21119	17.0	0.36		0.80 J			100 U	
I11	01	02	21132	18.0	0.23		0.88				
I11	01	02	21133	19.0	0.31 J		0.85 J			100 U	
I11	01	02	21134	20.0	0.15		1.53				
I11	01	02	21135	21.0	0.19 J		1.59			100 U	
I11	01	02	21141	22.0	0.25		0.77 J				
I11	01	02	21142	23.0	0.27		0.79			100 U	
I11	01	02	21150	25.0	0.17 J		0.93 J			100 U	
I11	01	02	21151	26.0	0.27 J		1.29 J				
I11	01	02	21152	27.0	0.26 J		0.89			100 U	
I11	01	02	21176	28.0	0.16		1.55				
I11	01	02	21177	29.0	0.28 J		1.02 J			100 U	
I11	**01**	**02**	**21178**	**30.0**	**0.267**	**0.224**	**0.235**	**0.0026 U**	**0.0026 U**	**1.5 J**	**0.52 U**
I11	01	03	21291	1.0	0.96		3.09 J			100 U	
I11	01	03	21292	2.0	0.70		6.08 J				
I11	01	03	21293	3.0	0.51 J		1.03 J			100 U	
I11	01	03	21300	5.0	0.95		3.14 J			100 U	
I11	01	03	21301	6.0	0.68 J		2.10				
I11	01	03	21302	7.0	0.29		< 0.55			100 U	
I11	01	03	21303	9.0	0.79		1.31 J			100 U	
I11	01	03	21309	11.0	0.31 J		3.84			100 U	
I11	01	03	21310	12.0	0.29		1.24				
I11	01	03	21311	13.0	0.23		1.66 J			100 U	
I11	01	03	21312	15.0	0.40 J		2.55 J			100 U	
I11	01	03	21313	16.0	0.31		1.67				
I11	01	03	21314	17.0	0.23		0.51 UJ			100 U	
I11	01	03	21315	19.0	0.06 UJ		< 0.38			100 U	
I11	01	03	21316	21.0	0.19		0.54 J			100 U	
I11	01	03	21317	22.0	0.30		0.51 J				
I11	01	03	21318	23.0	0.17		< 0.26			100 U	

Table 2
LPH Investigation,
LPH01 and LPH02 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
I11	01	03	21319	25.0	0.26 J		1.14 J			100 U	
I11	01	03	21323	26.0	0.33		2.14				
I11	01	03	21324	27.0	0.27		0.93 J			100 U	
I11	01	03	21333	29.0	0.32		< 0.51			100 U	
I11	**01**	**03**	**21338**	**30.0**	**0.168**	**0.193**	**0.209**	**0.0026 U**	**0.0026 U**	**1.1 J**	**0.078 J**
I11	01	04	21345	1.0	1.10 J		3.93			100 U	
I11	01	04	21346	2.0	0.74		< 1.16				
I11	01	04	21347	3.0	0.99		7.08			100 U	
I11	01	04	21354	4.0	1.20		2.49				
I11	01	04	21355	5.0	0.94		1.83			100 U	
I11	01	04	21364	6.0	0.64		1.75				
I11	01	04	21365	7.0	0.04 UJ		1.35 J			100 U	
I11	01	04	21366	9.0	0.62		1.99			100 U	
I11	01	04	21367	11.0	0.03 UJ		< 0.75			100 U	
I11	01	04	21369	12.0	0.19		0.94 J				
I11	01	04	21370	13.0	0.34		0.78 J			100 U	
I11	01	04	21371	15.0	0.40 J		1.16 J			100 U	
I11	01	04	21372	16.0	0.32		1.59				
I11	01	04	21373	17.0	0.29 J		1.15 J			100 U	
I11	01	04	21390	19.0	0.21		< 0.36			100 U	
I11	01	04	21393	21.0	0.38		0.84			100 U	
I11	01	04	21394	22.0	0.17		0.72 J				
I11	01	04	21395	23.0	0.17		0.77			100 U	
I11	01	04	21396	25.0	0.08 UJ		< 0.62			100 U	
I11	01	04	21397	26.0	0.26		1.29				
I11	01	04	21398	27.0	0.27		< 0.53			100 U	
I11	01	04	21422	29.0	0.27 J		0.68 J			100 U	
I11	**01**	**04**	**21423**	**30.0**	**0.194**	**0.126**	**0.148**	**0.0026 U**	**0.0026 U**	**1.6 J**	**0.080 J**
I11	01	05	21203	1.0	1.05 J		1.22 J			100 U	
I11	01	05	21204	2.0	1.37		3.85				
I11	01	05	21205	3.0	1.15 J		2.35			100 U	
I11	01	05	21217	4.0	1.01		2.17				
I11	01	05	21218	5.0	1.08		1.94			100 U	
I11	01	05	21227	7.0	0.55 J		1.09 J			100 U	
I11	01	05	21228	9.0	0.85		1.94			100 U	
I11	01	05	21243	11.0	0.31		1.84			100 U	
I11	01	05	21244	12.0	0.49 J		1.06				
I11	01	05	21245	13.0	0.25 J		2.08			100 U	
I11	01	05	21246	15.0	0.27		0.68 J			100 U	
I11	01	05	21247	16.0	0.27 J		< 0.64				
I11	01	05	21248	17.0	0.06 UJ		0.53 J			100 U	
I11	01	05	21251	19.0	0.03 UJ		< 0.57			100 U	
I11	01	05	21252	21.0	0.19		1.91 J			100 U	
I11	01	05	21253	22.0	0.18		1.06 J				
I11	01	05	21254	23.0	0.21		1.06			100 U	
I11	01	05	21256	24.0	0.19		0.91 J				
I11	01	05	21257	25.0	< 0.05		1.26 J			100 U	
I11	01	05	21274	27.0	0.30		0.75 J			100 U	
I11	01	05	21275	28.0	0.15		0.37 UJ				
I11	01	05	21276	29.0	0.18 J		0.65 J			100 U	
I11	**01**	**05**	**21278**	**30.0**	**0.143**	**42.1**	**35.8**	**0.0026 U**	**0.0026 U**	**1.2 J**	**0.51 U**
I11	02	01	20847	7.0	1.39		10.34			100 U	

Table 2
LPH Investigation,
LPH01 and LPH02 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
I11	02	01	20848	9.0	NS		NS			100 U	
I11	02	01	20849	11.0	NS		NS			41.8 J	
I11	02	01	20850	13.0	1.01		9.62			44.9 J	
I11	02	01	20859	14.0	0.57		4.77				
I11	02	01	20860	15.0	0.29		2.54			100 U	
I11	02	01	20884	16.0	0.20		2.00				
I11	02	01	20885	17.0	0.20		< 0.74			100 U	
I11	02	01	20886	18.0	0.30		1.31				
I11	02	01	20887	19.0	< 0.06		1.26			100 U	
I11	02	01	20888	20.0	< 0.05		0.92 J				
I11	02	01	20889	21.0	0.25		0.79 J			100 U	
I11	02	01	20893	22.0	< 0.03		2.26 J				
I11	02	01	20894	23.0	0.25		0.43 J			100 U	
I11	02	01	20900	24.0	< 0.05		< 0.38				
I11	02	01	20901	25.0	< 0.06		0.58 J			100 U	
I11	02	01	20902	26.0	0.29		0.98 J				
I11	02	01	20903	27.0	0.27		2.02			100 U	
I11	02	01	20908	28.0	0.18 J		0.99 J				
I11	02	01	20909	29.0	0.20		0.64 J			100 U	
I11	**02**	**01**	**20910**	**30.0**	**0.112**	**0.131**	**0.123 J**	**0.0026 U**	**0.0026 U**	**1.9 J**	**0.52 UJ**
I11	02	02	20989	1.0	1.51		2.39			100 U	
I11	02	02	20990	2.0	0.64		1.80				
I11	02	02	20991	3.0	0.83		2.06			100 U	
I11	02	02	20997	5.0	0.71		2.28 J			100 U	
I11	02	02	20998	6.0	0.66		0.93 J				
I11	02	02	20999	7.0	0.73		1.12 J			100 U	
I11	02	02	21001	10.0	0.28		0.52 J				
I11	02	02	21002	11.0	0.29		< 0.55			100 U	
I11	02	02	21004	13.0	0.22		< 0.65			100 U	
I11	02	02	21005	14.0	0.38		1.62				
I11	02	02	21006	15.0	0.27		< 0.25			100 U	
I11	02	02	21009	16.0	0.23		1.47				
I11	02	02	21010	17.0	0.21		< 0.41			100 U	
I11	02	02	21012	18.0	0.32		0.97				
I11	02	02	21013	19.0	0.29		0.99 J			100 U	
I11	02	02	21016	20.0	0.22		0.87 J				
I11	02	02	21017	21.0	0.30		0.57 J			100 U	
I11	02	02	21023	22.0	0.32		0.47 J				
I11	02	02	21024	23.0	0.20		0.51 J			100 U	
I11	02	02	21026	24.0	0.27		< 0.28				
I11	02	02	21027	25.0	0.26		1.08 J			100 U	
I11	02	02	21028	26.0	0.20		< 0.22				
I11	02	02	21029	27.0	< 0.03		0.59 J			100 U	
I11	02	02	21045	28.0	0.24		0.76 J				
I11	02	02	21046	29.0	0.24		0.32 J			100 U	
I11	**02**	**02**	**21048**	**30.0**	**0.115**	**0.138**	**0.143**	**0.0026 U**	**0.0026 U**	**1.7 J**	**0.51 U**
I11	02	03	20920	4.0	0.70		1.86 J				
I11	02	03	20921	5.0	0.45		1.47 J			100 U	
I11	02	03	20922	7.0	0.52		1.54			100 U	
I11	02	03	20927	9.0	0.66		1.55 J			100 U	
I11	02	03	20928	11.0	0.26		2.47			100 U	
I11	02	03	20935	12.0	0.20		< 0.35				

Table 2
LPH Investigation,
LPH01 and LPH02 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
I11	02	03	20936	13.0	0.19		1.29			100 U	
I11	02	03	20937	14.0	0.40		< 0.66				
I11	02	03	20938	15.0	0.26		3.13			100 U	
I11	02	03	20939	16.0	0.34		1.85				
I11	02	03	20940	17.0	0.21		0.74 J			100 U	
I11	02	03	20945	18.0	< 0.03		2.43				
I11	02	03	20946	19.0	< 0.07		2.35 J			100 U	
I11	02	03	20947	20.0	0.29		2.16				
I11	02	03	20948	21.0	< 0.04		1.14			100 U	
I11	02	03	20959	22.0	0.16		1.36				
I11	02	03	20960	23.0	0.25		1.39			100 U	
I11	02	03	20961	24.0	0.42		1.42 J				
I11	02	03	20962	25.0	0.19		1.38			100 U	
I11	02	03	20963	26.0	0.23		0.78				
I11	02	03	20964	27.0	0.26		< 0.37			100 U	
I11	02	03	20971	28.0	0.21		1.07 J				
I11	02	03	20972	29.0	0.29		< 0.62			100 U	
I11	**02**	**03**	**20978**	**30.0**	**0.111**	**0.158**	**0.140**	**0.0026 U**	**0.0026 U**	**1.3 J**	**0.51 U**
I11	02	05	21069	4.0	0.61		1.99				
I11	02	05	21070	5.0	0.30		2.70			100 U	
I11	02	05	21071	6.0	0.43		0.55 J				
I11	02	05	21072	7.0	0.76		< 0.90			100 U	
I11	02	05	21074	8.0	0.25		0.70 J				
I11	02	05	21075	9.0	0.42		0.95 J			100 U	
I11	02	05	21076	10.0	0.23		< 0.40				
I11	02	05	21077	11.0	0.29		1.33			100 U	
I11	02	05	21084	12.0	0.29		1.26 J				
I11	02	05	21085	13.0	0.32		2.89 J			100 U	
I11	02	05	21088	14.0	0.23		0.45 J				
I11	02	05	21089	15.0	0.29 J		0.42 J			100 U	
I11	02	05	21090	16.0	0.28 J		0.76 J				
I11	02	05	21091	17.0	0.21 J		1.20			100 U	
I11	02	05	21093	18.0	0.22		< 0.44				
I11	02	05	21092	19.0	0.28 J		< 0.32			100 U	
I11	02	05	21094	20.0	0.48 J		< 0.56				
I11	02	05	21095	21.0	0.23 J		0.63 J			100 U	
I11	02	05	21110	22.0	0.16		< 0.23				
I11	02	05	21111	23.0	0.21 J		0.51 J			100 U	
I11	02	05	21112	24.0	0.31 J		1.23				
I11	02	05	21113	25.0	0.26 J		0.72 J			100 U	
I11	02	05	21114	26.0	0.15		< 0.41				
I11	02	05	21115	27.0	0.18 J		0.81 J			100 U	
I11	02	05	21121	28.0	0.20		0.49 J				
I11	02	05	21122	29.0	0.20		1.75			42.5 J	
I11	**02**	**05**	**21123**	**30.0**	**0.163**	**0.140**	**0.108 J**	**0.0026 U**	**0.0026 U**	**1.5 J**	**0.52 U**

Table 2
LPH Investigation,
LPH01 and LPH02 Soil Boring Sample Results

Analytes:

Th-232 - Thorium-232
U-234 - Uranium-234
U-238 - Uranium-238
TCE - Trichloroethene
PCE - Tetrachloroethene
Ni - Nickel
Be - Beryllium

Units:

pCi/g - picoCurie/gram
mg/kg - milligram/kilogram

Qualifiers:

U - Validation qualifier used to indicate that the result was qualified as non-detect.
J - Validation qualifier used to indicate that the result is considered an estimate.
UJ - Validation qualifier used to indicate that the result was qualified as non-detect and the associated reporting limit is considered an estimate.
< - Validation qualifier (for on-Site radiological constituents) used to indicate that the result was qualified as non-detect.

Notes:

See Figure 3 for boring locations.
On-Site sample results are in plain font and include radionuclides (Th-232 and U-238) analyzed by the gamma spectroscopy system; and Ni by x-ray fluorescence spectroscopy by Stone Environmental, Inc.
Off-Site sample results are in **bold font** and indicate that the analysis was performed by Severn Trent Laboratories, Inc.
NS - Not sampled due to insufficient recovery.
Due to an artifact in the laboratory data reporting program, the on-Site analytical data should be interpreted to two significant figures.
Blank cell indicates analysis was not performed.

Table 3
LPH Investigation,
LPH03, LPH04 and LPH05 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
L14	03	01	21510	5.0	0.98 J		7.28			100 U	
L14	03	01	21511	6.0	NS		NS	0.105 U	1.982		
L14	03	01	21512	7.0	0.40 J		5.19			100 U	
L14	03	01	21516	9.0	0.62		6.33 J			100 U	
L14	03	01	21519	11.0	0.82		4.57			100 U	
L14	03	01	21520	13.0	NS		NS			50.4 J	
L14	03	01	21537	15.0	NS		NS			100 U	
L14	03	01	21538	17.0	0.46		9.86			100 U	
L14	03	01	21539	19.0	< 0.06		1.73			100 U	
L14	03	01	21547	21.0	0.25		2.30			100 U	
L14	03	01	21554	22.0	0.22		1.54				
L14	03	01	21555	23.0	0.28		1.35 J			100 U	
L14	03	01	21580	25.0	0.25		1.50			100 U	
L14	03	01	21581	26.0	0.21		2.19				
L14	03	01	21582	27.0	< 0.06		0.58 J			100 U	
L14	03	01	21598	29.0	< 0.07		< 0.45			100 U	
L14	**03**	**01**	**21599**	**30.0**	**0.150**	**0.199 J**	**0.199 J**	0.113 U	0.113 U	**1.5 J**	**0.085 J**
L14	03	02	21731	1.0	0.88		3.56			100 U	
L14	03	02	21732	3.0	NS		NS			100 U	
L14	03	02	21733	5.0	0.96		11.75			100 U	
L14	03	02	21734	7.0	0.55		2.16			100 U	
L14	03	02	21735	9.0	NS		NS			100 U	
L14	03	02	21740	11.0	0.77		1.66			100 U	
L14	03	02	21741	13.0	0.67		2.57			100 U	
L14	03	02	21746	14.0	0.26		1.39				
L14	03	02	21747	15.0	0.31		1.85			100 U	
L14	03	02	21748	16.0	0.35		2.77 J				
L14	03	02	21749	17.0	0.38		1.59			100 U	
L14	03	02	21756	18.0	0.33		< 0.66				
L14	03	02	21757	19.0	0.20		1.35			100 U	
L14	03	02	21758	20.0	0.19		1.28				
L14	03	02	21759	21.0	< 0.06		0.80 J			100 U	
L14	03	02	21760	22.0	0.28		1.46 J				
L14	03	02	21761	23.0	0.24		1.06 J			100 U	
L14	03	02	21765	25.0	0.40		< 0.61			100 U	
L14	03	02	21766	26.0	0.25		1.00				
L14	03	02	21767	27.0	0.19		< 0.35			100 U	
L14	03	02	21768	28.0	0.26		0.58 J				
L14	03	02	21769	29.0	0.33		< 0.40			100 U	
L14	**03**	**02**	**21770**	**30.0**	**0.146**	**0.152**	**0.134**	**0.0025 U**	**0.0025 U**	**1.3 R**	**0.060 J**
L14	03	03	21618	1.0	0.86		0.92 J			100 U	
L14	03	03	21619	2.0	0.79		3.31				
L14	03	03	21620	3.0	1.07		5.83			100 U	
L14	03	03	21621	5.0	0.57		1.30 J			100 U	
L14	03	03	21637	6.0	0.80		1.76				
L14	03	03	21638	7.0	0.73		2.38			100 U	
L14	03	03	21639	8.0	0.28		0.90 J				
L14	03	03	21640	9.0	0.38		3.35 J			100 U	
L14	03	03	21641	11.0	0.33		0.90 J			100 U	
L14	03	03	21646	13.0	< 0.11		1.22 J			100 U	
L14	03	03	21649	15.0	< 0.05		0.65 J			100 U	
L14	03	03	21650	16.0	0.42		1.44 J				

Table 3
LPH Investigation,
LPH03, LPH04 and LPH05 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
L14	03	03	21651	17.0	0.27		1.80			100 U	
L14	03	03	21654	19.0	0.25		1.82 J			100 U	
L14	03	03	21655	21.0	0.39		1.42			100 U	
L14	03	03	21656	22.0	0.24		0.58 J				
L14	03	03	21657	23.0	0.30		< 0.14			100 U	
L14	03	03	21664	25.0	0.22		< 0.43			100 U	
L14	03	03	21665	26.0	0.26		1.67 J				
L14	03	03	21666	27.0	0.32		1.18			100 U	
L14	03	03	21669	28.0	0.15		0.93 J				
L14	03	03	21670	29.0	0.25		0.74 J			100 U	
L14	**03**	**03**	**21673**	**30.0**	**0.187**	**0.127**	**0.140**	**0.0026 U**	**0.0026 U**	**1.1 R**	**0.066 J**
L14	03	04	21773	1.0	0.59		1.47 J			100 U	
L14	03	04	21774	3.0	0.83		14.30			42.2 J	
L14	03	04	21776	5.0	0.68		10.59			100 U	
L14	03	04	21784	6.0	0.74		3.61				
L14	03	04	21785	7.0	< 0.10		< 0.84			100 U	
L14	03	04	21786	8.0	0.56		0.74 J				
L14	03	04	21787	9.0	0.48		0.91 J			100 U	
L14	03	04	21788	11.0	0.27		1.32 J			100 U	
L14	03	04	21789	13.0	0.34		< 0.60			100 U	
L14	03	04	21790	15.0	0.30		1.41			100 U	
L14	03	04	21801	16.0	0.24		1.40 J				
L14	03	04	21802	17.0	0.31		1.25			100 U	
L14	03	04	21807	19.0	0.25		0.38 J			100 U	
L14	03	04	21810	21.0	0.29		1.29 J			100 U	
L14	03	04	21815	22.0	0.20		0.37 J				
L14	03	04	21816	23.0	< 0.06		0.85 J			100 U	
L14	03	04	21827	25.0	0.21		2.19			100 U	
L14	03	04	21828	26.0	0.24		0.97 J				
L14	03	04	21829	27.0	0.21		1.48			100 U	
L14	03	04	21830	29.0	0.30		0.56 J			100 U	
L14	**03**	**04**	**21832**	**30.0**	**0.218**	**0.203**	**0.166**	**0.0025 U**	**0.0025 U**	**1.1 R**	**0.086 J**
L14	03	05	21675	1.0	1.10		2.56 J			100 U	
L14	03	05	21676	3.0	1.05		9.31			100 U	
L14	03	05	21677	4.0	0.60		3.87				
L14	03	05	21678	5.0	0.70		< 0.65			100 U	
L14	03	05	21683	7.0	0.56		1.71			100 U	
L14	03	05	21688	9.0	0.67		4.63			100 U	
L14	03	05	21689	10.0	0.75		7.48				
L14	03	05	21690	11.0	1.84		16.91			100 U	
L14	03	05	21691	13.0	0.95		16.64			100 U	
L14	03	05	21696	15.0	0.78		4.01			100 U	
L14	03	05	21698	16.0	NS		NS	0.133 U	12.370 D		
L14	03	05	21697	17.0	0.25		2.04			100 U	
L14	03	05	21703	18.0	0.21		1.40				
L14	03	05	21704	19.0	0.24		1.47			100 U	
L14	03	05	21705	21.0	0.28		3.45			100 U	
L14	03	05	21717	22.0	0.19		1.96				
L14	03	05	21718	23.0	0.25		3.36			100 U	
L14	03	05	21719	25.0	0.19		1.01			100 U	
L14	03	05	21724	26.0	0.21		0.85 J				
L14	03	05	21725	27.0	0.15		0.49 J			100 U	

Table 3
LPH Investigation,
LPH03, LPH04 and LPH05 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
L14	03	05	21726	28.0	0.25		0.53 J				
L14	03	05	21727	29.0	0.25		1.04 J			100 U	
L14	**03**	**05**	**21730**	**30.0**	**0.179**	**0.179**	**0.181**	**0.0025 U**	**0.0025 U**	**1.4 R**	**0.055 J**
M14	04	01	21906	5.0	0.97		< 1.30			100 U	
M14	04	01	21907	9.0	NS		NS			100 U	
M14	04	01	21908	11.0	0.60		6.94			100 U	
M14	04	01	21909	13.0	0.93		14.02			100 U	
M14	04	01	21916	15.0	0.87		17.31			100 U	
M14	04	01	21924	16.0	0.84		14.05				
M14	04	01	21925	17.0	0.77		5.21 J			100 U	
M14	04	01	21928	19.0	0.74		10.13 J			100 U	
M14	04	01	21934	21.0	NS		NS			100 U	
M14	04	01	21947	22.0	0.97		79.12	0.176 U	6.364		
M14	04	01	21948	23.0	0.28		1.35 J			100 U	
M14	04	01	21949	24.0	0.82		40.70				
M14	04	01	21950	25.0	0.21		7.69			100 U	
M14	04	01	21959	27.0	0.16		5.74			100 U	
M14	04	01	21960	29.0	0.31		1.13 J			100 U	
M14	**04**	**01**	**21975**	**30.0**	**0.164**	**1.59**	**0.83**	**0.0026 U**	**0.0026 U**	**1.5 J**	**0.051 J**
M14	04	02	22171	1.0	0.63		1.32 J			100 U	
M14	04	02	22172	3.0	0.90		1.92			100 U	
M14	04	02	22173	5.0	1.21		13.44			100 U	
M14	04	02	22191	7.0	1.00		9.79			100 U	
M14	04	02	22200	9.0	0.64		4.32			100 U	
M14	04	02	22201	11.0	0.43		2.91 J			45.0 J	
M14	04	02	22204	13.0	0.44		3.94	0.094 U	1.573	100 U	
M14	04	02	22205	15.0	NS		NS			100 U	
M14	04	02	22206	17.0	0.30		2.54			100 U	
M14	04	02	22207	19.0	0.29		2.16			100 U	
M14	04	02	22208	21.0	0.20		3.56	0.097 U	1.680	100 U	
M14	04	02	22209	23.0	0.24		0.90			100 U	
M14	04	02	22210	25.0	0.21		0.39 J			100 U	
M14	04	02	22211	26.0	0.18		2.07 J				
M14	04	02	22212	27.0	0.16		2.36			100 U	
M14	04	02	22214	29.0	0.30		2.08			100 U	
M14	**04**	**02**	**22215**	**30.0**	**0.166**	**1.30**	**1.29**	**0.0026 U**	**0.0026 U**	**1.6 J**	**0.10 J**
M14	04	03	21980	1.0	0.69		1.47			100 U	
M14	04	03	21981	3.0	0.79		3.43			100 U	
M14	04	03	21994	5.0	0.15 UJ		11.32			100 U	
M14	04	03	22009	7.0	0.94 J		11.96			100 U	
M14	04	03	22010	9.0	0.70		2.99			100 U	
M14	04	03	22011	10.0	< 0.07		0.87 J				
M14	04	03	22012	11.0	0.50 J		0.73 J			100 U	
M14	04	03	22017	13.0	0.36		1.10 J			100 U	
M14	04	03	22022	15.0	0.35 J		0.75 J			100 U	
M14	04	03	22023	17.0	0.30		0.76 J			100 U	
M14	04	03	22024	19.0	0.24		0.62 J			100 U	
M14	04	03	22025	21.0	0.02 UJ		1.47	0.099 U	0.099 U	100 U	
M14	04	03	22026	23.0	0.19		1.57 J			100 U	
M14	04	03	22037	25.0	0.17 J		1.16			100 U	
M14	04	03	22038	26.0	0.20		1.13 J				
M14	04	03	22039	27.0	0.18		1.13			100 U	

Table 3
LPH Investigation,
LPH03, LPH04 and LPH05 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
M14	04	03	22048	29.0	0.31 J		1.03 J			100 U	
M14	**04**	**03**	**22057**	**30.0**	**0.136**	**0.325**	**0.298**	**0.0026 U**	**0.0026 U**	**3.6 J**	**0.096 J**
M14	04	04	22064	1.0	0.86		1.45 J			100 U	
M14	04	04	22065	3.0	1.13		2.08 J			100 U	
M14	04	04	22072	5.0	0.96		4.62			100 U	
M14	04	04	22073	7.0	1.22		6.30			100 U	
M14	04	04	22074	9.0	0.70		1.38 J			100 U	
M14	04	04	22091	11.0	< 0.03		2.14			100 U	
M14	04	04	22096	13.0	0.27		1.87			100 U	
M14	04	04	22097	15.0	0.26		0.75 J			100 U	
M14	04	04	22098	16.0	0.37		0.74 J				
M14	04	04	22099	17.0	< 0.07		1.35 J			100 U	
M14	04	04	22121	19.0	0.24		< 0.59			100 U	
M14	04	04	22125	21.0	0.30		0.68 J			100 U	
M14	04	04	22123	22.0	0.23		1.06 J				
M14	04	04	22124	23.0	< 0.06		0.54 J			100 U	
M14	04	04	22132	25.0	< 0.04		0.59 J			100 U	
M14	04	04	22133	26.0	0.23		2.10 J				
M14	04	04	22134	27.0	0.22		1.96			100 U	
M14	04	04	22135	29.0	0.21		< 0.53			100 U	
M14	**04**	**04**	**22153**	**30.0**	**0.152**	**0.255**	**0.193**	**0.0026 U**	**0.0026 U**	**1.8 J**	**0.094 J**
M14	04	05	22216	1.0	1.13		1.89 J			100 U	
M14	04	05	22217	2.0	0.96		4.51				
M14	04	05	22218	3.0	1.10		12.39			40.1 J	
M14	04	05	22219	5.0	1.42		15.75			100 U	
M14	04	05	22220	7.0	0.90		6.28			100 U	
M14	04	05	22221	9.0	1.28		2.94			100 U	
M14	04	05	22226	11.0	0.49		1.49			100 U	
M14	04	05	22227	13.0	0.49		2.15			100 U	
M14	04	05	22228	15.0	0.40		2.05			100 U	
M14	04	05	22231	16.0	0.27		1.97				
M14	04	05	22232	17.0	0.29		3.27			100 U	
M14	04	05	22233	18.0	< 0.03		2.23				
M14	04	05	22234	19.0	0.32		1.95			100 U	
M14	04	05	22241	20.0	0.17		0.94				
M14	04	05	22242	21.0	< 0.07		1.97			100 U	
M14	04	05	22250	22.0	0.28		1.14				
M14	04	05	22251	23.0	0.34		0.55 J			100 U	
M14	04	05	22252	25.0	0.21		0.61 J			100 U	
M14	04	05	22255	26.0	0.29		< 0.29				
M14	04	05	22256	27.0	0.22		2.94			100 U	
M14	04	05	22265	28.0	0.18		1.40				
M14	04	05	22266	29.0	0.17		< 0.50			100 U	
M14	**04**	**05**	**22270**	**30.0**	**0.161**	**0.276**	**0.249**	**0.0025 U**	**0.0025 U**	**1.9 J**	**0.089 J**
M14	04	06	22289	1.0	0.85		< 0.82			100 U	
M14	04	06	22290	2.0	1.35		7.33				
M14	04	06	22291	3.0	0.99		2.47			100 U	
M14	04	06	22296	5.0	1.10		15.01			45.1 J	
M14	04	06	22331	7.0	0.78		7.52			100 U	
M14	04	06	22332	9.0	0.78		2.00			100 U	
M14	04	06	22333	11.0	0.30		1.87			100 U	
M14	04	06	22334	13.0	0.30		1.15 J			100 U	

Table 3
LPH Investigation,
LPH03, LPH04 and LPH05 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
M14	04	06	22335	14.0	0.28		1.51				
M14	04	06	22336	15.0	0.21		1.08 J			100 U	
M14	04	06	22337	16.0	0.36		0.80 J				
M14	04	06	22338	17.0	0.28		0.81 J			100 U	
M14	04	06	22344	19.0	0.24		0.95			100 U	
M14	04	06	22356	21.0	0.24		1.16			100 U	
M14	04	06	22357	22.0	0.15		0.87 J				
M14	04	06	22358	23.0	0.30		1.48			100 U	
M14	04	06	22367	25.0	0.27		1.38			100 U	
M14	04	06	22378	26.0	0.32		2.22				
M14	04	06	22379	27.0	0.23		< 1.07			100 U	
M14	04	06	22380	29.0	0.25		3.75			100 U	
M14	**04**	**06**	**22394**	**30.0**	**0.114**	**0.98**	**0.98**	**0.0026 U**	**0.0026 U**	**1.4 J**	**0.062 J**
M14	04	07	22548	1.0	0.74		1.54 J			100 U	
M14	04	07	22549	2.0	0.69		2.23				
M14	04	07	22550	3.0	1.10		3.59 J			100 U	
M14	04	07	22557	4.0	0.99		10.84				
M14	04	07	22558	5.0	0.97		13.46			100 U	
M14	04	07	22565	7.0	0.73		3.81 J			100 U	
M14	04	07	22566	9.0	1.02		5.58	0.097 U	1.256	100 U	
M14	04	07	22571	11.0	0.29		0.66 J			100 U	
M14	04	07	22574	13.0	< 0.06		0.74 J			100 U	
M14	04	07	22575	15.0	0.34		1.42 J			100 U	
M14	04	07	22576	16.0	< 0.03		0.78 J				
M14	04	07	22577	17.0	0.29		1.67			100 U	
M14	04	07	22582	19.0	0.29		2.49			100 U	
M14	04	07	22583	21.0	0.27		< 0.42			100 U	
M14	04	07	22584	22.0	0.23		0.93 J				
M14	04	07	22585	23.0	0.29		< 0.45			100 U	
M14	04	07	22586	25.0	0.30		0.68 J			100 U	
M14	04	07	22588	26.0	0.21		1.07 J				
M14	04	07	22589	27.0	0.22		0.81 J			100 U	
M14	04	07	22590	28.0	0.22		0.57 J				
M14	04	07	22591	29.0	0.25		< 0.41			100 U	
M14	**04**	**07**	**22592**	**30.0**	**0.121**	**0.070 J**	**0.080 J**	**0.0025 U**	**0.0025 U**	**2.2 J**	**0.11 J**
M14	04	08	22476	1.0	0.87		1.54 J			100 U	
M14	04	08	22481	2.0	1.05		< 1.35				
M14	04	08	22482	3.0	1.25		22.97 J			100 U	
M14	04	08	22483	5.0	0.96		1.73 J			100 U	
M14	04	08	22491	7.0	0.46		0.69 J			100 U	
M14	04	08	22506	9.0	0.45		1.01 J			100 U	
M14	04	08	22507	11.0	0.36		1.23 J			100 U	
M14	04	08	22509	13.0	0.34		0.94 J			100 U	
M14	04	08	22510	15.0	0.24		0.51 UJ			100 U	
M14	04	08	22519	17.0	0.25		0.96 J			100 U	
M14	04	08	22522	19.0	0.33		1.55 J			100 U	
M14	04	08	22523	21.0	0.34		0.92 J			100 U	
M14	04	08	22525	22.0	0.18		0.53 J				
M14	04	08	22526	23.0	0.25		0.38 J			100 U	
M14	04	08	22527	25.0	0.21		1.12 J			100 U	
M14	04	08	22538	26.0	0.26		1.07 J				
M14	04	08	22539	27.0	0.22		1.33 J			100 U	

Table 3
LPH Investigation,
LPH03, LPH04 and LPH05 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
M14	04	08	22542	29.0	< 0.05		0.51 J			100 U	
M14	**04**	**08**	**22545**	**30.0**	**0.173**	**0.188**	**0.121**	**0.0026 U**	**0.0026 U**	**0.84 J**	**0.17 J**
M14	04	09	22417	1.0	0.71		0.65 J			100 U	
M14	04	09	22418	3.0	0.90		6.81			100 U	
M14	04	09	22422	5.0	0.75		5.01			100 U	
M14	04	09	22424	7.0	0.96		2.39			100 U	
M14	04	09	22425	9.0	0.64		1.47			40.8 J	
M14	04	09	22426	11.0	0.60		1.45			100 U	
M14	04	09	22432	13.0	0.36		1.38 J			100 U	
M14	04	09	22433	15.0	0.24		1.15 J			100 U	
M14	04	09	22434	16.0	< 0.05		0.61 J				
M14	04	09	22435	17.0	0.20		< 0.45			100 U	
M14	04	09	22437	19.0	0.29		< 0.24			100 U	
M14	04	09	22438	21.0	0.33		0.53 J			100 U	
M14	04	09	22446	22.0	0.32		0.76 J				
M14	04	09	22447	23.0	0.24		< 0.39			100 U	
M14	04	09	22448	25.0	0.34		1.95			100 U	
M14	04	09	22459	26.0	0.22		0.87 J				
M14	04	09	22460	27.0	0.23		0.45 J			100 U	
M14	04	09	22464	29.0	0.20		1.27			100 U	
M14	**04**	**09**	**22465**	**30.0**	**0.215**	**0.402**	**0.305**	**0.0026 U**	**0.0026 U**	**1.2 J**	**0.12 J**
N15	05	01	22596	1.0	< 0.06		2.63			100 U	
N15	05	01	22597	3.0	0.99		0.95 J			100 U	
N15	05	01	22599	5.0	NS		NS			100 U	
N15	05	01	22605	25.0	NS		NS			50.2 J	
N15	05	01	22606	27.0	0.29		6.76			100 U	
N15	**05**	**01**	**22607**	**28.0**	**0.165**	**2.31**	**2.20**	**0.0026 U**	**0.042**	**2.3 J**	**0.11 J**
N15	**05**	**01**	**22617**	**30.0**	**0.193**	**1.21**	**1.13**	**0.0026 U**	**0.016**	**2.5 J**	**0.11 J**
N15	05	01	22641	32.0	0.25 J		1.61				
N15	05	01	22642	33.0	0.25		< 0.42			100 U	
N15	05	01	22650	35.0	0.37		0.65 J			100 U	
N15	05	01	22651	37.0	0.25 J		1.32 J			100 U	
N15	05	01	22664	39.0	0.43		< 0.58			100 U	
N15	05	01	22673	41.0	0.28		0.77			100 U	
N15	05	01	22688	42.0	0.16		0.77				
N15	05	01	22689	43.0	0.22 J		0.47 J			100 U	
N15	05	01	22698	45.0	0.24		1.08			100 U	
N15	05	01	22701	46.0	0.20 J		0.87 J				
N15	05	01	22702	47.0	0.30		1.77			100 U	
N15	05	01	22705	48.0	0.55		< 0.51				
N15	05	01	22706	49.0	0.34		1.63			100 U	
N15	05	01	22715	50.0	0.35		1.47				
N15	05	01	22716	51.0	0.90		5.59			100 U	
N15	05	01	22731	52.0	0.55		1.53				
N15	05	01	22732	53.0	0.90		5.07	0.103 U	0.103 U	100 U	
N15	05	01	22733	54.0	0.73		5.13				
N15	05	01	22734	55.0	0.56		10.18			100 U	
N15	05	01	22735	56.0	0.58		4.70				
N15	05	01	22736	57.0	0.39		3.15			100 U	
N15	05	01	22737	58.0	0.46		3.70				
N15	05	01	22738	59.0	0.26		1.53			100 U	
N15	05	01	22757	60.0	0.35		2.63				

Table 3
LPH Investigation,
LPH03, LPH04 and LPH05 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
N15	05	01	22758	61.0	0.34		3.88			100 U	
N15	05	01	22765	62.0	0.35		1.82				
N15	05	01	22766	63.0	0.38		1.25			100 U	
N15	**05**	**01**	**22800**	**64.0**	**0.109**	**0.344**	**0.386**	**0.0026 U**	**0.0026 U**	**0.50 J**	**0.52 U**
N15	05	02	22633	1.0	0.68 J		2.18			100 U	
N15	05	02	22634	3.0	1.20		9.42			100 U	
N15	05	02	22808	4.0	1.26		9.07				
N15	05	02	22809	5.0	1.23		1.24 J			100 U	
N15	05	02	22810	7.0	0.36		< 0.50			100 U	
N15	05	02	22816	9.0	1.01		0.98 J			100 U	
N15	05	02	22819	11.0	0.35		< 0.69			100 U	
N15	05	02	22824	13.0	0.48		1.21			100 U	
N15	05	02	22826	15.0	0.72		0.92 J			100 U	
N15	05	02	22827	16.0	0.45		1.99				
N15	05	02	22828	17.0	0.24		1.20			100 U	
N15	05	02	22830	19.0	0.31		< 0.27			100 U	
N15	05	02	22839	21.0	0.32		1.11 J			100 U	
N15	05	02	22842	22.0	0.18		0.96 J				
N15	05	02	22843	23.0	0.25		1.70			100 U	
N15	05	02	22848	25.0	0.46		1.34			100 U	
N15	05	02	22849	26.0	0.34		1.16 J				
N15	05	02	22850	27.0	0.24		0.82 J			100 U	
N15	05	02	22859	29.0	0.31		< 0.41			100 U	
N15	**05**	**02**	**22862**	**30.0**	**0.115**	**0.150**	**0.108**	**0.0026 U**	**0.0026 U**	**1.4 J**	**0.063 J**
N15	05	03	22922	1.0	NS		NS			100 U	
N15	05	03	22923	2.0	1.24		1.73 J				
N15	05	03	22924	3.0	1.01		6.44			100 U	
N15	05	03	22929	4.0	0.97		6.62				
N15	05	03	22930	5.0	1.51		4.52 J			100 U	
N15	05	03	22931	6.0	0.55		1.35				
N15	05	03	22932	7.0	0.66		0.84 J			100 U	
N15	05	03	22935	9.0	0.96		1.65 J			100 U	
N15	05	03	22940	11.0	0.34		1.07			100 U	
N15	05	03	22945	12.0	0.37		0.53 J				
N15	05	03	22946	13.0	0.46		1.72 J			100 U	
N15	05	03	22961	15.0	0.27		1.09 J			100 U	
N15	05	03	22963	16.0	0.25		1.34				
N15	05	03	22964	17.0	0.26		1.08 J			100 U	
N15	05	03	22965	19.0	0.27		0.89 J			100 U	
N15	05	03	22966	20.0	0.18		1.01				
N15	05	03	22967	21.0	0.23		1.63			100 U	
N15	05	03	22972	23.0	0.22		< 0.44			100 U	
N15	05	03	22981	25.0	0.21		1.13 J			100 U	
N15	05	03	22982	26.0	0.17		0.62 J				
N15	05	03	22983	27.0	0.26		1.14 J			100 U	
N15	05	03	22984	29.0	0.21		0.86 J			100 U	
N15	**05**	**03**	**22989**	**30.0**	**0.129**	**0.246**	**0.255**	**0.0026 U**	**0.00094 J**	**2.0 J**	**0.17 J**
N15	05	04	23150	1.0	0.52		2.14			100 U	
N15	05	04	23151	3.0	1.26		7.63			56.6 J	
N15	05	04	23152	4.0	1.03		7.47				
N15	05	04	23153	5.0	1.15		2.67			100 U	
N15	05	04	23154	7.0	0.49		1.09 J			100 U	

Table 3
LPH Investigation,
LPH03, LPH04 and LPH05 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
N15	05	04	23155	9.0	0.66		1.18 J			100 U	
N15	05	04	23156	10.0	0.42		1.10 J				
N15	05	04	23157	11.0	0.40		0.87 J			100 U	
N15	05	04	23163	13.0	0.21		0.60 J			100 U	
N15	05	04	23176	15.0	0.28		2.99 J			100 U	
N15	05	04	23177	16.0	0.30		1.07				
N15	05	04	23178	17.0	0.25		1.74			100 U	
N15	05	04	23186	19.0	0.28		2.00 J			100 U	
N15	05	04	23187	20.0	0.22		1.18				
N15	05	04	23188	21.0	0.28		0.73 J			100 U	
N15	05	04	23205	23.0	0.26		1.54 J			100 U	
N15	05	04	23206	25.0	0.42		1.99			100 U	
N15	05	04	23213	26.0	0.34		1.01 J				
N15	05	04	23214	27.0	0.23		1.14			100 U	
N15	05	04	23228	29.0	0.28		1.22			100 U	
N15	**05**	**04**	**23233**	**30.0**	**0.171**	**0.250**	**0.244**	**0.0026 U**	**0.018 J**	**1.4 J**	**0.51 U**
N15	05	05	23000	1.0	0.75		< 0.76			100 U	
N15	05	05	23001	3.0	0.96		< 1.18			100 U	
N15	05	05	23013	4.0	0.93		1.44 J				
N15	05	05	23014	5.0	1.37		1.87			100 U	
N15	05	05	23021	7.0	0.52		< 0.66			100 U	
N15	05	05	23023	8.0	0.42		1.29				
N15	05	05	23024	9.0	0.47		1.99 J			100 U	
N15	05	05	23025	11.0	0.33		1.91 J			100 U	
N15	05	05	23026	13.0	0.27		1.08 J			100 U	
N15	05	05	23038	15.0	0.36		0.57 UJ			100 U	
N15	05	05	23039	16.0	0.20		0.82 J				
N15	05	05	23040	17.0	0.22 J		1.08 J			100 U	
N15	05	05	23043	19.0	0.17		0.75 J			100 U	
N15	05	05	23044	21.0	0.33		2.42 J			100 U	
N15	05	05	23045	22.0	0.32		0.96 J				
N15	05	05	23046	23.0	0.26		1.72 J			100 U	
N15	05	05	23057	25.0	0.33		0.86			100 U	
N15	05	05	23058	26.0	0.25		2.44 J				
N15	05	05	23059	27.0	< 0.03		0.83			100 U	
N15	05	05	23072	29.0	0.25		1.25 J			100 U	
N15	**05**	**05**	**23079**	**30.0**	**0.168**	**0.227**	**0.210**	**0.0025 U**	**0.0063 J**	**1.4 J**	**0.20 J**

Table 3
LPH Investigation,
LPH03, LPH04 and LPH05 Soil Boring Sample Results

Analytes:

Th-232 - Thorium-232
U-234 - Uranium-234
U-238 - Uranium-238
TCE - Trichloroethene
PCE - Tetrachloroethene
Ni - Nickel
Be - Beryllium

Units:

pCi/g - picoCurie/gram
mg/kg - milligram/kilogram

Qualifiers:

R - Validation qualifier used to indicate that the result is considered unusable.
U - Validation qualifier used to indicate that the result was qualified as non-detect.
J - Validation qualifier used to indicate that the result is considered an estimate.
UJ - Validation qualifier used to indicate that the result was qualified as non-detect and the associated reporting limit is considered an estimate.
D - Validation qualifier used to indicate that analysis was performed on a sample requiring dilution.
< - Validation qualifier (for on-Site radiological constituents) used to indicate that the result was qualified as non-detect.

Notes:

See Figure 4 for boring locations.
On-Site sample results are in plain font and include radionuclides (Th-232 and U-238) analyzed by the gamma spectroscopy system; volatile organic compounds (TCE and PCE) by solid phase microextraction and capillary gas chromatography by Stone Environmental, Inc.; and Ni by x-ray fluorescence spectroscopy by Stone Environmental, Inc.
Off-Site sample results are in **bold font** and indicate that the analysis was performed by Severn Trent Laboratories, Inc.
NS - Not sampled due to insufficient recovery.
Due to an artifact in the laboratory data reporting program, the on-Site analytical data should be interpreted to two significant figures.
The Container for sample 21599 was broken during transfer to STL and an on-Site VOC analysis was used to replace the lost sample result.
Blank cell indicates analysis was not performed.
Result is above Site cleanup level.

Table 4
LPH Investigation,
LPH12 and LPH13 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
A19	12	01	18224	4.0	1.22		8.79				
A19	12	01	18230	5.0	0.57		3.73			100 U	
A19	12	01	18231	6.0	0.54		2.76				
A19	12	01	18232	7.0	0.53		1.23 J			100 U	
A19	12	01	18233	8.0	< 0.08		1.30				
A19	**12**	**01**	**18234**	**9.0**	0.30		2.52 J			**2.0 J**	
A19	12	01	18244	10.0	0.48		2.65 J				
A19	12	01	18245	11.0	0.32 J		2.19			100 U	
A19	12	01	18246	12.0	0.39		2.66				
A19	12	01	18247	13.0	0.43		0.85 J			100 U	
A19	12	01	18248	14.0	0.36		< 0.50				
A19	12	01	18249	15.0	< 0.08		1.32 J			100 U	
A19	12	01	18250	16.0	0.32		1.03 J				
A19	12	01	18251	17.0	0.22		0.51 J			100 U	
A19	12	01	18267	18.0	0.22		< 0.35				
A19	12	01	18268	19.0	0.33		0.96			100 U	
A19	12	01	18269	20.0	0.16 J		0.77 J				
A19	12	01	18270	21.0	0.22		0.97 J			100 U	
A19	12	01	18271	22.0	0.29		0.45 J				
A19	12	01	18272	23.0	0.27		0.30 J			100 U	
A19	12	01	18273	24.0	0.24		0.37 J				
A19	12	01	18274	25.0	0.31		< 0.46			100 U	
A19	12	01	18275	26.0	0.19		0.64 J				
A19	12	01	18276	27.0	0.22		1.05			100 U	
A19	12	01	18282	28.0	0.33		0.55 J				
A19	12	01	18283	29.0	0.36		2.00			100 U	
A19	**12**	**01**	**18284**	**30.0**	**0.141**	**0.156**	**0.164**	**0.0026 U**	**0.0026 U**	**4.2 U**	**0.25 J**
A19	12	03	18403	1.0	0.95		7.58			133	
A19	12	03	18404	2.0	0.99		6.69				
A19	12	03	18405	3.0	0.59		6.25			100 U	
A19	12	03	18406	4.0	0.59		4.38				
A19	12	03	18407	5.0	0.56		1.51 J			100 U	
A19	12	03	18408	6.0	0.33		0.54 J				
A19	12	03	18409	7.0	0.54		1.38 J			100 U	
A19	12	03	18416	8.0	0.52		2.89				
A19	12	03	18417	9.0	0.72		1.46 J			100 U	
A19	12	03	18418	10.0	0.38		1.53				
A19	12	03	18419	11.0	0.38		< 0.45			100 U	
A19	12	03	18420	12.0	0.51		1.62				
A19	12	03	18421	13.0	0.35		< 0.46			100 U	
A19	12	03	18431	14.0	0.46		< 0.66				
A19	12	03	18432	15.0	0.25		0.53 J			100 U	
A19	12	03	18433	16.0	0.28		0.46 J				
A19	12	03	18434	17.0	0.25		< 0.33			100 U	
A19	12	03	18439	18.0	0.36		1.92				
A19	**12**	**03**	**18440**	**19.0**	0.25		1.48			**4.1 U**	
A19	12	03	18441	20.0	0.27		< 0.33				
A19	12	03	18442	21.0	0.25		1.64			100 U	
A19	12	03	18446	22.0	0.19		0.76 J				
A19	12	03	18447	23.0	0.58		2.70 J			100 U	
A19	12	03	18456	24.0	0.18		0.50 J				
A19	12	03	18457	25.0	0.20		< 0.29			100 U	

Table 4
LPH Investigation,
LPH12 and LPH13 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
A19	12	03	18458	26.0	0.32		0.97 J				
A19	12	03	18459	27.0	0.22		1.41			100 U	
A19	12	03	18462	28.0	0.19		< 0.23				
A19	12	03	18463	29.0	0.19		1.62			100 U	
A19	**12**	**03**	**18464**	**30.0**	**0.137**	**0.154**	**0.122 J**	**0.0026 U**	**0.0026 U**	**2.0 J**	**0.52 U**
A19	12	04	18480	1.0	0.55		3.26			100 U	
A19	12	04	18483	3.0	0.65		1.15			100 U	
A19	12	04	18494	4.0	0.30		0.92				
A19	12	04	18495	5.0	0.66		< 0.73			100 U	
A19	12	04	18496	6.0	1.05		1.69 J				
A19	12	04	18497	7.0	0.61		2.16			100 U	
A19	12	04	18498	8.0	0.42		1.99				
A19	12	04	18499	9.0	0.36		0.87 J			100 U	
A19	12	04	18500	10.0	0.36		< 0.62				
A19	12	04	18501	11.0	0.38		< 0.26			100 U	
A19	12	04	18504	12.0	0.29		0.90 J				
A19	12	04	18505	13.0	0.54		1.80			100 U	
A19	12	04	18506	14.0	0.37		0.92 J				
A19	12	04	18507	15.0	0.42		0.64 J			100 U	
A19	12	04	18508	16.0	0.27		1.01 J				
A19	12	04	18509	17.0	0.32		1.09 J			100 U	
A19	12	04	18511	18.0	0.23		1.18				
A19	12	04	18512	19.0	0.17		0.40 J			100 U	
A19	12	04	18513	20.0	0.25		1.76 J				
A19	12	04	18514	21.0	0.22		0.93			100 U	
A19	12	04	18515	22.0	0.17		0.85				
A19	12	04	18516	23.0	0.21		2.74			100 U	
A19	12	04	18519	24.0	0.17		0.56 J				
A19	12	04	18520	25.0	0.22		0.73 J			100 U	
A19	12	04	18521	26.0	0.25		1.26 J				
A19	12	04	18522	27.0	0.30		1.40			100 U	
A19	12	04	18523	28.0	< 0.06		0.70 J				
A19	12	04	18524	29.0	0.24		1.01			100 U	
A19	**12**	**04**	**18525**	**30.0**	**0.207**	**0.144**	**0.122 J**	**0.0026 U**	**0.0026 U**	**2.2 J**	**0.51 U**
A19	12	05	18301	1.0	1.21		6.76			100 U	
A19	12	05	18315	2.0	0.88		5.25				
A19	12	05	18316	3.0	0.86		4.35			44.2 J	
A19	12	05	18317	4.0	0.77		6.10				
A19	12	05	18318	5.0	0.61		1.95			100 U	
A19	12	05	18319	6.0	0.44		1.71 J				
A19	12	05	18320	7.0	0.38		1.20 J			100 U	
A19	12	05	18339	8.0	0.98		2.09				
A19	12	05	18340	9.0	0.51		1.00 J			100 U	
A19	12	05	18341	10.0	0.90		2.41 J				
A19	12	05	18342	11.0	0.55		1.02 J			100 U	
A19	12	05	18343	12.0	0.33		1.11 J				
A19	12	05	18344	13.0	0.25		1.07 J			100 U	
A19	12	05	18354	14.0	0.43		1.45 J				
A19	12	05	18355	15.0	0.42		< 0.66			100 U	
A19	12	05	18352	16.0	0.38		0.48 J				
A19	12	05	18353	17.0	0.43		1.76 J			100 U	
A19	12	05	18356	18.0	0.40		< 0.41				

Table 4
LPH Investigation,
LPH12 and LPH13 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
A19	12	05	18357	19.0	0.37		0.86 J			100 U	
A19	12	05	18364	20.0	0.38		< 0.44				
A19	12	05	18365	21.0	0.49		2.09			100 UJ	
A19	12	05	18372	22.0	0.16		0.69 J				
A19	12	05	18373	23.0	0.24		< 0.30			100 UJ	
A19	12	05	18374	24.0	0.20		0.67				
A19	12	05	18375	25.0	0.43		< 0.24			100 UJ	
A19	12	05	18378	26.0	0.23		0.68 J				
A19	12	05	18379	27.0	0.24		0.70 J			100 U	
A19	12	05	18380	28.0	0.29		1.36				
A19	12	05	18381	29.0	0.24		1.30 J			100 U	
A19	**12**	**05**	**18382**	**30.0**	**0.136**	**0.218**	**0.213**	**0.0026 U**	**0.0026 U**	**4.1 U**	**0.52 U**
Z68	13	01	18540	4.0	0.71		3.96				
Z68	13	01	18541	5.0	0.49		1.89			100 U	
Z68	13	01	18542	6.0	0.44		0.94 J				
Z68	13	01	18543	7.0	0.81		< 0.67			100 U	
Z68	13	01	18547	8.0	0.91		1.77 J				
Z68	13	01	18548	9.0	0.69		1.12 J			100 U	
Z68	13	01	18553	10.0	0.31		1.14 J				
Z68	13	01	18554	11.0	0.36		0.64 J			100 U	
Z68	13	01	18559	12.0	0.28		< 0.61				
Z68	13	01	18560	13.0	0.34		1.38			100 U	
Z68	13	01	18573	14.0	0.24		0.71 J				
Z68	13	01	18574	15.0	0.35		1.58			100 U	
Z68	13	01	18578	16.0	0.32		0.35 J				
Z68	13	01	18579	17.0	< 0.04		0.54 J			100 U	
Z68	13	01	18588	18.0	0.19		0.48 J				
Z68	13	01	18589	19.0	0.29		1.53 J			100 U	
Z68	13	01	18590	20.0	0.22		0.69 J				
Z68	13	01	18591	21.0	0.26		< 0.34			100 U	
Z68	13	01	18606	22.0	0.21		0.90 J				
Z68	13	01	18607	23.0	0.23		1.17 J			100 U	
Z68	13	01	18608	24.0	0.31		< 0.37				
Z68	13	01	18609	25.0	0.28		0.75			100 U	
Z68	13	01	18610	26.0	< 0.06		0.50 J				
Z68	13	01	18611	27.0	0.18		0.90 J			100 U	
Z68	13	01	18612	28.0	0.29		1.16				
Z68	13	01	18613	29.0	0.31		< 0.62			100 U	
Z68	**13**	**01**	**18614**	**30.0**	**0.108**	**0.189**	**0.159**	**0.0026 U**	**0.0026 U**	**2.7 J**	**0.52 U**
Z68	13	04	18701	1.0	0.72		3.93 J			100 U	
Z68	13	04	18702	2.0	0.60		1.27 UJ				
Z68	13	04	18703	3.0	0.76		12.00			41.9 J	
Z68	13	04	18704	4.0	0.74		1.68 J				
Z68	13	04	18705	5.0	0.48		1.22 J			100 U	
Z68	13	04	18706	7.0	0.74		< 0.75			100 U	
Z68	13	04	18707	8.0	0.59		3.14 J				
Z68	13	04	18708	9.0	0.48		0.62 J			100 U	
Z68	13	04	18709	10.0	0.48		0.69 UJ				
Z68	13	04	18710	11.0	0.28		0.26 UJ			100 U	
Z68	13	04	18711	12.0	0.37		0.53 UJ				
Z68	13	04	18712	13.0	0.38		0.62 J			100 U	
Z68	13	04	18716	14.0	0.25		1.04 J				

Table 4
LPH Investigation,
LPH12 and LPH13 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
Z68	**13**	**04**	**18717**	**15.0**	0.21		1.44 J			**4 U**	
Z68	13	04	18718	17.0	0.28		0.56 J			100 U	
Z68	13	04	18719	18.0	0.34		0.51 UJ				
Z68	13	04	18720	19.0	0.17		1.03 J			100 U	
Z68	13	04	18721	20.0	0.15		0.53 J				
Z68	13	04	18722	21.0	0.29		1.53			100 U	
Z68	13	04	18728	22.0	0.18		1.02 J				
Z68	13	04	18729	23.0	0.22		0.65 J			100 U	
Z68	13	04	18730	24.0	0.20		1.31 J				
Z68	13	04	18731	25.0	< 0.03		0.83 J			100 U	
Z68	13	04	18732	26.0	0.18		0.55 J				
Z68	13	04	18743	28.0	0.18		0.45 UJ				
Z68	13	04	18744	29.0	0.25		< 0.52			100 U	
Z68	**13**	**04**	**18745**	**30.0**	**0.142**	**0.198**	**0.164**	**0.0026 U**	**0.0026 U**	**3.4 J**	**0.51 U**
Z68	13	05	18619	1.0	< 0.11		4.42			100 U	
Z68	13	05	18620	2.0	0.75		14.24 J				
Z68	13	05	18621	3.0	0.62		6.59 J			100 U	
Z68	13	05	18622	4.0	0.68		2.06				
Z68	13	05	18623	5.0	0.78		1.95 J			100 U	
Z68	13	05	18624	6.0	0.51		1.06 J				
Z68	13	05	18625	7.0	0.67		1.68 J			100 U	
Z68	13	05	18633	8.0	1.19		1.04 J				
Z68	13	05	18634	9.0	0.51		1.88 J			100 U	
Z68	13	05	18635	10.0	0.63		1.72 J				
Z68	13	05	18636	11.0	0.31		< 0.49			100 U	
Z68	13	05	18637	12.0	0.42		1.65 J				
Z68	13	05	18638	13.0	0.26		1.08 J			100 U	
Z68	13	05	18651	14.0	0.38		0.81 J				
Z68	13	05	18652	15.0	0.26		< 0.56			100 U	
Z68	13	05	18663	16.0	0.30		0.28 UJ				
Z68	13	05	18664	17.0	0.33		1.77 J			100 U	
Z68	13	05	18671	19.0	< 0.05		0.97 J			100 U	
Z68	13	05	18682	20.0	0.37		1.44				
Z68	13	05	18683	21.0	0.28		1.49 J			100 U	
Z68	13	05	18686	22.0	0.21		1.03				
Z68	13	05	18687	23.0	0.29		1.29 J			100 U	
Z68	13	05	18688	25.0	0.22		< 0.51			100 U	
Z68	13	05	18689	26.0	0.17		1.13 J				
Z68	13	05	18690	27.0	0.34		1.52 J			100 U	
Z68	13	05	18696	28.0	0.23		1.37 J				
Z68	13	05	18697	29.0	< 0.06		1.21 J			100 U	
Z68	**13**	**05**	**18698**	**30.0**	**0.195**	**0.539**	**0.577**	**0.0026 U**	**0.0026 U**	**4.1 U**	**0.51 U**

Table 4
LPH Investigation,
LPH12 and LPH13 Soil Boring Sample Results

Analytes:

Th-232 - Thorium-232
U-234 - Uranium-234
U-238 - Uranium-238
TCE - Trichloroethene
PCE - Tetrachloroethene
Ni - Nickel
Be - Beryllium

Units:

pCi/g - picoCurie/gram
mg/kg - milligram/kilogram

Qualifiers:

U - Validation qualifier used to indicate that the result was qualified as non-detect.
J - Validation qualifier used to indicate that the result is considered an estimate.
UJ - Validation qualifier used to indicate that the result was qualified as non-detect and the associated reporting limit is considered an estimate.
< - Validation qualifier (for on-Site radiological constituents) used to indicate that the result was qualified as non-detect.

Notes:

See Figure 5 for boring locations.
On-Site sample results are in plain font and include radionuclides (Th-232 and U-238) analyzed by the gamma spectroscopy system; and Ni by x-ray fluorescence spectroscopy by Stone Environmental, Inc.
Off-Site sample results are in **bold font** and indicate that the analysis was performed by Severn Trent Laboratories, Inc.
Due to an artifact in the laboratory data reporting program, the on-Site analytical data should be interpreted to two significant figures.
Blank cell indicates analysis was not performed.

Table 5
LPH Investigation,
LPH14 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
Z71	**14**	**01**	**17903**	**20.0**	**0.87**	**24.5**	**22.2**	**0.00043 U**	**0.00071 U**	**30.2**	**0.56 U**
Z71	**14**	**01**	**17905**	**21.0**	0.50		7.62			**21.2**	
Z71	14	01	17906	22.0	0.20		1.92				
Z71	**14**	**01**	**17907**	**23.0**	0.29		6.14			**39.6**	
Z71	14	01	17908	24.0	0.21		3.78				
Z71	**14**	**01**	**17909**	**25.0**	0.18		2.93			**3.0 J**	
Z71	14	01	17910	26.0	0.34		2.71				
Z71	**14**	**01**	**17911**	**27.0**	0.19		1.32			**4.5**	
Z71	14	01	17919	28.0	0.30		2.19				
Z71	**14**	**01**	**17920**	**29.0**	0.26		1.33 J			**4.2 U**	
Z71	**14**	**01**	**17921**	**30.0**	**0.129**	**0.56**	**0.56**	**0.0027 U**	**0.0027 U**	**2.6 J**	**0.53 U**
Z71	14	02	18021	6.0	0.74		< 1.07				
Z71	14	02	18022	7.0	1.46		2.67			100 U	
Z71	14	02	18023	8.0	0.91		1.58				
Z71	**14**	**02**	**18024**	**9.0**	0.60		< 0.84			**4.1 U**	
Z71	14	02	18025	10.0	0.78		2.05 J				
Z71	14	02	18026	11.0	0.39		< 0.68			100 U	
Z71	14	02	18029	12.0	0.43		1.41 J				
Z71	14	02	18030	13.0	0.49		1.73			100 U	
Z71	14	02	18033	14.0	0.36		0.91 J				
Z71	14	02	18034	15.0	< 0.08		2.82			100 U	
Z71	14	02	18035	16.0	0.31		1.83				
Z71	14	02	18036	17.0	0.28		1.86 J			100 U	
Z71	14	02	18039	18.0	0.33		1.43				
Z71	14	02	18040	19.0	0.30		0.97 J			100 U	
Z71	14	02	18043	20.0	0.31		1.65				
Z71	14	02	18044	21.0	0.20		1.60			100 U	
Z71	14	02	18047	22.0	< 0.07		1.52				
Z71	14	02	18048	23.0	0.22		< 0.52			100 U	
Z71	14	02	18054	26.0	0.26		1.36				
Z71	14	02	18055	27.0	0.32		0.79 J			100 U	
Z71	14	02	18056	28.0	0.28		2.83 J				
Z71	14	02	18057	29.0	0.19		0.44 J			100 U	
Z71	**14**	**02**	**18058**	**30.0**	**0.161**	**0.119**	**0.106**	**0.0026 U**	**0.0026 U**	**4.1 U**	**0.25 J**
Z71	14	03	17926	2.0	1.14		16.32				
Z71	14	03	17927	3.0	0.61		1.83			100 U	
Z71	14	03	17932	4.0	1.85		3.96				
Z71	14	03	17933	5.0	0.92		1.96 J			100 U	
Z71	14	03	17934	6.0	0.67		2.27				
Z71	14	03	17935	7.0	0.51		1.51			100 U	
Z71	14	03	17940	8.0	0.74		1.30 J				
Z71	**14**	**03**	**17941**	**9.0**	0.56		1.57 J			**4.3**	
Z71	14	03	17942	10.0	0.48		1.84				
Z71	14	03	17943	11.0	0.24		0.49 J			100 U	
Z71	14	03	17944	12.0	0.31		1.12 J				
Z71	14	03	17945	13.0	0.37		1.44			100 U	
Z71	14	03	17948	14.0	0.41		0.64 J				
Z71	14	03	17949	15.0	0.30		0.54 J			100 U	
Z71	14	03	17950	16.0	0.39		1.00 J				
Z71	14	03	17951	17.0	0.27		< 0.22			100 U	
Z71	14	03	17955	18.0	< 0.06		1.00				
Z71	14	03	17956	19.0	0.19		1.28			100 U	
Z71	14	03	17957	20.0	0.24		0.95 J				
Z71	14	03	17958	21.0	0.22		< 0.50			100 U	
Z71	**14**	**03**	**17959**	**23.0**	< 0.02		1.00			**4.1 U**	
Z71	14	03	17960	24.0	0.21		0.88				
Z71	14	03	17961	25.0	< 0.03		0.59 J			100 U	

Table 5
LPH Investigation,
LPH14 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
Z71	14	03	17962	26.0	0.24		0.86				
Z71	14	03	17963	27.0	0.18		0.88			100 U	
Z71	14	03	17964	28.0	0.30		1.10 J				
Z71	**14**	**03**	**17965**	**29.0**	0.27		1.17			**4.1 U**	
Z71	**14**	**03**	**17966**	**30.0**	**0.163**	**0.170**	**0.172**	**0.0025 U**	**0.0025 U**	**2.6 J**	**0.28 J**
Z71	14	05	17977	4.0	0.55		1.31 J				
Z71	14	05	17978	5.0	0.46		1.41			100 U	
Z71	14	05	17989	6.0	0.47		1.65				
Z71	14	05	17990	7.0	0.92		2.15 J			100 U	
Z71	14	05	17991	8.0	0.97		2.25 J				
Z71	14	05	17992	9.0	1.58		3.49			100 U	
Z71	14	05	17993	10.0	0.87		1.05 J				
Z71	14	05	17994	11.0	1.32		3.11			100 U	
Z71	14	05	17995	12.0	1.22		0.83 J				
Z71	**14**	**05**	**17996**	**13.0**	0.29		0.54 J			**3.1 J**	
Z71	14	05	17997	14.0	1.25		2.06 J				
Z71	14	05	17998	15.0	0.17		0.64 J			100 U	
Z71	14	05	17999	16.0	0.28		< 0.40				
Z71	14	05	18000	17.0	0.23		< 0.43			100 U	
Z71	14	05	18001	18.0	0.29		0.82 J				
Z71	14	05	18002	19.0	0.32		1.68 J			100 U	
Z71	14	05	18008	20.0	0.24		0.87 J				
Z71	14	05	18009	21.0	0.30		1.21			100 U	
Z71	14	05	18010	22.0	0.28		1.43				
Z71	14	05	18011	23.0	0.27		< 0.44			100 U	
Z71	14	05	18014	24.0	< 0.07		1.92				
Z71	14	05	18015	25.0	0.25		0.53 J			100 U	
Z71	14	05	18016	26.0	0.16		0.56 J				
Z71	14	05	18017	27.0	0.25		0.63 J			100 U	
Z71	14	05	18018	28.0	0.26		0.88				
Z71	14	05	18019	29.0	0.27		1.13			100 U	
Z71	**14**	**05**	**18020**	**30.0**	**0.141**	**0.168**	**0.118**	**0.0026 U**	**0.0026 U**	**4.2 U**	**0.28 J**
Z71	14	06	18128	2.0	0.49		1.59				
Z71	14	06	18129	3.0	0.61		3.20			100 U	
Z71	14	06	18131	4.0	0.34		2.15				
Z71	14	06	18130	5.0	1.03		3.65 J			100 U	
Z71	14	06	18132	6.0	1.09		2.50 J				
Z71	14	06	18133	7.0	0.94		2.88 J			100 U	
Z71	14	06	18134	8.0	0.57		1.06 J				
Z71	14	06	18135	9.0	0.89		1.00 UJ			100 U	
Z71	14	06	18136	10.0	1.04		2.29 J				
Z71	14	06	18137	11.0	0.43		0.81 J			100 U	
Z71	14	06	18138	12.0	0.68		1.46				
Z71	14	06	18139	13.0	1.08		0.92 J			100 U	
Z71	14	06	18140	14.0	0.65		< 0.94				
Z71	14	06	18141	15.0	< 0.05		< 0.50			100 U	
Z71	14	06	18143	16.0	0.35		1.09 J				
Z71	14	06	18144	17.0	0.38		1.56 J			100 U	
Z71	14	06	18145	18.0	0.19		0.47 J				
Z71	14	06	18146	19.0	0.28		0.61 J			100 U	
Z71	14	06	18147	20.0	0.28		1.72 J				
Z71	14	06	18148	21.0	0.29		1.00 J			100 U	
Z71	14	06	18151	22.0	0.33		< 0.51				
Z71	14	06	18152	23.0	0.22		1.00			100 U	
Z71	14	06	18153	24.0	< 0.04		< 0.54				
Z71	**14**	**06**	**18154**	**25.0**	0.28		0.97 J			**4.1 U**	
Z71	14	06	18155	26.0	0.24		1.81				

Table 5
LPH Investigation,
LPH14 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
Z71	14	06	18156	27.0	0.28		0.96 J			100 U	
Z71	14	06	18159	28.0	0.21		< 0.36				
Z71	14	06	18160	29.0	0.24		0.85 J			100 U	
Z71	**14**	**06**	**18161**	**30.0**	**0.146**	**0.119**	**0.125**	**0.0026 U**	**0.0026 U**	**2.3 J**	**0.52 U**
Z71	14	09	18072	2.0	0.62		4.23 J				
Z71	14	09	18073	3.0	0.49		1.82 J			100 U	
Z71	14	09	18074	4.0	0.60		1.84 J				
Z71	14	09	18075	5.0	0.50		1.62 J			100 U	
Z71	14	09	18076	6.0	0.92		2.37 J				
Z71	14	09	18077	7.0	1.16		2.23			100 U	
Z71	14	09	18078	8.0	0.75		2.31				
Z71	14	09	18079	9.0	1.24		1.96			100 U	
Z71	14	09	18088	10.0	0.35		1.49 J				
Z71	14	09	18089	11.0	0.32		1.26 J			100 U	
Z71	14	09	18091	12.0	0.36		1.10 J				
Z71	14	09	18092	13.0	0.43		0.48 J			100 U	
Z71	14	09	18099	14.0	0.33		< 0.48	0.095 U	0.095 U		
Z71	14	09	18100	15.0	0.31		0.58 J			100 U	
Z71	14	09	18101	16.0	0.27		1.62 J				
Z71	14	09	18102	17.0	0.22		1.32 J			100 U	
Z71	14	09	18112	18.0	< 0.08		0.96 J				
Z71	**14**	**09**	**18113**	**19.0**	0.29		1.30			**4.1 U**	
Z71	14	09	18114	20.0	0.37		0.66 UJ				
Z71	14	09	18115	21.0	0.24		1.50			100 U	
Z71	14	09	18116	22.0	0.26		1.04 J				
Z71	14	09	18117	23.0	0.24		0.79 J			100 U	
Z71	14	09	18118	24.0	0.14		0.78 J				
Z71	14	09	18119	25.0	< 0.08		0.84 J			100 U	
Z71	14	09	18120	26.0	0.29		1.23 J				
Z71	14	09	18121	27.0	0.34		0.64 J			100 U	
Z71	14	09	18124	28.0	0.38		1.10 J				
Z71	14	09	18125	29.0	< 0.03		0.62 J			100 U	
Z71	**14**	**09**	**18126**	**30.0**	**0.132**	**0.225**	**0.208**	**0.0026 U**	**0.0026 U**	**4.1 U**	**0.51 U**

Table 5
LPH Investigation,
LPH14 Soil Boring Sample Results

Analytes:

Th-232 - Thorium-232
U-234 - Uranium-234
U-238 - Uranium-238
TCE - Trichloroethene
PCE - Tetrachloroethene
Ni - Nickel
Be - Beryllium

Units:

pCi/g - picoCurie/gram
mg/kg - milligram/kilogram

Qualifiers:

U - Validation qualifier used to indicate that the result was qualified as non-detect.

J - Validation qualifier used to indicate that the result is considered an estimate.

UJ - Validation qualifier used to indicate that the result was qualified as non-detect and the associated reporting limit is considered an estimate.

< - Validation qualifier (for on-Site radiological constituents used to indicate that the result was qualified as non-detect.

Notes:

See Figure 6 for boring locations.

On-Site sample results are in plain font and include radionuclides (Th-232 and U-238) analyzed by the gamma spectroscopy system; volatile organic compounds (TCE and PCE) by solid phase microextraction and capillary gas chromatography by Stone Environmental, Inc.; and Ni by x-ray fluorescence spectroscopy by Stone Environmental, Inc.

Off-Site sample results are in **bold font** and indicate that the analysis was performed by Severn Trent Laboratories, Inc.

Due to an artifact in the laboratory data reporting program, the on-Site analytical data should be interpreted to two significant figures.

Blank cell indicates analysis was not performed.

Table 6
LPH Investigation,
LPH15, LPH16 and LPH17 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
S69	15	01	18157	5.0	NS		NS			100 U	
S69	15	01	18158	7.0	0.46		2.46			100 U	
S69	15	01	18162	8.0	0.87		1.55 J				
S69	15	01	18163	9.0	0.40		1.17			100 U	
S69	15	01	18164	10.0	< 0.12		2.31				
S69	15	01	18165	11.0	0.53		1.23 J			100 U	
S69	15	01	18166	13.0	0.55		< 0.62			100 U	
S69	15	01	18168	15.0	0.84		< 0.93			100 U	
S69	15	01	18180	17.0	0.54		0.98 J			100 U	
S69	15	01	18182	19.0	0.25		0.54 J			100 U	
S69	15	01	18185	21.0	0.24		0.69 J			100 U	
S69	15	01	18192	22.0	0.31		2.14				
S69	15	01	18193	23.0	0.32		< 0.56			100 U	
S69	15	01	18195	24.0	0.43		0.95				
S69	15	01	18196	25.0	0.34		1.26			100 U	
S69	15	01	18197	26.0	0.33		1.70				
S69	15	01	18198	27.0	0.22		< 0.48			100 U	
S69	15	01	18199	28.0	0.22 J		0.71 J				
S69	15	01	18200	29.0	0.27		0.94 J			100 U	
S69	**15**	**01**	**18211**	**30.0**	**0.10**	**0.151**	**0.155**	**0.0026 U**	**0.0026 U**	**3.3 J**	**0.52 U**
S69	15	02	18302	1.0	0.96		2.22			100 U	
S69	15	02	18303	2.0	0.62		1.14 J				
S69	15	02	18304	3.0	0.47		2.45			100 U	
S69	15	02	18305	4.0	0.32		0.69 J				
S69	15	02	18306	5.0	0.49		1.61			100 U	
S69	15	02	18307	6.0	0.66		1.59 J				
S69	15	02	18308	7.0	0.69		1.89			100 UJ	
S69	15	02	18309	8.0	0.52		2.37				
S69	**15**	**02**	**18310**	**9.0**	0.27		1.20 J			**4.1 U**	
S69	15	02	18323	10.0	0.27		1.41 J				
S69	15	02	18324	11.0	0.22		1.07 J			100 UJ	
S69	15	02	18325	12.0	0.27		0.94 J				
S69	15	02	18326	13.0	0.49		1.49 J			100 UJ	
S69	15	02	18328	14.0	0.22		0.90 J				
S69	15	02	18327	15.0	0.21		1.59			100 UJ	
S69	15	02	18329	16.0	0.36		1.22				
S69	15	02	18330	17.0	0.25		0.71			100 UJ	
S69	15	02	18331	18.0	0.26		1.04 J				
S69	15	02	18332	19.0	0.26		0.58 J			100 UJ	
S69	15	02	18348	20.0	0.19		0.73 J				
S69	15	02	18349	21.0	0.21		< 0.40			100 UJ	
S69	15	02	18350	22.0	0.24		1.10				
S69	15	02	18351	23.0	< 0.06		0.66 J			100 UJ	
S69	15	02	18358	24.0	< 0.03		0.91 J				
S69	15	02	18359	25.0	0.33		0.62 J			100 UJ	
S69	15	02	18360	26.0	0.33		0.67 J				
S69	15	02	18361	27.0	< 0.07		2.11 J			100 UJ	
S69	15	02	18362	28.0	0.22		0.58 J				
S69	15	02	18363	29.0	0.31		1.43 J			100 UJ	
S69	**15**	**02**	**18366**	**30.0**	**0.161**	**0.190**	**0.195**	**0.0026 U**	**0.0026 U**	**4.1 U**	**0.51 U**
S69	15	03	18428	5.0	0.81		1.78 J			100 U	
S69	15	03	18429	6.0	0.54		< 0.37				

Table 6
LPH Investigation,
LPH15, LPH16 and LPH17 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
S69	15	03	18430	7.0	0.45		0.83 J			100 U	
S69	15	03	18445	9.0	NS		NS			100 U	
S69	15	03	18443	11.0	0.64		2.42			100 U	
S69	15	03	18444	13.0	0.66		1.31 J			100 U	
S69	15	03	18469	15.0	0.44		< 0.69			100 U	
S69	15	03	18470	17.0	0.40		0.78 J			100 U	
S69	15	03	18471	19.0	NS		NS			100 U	
S69	15	03	18472	21.0	NS		NS			100 U	
S69	15	03	18473	23.0	0.62		1.60 J			100 U	
S69	15	03	18476	24.0	0.24		1.28				
S69	15	03	18477	25.0	0.25		< 0.37			100 U	
S69	15	03	18478	26.0	0.20		1.17				
S69	15	03	18479	27.0	0.28		1.42			100 U	
S69	15	03	18484	28.0	0.29		0.53 J				
S69	15	03	18485	29.0	0.18		0.57 J			100 U	
S69	**15**	**03**	**18488**	**30.0**	**0.149**	**0.293**	**0.209**	**0.0027 U**	**0.0027 U**	**2.4 J**	**0.53 U**
S69	15	04	18220	4.0	0.59		2.02 J				
S69	15	04	18221	5.0	1.03		1.02 J			100 U	
S69	15	04	18222	6.0	0.68		1.55 J				
S69	15	04	18223	7.0	0.79		2.35			100 U	
S69	15	04	18235	9.0	0.54		1.50			100 U	
S69	15	04	18236	10.0	0.62		2.14				
S69	15	04	18237	11.0	0.60		2.32 J			100 U	
S69	15	04	18238	13.0	NS		NS			100 U	
S69	15	04	18239	15.0	0.27		0.88 J			100 U	
S69	15	04	18240	16.0	0.34		1.91				
S69	15	04	18241	17.0	0.28		0.89			100 U	
S69	15	04	18242	18.0	0.31		1.30				
S69	15	04	18243	19.0	0.22		1.54 J			100 U	
S69	15	04	18252	20.0	0.28		0.66 J				
S69	15	04	18253	21.0	0.28		0.70 J			100 U	
S69	15	04	18261	22.0	0.27		1.06				
S69	15	04	18262	23.0	0.20		< 0.28			100 U	
S69	15	04	18263	24.0	< 0.08		< 0.42				
S69	15	04	18264	25.0	0.37		2.29 J			100 U	
S69	15	04	18265	26.0	0.31		1.79				
S69	15	04	18266	27.0	< 0.03		1.46			100 U	
S69	15	04	18279	28.0	0.29		1.63 J				
S69	15	04	18280	29.0	0.26		0.66 J			100 U	
S69	**15**	**04**	**18281**	**30.0**	**0.107**	**0.217**	**0.212**	**0.0026 U**	**0.0026 U**	**4.1 U**	**0.51 U**
S69	15	05	18367	1.0	0.72		1.79			100 UJ	
S69	15	05	18368	2.0	0.82		2.38				
S69	15	05	18369	3.0	0.91		2.85			100 UJ	
S69	15	05	18370	4.0	0.54		1.16 J				
S69	15	05	18371	5.0	0.95		1.57 J			100 UJ	
S69	15	05	18376	6.0	1.81		1.87 J				
S69	15	05	18377	7.0	0.78		1.08 J			100 U	
S69	15	05	18383	8.0	0.46		2.33				
S69	15	05	18384	9.0	0.38		1.25 J			100 U	
S69	15	05	18385	10.0	< 0.11		0.97 J				
S69	15	05	18386	11.0	0.29		1.29			100 U	
S69	15	05	18387	12.0	0.30		1.25				

Table 6
LPH Investigation,
LPH15, LPH16 and LPH17 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
S69	15	05	18388	13.0	0.57		1.38			100 U	
S69	15	05	18389	14.0	0.38		1.11 J				
S69	15	05	18390	15.0	0.25		< 0.66			100 U	
S69	15	05	18391	16.0	0.36		1.64 J				
S69	15	05	18392	17.0	0.43		1.11 J			**2.2 J**	
S69	15	05	18393	18.0	0.40		< 0.79				
S69	15	05	18394	19.0	< 0.04		0.97			100 U	
S69	15	05	18395	20.0	0.19		0.67 J				
S69	15	05	18396	21.0	< 0.05		1.31			100 U	
S69	15	05	18397	22.0	0.11		0.50 J				
S69	15	05	18398	23.0	0.23		0.58 J			100 U	
S69	15	05	18399	24.0	< 0.04		0.51 J				
S69	15	05	18400	25.0	0.24		1.37 J			100 U	
S69	15	05	18401	26.0	< 0.02		0.86 J				
S69	15	05	18402	27.0	0.19		0.53 J			100 U	
S69	15	05	18413	28.0	0.21		0.56 J				
S69	15	05	18414	29.0	0.18		1.89			100 U	
S69	**15**	**05**	**18415**	**30.0**	**0.151**	**0.130**	**0.165**	**0.0026 U**	**0.0026 U**	**4.1 U**	**0.71**
R69	16	01	18544	5.0	0.59		1.92 J			100 U	
R69	16	01	18545	7.0	0.71		1.62 J			100 U	
R69	16	01	18546	9.0	0.59		1.52 J			100 U	
R69	16	01	18557	11.0	NS		NS			100 U	
R69	16	01	18558	13.0	0.30		1.17 J			100 U	
R69	16	01	18563	14.0	0.31		0.73 J				
R69	16	01	18564	15.0	0.25		1.63 J			100 U	
R69	16	01	18569	16.0	0.28		0.58 J				
R69	16	01	18570	17.0	0.47		1.03 J			100 U	
R69	16	01	18571	18.0	< 0.05		1.06				
R69	16	01	18572	19.0	0.21		0.50 J			100 U	
R69	16	01	18575	21.0	0.15		1.11 J			100 U	
R69	16	01	18576	22.0	0.46		0.72 J				
R69	16	01	18577	23.0	0.30		1.27 J			100 U	
R69	16	01	18592	24.0	0.24		0.76 J				
R69	16	01	18593	25.0	0.39		1.03 J			100 U	
R69	16	01	18594	26.0	0.24		0.50 J				
R69	16	01	18595	27.0	0.24		0.55 J			100 U	
R69	16	01	18596	28.0	0.16		1.25 J				
R69	16	01	18597	29.0	0.25		0.63 J			100 U	
R69	**16**	**01**	**18603**	**30.0**	**0.137**	**0.068 J**	**0.176**	**0.0026 U**	**0.0026 U**	**2.2 J**	**0.51 U**
R69	16	02	18713	5.0	0.97		2.10			100 U	
R69	16	02	18714	7.0	0.51		0.96 J			100 U	
R69	16	02	18715	9.0	0.68		< 0.42			100 U	
R69	16	02	18723	11.0	0.40		0.97 J			100 U	
R69	16	02	18724	12.0	0.20		1.30 J				
R69	16	02	18725	13.0	0.24		0.98 J			100 U	
R69	16	02	18726	14.0	0.39		1.25 J				
R69	16	02	18727	15.0	0.22		0.58 J			100 U	
R69	16	02	18735	16.0	0.18		0.65 J				
R69	16	02	18733	17.0	0.31		1.49 J			100 U	
R69	16	02	18734	18.0	0.31		0.73 J				
R69	16	02	18736	19.0	0.20		0.46 UJ			100 U	
R69	16	02	18737	21.0	< 0.07		0.44 J			100 U	

Table 6
LPH Investigation,
LPH15, LPH16 and LPH17 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
R69	16	02	18738	22.0	0.18		0.63 J				
R69	16	02	18739	23.0	0.24		0.28 UJ			100 U	
R69	16	02	18740	25.0	0.25		0.86 J			100 U	
R69	16	02	18741	26.0	0.22		0.83 J				
R69	16	02	18742	27.0	0.31		0.90 J			100 U	
R69	16	02	18746	28.0	0.22		1.33				
R69	16	02	18747	29.0	0.19		0.82 J			100 U	
R69	**16**	**02**	**18748**	**30.0**	**0.120**	**0.099 J**	**0.121**	**0.0026 UJ**	**0.0026 UJ**	**3.0 J**	**0.51 U**
R69	16	03	18615	5.0	0.52		1.82			100 U	
R69	16	03	18616	7.0	NS		NS			100 U	
R69	16	03	18617	9.0	NS		NS			100 U	
R69	16	03	18618	11.0	0.06 UJ		1.57 J			100 U	
R69	16	03	18639	13.0	0.29		0.76 J			100 U	
R69	16	03	18640	14.0	0.30		0.98 J				
R69	**16**	**03**	**18641**	**15.0**	0.23		0.74 J			**4.1 U**	
R69	16	03	18642	16.0	0.20		0.99 J				
R69	16	03	18643	17.0	0.29		0.77 J			100 U	
R69	16	03	18653	18.0	0.28		1.16 J				
R69	16	03	18654	19.0	0.37		0.68 J			100 U	
R69	16	03	18655	21.0	0.21 J		0.90 J			100 U	
R69	16	03	18656	23.0	0.14		0.74 J			100 U	
R69	16	03	18672	25.0	0.18		0.28 UJ			100 U	
R69	16	03	18673	26.0	0.27		0.90 J				
R69	16	03	18674	27.0	0.18		0.48 UJ			100 U	
R69	16	03	18675	28.0	0.16		0.29 UJ				
R69	16	03	18676	29.0	0.28		1.83			100 U	
R69	**16**	**03**	**18677**	**30.0**	**0.140**	**0.098 J**	**0.118**	**0.0026 U**	**0.0026 U**	**4.1 U**	**0.51 U**
R69	16	04	18751	1.0	0.58		1.09 J			100 U	
R69	16	04	18752	2.0	0.50		2.04				
R69	16	04	18753	3.0	0.78		2.24			100 U	
R69	16	04	18754	4.0	0.76		1.22 J				
R69	16	04	18755	5.0	0.83		1.60			100 U	
R69	16	04	18756	6.0	< 0.09		0.74 J				
R69	16	04	18757	7.0	0.49		1.10			100 U	
R69	16	04	18758	8.0	0.60		2.49				
R69	16	04	18759	9.0	0.37		1.04 J			100 U	
R69	16	04	18760	10.0	0.36		1.65				
R69	16	04	18761	11.0	0.32		1.88 J			100 U	
R69	16	04	18762	12.0	0.31		1.85				
R69	**16**	**04**	**18763**	**13.0**	0.25		< 0.57			**2.2 J**	
R69	16	04	18764	14.0	0.36		1.36				
R69	16	04	18765	15.0	< 0.03		1.68 J			100 U	
R69	16	04	18766	16.0	0.56		1.15 J				
R69	16	04	18767	17.0	0.22		1.12			100 U	
R69	16	04	18768	18.0	0.37		< 0.54				
R69	16	04	18769	19.0	0.25		1.61			100 U	
R69	16	04	18770	20.0	0.14		0.35 J				
R69	16	04	18771	21.0	0.31		< 0.53			100 U	
R69	16	04	18772	22.0	< 0.04		0.86 J				
R69	16	04	18773	23.0	0.37		2.21			100 U	
R69	16	04	18774	25.0	0.26		0.74 J			100 U	
R69	16	04	18775	26.0	0.18		0.61 J				

Table 6
LPH Investigation,
LPH15, LPH16 and LPH17 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
R69	16	04	18776	27.0	0.20		0.53 J			100 U	
R69	16	04	18778	28.0	0.17		< 0.45				
R69	16	04	18779	29.0	0.25		0.82 J			100 U	
R69	**16**	**04**	**18780**	**30.0**	**0.109**	**0.121**	**0.079 J**	**0.0026 U**	**0.0026 U**	**4.1 U**	**0.52 U**
R69	16	05	18781	5.0	0.59		2.11			100 U	
R69	16	05	18782	7.0	0.24		< 0.54			100 U	
R69	16	05	18783	8.0	0.36		2.19				
R69	16	05	18784	9.0	0.38		1.38			100 U	
R69	16	05	18785	10.0	0.40		1.49				
R69	16	05	18786	11.0	0.54		2.01			100 U	
R69	16	05	18787	12.0	0.26		1.18				
R69	16	05	18788	13.0	0.35		1.61			100 U	
R69	16	05	18789	14.0	0.33		0.99 J				
R69	16	05	18790	15.0	0.31		0.86 J			100 U	
R69	16	05	18791	16.0	0.30		1.60				
R69	16	05	18792	17.0	0.23		0.95 J			100 U	
R69	16	05	18793	18.0	0.22		1.68				
R69	16	05	18794	19.0	< 0.05		1.16			100 U	
R69	16	05	18795	21.0	0.30		0.44 J			100 U	
R69	16	05	18796	22.0	0.17		0.71 J				
R69	16	05	18797	23.0	0.32		0.64 J			100 U	
R69	16	05	18798	24.0	0.21		0.54 J				
R69	16	05	18799	25.0	< 0.06		1.54			100 U	
R69	16	05	18800	26.0	0.29		0.74 J				
R69	16	05	18801	27.0	0.33		0.49 J			100 U	
R69	16	05	18802	28.0	< 0.04		< 0.24				
R69	16	05	18803	29.0	0.29		1.11 J			100 U	
R69	**16**	**05**	**18804**	**30.0**	**0.108**	**0.106**	**0.118**	**0.0026 U**	**0.0026 U**	**4.1 U**	**0.51 U**
R69	16	06	18805	4.0	0.89 J		2.74				
R69	16	06	18806	5.0	1.06 J		3.55 J			100 U	
R69	16	06	18807	7.0						100 U	
R69	16	06	18808	9.0	0.55 J		1.46 J			100 U	
R69	16	06	18818	10.0	0.28		1.30 J				
R69	16	06	18819	11.0	0.36 J		0.64 J			100 U	
R69	16	06	18820	12.0	0.25		1.17				
R69	16	06	18821	13.0	0.05 UJ		2.09			100 U	
R69	16	06	18822	14.0	0.26		0.65 J				
R69	16	06	18823	15.0	0.40 J		0.96 J			100 U	
R69	16	06	18843	17.0	0.19 J		< 0.27			100 U	
R69	16	06	18844	18.0	0.31		0.55 J				
R69	16	06	18845	19.0	0.28 J		0.97 J			100 U	
R69	16	06	18846	21.0	0.25 J		1.11			100 U	
R69	16	06	18847	22.0	0.30 J		0.98 J				
R69	16	06	18848	23.0	0.30 J		1.14			100 U	
R69	16	06	18849	25.0	0.19 J		0.71 J			100 U	
R69	16	06	18850	26.0	0.24		0.59 J				
R69	16	06	18851	27.0	0.22 J		0.44 J			100 U	
R69	16	06	18860	28.0	0.23		1.46				
R69	16	06	18861	29.0	0.23		0.80 J			100 U	
R69	**16**	**06**	**18862**	**30.0**	**0.118**	**0.181**	**0.139**	**0.0026 U**	**0.0026 U**	**2.0 J**	**0.51 U**
R69	16	07	18871	1.0	0.46		1.38 J			100 U	
R69	16	07	18872	2.0	0.36		1.38				

Table 6
LPH Investigation,
LPH15, LPH16 and LPH17 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
R69	16	07	18873	3.0	0.74		1.14 J			100 U	
R69	16	07	18879	4.0	0.60 J		1.12 J				
R69	16	07	18880	5.0	0.41 J		1.27 J			100 U	
R69	16	07	18893	6.0	0.31 J		0.69 J				
R69	**16**	**07**	**18894**	**7.0**	0.48 J		< 0.38			**3.2 J**	
R69	16	07	18895	8.0	0.44		0.58 J				
R69	16	07	18896	9.0	0.34 J		< 0.50			100 U	
R69	16	07	18897	10.0	0.35		0.77 J				
R69	16	07	18898	11.0	0.45		0.73 J			100 U	
R69	16	07	18905	12.0	0.31 J		< 0.58				
R69	16	07	18906	13.0	0.30 J		1.18			100 U	
R69	16	07	18907	14.0	0.40 J		0.60 J				
R69	16	07	18908	15.0	0.27		0.73 J			100 U	
R69	16	07	18909	16.0	0.23		< 0.26				
R69	16	07	18910	17.0	0.27 J		1.52			100 U	
R69	16	07	18916	19.0	0.13 J		0.44 J			100 U	
R69	16	07	18917	21.0	0.36 J		1.56			100 U	
R69	16	07	18922	23.0	0.34 J		1.10 J			100 U	
R69	16	07	18927	24.0	0.23		0.56 J				
R69	16	07	18928	25.0	0.06 UJ		1.11 J			100 U	
R69	16	07	18929	26.0	0.19		< 0.43				
R69	16	07	18930	27.0	0.09 J		< 0.47			100 U	
R69	16	07	18942	28.0	< 0.04		0.56 UJ				
R69	16	07	18943	29.0	0.28 J		< 0.30			100 U	
R69	**16**	**07**	**18944**	**30.0**	**0.113**	**0.105**	**0.117**	**0.0026 U**	**0.0026 R**	**4.1 U**	**0.51 U**
R69	16	08	18948	1.0	0.73 J		1.80			100 U	
R69	16	08	18950	3.0	1.11		2.50 J			49.4 J	
R69	16	08	18952	4.0	0.06		0.22 J				
R69	16	08	18953	5.0	0.50 J		0.63 J			100 U	
R69	16	08	18964	6.0	0.63 J		1.07 J				
R69	16	08	18965	7.0	0.60		1.24 J			100 U	
R69	16	08	18966	8.0	0.52		0.62 J				
R69	16	08	18967	9.0	0.42 J		3.18			100 U	
R69	16	08	18975	11.0	0.39 J		< 0.53			100 U	
R69	16	08	18976	13.0	0.36 J		1.61 J			100 U	
R69	16	08	18992	15.0	0.51		0.66 J			100 U	
R69	16	08	18993	16.0	0.31 J		1.86				
R69	16	08	18994	17.0	0.26		1.34			100 U	
R69	16	08	18995	19.0	0.28 J		1.42			100 U	
R69	16	08	18996	21.0	0.28		< 0.49			100 U	
R69	16	08	19014	23.0	0.40 J		< 0.36			100 U	
R69	16	08	19015	24.0	0.26		0.29 UJ				
R69	16	08	19016	25.0	< 0.06		0.69 J			100 U	
R69	16	08	19017	26.0	0.39 J		1.01 J				
R69	16	08	19018	27.0	0.24		0.93 J			100 U	
R69	16	08	19021	29.0	0.10 J		1.10			100 U	
R69	**16**	**08**	**19022**	**30.0**	**0.061 J**	**0.153**	**0.111**	**0.0026 U**	**0.0026 U**	**4.1 U**	**0.51 U**
R69	16	09	19029	5.0	0.76		1.51 J			100 U	
R69	16	09	19030	6.0	0.36		1.01 J				
R69	16	09	19031	7.0	0.41 J		1.40 J			100 U	
R69	16	09	19032	8.0	0.33		0.37 UJ				
R69	16	09	19033	9.0	0.42		1.09 J			100 U	

Table 6
LPH Investigation,
LPH15, LPH16 and LPH17 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
R69	16	09	19038	11.0	0.34		0.57 UJ			100 U	
R69	16	09	19039	13.0	0.50 J		< 0.35			100 U	
R69	16	09	19047	15.0	0.41		0.63 J			100 U	
R69	16	09	19050	16.0	0.34		0.66 J				
R69	16	09	19051	17.0	0.29		1.49 J			100 U	
R69	16	09	19054	19.0	0.21		0.86 J			100 U	
R69	16	09	19058	20.0	0.18		1.31				
R69	16	09	19059	21.0	0.20		0.31 UJ			100 U	
R69	16	09	19060	22.0	0.27		2.06 J				
R69	16	09	19061	23.0	0.28		0.98 J			100 U	
R69	16	09	19062	25.0	0.20		0.90 J			100 U	
R69	16	09	19067	26.0	0.30		1.23 J				
R69	16	09	19068	27.0	0.16		0.30 J			100 U	
R69	16	09	19076	28.0	0.15		0.95				
R69	16	09	19077	29.0	< 0.07		0.74 J			100 U	
R69	**16**	**09**	**19078**	**30.0**	**0.198**	**0.139**	**0.164**	**0.0026 U**	**0.0026 U**	**2.7 J**	**0.51 U**

Table 6
LPH Investigation,
LPH15, LPH16 and LPH17 Soil Boring Sample Results

Analytes:

Th-232 - Thorium-232
U-234 - Uranium-234
U-238 - Uranium-238
TCE - Trichloroethene
PCE - Tetrachloroethene
Ni - Nickel
Be - Beryllium

Units:

pCi/g - picoCurie/gram
mg/kg - milligram/kilogram

Qualifiers:

R - Validation qualifier used to indicate that the result is considered unusable.
U - Validation qualifier used to indicate that the result was qualified as non-detect.
J - Validation qualifier used to indicate that the result is considered an estimate.
UJ - Validation qualifier used to indicate that the result was qualified as non-detect and the associated reporting limit is considered an estimate.
< - Validation qualifier (for on-Site radiological constituents) used to indicate that the result was qualified as non-detect.

Notes:

See Figure 7 for boring locations.
On-Site sample results are in plain font and include radionuclides (Th-232 and U-238) analyzed by the gamma spectroscopy system; and Ni by x-ray fluorescence spectroscopy by Stone Environmental, Inc.
Off-Site sample results are in **bold font** and indicate that the analysis was performed by Severn Trent Laboratories, Inc.
NS - Not sampled due to insufficient recovery.
Due to an artifact in the laboratory data reporting program, the on-Site analytical data should be interpreted to two significant figures.
Blank cell indicates analysis was not performed.
Due to the proximity of LPH16 and LPH17, all soil borings were given the designation LPH16.

Table 7
LPH Investigation,
LPH20 and LPH21 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
L05	20	01	19775	1.0	0.76 J		13.54			332	
L05	20	01	19776	2.0	0.85		< 0.72				
L05	20	01	19777	3.0	1.32 J		1.38 J			100 U	
L05	20	01	19785	4.0	0.52 J		1.38 J				
L05	20	01	19782	5.0	0.37 J		1.37 J			100 U	
L05	20	01	19783	6.0	0.42 J		1.76 J				
L05	20	01	19784	7.0	0.60 J		1.66			100 U	
L05	20	01	19797	9.0	0.34 J		0.66 J			100 U	
L05	20	01	19798	11.0	0.18 J		0.64 J			100 U	
L05	20	01	19799	13.0	0.33 J		< 0.50			100 U	
L05	20	01	19840	15.0	0.28 J		0.78 J			100 U	
L05	20	01	19841	17.0	0.26 J		< 0.39			100 U	
L05	20	01	19842	18.0	0.06 UJ		0.55 J				
L05	20	01	19843	19.0	0.31 J		0.92			100 U	
L05	20	01	19844	20.0	0.33 J		1.51 J				
L05	20	01	19845	21.0	0.18 J		0.75 J			100 U	
L05	20	01	19848	22.0	0.29 J		1.27 J				
L05	20	01	19849	23.0	0.30 J		1.40			100 U	
L05	20	01	19862	25.0	0.06 UJ		0.49 J			100 U	
L05	20	01	19861	26.0	0.18 J		0.79 J				
L05	**20**	**01**	**19863**	**27.0**	0.20 J		0.55 J			**2.8 J**	
L05	20	01	19877	29.0	0.05 UJ		< 0.29			100 U	
L05	**20**	**01**	**19882**	**30.0**	**0.101**	**0.135**	**0.158**	**0.0026 U**	**0.0026 U**	**2.5 J**	**0.28 J**
L05	20	02	19906	1.0	1.10		4.56 J			205	
L05	20	02	19907	2.0	1.03 J		3.83				
L05	20	02	19908	3.0	1.75 J		2.06 J			100 U	
L05	20	02	19911	4.0	1.61		3.01 J	0.093 U	0.132		
L05	20	02	19912	5.0	0.99 J		3.15			100 U	
L05	20	02	19913	6.0	0.54 J		1.60 J				
L05	20	02	19914	7.0	0.65		0.81 UJ			100 U	
L05	20	02	19916	9.0	0.42 J		0.81 J			42.3 J	
L05	20	02	19919	11.0	NS		NS			100 U	
L05	20	02	19920	13.0	0.45		0.45 UJ			100 U	
L05	20	02	19921	15.0	0.31		0.70 J			100 U	
L05	20	02	19922	16.0	0.39		1.51 J				
L05	20	02	19923	17.0	0.48		1.77			100 U	
L05	20	02	19937	19.0	0.28		1.24			100 U	
L05	20	02	19938	21.0	0.33 J		1.06 J			100 U	
L05	20	02	19939	22.0	< 0.05		0.40 J				
L05	20	02	19940	23.0	< 0.07		0.61 J			100 U	
L05	20	02	19951	25.0	0.24 J		1.49			100 U	
L05	20	02	19952	26.0	0.28		0.61 J				
L05	20	02	19953	27.0	0.20		0.94 J			100 U	
L05	20	02	19964	29.0	0.34 J		1.31 J			100 U	
L05	**20**	**02**	**19974**	**30.0**	**0.145**	**0.153**	**0.155**	**0.0026 U**	**0.00035 J**	**2.6 J**	**0.27 J**
L05	20	03	20045	1.0	0.76		14.02			85.2 J	
L05	20	03	20046	2.0	0.66		7.98				
L05	20	03	20047	3.0	1.08		6.86			100 U	
L05	20	03	20063	4.0	0.37		2.04				
L05	20	03	20064	5.0	0.96		2.73 J			100 U	
L05	20	03	20065	6.0	0.54		1.96 J				
L05	20	03	20066	7.0	0.59		1.90 J			100 U	

Table 7
LPH Investigation,
LPH20 and LPH21 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
L05	20	03	20072	9.0	0.42		2.19			100 U	
L05	20	03	20076	11.0	0.43		0.96 J			100 U	
L05	20	03	20079	13.0	0.49		1.15 J			100 U	
L05	20	03	20087	15.0	0.27		0.54 J			100 U	
L05	20	03	20088	16.0	0.41		0.88 J				
L05	20	03	20089	17.0	0.27		2.16 J			100 U	
L05	20	03	20092	19.0	0.32		2.17 J			100 U	
L05	20	03	20101	21.0	0.19		1.12 J			100 U	
L05	20	03	20102	22.0	0.24		1.77 J				
L05	20	03	20103	23.0	0.30		0.51 J			100 U	
L05	20	03	20110	25.0	0.37		1.30 J			100 U	
L05	20	03	20111	26.0	0.26		< 0.67				
L05	20	03	20112	27.0	0.23		0.43 J			100 U	
L05	20	03	20121	29.0	0.24		1.27			100 U	
L05	**20**	**03**	**20126**	**30.0**	**0.166**	**0.161**	**0.154**	**0.0026 U**	**0.0026 U**	**1.8 J**	**0.51 U**
L05	20	04	20133	1.0	0.92		12.75			1105 J	
L05	20	04	20134	2.0	NS		NS	0.088 U	0.482		
L05	20	04	20135	3.0	1.02		7.06			100 U	
L05	20	04	20136	5.0	0.43		0.66 J			100 U	
L05	20	04	20144	7.0	0.98		1.14 J			100 U	
L05	20	04	20145	9.0	0.50		1.82			100 U	
L05	20	04	20146	11.0	0.39		1.64 J			100 U	
L05	20	04	20147	12.0	0.36		0.68 J				
L05	20	04	20148	13.0	0.24		0.44 J			100 U	
L05	20	04	20149	15.0	0.20		< 0.23			100 U	
L05	20	04	20159	16.0	0.28		1.20				
L05	20	04	20160	17.0	0.31		1.03 J			100 U	
L05	20	04	20161	19.0	< 0.09		0.82 J			100 U	
L05	20	04	20165	21.0	0.40		0.71 J			100 U	
L05	20	04	20168	22.0	0.29		0.22 UJ				
L05	20	04	20169	23.0	0.27		1.00 J			100 U	
L05	20	04	20172	25.0	0.24		0.56 J			100 U	
L05	20	04	20179	26.0	0.24		1.24				
L05	20	04	20180	27.0	0.17		1.33 J			100 U	
L05	20	04	20181	29.0	0.16		0.68 J			100 U	
L05	**20**	**04**	**20182**	**30.0**	**0.141**	**0.159**	**0.124**	**0.0026 U**	**0.0026 U**	**2.1 J**	**0.16 J**
L05	20	05	19978	1.0	1.07		40.07 J			201	
L05	20	05	19979	2.0	0.64 J		< 0.73	0.098 U	0.098 U		
L05	20	05	19980	3.0	1.17 J		2.19			100 U	
L05	20	05	19981	5.0	0.63		1.00 J			100 U	
L05	20	05	19982	6.0	0.59		2.99 J				
L05	20	05	19983	7.0	0.49		1.24 J			100 U	
L05	20	05	19997	8.0	0.76 J		1.01 J				
L05	20	05	19998	9.0	0.38		1.33 J			100 U	
L05	20	05	19999	11.0	0.26		0.69 J			100 U	
L05	20	05	20000	13.0	0.62		< 0.85			100 U	
L05	20	05	20007	15.0	0.37		< 0.57			100 U	
L05	20	05	20008	16.0	0.32		< 0.48				
L05	20	05	20009	17.0	0.21		0.61 J			100 U	
L05	20	05	20010	19.0	0.20		0.69 J			100 U	
L05	20	05	20019	21.0	0.41		1.52			100 U	
L05	20	05	20020	22.0	0.28		1.84				

Table 7
LPH Investigation,
LPH20 and LPH21 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
L05	20	05	20021	23.0	0.26		1.18 J			100 U	
L05	20	05	20026	25.0	0.28		1.51			100 U	
L05	20	05	20027	26.0	0.19		< 0.47				
L05	20	05	20028	27.0	0.31		0.62 J			100 U	
L05	20	05	20035	29.0	0.41		1.21			100 U	
L05	**20**	**05**	**20041**	**30.0**	**0.161**	**0.147**	**0.182**	**0.0026 U**	**0.0026 U**	**2.8 J**	**0.33 J**
I06	21	01	19179	3.0	NS		NS			100 U	
I06	21	01	19187	5.0	0.80		6.43			100 U	
I06	21	01	19188	7.0	1.23		33.35			100 U	
I06	21	01	19197	9.0	0.85		35.34			100 U	
I06	21	01	19200	11.0	0.90		39.73			100 U	
I06	21	01	19201	12.0	0.65		35.82				
I06	21	01	19202	13.0	1.09		45.44			100 U	
I06	21	01	19207	15.0	1.08		46.15			43.3 J	
I06	**21**	**01**	**19221**	**16.0**	**20.5**	**612**	**82**	**1600**	**40000 J**	**125 J**	**0.86 U**
I06	21	01	19222	19.0	3.35		11.49	33.412 D	1344.441 J	100 U	
I06	21	01	19227	21.0	0.75		5.69	0.117 U	0.337	100 U	
I06	21	01	19240	22.0	NS		NS	0.113 U	0.219		
I06	21	01	19239	23.0	0.78		5.27 J			100 U	
I06	21	01	19261	25.0	0.50		4.33				
I06	21	01	19265	26.0	0.53		< 1.15				
I06	21	01	19266	27.0	1.16		16.82 J				
I06	21	01	19278	29.0	0.34		< 1.17				
I06	**21**	**01**	**19279**	**30.0**	**0.250**	**7.27**	**4.74**	**0.0026 U**	**0.0026 R**	**2.4 J**	**0.51 U**
I06	21	02	19588	1.0	0.77		7.18 J			100 U	
I06	21	02	19589	2.0	0.84		4.74 J				
I06	21	02	19590	3.0	1.40 J		< 1.51			100 U	
I06	21	02	19599	4.0	0.40		2.50 J				
I06	21	02	19600	5.0	0.37		1.07 J			100 U	
I06	21	02	19605	6.0	0.35		0.96 J				
I06	21	02	19606	7.0	0.56		2.35 J			100 U	
I06	21	02	19611	8.0	0.77		4.00				
I06	21	02	19612	9.0	0.36		1.22 J			100 U	
I06	21	02	19613	10.0	0.29		2.49 J				
I06	21	02	19614	11.0	0.32		1.61 J			100 U	
I06	21	02	19616	12.0	0.30 J		2.21				
I06	21	02	19617	13.0	0.43 J		< 0.80			100 U	
I06	21	02	19618	14.0	0.22		7.63 J				
I06	21	02	19619	15.0	0.30		9.07 J			100 U	
I06	21	02	19620	16.0	0.22		9.73				
I06	21	02	19621	17.0	0.51 J		14.93			100 U	
I06	21	02	19622	18.0	0.41		7.88 J				
I06	21	02	19623	19.0	0.20		8.37 J			100 U	
I06	21	02	19624	21.0	0.42		15.16			100 U	
I06	21	02	19625	22.0	0.45 J		8.24				
I06	21	02	19626	23.0	0.34		9.36			100 U	
I06	21	02	19627	25.0	0.04 UJ		10.85			100 U	
I06	21	02	19628	26.0	0.27		11.38				
I06	21	02	19629	27.0	0.06 UJ		13.78			100 U	
I06	21	02	19637	28.0	0.32 J		15.68				
I06	21	02	19638	29.0	0.15		9.09			100 U	
I06	**21**	**02**	**19641**	**30.0**	**0.132**	**6.58**	**5.97**	**0.0026 U**	**0.0026 U**	**1.6 J**	**0.089 J**

Table 7
LPH Investigation,
LPH20 and LPH21 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
I06	21	03	19315	2.0	1.00		16.87 J				
I06	21	03	19316	3.0	1.15		14.63			100 U	
I06	21	03	19335	4.0	0.50		11.59				
I06	21	03	19336	5.0	< 0.10		11.55			100 U	
I06	21	03	19342	6.0	0.33		1.91 J				
I06	21	03	19343	7.0	0.55		2.65			100 U	
I06	21	03	19348	9.0	0.90		3.49			100 U	
I06	21	03	19354	11.0	0.30		2.96			100 U	
I06	21	03	19359	12.0	0.36		4.41				
I06	21	03	19360	13.0	0.30		3.87			100 U	
I06	21	03	19365	15.0	1.00		10.93			100 U	
I06	21	03	19371	16.0	1.30		11.77				
I06	21	03	19372	17.0	2.44		14.97			100 U	
I06	21	03	19379	18.0	1.40		9.13				
I06	21	03	19380	19.0	1.40		3.47			100 U	
I06	21	03	19384	20.0	1.36		5.37				
I06	21	03	19385	21.0	0.85		< 0.97			100 U	
I06	21	03	19390	22.0	1.10		10.74				
I06	21	03	19391	23.0	0.99		7.34			100 U	
I06	21	03	19407	25.0	0.88		14.70			100 U	
I06	21	03	19408	26.0	0.92		17.11				
I06	21	03	19409	27.0	0.98		22.38			100 U	
I06	21	03	19420	28.0	0.68		13.89				
I06	21	03	19421	29.0	0.46		17.87			100 U	
I06	**21**	**03**	**19422**	**30.0**	**0.63**	**22.3**	**13.9**	**0.0026 U**	**0.0026 R**	**2.2 J**	**0.12 J**
I06	21	04	19497	3.0	1.45		9.54			100 U	
I06	21	04	19694	4.0	0.76		11.93				
I06	21	04	19502	5.0	0.53		1.49			100 U	
I06	21	04	19503	6.0	0.51		2.75				
I06	21	04	19504	7.0	0.69		6.53			100 U	
I06	21	04	19514	9.0	0.34		1.04 J			100 U	
I06	21	04	19520	11.0	0.27		3.18			100 U	
I06	21	04	19521	12.0	0.20		< 0.49				
I06	21	04	19522	13.0	0.48		4.07			100 U	
I06	21	04	19525	15.0	0.71		3.76			100 U	
I06	21	04	19526	16.0	0.78		6.14				
I06	21	04	19529	17.0	1.62		6.44			100 U	
I06	21	04	19530	19.0	1.01		6.18			100 U	
I06	21	04	19528	21.0	0.72		5.80			100 U	
I06	21	04	19531	22.0	0.79		2.49				
I06	21	04	19532	23.0	1.10		3.97			100 U	
I06	21	04	19538	25.0	0.99		5.30			100 U	
I06	21	04	19539	26.0	1.22 J		3.18				
I06	21	04	19540	27.0	2.77		5.01			100 U	
I06	21	04	19541	28.0	1.25		3.96 J				
I06	21	04	19542	29.0	1.12		4.81 J			100 U	
I06	**21**	**04**	**19578**	**30.0**	**0.62**	**13.4**	**8.07**	**0.0026 U**	**0.0026 U**	**1.3 J**	**0.51 U**
I06	21	05	19692	2.0	1.01		18.35				
I06	21	05	19693	3.0	0.77		9.66			100 U	
I06	21	05	19695	5.0	2.97		27.44			100 U	
I06	21	05	19696	7.0	2.74		46.94			100 U	
I06	21	05	19697	9.0	0.93		15.38			100 U	

Table 7
LPH Investigation,
LPH20 and LPH21 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
I06	21	05	19698	10.0	2.33		59.20				
I06	21	05	19699	11.0	3.22		33.89			100 U	
I06	21	05	19703	13.0	NS		NS			100 U	
I06	21	05	19704	14.0	0.90		3.75				
I06	21	05	19705	15.0	1.58		7.06			100 U	
I06	21	05	19706	16.0	1.54		16.18				
I06	21	05	19707	17.0	1.14		9.20			100 U	
I06	21	05	19721	18.0	0.86		7.55				
I06	21	05	19722	19.0	1.04		13.45			100 U	
I06	21	05	19723	21.0	1.00		6.97			100 U	
I06	21	05	19728	22.0	1.04		7.08				
I06	21	05	19729	23.0	1.14		4.02			100 U	
I06	21	05	19737	24.0	1.27		3.99				
I06	21	05	19738	25.0	0.98		1.55			100 U	
I06	21	05	19747	26.0	1.89		4.04				
I06	21	05	19748	27.0	2.45		3.79			100 U	
I06	21	05	19753	28.0	1.33		3.86				
I06	21	05	19754	29.0	1.65		2.33			100 U	
I06	**21**	**05**	**19768**	**30.0**	**0.150**	**0.166**	**0.147**	**0.0025 U**	**0.0025 U**	**1.8 J**	**0.51 U**
I06	21	06	20602	1.0	0.82		5.64 J			100 U	
I06	21	06	20603	2.0	0.93		2.08				
I06	21	06	20604	3.0	1.02		2.43			100 U	
I06	21	06	20605	5.0	0.42		14.28			100 U	
I06	21	06	20607	6.0	0.37		11.39				
I06	21	06	20608	7.0	0.53		16.60			100 U	
I06	21	06	20614	8.0	1.07		13.41				
I06	21	06	20615	9.0	0.50		3.36 J			100 U	
I06	21	06	20623	11.0	0.41		1.20 J			100 U	
I06	21	06	20624	13.0	0.27		2.84			100 U	
I06	21	06	20652	15.0	0.36		1.34 J			100 U	
I06	21	06	20653	16.0	0.32		3.17 J				
I06	21	06	20654	17.0	0.34		3.82			100 U	
I06	21	06	20661	19.0	0.29		1.27 J			100 U	
I06	21	06	20662	21.0	0.27		1.89			100 U	
I06	21	06	20678	22.0	0.17		1.09 J				
I06	21	06	20679	23.0	0.25		0.62 J			100 U	
I06	21	06	20684	25.0	< 0.02		0.48 J			100 U	
I06	21	06	20685	26.0	< 0.02		0.79 J				
I06	21	06	20686	27.0	0.23		< 0.51			100 U	
I06	21	06	20689	29.0	< 0.04		0.36 J			100 U	
I06	**21**	**06**	**20700**	**30.0**	**0.137**	**0.097 J**	**0.137**	**0.0025 U**	**0.0025 U**	**1.6 J**	**0.14 J**
I06	21	07	20709	1.0	0.60		< 1.20			100 U	
I06	21	07	20711	2.0	1.25		8.38				
I06	21	07	20712	3.0	0.88		3.16			100 U	
I06	21	07	20713	5.0	0.41		1.56			100 U	
I06	21	07	20719	6.0	0.60		1.93				
I06	21	07	20720	7.0	0.49		1.51			43.1 J	
I06	21	07	20731	9.0	0.77		0.85 J			100 U	
I06	21	07	20732	11.0	0.29		2.57			100 U	
I06	21	07	20751	13.0	< 0.05		< 0.58			100 U	
I06	21	07	20758	15.0	0.27		1.10			100 U	
I06	21	07	20762	16.0	0.25		0.96 J				

Table 7
LPH Investigation,
LPH20 and LPH21 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
I06	21	07	20763	17.0	0.31		0.77 J			100 U	
I06	21	07	20771	19.0	0.21		1.43			100 U	
I06	21	07	20772	21.0	0.25		0.60 J			100 U	
I06	21	07	20780	22.0	0.22		1.42 J				
I06	21	07	20781	23.0	0.29		0.90			100 U	
I06	21	07	20791	25.0	0.24		1.59			100 U	
I06	21	07	20792	26.0	0.30		3.97				
I06	21	07	20793	27.0	0.26		8.07			100 U	
I06	21	07	20804	29.0	0.27		1.61			100 U	
I06	**21**	**07**	**20813**	**30.0**	**0.195**	**6.48 J**	**7.06 J**	**0.0025 U**	**0.0025 U**	**2.6 J**	**0.32 J**
I06	21	08	20400	1.0	0.99		6.81			100 U	
I06	21	08	20401	3.0	0.98		1.66 J			100 U	
I06	21	08	20414	5.0	0.54 J		1.08 J			100 U	
I06	21	08	20427	7.0	0.91		1.42 J			100 U	
I06	21	08	20428	9.0	0.51		3.55			100 U	
I06	21	08	20434	11.0	0.35		0.96 J			100 U	
I06	21	08	20435	12.0	0.29		< 0.62				
I06	21	08	20436	13.0	0.33		0.70 J			100 U	
I06	21	08	20442	15.0	0.34		1.27 J			100 U	
I06	21	08	20443	16.0	0.29		1.40				
I06	21	08	20444	17.0	0.37		1.58 J			100 U	
I06	21	08	20448	19.0	0.25		5.96			100 U	
I06	21	08	20454	21.0	0.31		10.58			100 U	
I06	21	08	20455	22.0	0.20		5.32				
I06	21	08	20456	23.0	0.28		10.16			100 U	
I06	21	08	20475	25.0	< 0.07		8.76			42.7 J	
I06	21	08	20476	26.0	0.30		7.80				
I06	21	08	20477	27.0	0.29		9.51			100 U	
I06	21	08	20490	29.0	0.23		10.70			100 U	
I06	**21**	**08**	**20500**	**30.0**	**0.124**	**6.06**	**5.91**	**0.0025 U**	**0.0025 U**	**0.85 J**	**0.049 J**
I06	21	09	20534	1.0	0.53		2.11			100 U	
I06	21	09	20535	2.0	1.41		4.63				
I06	21	09	20536	3.0	1.45		2.52			100 U	
I06	21	09	20537	5.0	0.42		0.96 J			41.9 J	
I06	21	09	20545	6.0	0.67		1.35 J				
I06	21	09	20546	7.0	0.59		3.18			100 U	
I06	21	09	20553	9.0	1.22		3.04			100 U	
I06	21	09	20554	11.0	0.26		0.94 J			100 U	
I06	21	09	20555	12.0	0.41		< 0.53				
I06	21	09	20556	13.0	0.28		0.68 J			55.2 J	
I06	21	09	20561	14.0	< 0.09		1.79				
I06	21	09	20562	15.0	0.29		0.71 J			100 U	
I06	21	09	20563	16.0	0.34		1.09				
I06	21	09	20564	17.0	0.35		1.21			100 U	
I06	21	09	20565	19.0	0.20		1.42 J			100 U	
I06	21	09	20566	21.0	0.36		2.27			100 U	
I06	21	09	20569	22.0	0.33		3.48				
I06	21	09	20570	23.0	0.31		2.14			100 U	
I06	21	09	20578	25.0	0.23		1.47			100 U	
I06	21	09	20587	27.0	0.20		< 0.24			42.8 J	
I06	21	09	20590	29.0	0.28		1.73			100 U	
I06	**21**	**09**	**20595**	**30.0**	**0.120**	**0.68**	**0.58**	**0.0026 U**	**0.0026 U**	**1.7 J**	**0.11 J**

Table 7
LPH Investigation,
LPH20 and LPH21 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
I06	21	13	20294	1.0	0.93		8.02			100 U	
I06	21	13	20297	2.0	0.93		14.35				
I06	21	13	20298	3.0	0.68		0.70 J			100 U	
I06	21	13	20302	4.0	0.38		1.29				
I06	21	13	20303	5.0	0.71 J		1.70 J			100 U	
I06	21	13	20304	7.0	< 0.08		0.69 J			100 U	
I06	21	13	20305	8.0	0.90		2.15 J				
I06	21	13	20306	9.0	0.59 J		< 0.63			100 U	
I06	21	13	20307	11.0	0.26		0.82			100 U	
I06	21	13	20309	12.0	0.42		0.91 J				
I06	21	13	20310	13.0	0.08 UJ		< 0.58			100 U	
I06	21	13	20337	15.0	0.29 J		2.03			100 U	
I06	21	13	20338	16.0	0.50		1.45 J				
I06	21	13	20339	17.0	0.21 J		1.02 J			100 U	
I06	21	13	20340	19.0	0.31		1.42			100 U	
I06	21	13	20354	21.0	0.28 J		0.95			100 U	
I06	21	13	20355	22.0	0.26		1.04				
I06	21	13	20356	23.0	0.33		1.00 J			100 U	
I06	21	13	20360	25.0	0.27		1.29 J			100 U	
I06	21	13	20369	26.0	0.26 J		1.17 J				
I06	21	13	20370	27.0	0.18		1.84			100 U	
I06	21	13	20378	29.0	0.22		1.21			100 U	
I06	**21**	**13**	**20385**	**30.0**	**0.144**	**0.165**	**0.202**	**0.0026 U**	**0.0026 U**	**3.2 J**	**0.17 J**

Table 7
LPH Investigation,
LPH20 and LPH21 Soil Boring Sample Results

Analytes:

Th-232 - Thorium-232
U-234 - Uranium-234
U-238 - Uranium-238
TCE - Trichloroethene
PCE - Tetrachloroethene
Ni - Nickel
Be - Beryllium

Units:

pCi/g - picoCurie/gram
mg/kg - milligram/kilogram

Qualifiers:

R - Validation qualifier used to indicate that the result is considered unusable.
U - Validation qualifier used to indicate that the result was qualified as non-detect.
J - Validation qualifier used to indicate that the result is considered an estimate.
UJ - Validation qualifier used to indicate that the result was qualified as non-detect and the associated reporting limit is considered an estimate.
D - Validation qualifier used to indicate that analysis was performed on a sample requiring dilution.
< - Validation qualifier (for on-Site radiological constituents) used to indicate that the result was qualified as non-detect.

Notes:

See Figure 8 for boring locations.
On-Site sample results are in plain font and include radionuclides (Th-232 and U-238) analyzed by the gamma spectroscopy system; volatile organic compounds (TCE and PCE) by solid phase microextraction and capillary gas chromatography by Stone Environmental, Inc.; and Ni by x-ray fluorescence spectroscopy by Stone Environmental, Inc.
Off-Site sample results are in **bold font** and indicate that the analysis was performed by Severn Trent Laboratories, Inc.
NS - Not sampled due to insufficient recovery.
Due to an artifact in the laboratory data reporting program, the on-Site analytical data should be interpreted to two significant figures.
Blank cell indicates analysis was not performed.
Result is above Site cleanup level.

Table 8
LPH Investigation,
LPH34 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
E08	34	01	28631	1.0	0.63		1.01 UJ			100 U	
E08	34	01	28632	2.0	0.57		2.21				
E08	34	01	28639	3.0	0.62		4.22			100 U	
E08	34	01	28640	4.0	0.63		4.01				
E08	34	01	28645	5.0	0.34		2.61 J			100 U	
E08	34	01	28646	6.0	0.42		1.11 J				
E08	34	01	28651	7.0	0.66		2.28 J			100 U	
E08	34	01	28663	8.0	0.31		0.50 J				
E08	34	01	28664	9.0	0.33		0.88 J			100 U	
E08	34	01	28667	10.0	0.37		1.33 J				
E08	34	01	28682	11.0	0.32		1.08 J			100 U	
E08	34	01	28687	12.0	0.29		0.70 J				
E08	34	01	28694	13.0	0.42		1.45 J			100 U	
E08	34	01	28695	14.0	0.27		0.62 J				
E08	34	01	28698	15.0	0.22		0.92 J			100 U	
E08	34	01	28699	16.0	0.23		1.37				
E08	34	01	28708	17.0	0.20		0.62 J			100 U	
E08	34	01	28717	18.0	0.20		4.00 J				
E08	34	01	28723	19.0	0.23		3.97 J			100 U	
E08	34	01	28732	20.0	0.23		2.48 J				
E08	34	01	28801	21.0	0.21 J		2.35			100 U	
E08	34	01	28802	22.0	0.17 J		2.19				
E08	34	01	28803	23.0	0.23		1.05 J			100 U	
E08	34	01	28811	24.0	0.18 J		1.08				
E08	34	01	28823	25.0	0.27		0.59 J			100 U	
E08	34	01	28829	26.0	0.47 J		1.04 J				
E08	34	01	28835	27.0	0.24		0.44 J			100 U	
E08	34	01	28848	28.0	0.15		< 0.40				
E08	34	01	28847	29.0	0.25		0.72 J			100 U	
E08	**34**	**01**	**28850**	**30.0**	**0.194**	**0.187**	**0.179**	**0.0026 U**	**0.0026 U**	**2.3 J**	**0.17 J**
F08	34	03	29838	2.0	0.42		2.79				
F08	34	03	29839	3.0	0.33		1.37 J			100 U	
F08	34	03	29840	4.0	0.30		1.17				
F08	34	03	29841	5.0	0.89		1.72 J			100 U	
F08	34	03	29844	7.0	0.54		1.69			100 U	
F08	34	03	29845	8.0	0.35		< 0.47				
F08	34	03	29846	9.0	0.33		1.33 J			100 U	
F08	34	03	29856	10.0	< 0.09		1.12 J				
F08	34	03	29857	11.0	0.28		1.52 J			100 U	
F08	34	03	29860	12.0	0.34		1.93 J				
F08	34	03	29861	13.0	0.30		0.65 J			100 U	
F08	34	03	29863	14.0	0.26		< 0.27				
F08	34	03	29864	15.0	0.19		< 0.33			100 U	
F08	34	03	29865	16.0	0.33		1.50				
F08	34	03	29866	17.0	0.20		0.90 J			100 U	
F08	34	03	29873	18.0	0.29		< 0.49				
F08	34	03	29874	19.0	0.28		1.50			100 U	
F08	34	03	29875	20.0	0.46		1.67 J				
F08	34	03	29876	21.0	0.27		0.96 J			100 U	
F08	34	03	29879	22.0	0.27		1.29 J				
F08	34	03	29880	23.0	0.28		0.82 J			100 U	
F08	34	03	29884	24.0	0.36		1.11 J				

Table 8
LPH Investigation,
LPH34 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
F08	34	03	29885	25.0	0.31		< 0.53			100 U	
F08	34	03	29886	26.0	0.25		0.81 J				
F08	34	03	29887	27.0	0.30		0.93 J			100 U	
F08	34	03	29888	28.0	0.22		1.21				
F08	34	03	29889	29.0	0.22		< 0.48			100 U	
F08	**34**	**03**	**29890**	**30.0**	**0.140**	**0.117**	**0.084 J**	**0.0025 U**	**0.0025 UJ**	**2.1 J**	**1.0**
E08	34	04	27455	1.0	0.66		5.13			100 U	
E08	34	04	27456	3.0	NS		NS			100 U	
E08	34	04	27461	9.0	NS		NS			100 U	
E08	**34**	**04**	**27462**	**10.0**	< 0.10		5.66	**0.0025 U**	**0.0025 U**		
E08	34	04	27463	14.0	0.25		< 1.11	0.094 U	0.094 U		
E08	34	04	27464	15.0	0.31 J		6.70			100 U	
E08	34	04	27467	16.0	0.22		5.87	0.113 U	0.113 U		
E08	34	04	27468	17.0	0.17		3.94			100 U	
E08	34	04	27469	18.0	0.31		6.06	0.112 U	0.112 U		
E08	34	04	27470	19.0	0.17		4.17			100 U	
E08	**34**	**04**	**27479**	**20.0**	0.28		5.01	**0.0025 U**	**0.0025 U**		
E08	34	04	27480	21.0	0.28		4.41			100 U	
E08	34	04	27481	22.0	0.22		3.39	0.111 U	0.111 U		
E08	34	04	27482	23.0	0.17		3.06			100 U	
E08	34	04	27483	24.0	0.13 J		2.66	0.131 U	0.131 U		
E08	34	04	27484	25.0	0.24		3.58			100 U	
E08	34	04	27490	26.0	0.19 J		2.74	0.107 U	0.107 U		
E08	34	04	27491	27.0	0.16		< 0.77			100 U	
E08	34	04	27492	28.0	0.24		9.45	0.109 U	0.109 U		
E08	34	04	27493	29.0	0.24 J		4.01			100 U	
E08	**34**	**04**	**27494**	**30.0**	**0.167 J**	**4.47**	**4.41**	**0.0025 U**	**0.0025 U**	**5.7**	**0.14 J**
E08	34	04	27506	32.0	0.18		< 0.84	0.112 U	0.112 U		
E08	34	04	27507	33.0	0.19		< 0.80			100 U	
E08	34	04	27508	34.0	0.22		2.40	0.109 U	0.109 U		
E08	34	04	27509	35.0	0.19		0.67 J			100 U	
E08	34	04	27515	36.0	< 0.04		1.02	0.115 U	0.115 U		
E08	34	04	27516	37.0	0.24 J		0.94			100 U	
E08	34	04	27517	38.0	0.02 UJ		< 0.24	0.115 U	0.115 U		
E08	34	04	27518	39.0	0.22 J		< 0.43			100 U	
E08	**34**	**04**	**27519**	**40.0**	0.21 J		0.60 J	**0.0026 U**	**0.0026 U**		
E08	34	04	27520	41.0	0.10 J		0.69 J			100 U	
E08	34	04	27527	42.0	0.17 J		0.73	0.116 U	0.116 U		
E08	34	04	27536	43.0	0.48 J		1.02 J			100 U	
E08	34	04	27537	44.0	0.46 J		< 0.57	0.115 U	0.115 U		
E08	34	04	27538	45.0	0.33 J		< 0.50			100 U	
E08	34	04	27539	46.0	0.29 J		0.60 J	0.135 U	0.135 U		
E08	34	04	27540	47.0	0.30 J		1.78			100 U	
E08	34	04	27541	48.0	1.33 J		2.27	0.098 U	0.098 U		
E08	34	04	27542	49.0	1.12 J		3.15			100 U	
E08	**34**	**04**	**27545**	**50.0**	0.82 J		2.22 J	**0.0030 U**	**0.00089 U**		
E08	34	04	27546	51.0	0.67 J		2.39 J			100 U	
E08	34	04	27547	52.0	0.75 J		1.10 J	0.093 U	0.093 U		
E08	34	04	27548	53.0	0.61 J		< 0.57			100 U	
E08	34	04	27551	54.0	0.61 J		1.16 J	0.115 U	0.115 U		
E08	34	04	27552	55.0	0.52 J		< 0.64			100 U	
E08	34	04	27553	56.0	0.33 J		1.17 J	0.111 U	0.111 U		

Table 8
LPH Investigation,
LPH34 Soil Boring Sample Results

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
E08	34	04	27554	57.0	0.34 J		0.94 J			100 U	
E08	34	04	27557	58.0	0.41 J		2.11	0.112 U	0.112 U		
E08	34	04	27558	59.0	0.46 J		1.54 J			100 U	
E08	34	04	27559	60.0	0.54 J		1.30	0.115 U	0.115 U		
E08	34	04	27560	61.0	0.27 J		0.89 J			100 U	
E08	34	04	27562	62.0	0.36 J		0.70 J	0.124 U	0.124 U		
E08	34	04	27563	63.0	0.32 J		1.89			100 U	
E08	**34**	**04**	**27564**	**64.0**	**0.50 J**	**0.212**	**0.138**	**0.0027 U**	**0.0027 U**	**0.47 J**	**0.072 J**
E08	34	05	28751	1.0	0.71		5.94 J			100 U	
E08	34	05	28752	2.0	0.87		6.99 J				
E08	34	05	28755	3.0	0.80		7.10 J			100 U	
E08	34	05	28800	4.0	0.39 J		1.12 J				
E08	34	05	28863	5.0	0.65 J		5.08			100 U	

Table 8
LPH Investigation,
LPH34 Soil Boring Sample Results

Analytes:

Th-232 - Thorium-232
U-234 - Uranium-234
U-238 - Uranium-238
TCE - Trichloroethene
PCE - Tetrachloroethene
Ni - Nickel
Be - Beryllium

Units:

pCi/g - picoCurie/gram
mg/kg - milligram/kilogram

Qualifiers:

U - Validation qualifier used to indicate that the result was qualified as non-detect.
J - Validation qualifier used to indicate that the result is considered an estimate.
UJ - Validation qualifier used to indicate that the result was qualified as non-detect and the associated reporting limit is considered an estimate.
< - Validation qualifier (for on-Site radiological constituents) used to indicate that the result was qualified as non-detect.

Notes:

See Figure 9 for boring locations.
On-Site sample results are in plain font and include radionuclides (Th-232 and U-238) analyzed by the gamma spectroscopy system; volatile organic compounds (TCE and PCE) by solid phase microextraction and capillary gas chromatography by Stone Environmental, Inc.; and Ni by x-ray fluorescence spectroscopy by Stone Environmental, Inc.
Off-Site sample results are in **bold font** and indicate that the analysis was performed by Severn Trent Laboratories, Inc.
NS - Not sampled due to insufficient recovery.
Due to an artifact in the laboratory data reporting program, the on-Site analytical data should be interpreted to two significant figures.
Blank cell indicates analysis was not performed.

Table 9
Summary of LPH Soil Boring Sample Results Above Site Cleanup Levels

Subcell	LPH	Boring Location	Sample ID	Depth (feet)	Th-232 (pCi/g)	U-234 (pCi/g)	U-238 (pCi/g)	TCE (mg/kg)	PCE (mg/kg)	Ni (mg/kg)	Be (mg/kg)
L14	03	01	21511	6.0	NS		NS	0.105 U	1.982		
L14	03	05	21698	16.0	NS		NS	0.133 U	12.370 D		
M14	04	01	21947	22.0	0.97		79.12	0.176 U	6.364		
N15	**05**	**DL07**	**12386**	**24.0**	1.68		124.79 J			**955 J**	
N15	05	DL07	12387	24.5	1.53		119.27				
N15	05	DL07	12389	25.0	0.47		9.38	0.095 U	6.132 D		
O18	06	DL10	12238	10.0	0.73		74.78				
O18	06	DL10	12239	11.0	0.69		81.39				
O18	06	DL10	12255	12.0	0.57 J		51.24				
O18	06	DL10	12274	15.0	0.40		51.62				
O18	06	DL13	12350	14.0	0.24		82.70				
O18	06	DL13	12351	15.0	0.24		71.52				
L05	20	04	20133	1.0	0.92		12.75			1105 J	
I06	**21**	**01**	**19221**	**16.0**	**20.5**	**612**	**82**	**1600**	**40000 J**	**125 J**	**0.86 U**
I06	21	01	19222	19.0	3.35		11.49	33.412 D	1344.441 J	100 U	
I06	21	05	19698	10.0	2.33		59.20				

Analytes:

Th-232 - Thorium-232
U-234 - Uranium-234
U-238 - Uranium-238
TCE - Trichloroethene
PCE - Tetrachloroethene
Ni - Nickel
Be - Beryllium

Units:

pCi/g - picoCurie/gram
mg/kg - milligram/kilogram

Qualifiers:

U - Validation qualifier used to indicate that the result was qualified as non-detect.
J - Validation qualifier used to indicate that the result is considered an estimate.
D - Validation qualifier used to indicate that analysis was performed on a sample requiring dilution.

Notes:

See Figure 2, Figure 4 and Figure 8 for boring locations.

On-Site sample results are in plain font and include radionuclides (Th-232 and U-238) analyzed by the gamma spectroscopy system; volatile organic compounds (TCE and PCE) by solid phase microextraction and capillary gas chromatography by Stone Environmental, Inc.; and Ni by x-ray fluorescence spectroscopy by Stone Environmental, Inc.

Off-Site sample results are in **bold font** and indicate that the analysis was performed by Severn Trent Laboratories, Inc.

NS - Not sampled due to insufficient recovery.

Due to an artifact in the laboratory data reporting program, the on-Site analytical data should be interpreted to two significant figures.

Site background concentration for Th-232 assumed to be approximately 0.6 pCi/g.

Blank cell indicates analysis was not performed.

Result is above Site cleanup level.

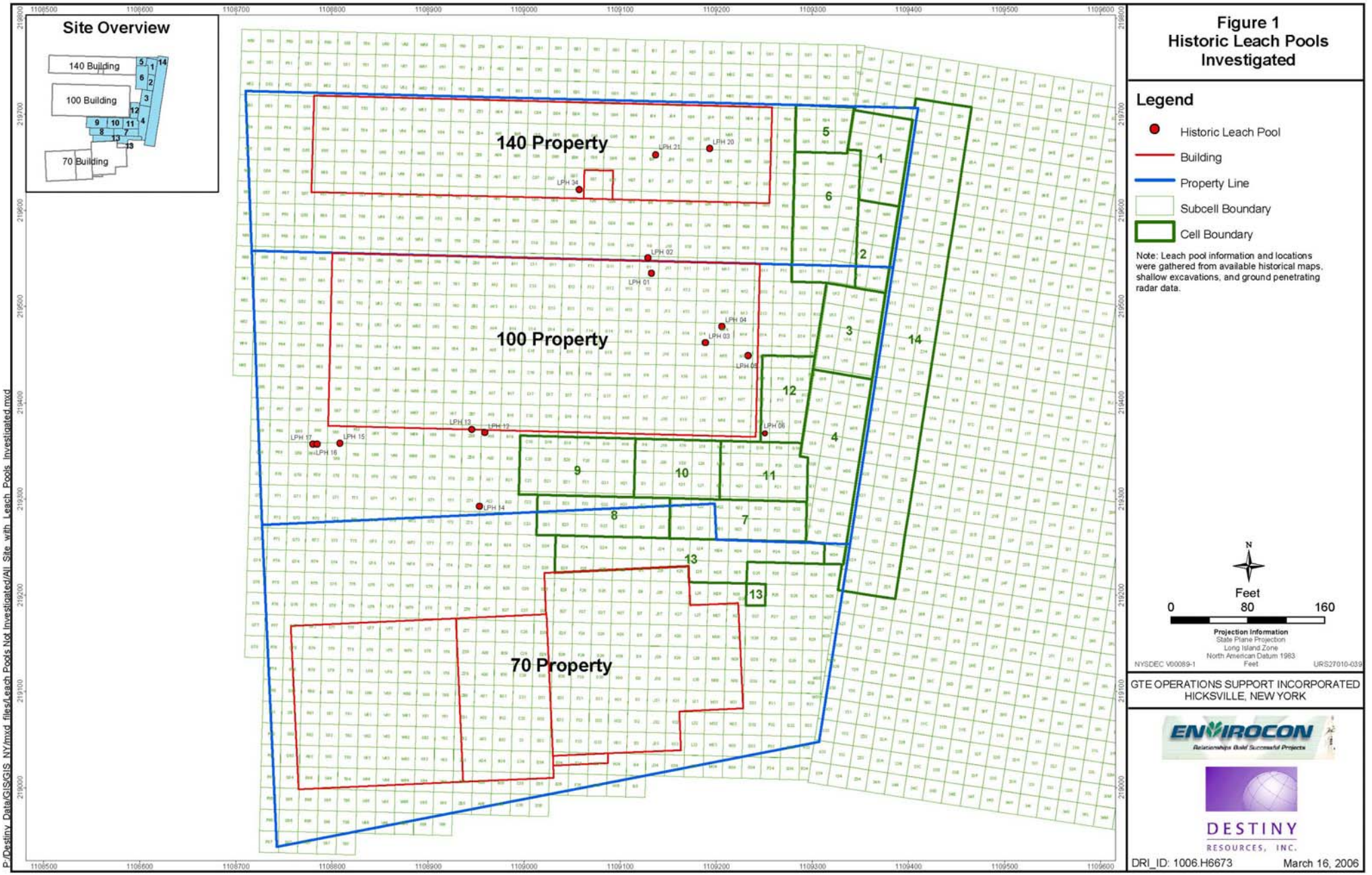

Figure 1
Historic Leach Pools Investigated

Legend

- Historic Leach Pool
- Building
- Property Line
- Subcell Boundary
- Cell Boundary

Note: Leach pool information and locations were gathered from available historical maps, shallow excavations, and ground penetrating radar data.

N

Feet

0 80 160

Projection Information
State Plane Projection
Long Island Zone
North American Datum 1983
Feet

NYSDEC V00089-1 URS27010-039

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Figure 2
Spring 2004 Investigation and LPH Investigation Soil Boring Locations

Legend

- Spring 2004 Investigation Boring Location
- LPH Investigation Boring Location
- Building
- Property Line
- Historic Leach Pool
- Subcell Boundary
- Cell Boundary

See Table 1, Table 2 and Table 3 for summarized sample results.

Borings DL06 and 01 in LPH04 and borings DL07 and 01 in LPH05 are very close and are shown with one circle on the figure.

Leach pool information and locations were gathered from available historical maps, shallow excavations, and ground penetrating radar data.

N

Feet

0 30 60

Projection Information
State Plane Projection
Long Island Zone
North American Datum 1983
Feet

NYSDEC V00089-1 URS27010-039

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DRI_ID: 1006.H6770 March 21, 2006

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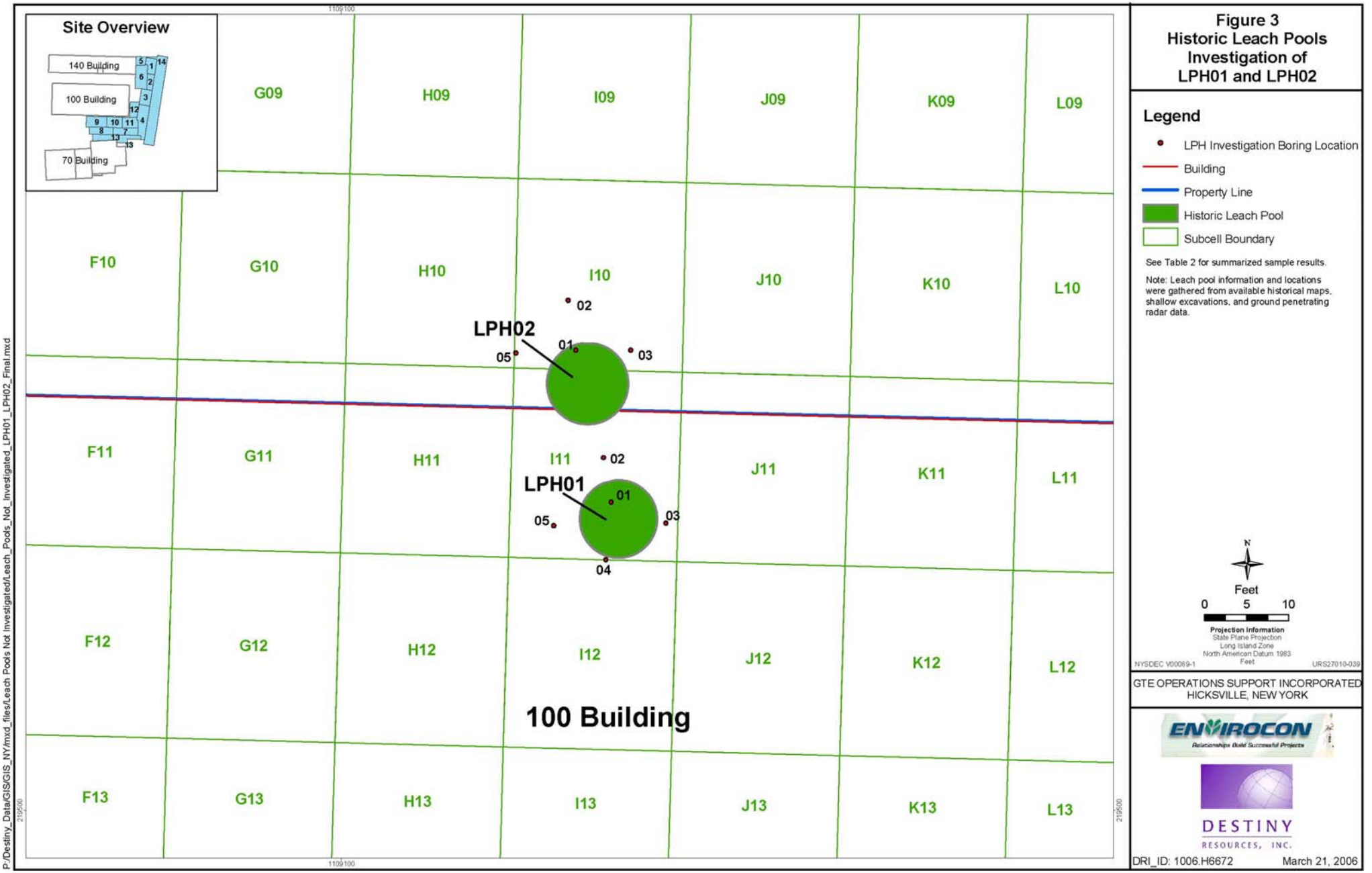

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Figure 3
Historic Leach Pools Investigation of LPH01 and LPH02

Legend

- LPH Investigation Boring Location
- Building
- Property Line
- Historic Leach Pool
- Subcell Boundary

See Table 2 for summarized sample results.

Note: Leach pool information and locations were gathered from available historical maps, shallow excavations, and ground penetrating radar data.

N

Feet

0 5 10

Projection Information
State Plane Projection
Long Island Zone
North American Datum 1983
Feet

NYSDEC V00089-1 URS27010-039

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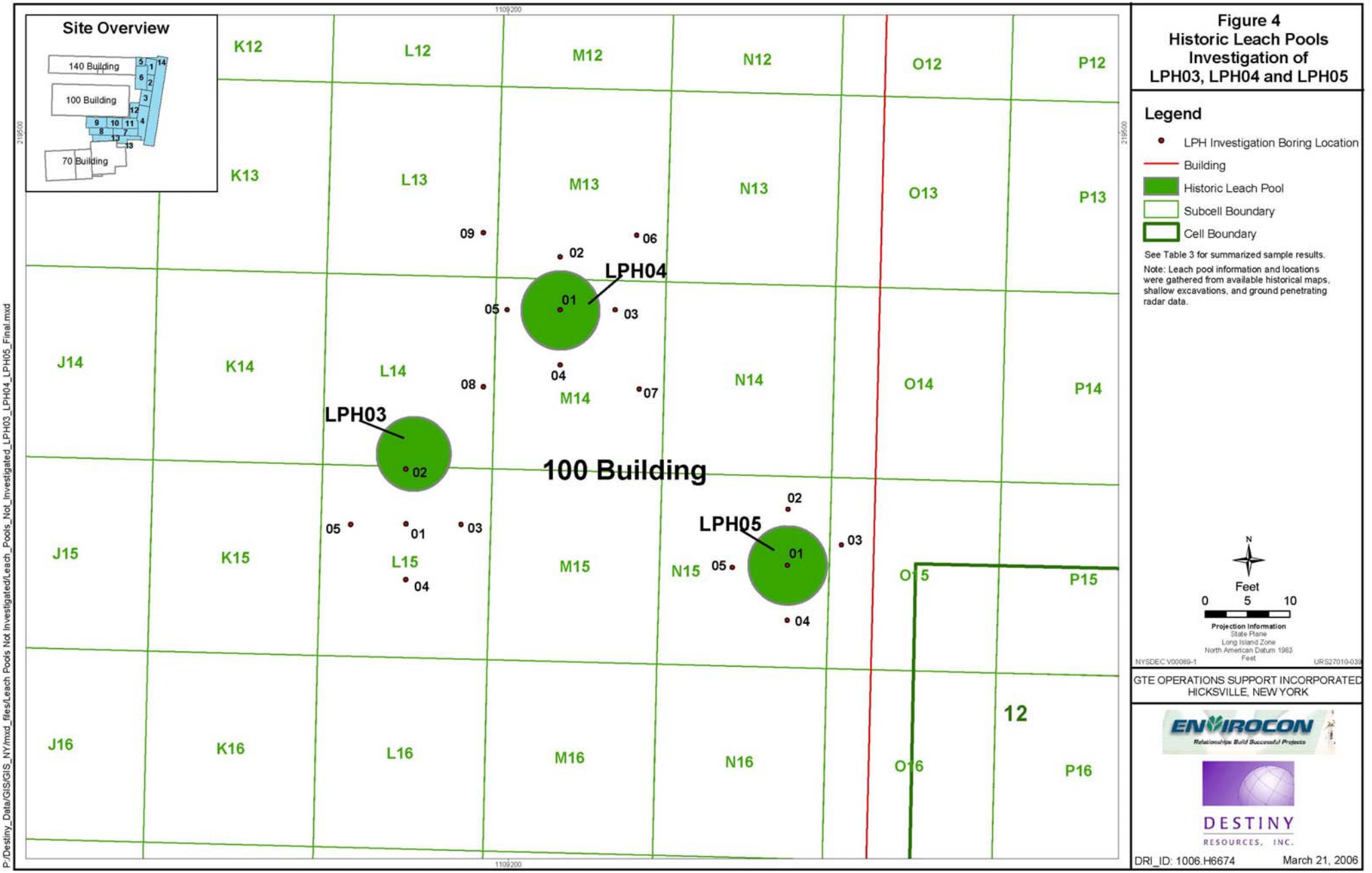

Figure 4
Historic Leach Pools Investigation of LPH03, LPH04 and LPH05

Legend

- LPH Investigation Boring Location
- Building
- Historic Leach Pool
- Subcell Boundary
- Cell Boundary

See Table 3 for summarized sample results.

Note: Leach pool information and locations were gathered from available historical maps, shallow excavations, and ground penetrating radar data.

N

Feet

0 5 10

Projection Information
State Plane
Long Island Zone
North American Datum 1983
Feet

NYSDEC V00089-1 URS27010-039

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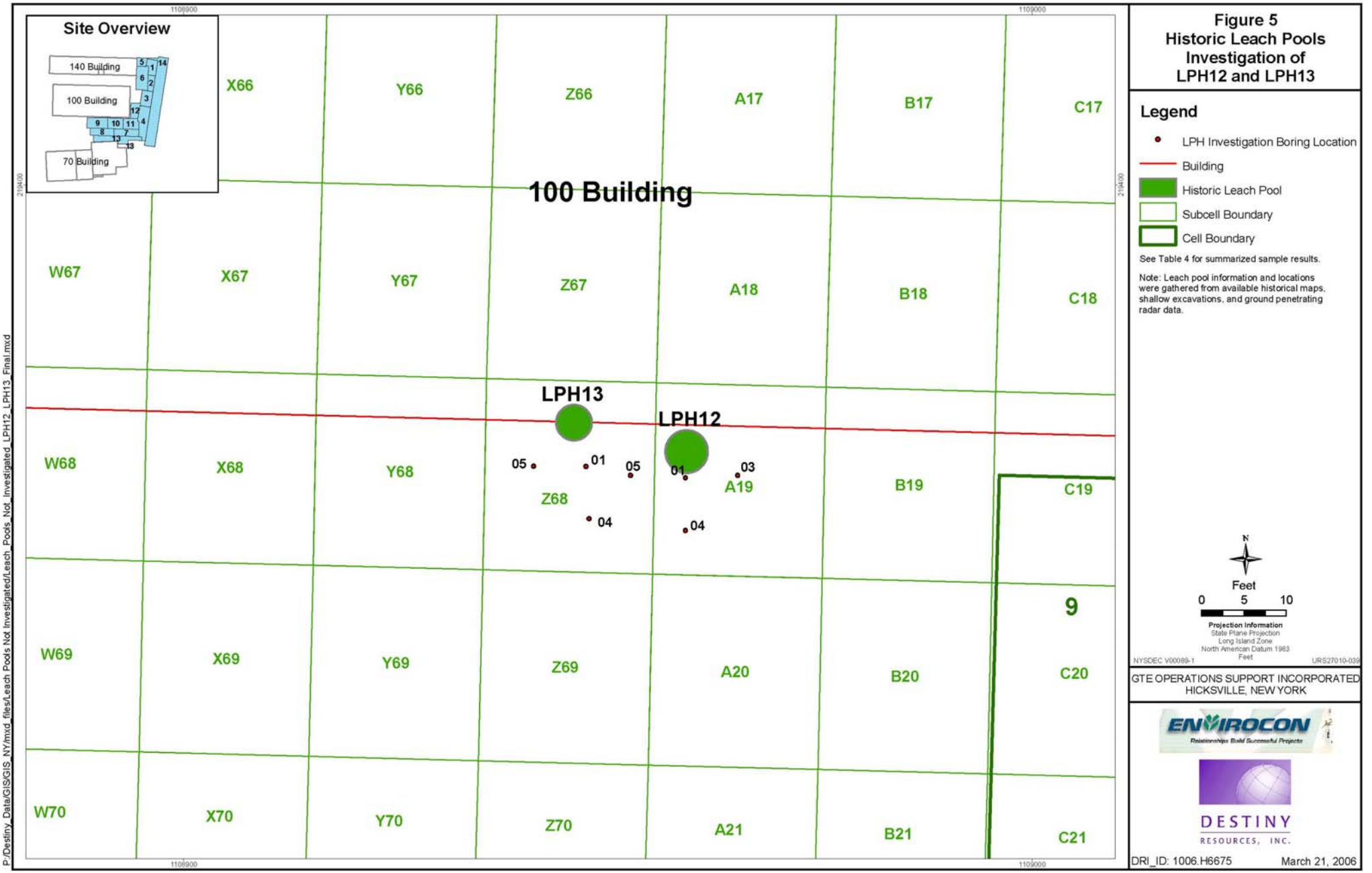

Figure 5
Historic Leach Pools Investigation of LPH12 and LPH13

Legend

- LPH Investigation Boring Location
- Building
- Historic Leach Pool
- Subcell Boundary
- Cell Boundary

See Table 4 for summarized sample results.

Note: Leach pool information and locations were gathered from available historical maps, shallow excavations, and ground penetrating radar data.

N

Feet

0 5 10

Projection Information
State Plane Projection
Long Island Zone
North American Datum 1983
Feet

NYSDEC V00089-1 URS27010-039

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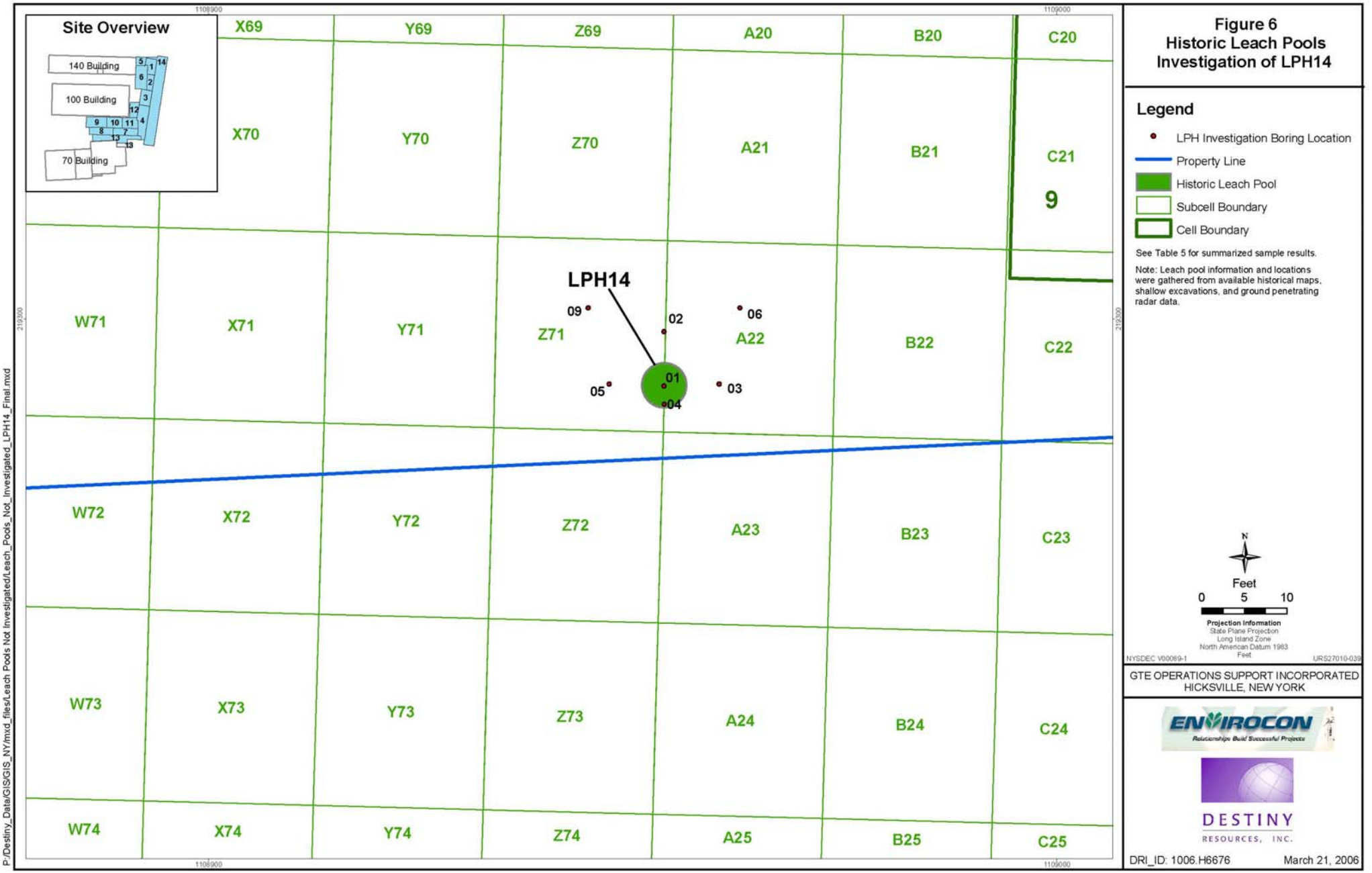

Figure 6
Historic Leach Pools Investigation of LPH14

Legend

- LPH Investigation Boring Location
- Property Line
- Historic Leach Pool
- Subcell Boundary
- Cell Boundary

See Table 5 for summarized sample results.

Note: Leach pool information and locations were gathered from available historical maps, shallow excavations, and ground penetrating radar data.

N

Feet

0 5 10

Projection Information
State Plane Projection
Long Island Zone
North American Datum 1983
Feet

NYSDEC V00069-1 URS27010-039

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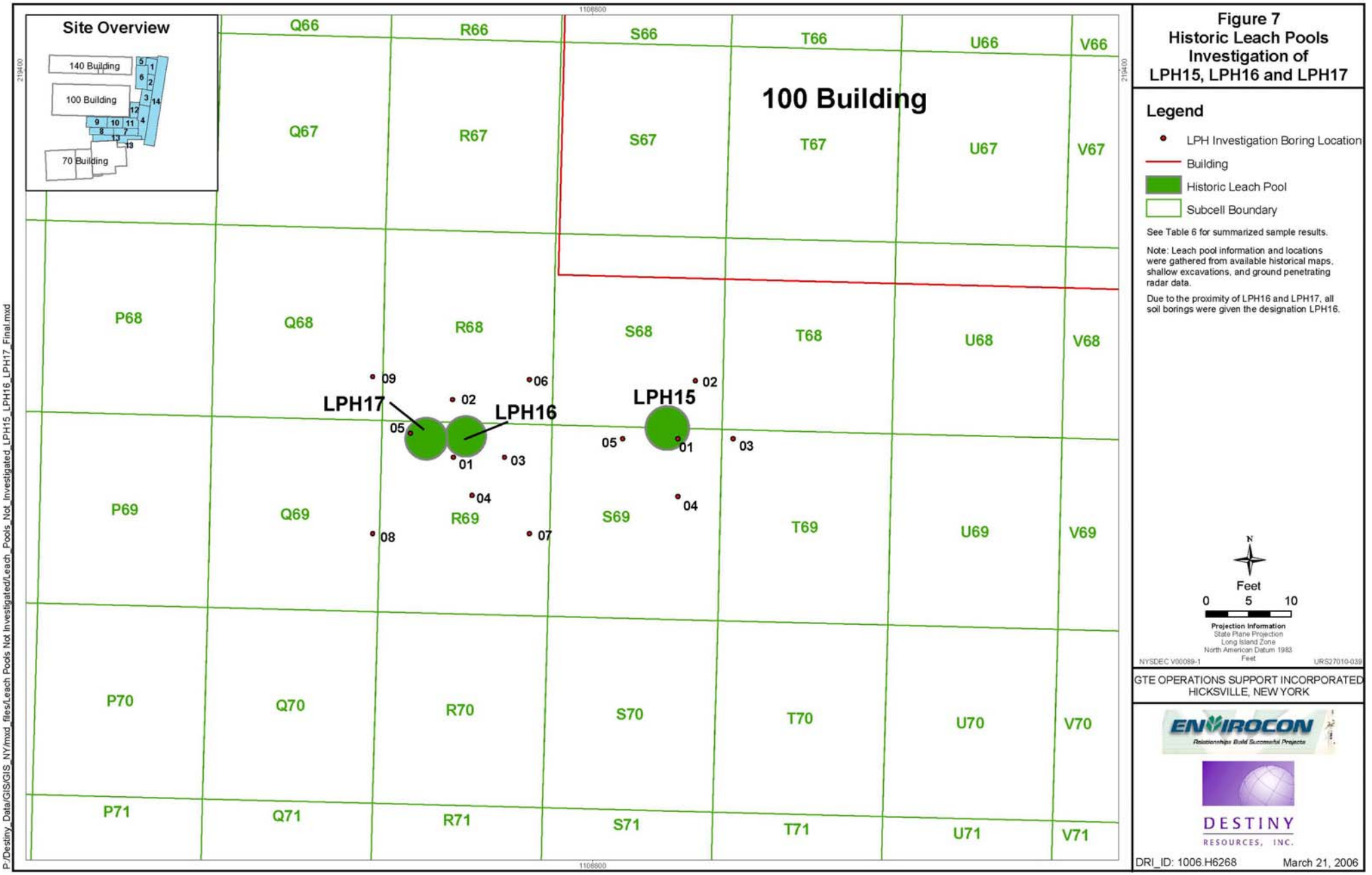

Figure 7
Historic Leach Pools Investigation of LPH15, LPH16 and LPH17

Legend

- LPH Investigation Boring Location
- Building
- Historic Leach Pool
- Subcell Boundary

See Table 6 for summarized sample results.

Note: Leach pool information and locations were gathered from available historical maps, shallow excavations, and ground penetrating radar data.

Due to the proximity of LPH16 and LPH17, all soil borings were given the designation LPH16.

N

Feet

0 5 10

Projection Information
State Plane Projection
Long Island Zone
North American Datum 1983
Feet

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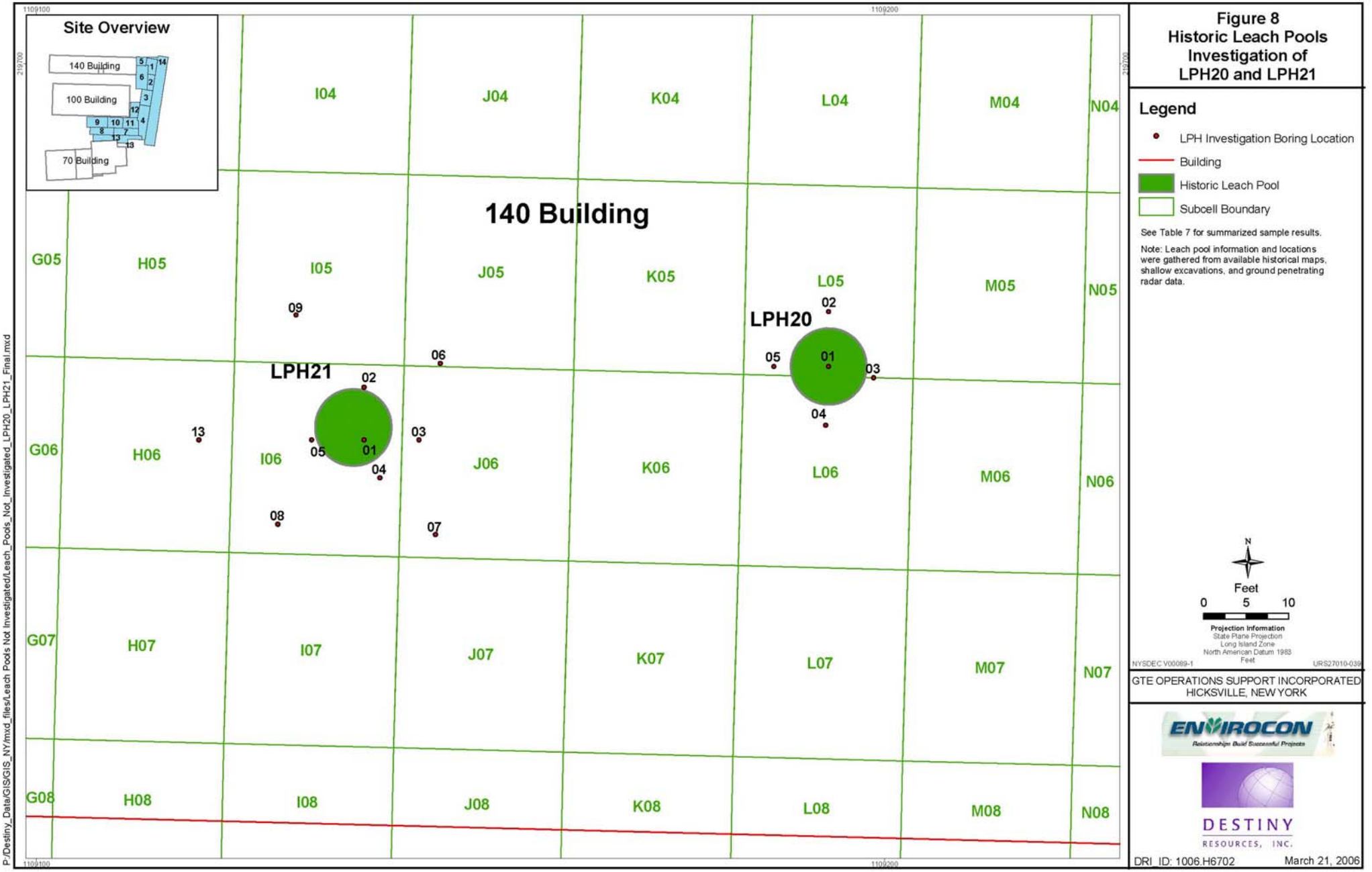

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Figure 8
Historic Leach Pools Investigation of LPH20 and LPH21

Legend

- LPH Investigation Boring Location
- Building
- Historic Leach Pool
- Subcell Boundary

See Table 7 for summarized sample results.

Note: Leach pool information and locations were gathered from available historical maps, shallow excavations, and ground penetrating radar data.

N

Feet

0 5 10

Projection Information
State Plane Projection
Long Island Zone
North American Datum 1983
Feet

NYSDEC V00089-1 URS27010-039

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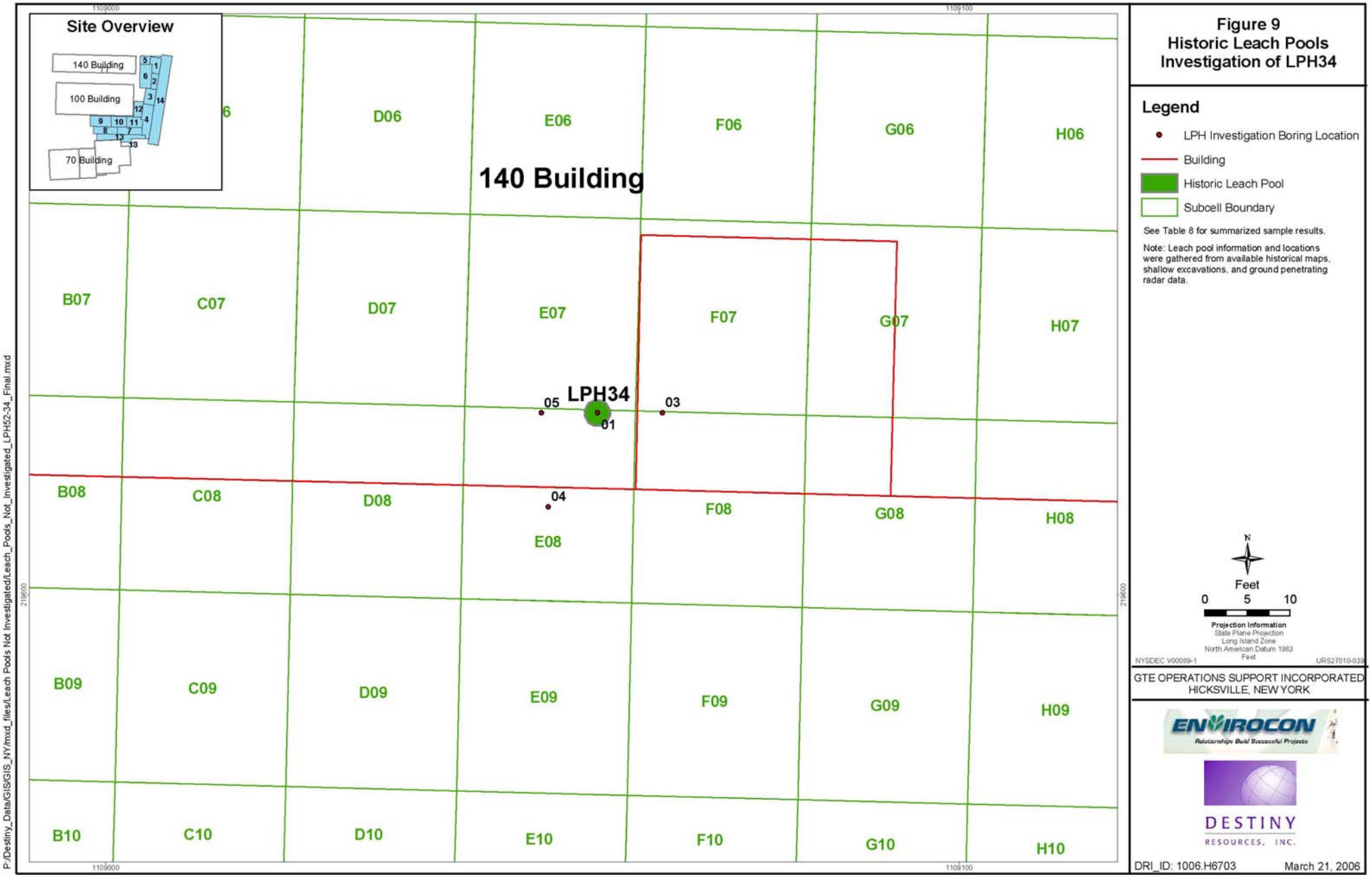

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Figure 9
Historic Leach Pools Investigation of LPH34

Legend

- LPH Investigation Boring Location
- Building
- Historic Leach Pool
- Subcell Boundary

See Table 8 for summarized sample results.

Note: Leach pool information and locations were gathered from available historical maps, shallow excavations, and ground penetrating radar data.

N

Feet

0 5 10

Projection Information
State Plane Projection
Long Island Zone
North American Datum 1983
Feet

NYSDEC V00089-1 URS27010-039

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DRI_ID: 1006.H6703 March 21, 2006

Subsurface Soil
Sampling and Analysis Plan
Historic Leach Pools

Former Sylvania Electric Products Incorporated Facility
Hicksville, New York
GTE Operations Support Incorporated

Revision 1: October 2004

This Leach Pool Sampling and Analysis Plan (LPH Plan) has been reviewed by URS Corporation – New York, and I am in agreement with the methods and procedures to be used in this investigation.

URS Corporation – New York

Robert D. Brathovde, P.E.
Engineer of Record

This Leach Pool Sampling and Analysis Plan (LPH Plan) has been reviewed by Professional Radiation Consulting, Inc. (PRCI), and I am in agreement with the methods and procedures to be used in this investigation.

, CHP for Shane Brightwell

Shane Brightwell, ~~CHP~~
President, PRCI

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Figure 1 – Historic Leach Pools Scheduled for Investigation
Figure 2 – Historic Leach Pools Sample Pattern Example

1.0 INTRODUCTION

During the last two years, soils containing residual uranium (U) and thorium (Th); certain volatile organic compounds (VOCs), specifically tetrachloroethene (PCE) and trichloroethene (TCE); and nickel (Ni), (collectively "target analytes") were excavated from defined areas at the Former Sylvania Electric Products Incorporated (Sylvania) property (the Site) and shipped off Site to an approved disposal facility. During excavation, various structures were encountered or otherwise identified. Those structures include, for example, historic leach pools, recharge basins, dry wells, and sumps. For the purposes of this Leach Pool Sampling and Analysis Plan (LPH Plan), historic leach pools, dry wells and catch basins are collectively referred to as historic leach pools (LPHs).

GTE Operations Support Incorporated (GTEOSI) is now preparing to investigate residual contamination in subsurface soils at locations on Site that formerly were used as LPHs. The purpose of this LPH Plan is to describe procedures to be used during investigation of the subsurface soils associated with LPHs. Fifteen suspected LPHs that have not been remediated remain on the Site as shown in Figure 1. Of the fifteen, LPH 24 is on the 70 Property and will be investigated at a later date; and LPH 06 was previously investigated and no further work is planned, however the data will be presented with the findings from this LPH investigation. All other LPHs shown on Figure 1 will be investigated pursuant to this LPH Plan.

The various sections of this plan will present the steps to be implemented in order to characterize the subsurface soils in the areas around the former LPH locations. The steps are written in such a manner that supports the characterization of a single LPH with no other LPHs in the vicinity. Modification to these steps will be permitted when two or more LPHs are located (or suspected) in the same general area or when field conditions or sample results indicate the modifications would better support the intent and objective of this plan as stated in Section 2.0. For example, the location of sampling points may be varied to delineate the perimeter surrounding several LPHs in close proximity to each other. All modifications to steps in this plan shall be made with the prior concurrence of the Radiation Safety Officer (or his designated alternate) and the prior approval of the Project Coordinator.

2.0 OBJECTIVE

The objective of the LPH Plan is to investigate the soils in the areas of the LPHs for the presence of these target analytes and, if such compounds are present above the cleanup criteria specified in the *Comprehensive Soil Remediation Work Plan*, Revision 5, June 2003 (Work Plan), delineate the areas of impact. Once the vertical and horizontal extents and associated concentrations have been delineated, this information will be used to evaluate the need for remediation.

3.0 APPLICABLE GUIDANCE

Remediation at the Site is being performed in accordance with a Voluntary Cleanup Agreement, Site V-00089-1, Index W1-0903-01-12, between New York State Department of Environmental Conservation (NYSDEC) and GTEOSI. Field procedures and analytical methods identified in the approved Site Work Plan have been incorporated in this sampling plan where appropriate. The investigation of soils to determine the presence of, concentrations, extent, and boundaries of contaminants is termed a *characterization* survey. The principles for a characterization survey described in Chapter 5 of *NUREG 1575, Multi-Agency Radiation Survey and Site Investigation Manual* (MARSSIM), have been considered in developing this Plan. Specific methods recommended in MARSSIM for subsurface soil sampling, have been incorporated in this LPH Plan.

4.0 LPH INVESTIGATION

The areas where the LPHs are located, shown in Figure 1, are covered with asphalt, concrete, building foundations or other surface materials. Additionally, the top of the each LPH may range from 0.15 meters (6 inches) to 2 meters (6.5 feet) below ground surface (bgs). The LPHs will be preliminarily located using historic maps and ground penetrating radar (GPR) data. This information will be used as a starting point in the field to locate each LPH. An excavator may then be employed to remove surface materials and/or overburden to physically locate the LPHs so that sampling patterns can be aligned accordingly. The construction of the pools, to the extent possible, will be documented in the field notes. Once an LPH is located, the starting sample location will be selected as described below.

4.1 SAMPLE LOCATIONS

The starting LPH sample location will be selected as close as possible to the geometric center of the main body of the historic leach pool as determined by reference to historical maps and other information, visual inspection, and use of ground-penetrating radar. Sampling coordinates will be determined using global positioning system (GPS) or laser positioning system (LPS). Once the center starting point location, sampling, and on-Site analyses are completed and the results evaluated, the associated sample pattern for the next four locations will be established. The spacing for the adjacent sampling locations will be established on a circular pattern as shown on Figure 2, just outside the LPH ring approximately 2 meters from the center location (more if necessary to remain outside the LPH). If needed, additional sampling points will be established on a concentric ring pattern outside the first ring as described below.

1. *Sampling Pattern* - The sampling pattern has been designed for delineating uniform (symmetrical) or non-uniform zones or areas of residual contamination. Sampling can be stopped along boundaries where residual contamination is no longer identified, and continued in the direction(s) where residual contamination is detected. Sampling will be performed as follows:

a. Sample points on the circles with 2-meter and 6-meter radii are placed on rays at 0°, 90°, 180°, and 270°. Sample points on the circle with a 4-meter radius are placed on rays at 45°, 135°, 225°, and 315°;
b. Samples on the 8-meter radius circle are spaced 45° apart, starting at 22.5°;
c. Samples on the 10-meter radius circle are spaced 45° apart, starting at 0°; and
d. If radial sample intervals are required at a distance of 12 meters or greater from the center, the sample locations can be set at 22.5° apart following the same pattern, pattern as set forth in subparts b and c, as applicable.

2. *Horizontal Boundary* - This pattern continues until the analytical data and associated trends demonstrate that the horizontal boundary of the impacted area has been established.

3. *Vertical Interval* - Based on the results of excavation and subsurface soil investigations performed during Site remediation completed to date, LPH impacts often were identified in relatively thin soil layers. Specifically, concentrations in LPH impacts increased from not detected to greater than the cleanup criteria in the next lower 0.3-meter (1-foot) interval. Within the same boring, the concentrations may then decrease rapidly over the next 0.3 to 0.6-meter (1- to 2-foot) intervals. As a result, subsurface soil delineation (DL) samples will be collected and analyzed by on-Site analytical capabilities at minimum of 0.3-meter (1-foot) intervals.

4. *Vertical Boundary* - Typically, the impacts at depth detected in the LPHs investigated to date were consistent with the depth of each LPH bottom [approximately 5 to 7 meters (16 to 23 feet) bgs], with occasional impacts found in fill soils within the LPH above the former bottom elevation. In certain instances, impacts were identified at depths deeper and widths broader than the LPH structure due to vertical and horizontal migration of contaminants. Impacts detected outside the LPHs were always accompanied by impacts identified within the LPH. Therefore, the initial sampling will be within the LPH footprint and the initial target depth will be the first soils encountered below the top of the LPH. (Note: Soil voids have been encountered in some of the LPHs investigated to date.) Sampling will continue if indications are that impacts continue, until two consecutive 0.3-meter (1-foot) intervals are observed as containing impacts less than the cleanup levels as defined in the Work Plan. Sampling will continue to the bottom of the LPH regardless of whether impacts above cleanup levels occurred in the two intervals above the bottom. After determining the vertical extent of impacts, the final sample after two consecutive samples with impacts less then cleanup levels will be collected and analyzed using the confirmation/verification (CF/VF) sampling procedure specified in the Work Plan. Subsequently, all other sampling locations identified during the horizontal delineation of the LPH will be sampled to the depth established during the vertical delineation.

4.2 MATERIALS AND METHODS

The following narrative describes the sample collection, analysis, and evaluation methodology to be used to execute this Plan.

4.2.1 Soil Sampling

The subsurface soil sampling prescribed in this LPH Plan can be performed by one of two methods:

1. A hollow-stem auger drill rig with split-spoon sampling capabilities can be used to collect soil samples. The split spoon (2 feet in length and 3 inches in diameter) is advanced in 2-foot intervals. Two, 1-foot interval samples will be collected per split-spoon. If access with a drill rig is not feasible, then a hand-held auger may be used as described below. Minor modifications to the hollow-stem auger drill rig will occur during use inside a building.

2. Although the hollow-stem auger method is preferred, a hand auger may be used for subsurface sampling of soils if:
    a. Solids (cobbles, debris, etc.) do not cause refusal;
    b. Soil conditions (moisture, etc.) do not cause excessive sloughing; and
    c. Preservation of the soil sample integrity for physical testing is not required.

The hand auger (8 inches in length and 4 inches in diameter) collects approximately 8 inches of soil. The hand auger will be advanced to the next sampling interval prior to subsequent sample collection.

4.2.2 Sample Field Screening and Preparation

Each sample will be field screened with a 3-inch sodium iodide (NaI) gamma detector to evaluate potential residual radiological impacts and a photoionization detector (PID) to evaluate the presence of VOCs. In addition, an x-ray fluorescence (XRF) spectrometer will be used on Site to screen samples for nickel. The field observations will be documented on the boring logs.

4.2.3 Sample Collection

Samples collected for radiological analysis will be placed in 1-liter Marinelli containers. Samples collected from the surface down to the depth required based on analytical results (as described earlier) will be labeled as "DL" (delineation) samples. DL samples will be used for radiological screening and analyzed on Site using gamma spectroscopy. The bottom sample interval will be labeled as "SP" (sample point) samples. The SP samples will be analyzed for radionuclides both on Site and off Site, consistent with the Work Plan criteria for CF/VF sampling.

Samples collected for chemical analysis will be placed in pre-preserved methanol vials and non-preserved 40-ml vials. The DL samples are not analyzed for VOCs or nickel unless field screening/observations support collection of a chemical or nickel sample. The SP samples will be analyzed for VOCs both on Site and off Site, consistent with the Work Plan criteria for CF/VF sampling.

A geologist will describe the samples in general accordance with the Unified Soil Classification System (USCS). Sample descriptions will include soil type, color, moisture, and other visual observations and field readings. This information will be documented on soil boring logs.

All samples will be logged into the Site sample tracking / barcode system.

4.2.4 Sample Analysis

Each DL sample will be analyzed for 10 minutes by on-Site gamma spectroscopy (providing a nominal detection limit of approximately 0.014 pCi/g for Th-232 and 3.6 pCi/g for U-238, both of which are far below their associated cleanup level) to quantify the concentrations of target radionuclides of U and Th. Each SP sample will be analyzed for 30 minutes by on-Site gamma spectroscopy (providing a nominal detection limit of approximately 0.008 pCi/g for Th-232 and 2.0 pCi/g for U-238, both of which are far below their associated cleanup level as well as by alpha spectroscopy (alpha-spec) at the off-Site laboratory [Severn Trent Laboratories, Earth City, Missouri (STL)] for isotopic Th and U.

If DL samples are collected for chemical analyses, they will be analyzed for VOCs on Site by Stone Environmental. Each SP sample will be analyzed for VOCs on-Site by Stone Environmental as well as off Site by STL for VOCs and nickel.

5.0 SAMPLING/ANALYSIS PROCEDURE

The following is the step-by-step procedure for sample collection and subsequent analysis. It is the responsibility of each technician to read, understand, and question if they do not understand, the following procedures.

1. The applicable Chemical/Radiological Work Permit (C/RWP) and Activity Hazards Analysis (AHA) will be in place prior to commencement of sampling.

2. The field crew will be briefed on this procedure prior to commencement of sampling.

3. Each sampling location will be located and surveyed in the field using either a LPS or GPS surveying system.

4. Investigate sample locations for utilities and obstructions prior to excavation to locate the LPH. If utilities or obstructions are present, take necessary steps to place them in safe condition prior to proceeding (lock out/tag out).

5. Physically locate and expose the top of the LPH using available means such as excavation. Any overburden will be stockpiled, if possible, in such a way that it can be screened or sampled for waste characterization if necessary. Again where possible, overburden will be staged in Lift Liners® that can be readily packaged for disposal or re-opened and placed back on the LPH after completion, as applicable.

6. Continuous sampling will be conducted at 1-foot intervals beginning with the soil first encountered within the LPH to identify potential impacts of target analytes. These samples will be documented as DL samples.

7. Radiological field screening of samples will be conducted on each sample using a NaI gamma detector.

8. Chemical field screening of samples for VOCs will be conducted on each sample using a PID. An XRF spectrometer will be used for on-Site nickel screening of every other sample beginning with the second sample in the boring, continuing with the fourth sample, sixth sample, etc. Soil samples (~100g) for Ni screening by XRF will be collected in Ziploc® bags if the soils are relatively dry and in glass jars if the moisture content is 20% or higher. The samples will be delivered to Stone Environmental for either direct screening by XRF, or for drying in an oven, and then screening by XRF. For those DL quality control (QC) samples to be submitted to STL, the soils will be transferred from the Ziploc® bags to 40-ml glass vials in the sample preparation area. For QC purposes, every tenth sample will be screened by XRF and then submitted to STL for duplicate analyses.

9. A geologist will log the borings and record observations and measurements consistent with the USCS nomenclature and procedures, noting indications of soil impacts by chemicals and other potential contributors to contamination.

10. Radiological DL samples will be analyzed by on-site gamma spectroscopy for a 10-minute count time. If the bottom two 0.3-meter (1-foot) DL sample intervals are lower than target levels and the nickel screening results meet the cleanup objectives, then a SP sample will be collected. If not, then continue with sampling procedure until the DL sample criteria are met.

11. The SP sample will be collected after the DL sampling criteria have been met and will be treated in the same manner as a CF/VF samples. For the central boring (boring location 1) an additional SP sample will be collected as near as discernable to the bottom of the LPH to provide information about the contents of the structure. At times, it may not be possible to locate the LPH bottom; in this instance, if the bottom is anticipated at a specific depth (knowledge from near-by LPHs), than an SP sample should be collected just above the assumed depth of the bottom. If no evidence exists to support the presence of the LPH sediment at the bottom, then no additional sample will be collected. Radiological SP samples will be analyzed by on-Site gamma spectroscopy for a 30-minute count time as well as off-Site isotopic analyses for U and Th by STL. Chemical SP samples will be collected and placed in vials with methanol for on-Site analysis by Stone Environmental and in 40-ml vials for submission to STL for analysis of VOCs. For those soils designated as SP samples, following the XRF screening, the soils will be transferred from the Ziploc® bag and placed in 40-ml glass vials in the sample preparation area and submitted to STL for nickel and beryllium analysis (as requested by NYSDEC).

12. If oily soils are encountered, they will be collected while sampling as either DL or SP samples. Pursuant to the NYSDEC request, these soils will be submitted to STL for analysis

of polychlorinated biphenyls (PCBs) and semi-volatile organic compounds (SVOCs) base/neutral fraction, only, in addition to VOCs, isotopic analyses for U and TH, nickel, and beryllium. The soils collected for PCB and SVOC analyses will be placed in 250-ml glass jars; a minimum of 100g is needed to accommodate both analyses. The containers for the other analyses will follow the instructions provided above. (If sufficient sample volume of oily soils is not available, the chemical analyses for VOCs, SVOCs, PCBs, nickel and beryllium will take precedence over samples for radiological analyses.)

13. After the completion of sampling from a given location, the borehole will be backfilled with clean cuttings and/or on-Site clean backfill material to within 0.1 to 0.15 meters (4 to 6 inches) of the top of the borehole. The remaining 0.1 to 0.15 meters (4 to 6 inches) will be filled with asphalt or applicable surfacing material.

14. Decontamination of sampling equipment will be performed in accordance with SOP-RAD-011, Equipment Decontamination and to meet chemical decontamination specifications.

6.0 TARGET CONCENTRATIONS

The soil concentrations for all samples will be compared to the Site cleanup levels, NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4060, or Site background concentrations, as appropriate, as defined in the Work Plan.

7.0 SCHEDULE

The work described in this LPH Plan was initiated on September 27, 2004.

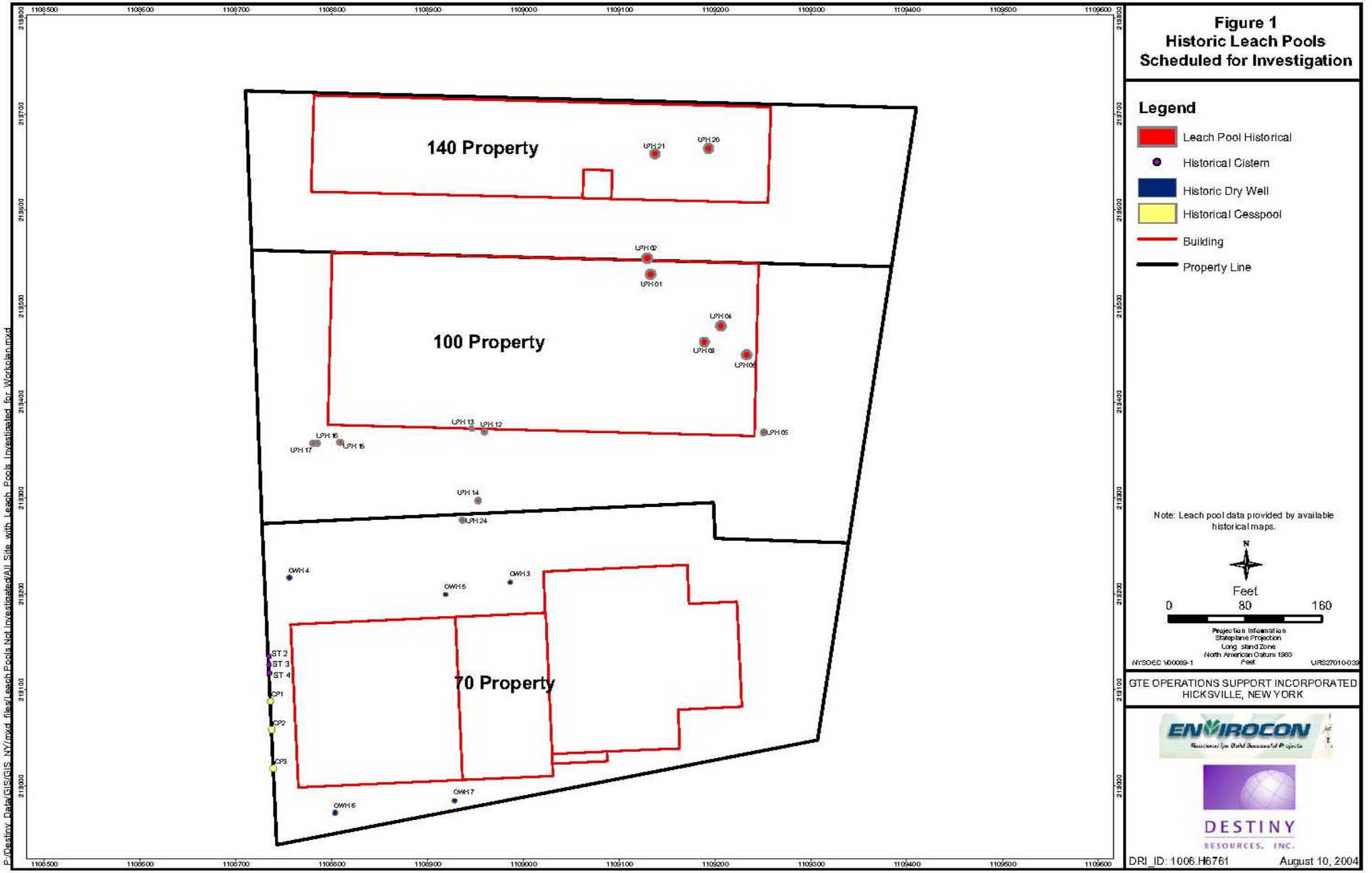

Figure 1
Historic Leach Pools Scheduled for Investigation

Legend

- Leach Pool Historical
- Historical Cistern
- Historic Dry Well
- Historical Cesspool
- Building
- Property Line

Note: Leach pool data provided by available historical maps.

N

Feet

0 80 160

Projection Information
Stateplane Projection
Long Island Zone
North American Datum 1983
Feet

NYSDEC V00089-1 URS27010-039

GTE OPERATIONS SUPPORT INCORPORATED
HICKSVILLE, NEW YORK

ENVIROCON

DESTINY RESOURCES, INC.

DRI_ID: 1006.H6761 August 10, 2004

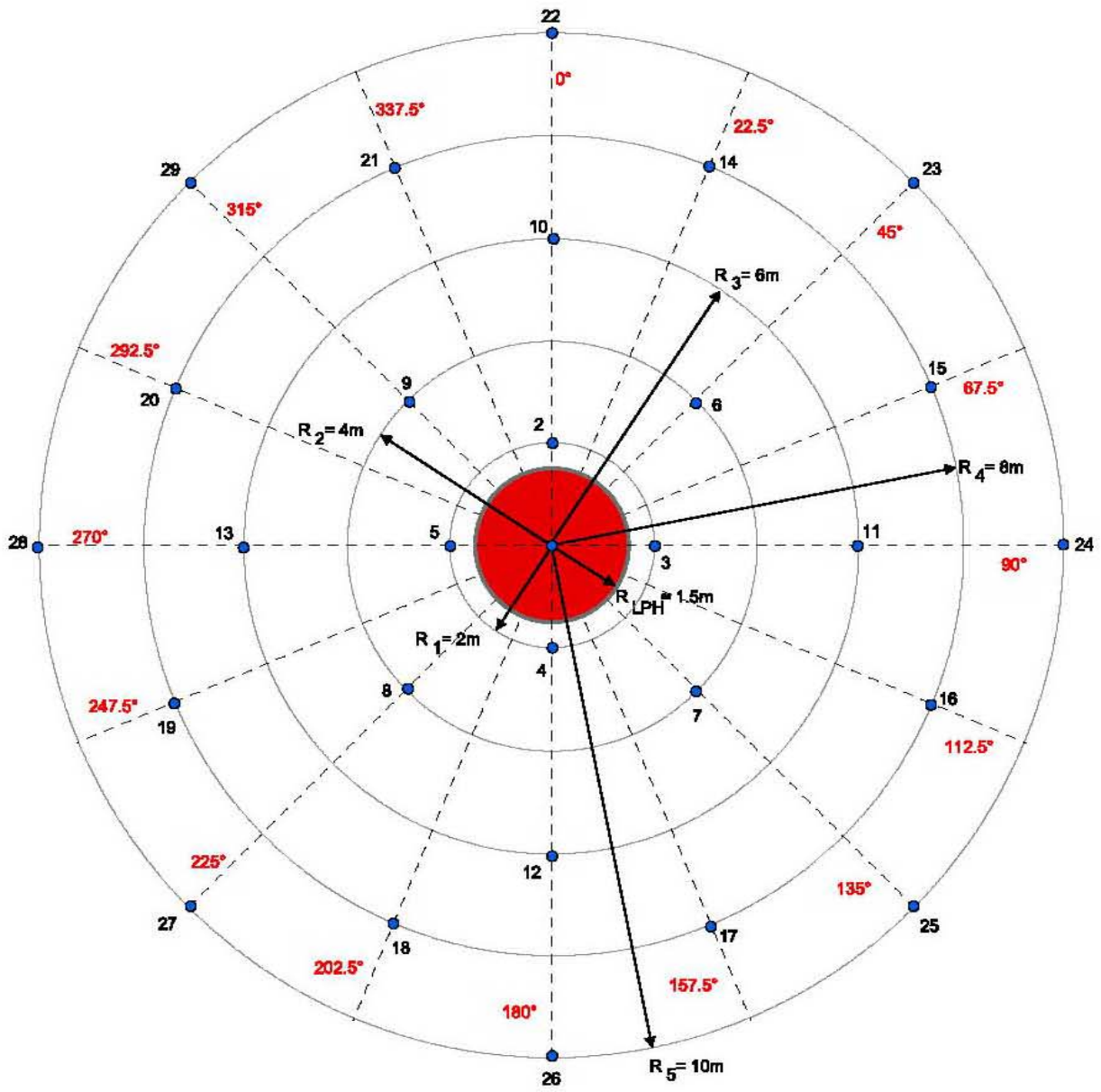

Figure 2
Historic Leach Pools
Sample Pattern Example

Legend

Leach Pool Historical

R Radius
m Meters
1 Boring Sequence Number
45° Degrees

N

NYSDEC V00089-1 URS27010-039

GTE OPERATIONS SUPPORT INCORPORATED
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DRI_ID: 1006.H5228 August 13, 2004

Article_revised_files\Leach_Pool_Sample_Pattern.mxd

New York State Department of Environmental Conservation
Division of Environmental Remediation, Region One
Building 40 - SUNY, Stony Brook, New York 11790-2356
Phone: (631) 444-0240 • **FAX:** (631) 444-0248
Website: www.dec.state.ny.us

Erin M. Crotty
Commissioner

September 17, 2004

Jean Agostinelli, Vice President - Controller
GTE Operations Support Inc.
140 Cantiague Rock Road
Hicksville, NY 11801

Re: Sub Surface Soil Sampling and Analysis Plan, Historical Leaching Pools, September 2004
Former Sylvania Electric Products Facility, #V00089-1

Dear Ms. Agostinelli:

The Department has the following comments on the subject work plan:

1) Page 1, Section 1.0 - There are some other historical leaching pools, sanitary pools, and dry wells on the 70 parcel indicated on the 1966 H2M survey that are not indicated on your figure. Their locations make it difficult to evaluate them at this time for this active facility. However, these pools will have to be evaluated later in a subsequent investigation.

2) Page 4, Section 4.2.4 - Please also analyze the soil samples for beryllium.

3) Additional sampling parameters may be necessary based on field observations. Any soils that have an oily appearance should also be analyzed for SVOCs (base neutrals) and PCBs.

3) Data evaluation, as specified in the previously approved work plans, will be required.

4) In understand that, as have been done previously during the preliminary evaluation of leaching pools on the 100 parcel, the slab or pavement will be removed around the suspected location in an attempt to sample directly from inside the leaching pools. Previous leaching pool sampling suggests that this is the only effective and accurate way to evaluate the leaching pools.

5) The construction of the pools must be documented. (Are the walls solid or perforated? Is the bottom solid or open? What pipes are visible in the sidewalls? What is the size of the pool? Is it precast or a block pool?)

6) The XRF results are for field screening only as an aid in selecting the most appropriate samples to be sent for off-site analysis.

7) In the event that a leaching pool cannot be found and sampled directly from inside the pool, other methods to further evaluate the area, such as soil gas sampling and/or groundwater sampling, should be discussed with the Department.

8) Investigation of potential groundwater impacts will be required later in a subsequent investigation, if appropriate.

9) Community air monitoring, as specified in NYSDOH's generic CAMP, is required during the leaching pool investigation.

Under the above conditions, I find the work plan to be acceptable. No revisions to the work plan are necessary. However, please attach a copy of this letter to the approved work plan.

Sincerely,

Robert R. Stewart

Robert R. Stewart
Environmental Engineer I

cc: W. Parish
K. Carpenter
J. Riggi
J. Nealon, NYSDOH