SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT

Former Columbia Cement Company, Inc. Facility
159 Hanse Avenue
Freeport, New York

SITE # 1-30-052

Prepared for:

Atlantic Richfield Company
1 West Pennsylvania Avenue
Suite 440
Towson, Maryland 21204-0527

bp

Prepared by:

URS Corporation
12 Commerce Drive
Cranford, New Jersey 07016

URS

December 2006

TABLE OF CONTENTS

Page

TABLE OF CONTENTS (continued)

Page

TABLES

FIGURES

TABLE OF CONTENTS (continued)

APPENDICES

1.0 INTRODUCTION

This Supplemental Remedial Investigation Report (SRIR) was prepared to present data obtained from subsurface investigation activities at the former Columbia Cement Company (CCC) site located at 159 Hanse Avenue in Freeport, New York ("Site"). URS Corporation (URS) prepared the SRIR on behalf of the Atlantic Richfield Company, a BP affiliate (BP) and in response to requests from the New York State Department of Environmental Conservation (NYSDEC) as partial fulfillment of requirements of the New York State Inactive Hazardous Waste Disposal Remedial (Superfund) Program. The SRIR presents a summary of the December 2003 Remedial Investigation Report (RIR) (Delaware Engineering, 2003) that previously was submitted to NYSDEC, and presents data obtained by URS subsequent to the RIR.

1.1 BACKGROUND INFORMATION

CCC, which was owned by Burmah Castrol, produced adhesives for a variety of applications. In 1988, while CCC operated the facility, approximately 1,760 gallons of 1,1,1-trichloroethane (1,1,1-TCA) was released to a storm drain during filling of an underground storage tank (UST) due to a failure of a contractor's tanker truck. The spill was reported and response measures were performed under regulatory oversight. In 1996, the property was sold to Illinois Tool Works (ITW). In 1998, Burmah Castrol entered into a Consent Agreement (Index WI #W2-02-0813-98-05) with the NYSDEC regarding the 1,1,1-TCA spill. In 2001, British Petroleum (BP) purchased all Burmah Castrol holdings and assumed liability for the 1,1,1-TCA spill. A Remedial Investigation (RI) was conducted by Delaware Engineering on behalf of BP and the RIR was submitted to NYSDEC in July 2003. In response to NYSDEC comments, a revised RIR was submitted in December 2003. Tables of data from the RIR are presented in Appendix A. Site characterization descriptions presented herein reflect information provided in the RI.

In September 2003, URS Corporation was retained by BP to prepare a Feasibility Study (FS) to evaluate remedial options for the Site. The FS was prepared based on data and information in the December 2003 RI Report and NYSDEC's comments to a draft RI, dated October 27, 2003. The FS was also prepared based on site conditions at the time of preparation. The Draft FS was submitted to NYSDEC on April 30, 2004.

In January 2004, ITW ceased operations at the Site and vacated the building. In May 2004, ITW informed BP they intended to close and remove the 10 existing USTs at the Site, in anticipation of sale of the property. The USTs were removed in September 2004. Since the 1,1,1-TCA spill occurred in the center of the UST area, the removal of the USTs dramatically changed conditions and access in the spill area and presented opportunities for remedial alternatives that previously were unavailable or impractical. Based on discussions with and approvals from NYSDEC, URS conducted supplemental investigation activities that would allow for refinement of site characterization to be used in preparation of a revised FS that takes the changed conditions (e.g. absence of USTs in the spill area) into consideration. These supplemental investigation activities and results are described in the following sections of this report. These supplemental investigation activities included:

- Multiple rounds of low-flow groundwater sampling of all site monitoring wells, including collection of biofeasibility parameters.

- Collection of post-excavation soil samples during UST closure.

- Collection of direct push soil samples in the UST/spill area after UST removal.

- Installation of 2 additional offsite monitoring wells and subsequent groundwater sampling.

- Performance of bench-scale testing of potential remedial alternatives.

- Performance of soil vapor, sub-slab vapor and indoor air sampling to evaluate the vapor intrusion pathway.

- Slug testing of selected monitoring wells.

1.2 SITE DESCRIPTION

The former CCC facility consists of approximately 2 acres in an area of Freeport, New York that is highly developed with commercial and industrial facilities. Freeport is located in Nassau County on the south shore of Long Island. The site location is shown on Figure 1. The Site building covers approximately 65,000 square feet, and consists of former offices, material storage, production rooms, and warehousing. Ten 8,000-gallon underground storage tanks (USTs) were located near the southeast corner of the property. The Site is bordered by a former Columbia Cement warehouse and parking spaces to the north. Rohm & Haas Electronic Components borders the property to the east. The Knickerbocker building, with multiple tenants, is located to the south of the property. The property is bordered by Hanse Avenue to the West. Farber Plastics and Love & Quiches bakery is located on the opposite (west) side of Hanse Avenue. A Site Plan is presented as Figure 2.

The Site is located on a peninsula on the south side of Long Island. Freeport Creek is located 500 feet west of the Site and Stadium Park Canal is 1,000 feet east of the site. Stadium Park Canal merges with Freeport Creek approximately 1,500 feet southeast of the site. From this point, surface water flows south through tidal marshes to the Atlantic Ocean, approximately 5 miles south of the Site.

The Site is very flat, ranging from 5 to 10 feet above Mean Sea Level (MSL). A surveyor established a benchmark on Hanse Avenue with an artificial reference elevation of 100 feet, and from this reference, site elevations ranged from 97.63 to 99.07. Surface water at the site drains to the west toward Freeport Creek. Storm drains located on site, also drain to Freeport Creek.

Ten 8,000-gallon USTs were installed in 1988. Five of these USTs (the southern tank farm) were installed in the Spring of 1988 (prior to the 1,1,1-TCA spill) and the remaining five (the northern tank farm) were installed after the spill. Due to excessive cracking, the concrete pad around the USTs was replaced in 1989. As stated previously, these USTs were closed and removed by ITW in September 2004. The UST removal is discussed in greater detail in Section 2.1.

1.3 SITE GEOLOGY/HYDROGEOLOGY

Soil borings advanced during investigation activities at the Site encountered five stratigraphic units beneath the site. In order of increasing depth, these units are: fill material; tidal marsh deposits; gravelly sand; gray clay and silt; and gray sand. Each of these units is discussed below.

- The fill material is encountered across the entire site and consists of reworked native soil and various debris related to previous Site use as a municipal landfill. The fill material ranges in thickness from 3.1 feet (ft) to 22.9 ft, with an average thickness of about 11 ft.

- The tidal marsh deposits are encountered beneath the fill material over most of the site, but are absent in some areas, including the UST/spill area. The tidal marsh deposits consist of brown, dark gray and black organic clayey silt with some fine to medium sand and varying amounts of roots, wood and peat. Where present, the tidal marsh material is encountered at an average depth of 9.5 ft and has an average thickness of 4 ft.

- The gravelly sand is a relatively thick and flat-lying unit encountered beneath the tidal marsh deposits, and beneath the fill material where the tidal marsh deposits are absent. The unit consists of medium dense, brown to light gray, coarse to fine sand, with little medium to fine subrounded gravel. Minor amounts of silt and clay were found in isolated samples. The gravelly sand thickness ranges from 15 to 30 ft and is thickest in the western portion of the site. The base of the gravelly sand is relatively flat and is encountered at about 35 ft below grade.

- The gray clay and silt underlies the gravelly sand. It consists of a medium gray clayey silt to silt and clay with little to trace sand and becomes clayier with depth. In the two borings on Site that penetrated the entire clay unit, the thickness ranged from 14 ft to 15.3 ft. The gray clay and silt unit likely acts as a lower confining unit beneath the site.

- An undifferentiated light gray fine sand underlies the gray clay and silt. It is described as a gray to light gray medium to fine sand with little silt. Based on literature review, this unit ranges in thickness from 20 to 30 ft beneath the Site.

The shallow water-bearing units beneath the Site are not utilized as a drinking water source. Deeper confined units include the Jameco, Magothy and Lloyd aquifers, which are used for drinking water in some areas of Long Island. Due to saltwater encroachment near the southern shore of Long Island, these units are not a source of drinking water near the Site. Groundwater beneath the site is classified as Class GSA (saline ground water).

Shallow groundwater at the Site is encountered in the fill material at depths ranging from 5.5 to 8.0 feet below grade (ft bgs). In various areas of the site, the water table is encountered in the fill material, the tidal marsh deposits, or the gravelly sand. Due to this fact and extensive connectivity between these units, particularly where the tidal marsh unit is thin or absent, these units have been treated collectively as a single unconfined aquifer. Some shallow monitoring wells are screened across all three units. Deep monitoring wells screened at the base of the gravelly sand have nearly identical groundwater elevations as adjacent shallow wells. The shallow unconfined groundwater discharges to Freeport Creek. The gray clay and silt unit acts as a lower confining layer or aquitard, separating the water table aquifer from the underlying gray sand. The gray sand is a separate confined water-bearing unit.

Groundwater flows primarily to the west, however, due to the Site's location, groundwater levels exhibit tidal influences, as described below. As is typical in coastal areas, shallow groundwater at the site is influenced by two tidal cycles per day. During tidal monitoring, groundwater level changes of 1 ft or less were recorded on Site. The tidal range is greatest to the west, suggesting a greater hydraulic connection to Freeport Creek than to Stadium Park Canal. The timing and degree of tidal response between the shallow and deep wells suggests that in some areas of the Site, the tidal marsh unit may restrict flow between the fill material and the gravelly sand.

As part of the RI, Delaware Engineering performed tidal monitoring of Site monitoring wells. During high tide, flow was generally to the west with a very shallow hydraulic gradient of 0.00095 ft/ft. During low tide, a groundwater divide forms in the north-central portion of the site. Groundwater east of this divide flows to the east and groundwater west of the divide flows to the west. Based on this observation, the gradient in the spill area alternates from east to west with a very minimal gradient in both directions. This alternating flow direction should serve to minimize contaminant transport from the site. The mean tide flow direction is east to west, with a hydraulic gradient of 0.0002 ft/ft net flow to the west.

2.0 SUPPLEMENTAL INVESTIGATION ACTIVITIES

From May 2004 to October 2006, URS performed supplemental remedial investigation activities at the Site. The activities were performed in coordination with NYSDEC. The purpose of these activities was to:

- Address data gaps in the RI identified by NYSDEC and NYDOH.
- Obtain soil data from areas previously inaccessible due to the former presence of the USTs.
- Obtain supplemental soil and groundwater data to evaluate additional remedial alternatives in the FS.
- Collect soil vapor, sub-slab vapor and indoor air samples to assess the vapor intrusion pathway.

The scope of work for the various phases of the Supplemental Remedial Investigation are described in the following sections of this report.

2.1 SOIL INVESTIGATION ACTIVITIES

2.1.1 Pre-Closure Soil Sampling

ITW contracted MACTEC Consultants (MACTEC) to coordinate and oversee closure and removal of the 10 onsite USTs. On May 20 and 21, 2004, MACTEC advanced 10 soil borings around the south and east sides of the UST area to collect soil samples. The soil samples were originally intended to be used in lieu of post-excavation samples. Soil samples were collected using hollow stem auger methods and were collected in 2-inch diameter split spoons. MACTEC collected soil samples from each boring at the UST invert depth of 12 feet below grade (fbg). Since only limited soil sampling had been done in the immediate vicinity of the spill area, URS participated in this soil boring program and collected additional soil samples at depths below the UST invert in the area of the 1988 1,1,1-TCA spill. The purpose of these samples was to delineate the extent of contamination detected in RI boring SB-98-2. URS collected soil samples from the MACTEC borings at depths ranging from 16 to 20 fbg. Samples were submitted under chain of custody documentation for analysis of Target Compound List (TCL) volatile organic compounds (VOCs).

2.1.2 UST Closure Soil Sampling

As stated previously, ITW, the property owner, removed the 10 onsite USTs. Each UST had an 8,000-gallon capacity, and had been out of use since January 2004. The UST closure was done in coordination with NYSDEC's Chemical Bulk Storage Division.

Closure activities commenced on August 23, 2004. A summary of MACTEC's activities is presented below. Labels painted on the ground and on piping inside the site building identified each UST by a number. According to the labels, the UST contents (when in service) were as follows:

UST ID	Contents
▪ UST # 1	Acetone
▪ UST # 2	Hexane
▪ UST # 3	Hexane
▪ UST # 4	Laktane
▪ UST # 5	Toluene
▪ UST # 6	Toluene
▪ UST # 7	Heptane

- UST # 8 MEK
- UST # 9 Toluene
- UST # 10 Acetone

The concrete pad around the USTs was broken using a jackhammer and removed. The UST piping was flushed out, disconnected and removed. A vac truck was used to pump residual liquids out of the USTs prior to removal. The interiors of the USTs were cleaned by a worker inside the tank. Due to concerns about damaging the structural integrity of the building, sheeting was driven into the ground around each UST prior to removal. A backhoe was used to remove backfill above and around each UST. Chains were then used to lift the UST out of the excavation. All USTs appeared to be in good condition. Each UST was 21.33 ft long with an 8 ft diameter, and was constructed of double-wall steel with a fiberglass lining. No visible holes or leaks were noted. The USTs had been installed in 1988. Following removal of each UST, both URS and MACTEC collected a post-excavation soil sample from the base of the excavation out of the backhoe bucket. The depth of the post-excavation soil samples was approximately 12 feet below grade.

During UST closure excavations, additional objects were encountered in the excavations. A series of pipes unrelated to the existing USTs was uncovered. A total of eight 2-inch steel pipes were found in the excavation about 2 feet below grade. Five of the pipes were oriented north-west and were located east of the USTs. The north end of the pipes bent downward to a depth of about 8 feet. Portions of the remaining three pipes were located adjacent to the other five, but they also turned and ran east-west between the two tank farms. The pipes were not connected to anything, but may have been associated with former Site USTs. The pipes were removed, cleaned, and disposed of with the USTs. URS collected two soil samples beneath the pipes and one sample from the soil stockpile removed from the deep end of the pipes. Also, in the area between the two tank farms where landfill debris is present, a small steel drum was located. The drum was rusted, partially crushed and in very poor condition. A black viscous tar-like liquid was observed in the drum. MACTEC removed the drum and surrounding soil and overpacked it for disposal. URS collected a soil sample from below the location where the drum was found. The soil was not stained. UST closure activities were documented in detail in MACTEC's *Site Assessment and UST Closure Report for TACC/ITW Facility, 159 Hanse Avenue, Freeport, New York*, dated December 21, 2005, submitted to NYSDEC's Chemical Bulk Storage Division.

2.1.3 Post-Closure Soil Sampling

Prior to removal of the USTs, soil sampling in the vicinity of the 1,1,1-TCA spill was limited because of the presence of the USTs. Also, since no as-built drawings were available, the exact location and orientation of the UST piping and the storm sewer piping were unknown, further limiting areas accessible for soil sampling. After the USTs were removed, the only known underground structure present in the spill area was the storm drain and associated piping. The piping was uncovered and replaced during closure activities so its location and orientation was known. This allowed for extensive soil sampling not possible when the USTs were in place. URS completed soil sampling beneath the former USTs and around the storm drain to delineate the nature and extent of soil impacts from the 1,1,1-TCA spill.

From October 6 to October 8, 2004, URS conducted soil sampling in the spill/UST area. The soil sampling was performed after the UST excavation had been backfilled with clean fill material, but before the area was paved. Soil samples were collected using direct-push methods and were collected in 4-foot long by 2-inch diameter macro-core samples with dedicated acetate liners. Drilling services were provided by Zebra Environmental Corporation of Lynbrook, New York.

Two sets of soil borings were incorporated into the program:

1) Closure verification borings. At the center of each former UST location a soil boring was advanced to 30 feet below grade. These borings were designated T-01 through T-10, corresponding with the UST Identification numbers listed in Section 2.1.2. In borings T-01 through T-10 soil samples were collected from the following depths: 16 to 18 ft bgs, 20 to 22 ft bgs, 24 to 26 ft bgs and 28 to 30 ft bgs. From each soil boring, the soil samples from 16 to 18 ft bgs and 20 to 22 ft bgs were analyzed for TCL VOCs with a one-week turnaround time. The results from these analyses were compared to the NYSDEC Recommended Soil Cleanup Objectives (RSCO), presented in NYSDEC Technical Administrative Guidance Document 4046 (TAGM). If exceedences of the NYSDEC RSCOs were detected in the 20 to 22 ft bgs sample, the two deeper samples from that boring were activated for VOC analysis.

2) Delineation borings. During the various stages of the RI, limited soil sampling was performed around the 1,1,1-TCA spill area. To delineate soil impacts detected in the RI soil samples, URS advanced 9 soil borings around the spill area (D-01 through D-09). Soil samples were collected from 10 to 12 ft bgs, 16 to 18 ft bgs, 20 to 22 ft bgs, 24 to 26 ft bgs and 28 to 30 ft bgs. From each soil boring, the soil samples from 10 to 12 ft bgs, 16

to 18 ft bgs and 20 to 22 ft bgs were analyzed for TCL VOCs with a one-week turnaround time. The results from these analyses were compared to the NYSDEC RSCOs. If exceedences of the NYSDEC RSCOs were detected in the 20 to 22 ft bgs sample, the two deeper samples from that boring were activated for VOC analysis.

A summary of the Post Closure Soil Sampling Program is provided in Table 1. Soil boring locations are shown on Figure 2. Boring logs are presented in Appendix B.

2.2 GROUNDWATER INVESTIGATION ACTIVITIES

2.2.1 2004 Groundwater VOC Sampling

Between June 7 and June 10, 2004, URS collected groundwater samples from all 15 existing site monitoring wells (9 shallow wells, 4 deep wells and 2 lower aquifer wells). Prior to sampling, a synchronous round of water level measurements was made in the wells. Each well was opened and the headspace was screened with a calibrated photoionization detector (PID). The well was then sounded with an interface probe capable of detecting free-phase NAPL. The depth to water and total depth of each well was measured from the surveyed top of the inner casing. After this round of measurements was made, the wells were sampled.

Wells were sampled using low-flow purging and sampling methods (Puls and Barcelona, 1996). The well was pumped with a peristaltic pump at a flow rate of 0.2 to 0.5 liters per minute (l/min). Water was pumped through a flow cell that contained a YSI Model 6820 water quality meter. The YSI contains probes that measure pH, specific conductance, temperature, turbidity, dissolved oxygen (DO) and oxidation-reduction potential (ORP). Measurements of these in-situ parameters were recorded every 3 to 5 minutes until they stabilized. A well was considered stabilized when the in-situ parameters changed less than 10% over 3 consecutive readings. Samples were collected from the pump discharge. Samples were submitted under chain of custody documentation for analysis of TCL VOCs. Samples were analyzed by Accutest Laboratories, a NYSDEC-certified laboratory (certification #10983) using NYSDEC ASP methods with Category B deliverables. A summary of the groundwater sampling program is presented in Table 2. Groundwater sampling logs are presented in Appendix C.

2.2.2 Groundwater Biofeasibility Sampling

Groundwater sampling during the Delaware Engineering RI did not include any sampling for biofeasibility parameters (parameters indicative of conditions conducive to biodegradation or providing evidence of biodegradation). These parameters include field parameters such as pH, dissolved oxygen and oxidation-reduction potential (ORP). Laboratory parameters include dissolved gasses (ethane, ethane and methane), chloride, nitrate, nitrite, iron II and iron III, manganese II and manganese III, sulfate, alkalinity, and total organic carbon (TOC). URS completed sampling and analysis for these biofeasibility parameters as part of sampling from selected wells during the June 2004, April 2005 and June 2006 groundwater sampling events. Sampling was conducted using the sampling procedures described above and samples submitted for analysis to Accutest Laboratories under chain of custody documentation. A summary of the groundwater sampling program is presented in Table 2.

2.2.3 Off-Site Monitoring Well Installation and Sampling

Results of groundwater sampling conducted during the RI and performed by URS in June 2004 indicated that groundwater contamination is present at the western site boundary at concentrations exceeding the NYS Groundwater Standards (GWS). In June 2004, chloroethane was detected in well MS-97-1S at 430 μg/l and in well MW-98-9D at 510 μg/l, which exceed the NYS GWS of 5 μg/l. Chlorobenzene also was detected in well MW-98-9D at 7 μg/l, which exceeds the NYS GWS of 5 μg/l. Due to these exceedences at the downgradient site boundary, NYSDEC requested that BP install additional wells west of the site to delineate the downgradient extent of the chloroethane plume. After consulting with NYSDEC, downgradient well locations were selected on the west side of Hanse Avenue.

URS secured the required street opening permits from the Village of Freeport to install monitoring wells on the west side of Hanse Avenue. Downgradient wells MW-05-14S and MW-05-15D were installed on April 19 and 20, 2005. The wells were installed using standard hollow stem auger methods. Drilling services were provided by Aquifer Drilling & Testing (ADT) of New Hyde Park, New York. To avoid contact with subsurface utilities during drilling, each boring was advanced to 5 feet bgs using an "air knife". Boring MW-05-15D was continuously sampled with a split spoon sampler from 5 feet bgs to 38 ft bgs. Boring MW-05-14S was installed adjacent to MW-05-15D so split spoon samples were not collected. Wells MW-05-14S and MW-05-15D were constructed of 2-inch PVC with screen depths and intervals equivalent to those of wells MW-97-1S and MW-98-9D, respectively. Drill cuttings were drummed and temporarily stored in the former CCC building for subsequent offsite disposal. Boring logs and well construction diagrams are provided in Appendix D. After installation, the wells were developed by pumping with a submersible pump until clear of sediment. Well locations are shown on Figure 2.

On April 26, 2005, URS sampled new wells MW-05-14S and MW-05-15D, and existing wells MW-97-1S, MW-98-9D and MW-03-13S. Wells were purged using low-flow methods. Wells were pumped at 0.2 to 0.5 L/Min through a flow cell with a calibrated Horiba U-22 water quality meter, where measurements for pH, conductivity, temperature, DO, turbidity and ORP were made. Measurements were recorded every 3 to 5 minutes. When the readings had stabilized, the sample was collected through the pump tubing. The purge water and development water was drummed and temporarily stored in the former CCC building for subsequent offsite disposal. Samples were stored on ice and transported under chain-of custody documentation to Accutest Laboratories for analysis under the NYSDEC ASP protocols. Samples were analyzed for TCL VOCs.

2.2.4 Slug Testing

On October 6, 2005, URS conducted slug testing on four site wells. Falling head and rising head slug tests were conducted in wells MW-05-14S, MW-97-1S, MW-98-9D and MW-97-6S. Prior to each test, a pressure transducer was installed in the well and allowed to equilibrate. The transducer was connected to a Hermit 3000 datalogger. The slug was a five-foot long 1.5-inch diameter section of PVC pipe filled with cement. The slug was introduced into the water column of the well as the datalogger was simultaneously started for the falling head slug test. The datalogger was programmed to record at a logarithmic rate, in which more frequent readings are recorded at the start of the test when head changes are greatest, and less frequently as the test progresses. The greatest interval between readings was one minute. When the water level recovered to its pre-test depth, the rising slug test was initiated by simultaneously pulling the slug out of the water column and restarting the datalogger to record the rate at which the water level recovered to its pre-test depth. The slug and water level indicator were decontaminated between wells by scrubbing with an Alconox® solution and rinsing with deionized water. Slug test data was downloaded to a computer and analyzed using the Bouwer and Rice method (Bouwer and Rice, 1976) on a spreadsheet. Slug test data is presented in Appendix E.

2.2.5 2006 Groundwater VOC Sampling

In addition to the 2004 and 2005 groundwater sampling of selected and newly installed wells described above, between June 6 and June 9, 2006, URS collected groundwater samples from all 17 existing site monitoring wells (10 shallow wells, 5 deep wells and 2 lower aquifer wells). Groundwater samples were collected using methods described in Section 2.2.1. As with the June 2004 groundwater sampling event, samples were collected for additional parameters to assess aquifer geochemical conditions and potential for natural attenuation of VOCs. Groundwater sampling logs are presented in Appendix C.

2.3 SOIL VAPOR INVESTIGATION ACTIVITIES

2.3.1 2005 Vapor Intrusion Sampling

At the request of NYDOH, a soil-gas survey was conducted to evaluate the presence of organic vapors in the subsurface at the Site. Prior to implementing the soil gas survey, URS prepared a work plan describing the details of the program. NYSDEC and NYSDOH reviewed and approved the work plan. The samples were collected in general accordance with the protocols described in the NYSDOH document "*FINAL Guidance for Evaluating Soil Vapor Intrusion in the State of New York*" dated October 2006. The sample locations, depicted on Figure 2, were as follows:

- Four sample locations, SG-05-01 and SG-05-04, located north, east, south and west, respectively of the former UST area. As requested by NYSDEC in its June 17, 2005 comments, sample location SG-05-02 was relocated adjacent to former soil-gas sampling location SG-16.

- Three sample locations, SG-05-05, SG-05-06, and SG-05-07 along the southern side of the Site building.

- Three sample locations, SG-05-08, SG-05-09, and SG-05-10 along the northern side of the Site building.

- Two ambient air/background air samples were obtained on the east and west sides of the site.

- As requested by NYSDEC in its June 17, 2005 comments, an additional sample location, SG-05-11, was added adjacent to the 1,1,1-TCA spill area.

At each sampling location (other than the background sample locations), a permanent soil vapor sampling point was installed. Permanent sampling points were installed so that if soil vapor contamination is detected, the concentrations can be monitored to evaluate the progress of future remedial measures at abating soil vapor contamination. Soil gas sampling points were installed by ADT, of New Hyde Park, New York on September 14 and 15, 2005. Prior to installation of the sampling points, URS gauged nearby monitoring wells to assess the water table depths so that the soil gas point would be screened at least one foot above the water table. ADT advanced a 2-inch diameter hole through the concrete or asphalt surface to approximately 5 feet below grade. A ¼-inch diameter polyethylene air sampling tube tipped with a 6-inch long stainless steel screen was advanced to the bottom of the borehole and the bottom 12 inches of the boring was filled with coarse sand to form the sampling zone. Each vapor sampling point was finished at grade with a flush-mount steel manhole and cover so that the points can be used for future monitoring.

The soil gas samples were collected on September 20 and 21, 2005. Samples were obtained using laboratory supplied pre-cleaned 6-liter SUMMA ® canisters. To evaluate the potential for "short circuit" of ambient air into soil vapor samples, a small polyethylene bucket, equipped with purge and vent ports as well as a grommet equipped with a ¼-inch diameter hole for the sampling tube, was placed upside down over the sample point, with the sampling tube passing through the bottom of the bucket. A foam rubber gasket was placed around the edge of the bucket and which was held in place by weights to form a tight seal between the bucket and the ground surface around the sample point. The purge and vent ports on the bucket were opened and helium was introduced into the bucket space until an 80 to 100 percent concentration was measured at the vent port. Both ports were then closed.

The sampling line was purged at 200 cc/min and checked for helium intrusion and, if, 10 percent helium or less is measured, sampling for sub-slab vapors was initiated. The soil vapor sampling line was attached to the SUMMA Canister after the pre-sampling vacuum had been recorded. Each SUMMA Canister was equipped with a dedicated flow controller pre-set to collect the 6 liter sample over 30 minutes, or a maximum of 200 cc/min. During the sampling period, the sampling line was monitored periodically for the presence of helium by means of a helium detector and a tee port on the sampling line. No helium intrusion was detected. During the sampling period, the vacuum reading was also monitored. Soil gas sampling logs are presented in Appendix F.

After the sampling was completed, the SUMMA canister vacuum readings were recorded, chain-of-custody documentation was completed, and the samples were forwarded to the Accutest Laboratories, an ELAP certified laboratory for analysis. Sample analysis was performed following the U.S. EPA Compendium Method TO-15: Determination of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS) (1999).

2.3.2 2006 Vapor Intrusion Sampling

Based on the results of the 2005 soil vapor sampling, NYDOH requested that BP collect additional samples, including:

- Three sub-slab vapor samples and two indoor air samples in the former Columbia Cement building;
- One outdoor ambient air sample;
- One sub-slab and one indoor air sample in the neighboring Knickerbocker Building;
- One sub-slab vapor sample at the neighboring Rohm & Haas building (along with an additional ambient air sample);.
- Resample selected exterior soil vapor sampling points.

On August 1, 2006, BP submitted a Revised Supplemental Soil Vapor Sampling Workplan that was accepted by NYSDEC and NYSDOH. On August 15, 2006, URS collected soil gas samples from sample points SG-05-1, SG-05-04, SG-05-05, SG-05-08 and SG-05-11. Sample locations are shown on Figure 2. Sampling procedures are described in Section 2.3.1. On August 16, 2006, samples were collected from the former Columbia Cement building and the Knickerbocker Building. Three sub-slab vapor samples were collected from former the Columbia Cement building (SS-06-01, SS-06-02 and SS-06-03). One sub-slab vapor sample (SS-06-03) was collected from the Knickerbocker building from a location near soil gas point SG-05-06. Sample locations were selected in the field following consultation with NYSDOH, NYSDEC and the Nassau County Board of Health, who observed the sampling.

Samples were collected by advancing a 4-inch diameter core barrel through the floor slab. A 6-inch long by ¼-inch diameter dedicated stainless steel screen was connected to polyethylene sample tubing. The sample screen was either driven into the aggregate below the slab or secured in the void space below the slab. The annular space between the sample tubing and slab was sealed with bentonite. As with the soil gas samples, a helium tracer gas was used to assess atmospheric intrusion into the sample.

Sub-slab vapor samples were collected using 6-liter SUMMA canisters. Samples were collected at a flow rate of 200 ml/minute for 30 minutes. When sampling was completed, the SUMMA canister valve was closed, the vacuum was recorded, and the canister was disconnected from the sample tubing. Sample tubing and screens were removed and the holes were grouted with bentonite and topped with concrete to match pre-existing surface conditions.

Two indoor air samples were collected from the former Columbia Cement building (IA-06-01 and IA-06-02). One indoor air sample was collected from the Knickerbocker building (IA-06-03), adjacent to sub-slab sample SS-06-04). In addition, one ambient air sample was collected outside the former Columbia Cement building, near the former UST area. Sample locations are shown on Figure 2. Indoor air samples and the ambient air samples were collected by placing a 6 L SUMMA canister approximately 4 feet above the ground and opening the valve to collect the sample at a flow rate of 200 ml/minute for 30 minutes. When sampling was completed, the SUMMA canister valve was closed and the vacuum was recorded. SVI samples were analyzed by Accutest Laboratories in Dayton, New Jersey.

Due to access restrictions, no sub-slab vapor was collected from the Rohm & Haas facility. On August 16, 2006, NYSDOH indicated that a shallow soil gas sample collected on the former Columbia Cement property, as close as reasonably possible to the Rohm & Haas building / property line would be an acceptable alternative. On October 5, 2006, an exterior sub-slab sample (SS-06-05) was collected approximately 10 feet from the Rohm & Haas building (about 3 feet from the property line). A track-mounted direct-push rig was used to advance a 2-inch diameter hole through the concrete pavement and 6 inches into the underlying aggregate and soil. Materials encountered beneath the concrete pavement included aggregate and landfill debris (silty sand with glass, metal and wood fragments). Sample SS-06-05 was collected using the same methods used to collect the interior sub-slab samples. In addition, one ambient air sample was collected, as described above. Due to a shortage of 6-liter SUMMA canisters, Accutest Laboratories could only provide 1-liter SUMMA canisters for this sampling event. Six-liter SUMMA canisters were provided by STL Laboratories of Burlington, Vermont. As a QA/QC check sub-slab sample SS-06-05 and ambient air sample AA-06-02 were collected using both 1-liter and 6-liter SUMMA canisters. Sample locations are shown on Figure 2. Soil gas, sub-slab vapor and indoor air sampling logs are presented in Appendix F.

2.4 TREATABILITY INVESTIGATION ACTIVITIES

2.4.1 Bench-Scale Treatability Testing

Upon review of data from soil and groundwater sampling described above, URS performed an initial analysis of potential alternatives for remediation of contaminated soil and groundwater at the site. The analysis allowed for screening of remedial technologies based on likelihood of success, ease of implementation and cost. Certain remedial technologies that were identified required laboratory bench-scale treatability testing to evaluate their effectiveness under site conditions and to determine required dosages. These technologies include in-situ chemical oxidation (ISCO) to treat residual soil contamination in the source area and enhanced bioremediation to treat the downgradient groundwater VOC plume. The bench scale test results and other recent site data will be utilized in completing the updated FS and allow for evaluation of updated remedial options including enhanced and natural degradation to address residual contamination associated with the 1,1,1-TCA spill. The bench-scale treatability testing was performed by Adventus Americas, Inc. (Adventus), under subcontract to URS.

For the ISCO bench-scale treatability study, URS collected soil from the spill area by advancing a soil boring SB042005 through the base of the storm drain where the spill occurred (SD-1). Soil for the bench-scale testing was collected from split spoon samples and drill cuttings between 12 ft bgs and 22 ft bgs. into a 5-gallon pail. Groundwater from well MW-1D-97 was collected in a 5-gallon pail for use in the ISCO bench-scale tests. The soil and groundwater were shipped to Adventus' Mississauga, Ontario facility. Based on the compounds present in the soil, activated persulfate was chosen as the oxidant for testing. Two activation methods (hydrogen peroxide and chelated iron) were tested. The testing was conducted on combined soil and groundwater from the site. Testing was done using a series of laboratory vessels containing site soil/groundwater mixtures and injected doses of permanganate and activation agents. The mixes were then sampled over time to evaluate the effectiveness of the permanganate / activation agent combinations. Details of the bench-scale testing procedures are presented in Appendix G.

For the enhanced bioremediation bench-scale treatability study, soil was collected from soil borings MW-05-14S and MW-05-15D during installation of the offsite wells. Groundwater was collected from well MW-98-9D. Soil and groundwater were shipped in 5-gallon pails to Adventus' Mississauga, Ontario for the testing. Based on previous groundwater sampling data, the primary limiting factor for natural attenuation at the site was identified as available organic carbon in the subsurface. For this reason, two slow-release carbon sources were chosen for the bench-scale testing: HRC® and EHC®. These amendments were injected into columns packed with soil from the site. The tests were conducted in replicates along with appropriate sterile and non-sterile controls. Groundwater from the site was pumped through these columns at a rate to mimic the natural pore volume flush rate. Influent and effluent groundwater samples were collected periodically over a twelve-week period to assess the removal of COCs. Details of the bench-scale testing procedures are presented in Appendix G.

3.0 RESULTS

3.1 SOIL INVESTIGATION ACTIVITIES

3.1.1 Pre-Closure Soil Sampling

URS collected 11 soil samples from 10 soil borings around the perimeter of the UST area. Samples were collected at depths ranging from 16 to 20 feet below grade, where the highest spill-related impacts were detected during the RI and analyzed for TCL VOCs. No compounds were detected at concentrations exceeding the NYSDEC RSCOs. Acetone was detected in 10 of 11 samples at concentrations ranging from 0.027 mg/kg to 0.12 mg/kg, all of which are below the RSCO of 0.2 mg/kg. Methylene chloride was detected in 9 of 11 samples at concentrations ranging from 0.0006 mg/kg to 0.0014 mg/kg, all of which are below the RSCO of 0.1 mg/kg. Methylene chloride was also detected in laboratory blanks, suggesting its presence may be related to laboratory contamination. No impacts from the 1988 1,1,1-TCA spill were detected in the Pre-Closure Soil Boring samples. Sample results are presented in Table 3. Results are plotted in Figure 3.

3.1.2 Sampling During Building Owner's UST Closure

URS collected one soil sample from beneath each of the ten USTs removed in August and September 2004. In addition, URS collected two additional samples from the northeast and southeast corners of the UST # 6 excavation, and one sample from the northern sidewall of the UST #8. URS also collected a sample of the UST fill above UST #8 prior to removal of the UST. Soil samples were analyzed for TCL VOCs. Sample results are presented in Table 4. Results are plotted in Figure 3.

No compounds were detected above RSCOs in the post-excavation samples. In samples TANK6, TANK 6-3, TANK 7, TANK 9, no compounds were detected above laboratory detection limits. Toluene was detected in samples TANK 1 through TANK 5, TANK 6-2, TANK 8, TANK 8-2 and TANK 10 at concentrations ranging from 0.001 mg/kg to 0.006 mg/kg, well below the RSCO of 1.5 mg/kg. In sample TANK 10, 1,1,1-TCA was detected at 0.016 mg/kg, 1,1-DCA was detected at 0.006 mg/kg, well below their respective RSCO of 0.08 mg/kg and 0.2 mg/kg. Also in TANK 10, PCE was detected at 0.01 mg/kg and TCE was detected at 0.001 mg/kg, below their RSCOs of 1.4 mg/kg and 0.7 mg/kg, respectively.

In the other samples collected during UST closure activities, 1,1,1-TCA, 1,1-DCA and PCE were detected in sample DRAIN-1, below the storm drain line. 1,1-DCA and chloroform were detected in sample DRUM-1, below a damaged steel drum. Chloroform was detected in samples PIPE 1 and PIPE 2 (below piping discovered in the UST excavation) and toluene was detected in sample PIPE 1. No target VOCs were detected in sample PILE 1, from the soil stockpile removed from around the piping. All compounds noted above were detected at concentrations well below their respective RSCOs.

The only exceedences of RSCOs were detected in sample PIPE 3, which was soil taken from the inside of one of the pipes removed. In PIPE 3, ethylbenzene 14 mg/kg), toluene (32 mg/kg) and xylenes (150 mg/kg) were detected at concentrations exceeding their respective RSCOs of 5.5 mg/kg, 1.5 mg/kg and 1.2 mg/kg. No chlorinated solvents were identified in the sample. This suggests the piping was formerly used for a petroleum-based product, not a solvent. Similar concentrations were not found in subsurface soils at the Site, and ethylbenzene and xylenes were not detected in any other post-excavation soil sample above laboratory detection limits.

3.1.3 Post-Closure Soil Sampling

3.1.3.1 Closure Verification

URS collected 40 soil samples from 10 UST Closure Confirmation soil borings (T-1 through T-10) in the former UST area. Each boring was advanced at the center of a former UST location through the backfill material, approximately at the same location where the post-excavation soil sample was collected. Twenty seven of these samples were analyzed for TCL VOCs. Analytical results are presented in Table 5 and are plotted on Figure 3.

1,1,1-TCA was detected at concentrations exceeding the RSCO of 0.8 mg/kg in samples T-03-16-18, T-03-20-22 and T-08-16-18 at concentrations ranging from 2.2 mg/kg to 4,800 mg/kg. 1,1-DCA was detected at concentrations exceeding the RSCO of 0.2 mg/kg in T-01-16-18, T-02-16-18, T-03-16-18, T-03-20-22, T-07-20-22 and T-08-16-18 at concentrations ranging from 0.49 mg/kg to 390 mg/kg. 1,2-DCA and 1,1-DCE were detected in T-03-20-22 at 1.2 mg/kg and 18 mg/kg, respectively which exceed their respective RSCOs of 0.1 mg/kg and 0.4 mg/kg. Chloroethane was detected in samples T-03-16-18, T-03-20-22 and T-08-16-18 at concentrations exceeding the RSCO of 1.9 mg/kg at concentrations ranging from 9 mg/kg to 16 mg/kg.

The only compound detected in the UST Closure Confirmation borings at a concentration exceeding the RSCO that is not related to the 1988 1,1,1-TCA spill was acetone. Acetone was detected in samples T-01-16-18, T-02-16-18, T-03-16-18 and T-04-16-18 at concentrations ranging from 0.23 mg/kg to 0.32 mg/kg, which exceeds the RSCO of 0.2 mg/kg. Other compounds at concentrations above method detection limits (MDLs) but below the RSCOs include 2-butanone, benzene, carbon disulfide, chlorobenzene, toluene, xylenes, methylene chloride, tetrachloroethene and trichloroethene.

3.1.3.2 Delineation Study

During the RI, exceedences of the NYSDEC RSCOs were detected in soil samples from borings SB-98-2, SB-98-3, SB-98-4 and MW-0-11A. From October 6 through October 8, 2004, URS advanced nine borings (D-01 through D-09) to confirm and delineate these exceedences. Sample depths were selected based on depths of exceedences in RI borings. Sample results are presented in Table 5 and are shown on Figure 3. Soil boring logs are presented in Appendix B.

Boring D-1 was advanced adjacent to RI borings SB-98-3 and MW-00-11A to confirm exceedences detected in these borings and assess whether soil contaminant concentrations have attenuated over time. In sample D-01-16-18 (16 to 18 ft bgs), 1,1,1-TCA (690 mg/kg), 1,1-DCA (11 mg/kg), 1,1-DCE (0.92 mg/kg) and chloroethane (8.4 mg/kg) were detected at concentrations exceeding RSCOs. No exceedences were detected in samples D-01-10-12 (10 to 12 ft bgs) and D-01-20-22 (20 to 22 ft bgs), so the impacted interval is vertically delineated at this location. The concentration of 1,1,1-DCA in D-01-16-18 (690 mg/kg) was significantly less than that in MW-00-11A at the same depth (2,600 mg/kg). 1,1-DCA and chloroethane were not detected in MW-00-11A, but exceeded the RSCOs in D-01-16-18. This suggests that 1,1,1-TCA in spill area soils has degraded to a degree, producing daughter products 1,1-DCA and chloroethane. Acetone (0.42 mg/kg) and 2-butanone (0.37 mg/kg) were also detected in D-01-16-18 at levels exceeding the RSCOs, but these compounds are not attributed to the 1988 1,1,1-TCA spill.

To the east of the spill area, borings D-2 and D-3 were advanced to delineate soil impacts detected in SB-98-2 at 10 to 13.7 ft bgs and 15.1 to 15.67 ft bgs. No exceedences of RSCOs were detected in 3 samples collected from boring D-2 at 10 to 12 ft bgs, 16 to 18 ft bgs and 20 to 22 ft bgs. In Boring D-3, 1,1-DCA was detected at 10 to 12 ft bgs at 0.26 mg/kg, which slightly exceeds the RSCO of 0.20 mg/kg. Based on these results, soil spill area impacts are effectively delineated to the east.

To the north of the spill area, no exceedences of RSCOs were detected in 3 samples from boring D-4, approximately 10 feet north of RI boring MW-00-11A. However, exceedences were detected further north in boring T-3 (see above).

Boring D-5 was advanced west of the spill area, approximately midway between storm drain SD-1 and boring SB-98-04. No exceedences of RSCOs were detected in boring D-5. Borings D-6 and D-7 were advanced about 10 feet and north and south, respectively, of RI boring SB-98-4, where 1,1-DCA(0.36 mg/kg), chloroethane (1.60 mg/kg) and acetone (0.57 mg/kg) were detected at concentrations exceeding the RSCOs. In sample D-07-10-12, 1,1,1-TCA (10 mg/kg), 1,1-DCA (75 mg/kg) and chloroethane (3.7 mg/kg) were detected at concentrations exceeding the RSCOs and greater than those in SB-98-4.

Boring D-8 was advanced about 10 feet south of storm drain SD-1. In sample D-08-10-12, 1,1,1-TCA (840 mg/kg), 1,1-DCA (100 mg/kg), 1,1-DCE (1.3 mg/kg) and 1,2-DCA (0.15 mg/kg) were detected at concentrations exceeding their respective RSCOs. No exceedences of RSCOs were detected in deeper samples from boring D-8. No exceedences of RSCOs were detected in samples from boring D-9, approximately 20 feet south of D-8.

3.1.4 Soil Investigation Summary

Based on the results described above, the extent of soil contamination in the spill area has been effectively delineated. Impacted soil at levels significantly exceeding the RSCOs is present is definable pockets. These areas are shown on Figure 4. Figure 4 also shows the orientation of cross-sections A-A', B-B', C-C' and D-D'. Soil sampling data from the RI and URS's Supplemental Investigation along these cross-sections are plotted on Figures 5 through 16. Concentrations of 1,1,1-TCA along the cross-section lines are shown on Figures 5 through 8. Concentrations of 1,1-DCA are shown in Figures 9 through 12 and chloroethane concentrations along the cross-sections are shown on Figures 13 through 16. These cross-sections show the vertical delineation of the primary spill-related soil contaminants in the spill area. The table on Figure 4 summarizes the vertical extent of each of the laterally delineated impacted areas. The table also shows the volume of each of the impacted areas and the volume of overlying non-impacted soil. The total volume of soil within the 4 pockets of contaminated soil is estimated at 1,100 cubic yards including clean soil and fill overlying the contaminated soil. The table shows that 610 cubic yards of soil and clean fill would need to be removed to excavate 490 cubic yards of impacted soil as a remedial measure.

3.2 GROUNDWATER INVESTIGATION ACTIVITIES

3.2.1 2004 Groundwater Sampling

3.2.1.1 Groundwater Levels and Flow

URS sampled existing site monitoring wells in June 2004. Groundwater level measurements and PID readings are presented on Table 6. Table 6 also presents the in-situ measurements recorded when the well had stabilized following purging. A water table elevation contour map for June 2004 is presented as Figure 17.

3.2.1.2 Groundwater Volatile Organic Compound Results

Sampling results from the June 2004 groundwater sampling event are presented in Table 7. Groundwater VOC results for all sampling events since 1997 are shown on Figure 19. As in groundwater sampling during the RI, the highest contaminant concentrations were detected in well MW-1S, adjacent to the spill location. 1,1,1-TCA, 1,1-DCA and chloroethane were detected in MW-1S at 150 μg/l, 660 μg/l and 10,000 μg/l, respectively, which exceeds their New York State Ambient Groundwater Quality Standard (GWS) of 5 μg/l. 1,1-DCE was detected at 4 μg/l, below the GWS of 5 μg/l. Several compounds unrelated to the 1988 1,1,1-TCA spill were also detected in MW-1S. Benzene and methylene chloride were detected at 15 μg/l and 230 μg/l, respectively, exceeding their respective GWS of 1 μg/l and 5 μg/l. Vinyl chloride was detected at 15 μg/l, exceeding the GWS of 2 μg/l. 1,2-DCA, ethylbenzene, toluene and xylenes were detected in MW-1S at concentrations below their GWS. It should be noted that the 2004 concentrations of 1,1,1-TCA (150 μg/l), 1,1-DCA (660 μg/l) and chloroethane (10,000 μg/l) in MW-1S were significantly below their 1997 concentrations of 2,600 μg/l, 47,000 μg/l and 49,000 μg/l, respectively, indicating that these compounds are attenuating over time in the spill area. Meanwhile, in nearby deep well MW-97-1D, no VOCs were detected at or above MDLs. Similarly, no VOCs were detected at or above MDLs in well MW-00-11A, screened below the lower gray clay layer.

To the west of the spill area, no VOCs were detected in shallow well MW-98-8S. Chloroethane was detected in well MW-98-8D at 14 μg/l, suggesting limited contaminant transport to the west of the spill area.

To the south of the spill area, chloroethane was detected in well MW-97-4S at 190 µg/l and chlorobenzene was detected at 1 µg/l, below its GWS of 5 µg/l. Chlorobenzene (79 µg/l) and 1,1-DCA (7 µg/l) were detected in well MW-97-5S at concentrations exceeding their GWS of 5 µg/l. In well MW-00-12D, no compounds were detected at laboratory detection limits.

In the northeast corner of the site in well MW-97-3S, chlorobenzene was detected at 8 µg/l. Chlorobenzene was also detected along the north central portion of the site in well MW-97-7S at 4 µg/l. Similarly, in the northeast corner of the site in wells MW-97-2S and MW-98-10D, chlorobenzene at 16 µg/l and 7 µg/l.

Along the southern Site boundary, about 100 feet southeast of the spill area, chloroethane (410 µg/l) and chlorobenzene (11 µg/l) were detected at concentrations exceeding the GWS. At the southeast (downgradient) corner of the Site in wells MW-97-1S and MW-98-9D, chloroethane was detected at 430 µg/l and 510 µg/l, respectively. Chlorobenzene was detected in wells MW-97-1S and MW-98-9D at 4 µg/l and 7 µg/l. Similarly, total xylenes were detected in wells MW-97-1S and MW-98-9D at 2 µg/l in both wells, below the GWS of 5 µg/l.

3.2.1.3 Groundwater Geochemical Data

In-situ physical parameter measurements made during purging are presented on Table 6. Geochemical sample data is presented in Table 7. Relevant physical and geochemical parameter data are plotted on Figure 20.

Natural attenuation of chlorinated VOCs typically occurs by reductive dechlorination, which generally occurs under anaerobic, reducing conditions. Dissolved oxygen was measured at less than 0.5 mg/l in all wells sampled, indicating anaerobic conditions. All wells also exhibited negative redox potential, ranging from -14.3 mV in well MW-97-7S to –207.3 mV in well MW-98-10D. This indicates a reducing environment, and it is noted that redox potentials of less than –150 mV would be most conducive to reductive dechlorination. Groundwater pH ranged from 6.19 to 6.67. The pH measured in MW-00-11A was 5.13, but this well is screened in a separate aquifer.

Ethane and ethene are indicators of reductive dechlorination, as these are the innocuous end products of the breakdown of chlorinated ethanes and ethenes. In Site wells in the gravelly sand aquifer, ethane concentrations ranged from 0.67 µg/l in MW-98-10D to 1,320 µg/l in MW-1S. The high ethane concentration in the spill area suggests degradation of 1,1,1-TCA to ethane.

Ethene was only detected in MW-1S, at 1.3 g/l. Methane is a product of anaerobic methanogenesis, another process which can contribute to the degradation of chlorinated VOCs. Methane concentrations ranged from 97 μg/l in MW-1D-97 to 10,000 μg/l in MW097-2S. The elevated methane concentrations are an indicator of methanogenesis.

The total alkalinity of groundwater system can be indicative of the extent to which degradation processes are occurring. The presence of carbon dioxide, produced during the respiration of organic compounds, can elevate alkalinity levels by forming carbonic acid, which subsequently dissolves carbonate minerals present in the affected groundwater system. On this basis, elevated concentrations of alkalinity in areas impacted by organic compounds contained in chlorinated solvents generally can be an indicator of natural attenuation. Alkalinity values ranged from 424 mg/l in MW-98-9D to 1,070 mg/l in MW-98-8S. Chloride is often a useful indicator of natural attenuation since it is produced during reductive dechlorination. Chloride values ranged from 38.4 mg/l in MW-97-2S to 388 mg/l in MW-97-3S. Total organic carbon (TOC) is the typical source of electrons needed to reduce chlorinated compounds. Higher concentrations (e.g. > 20 mg/l) indicate favorable conditions for natural attenuation (NA). TOC concentrations ranged from 6.3 mg/l in MW-97-5S to 22.9 mg/l in MW-97-3S.

3.2.2 Off-Site Monitoring Well Installation and Sampling

On April 19, 2005, monitoring wells MW-05-14S and MW-05-15D were installed in Hanse Avenue, approximately 70 feet west of MW-98-9D. The wells were installed as flushmount wells in Hanse Avenue. The lithology encountered was similar was similar to that encountered on Site. Fill material was present to a depth of about 25 feet below grade. The gray gravelly sand was encountered from 25 to 37 ft bgs. The gray silt/clay was encountered at 37 ft bgs.

On April 26, 2005, URS sampled these new wells for VOCs, as well as wells MW-97-1S, MW-98-9D and MW-00-13S. Water level and other field measurements are presented in Table 8. A groundwater elevation contour map for April 2005 is presented as Figure 17. The map shows that, as observed in the RI, the hydraulic gradient at the site is very low, about 0.0002 ft/ft. The map shows that, as observed in the RI, the hydraulic gradient at the site is very low, about 0.0002 ft/ft. Groundwater flow at the time of measurement was to the west. It should be noted that collecting a complete round of groundwater level measurements can take 2 to 3 hours. With tidal fluctuations, such measurements may not represent an actual "snapshot" of groundwater elevations. The contours should be considered accordingly. In the 2003 RI, measurements were made over an entire tidal cycle, and contour maps of high, low and mean tides were presented.

The mean tide contour map, which represents the overall groundwater flow pattern has no divide and flow is basically due west.

Groundwater VOC data is presented in Table 9 and is plotted on Figure 18. As in the June 2004 sampling event, no target VOCs were detected in well MW-03-13S. Chloroethane was detected in wells MW-97-1S and MW-98-9D at 170 μg/l and 910 μg/l, above the GWS of 50 μg/l. Chlorobenzene was detected in wells MW-97-1S and MW-98-9D at 3 μg/l and 9 μg/l. Chlorobenzene was detected in MW-05-14S at 24 μg/l, exceeding the GWS of 5 μg/l. Chlorobenzene was detected in MW-05-15D at 3 μg/l. Chloroethane was detected in MW-05-14S and MW-05-15D at 13 μg/l and 120 g/l, respectively. The presence of chloroethane in MW-05-15D indicates that contamination resulting from the 1988 1,1,1-TCA spill has migrated beyond the Site boundary. The source of the chlorobenzene contamination is not known, although it is not known to have been stored or used on Site. The 24 μg/l of chlorobenzene detected in MW-05-14S is higher than concentrations detected on Site.

3.2.3 2006 Groundwater Sampling

3.2.3.1 2006 Groundwater Levels and Flow

URS sampled existing site monitoring wells again in June 2006. Groundwater level measurements and PID readings are presented on Table 10. Table 10 also presents the in-situ measurements recorded when the well had stabilized following purging. A groundwater elevation contour map for June 2006 is presented as Figure 18. As stated previously, due to tidal fluctuations, the measurements may not represent an actual "snapshot" of groundwater elevations.

3.2.3.2 2006 Groundwater Volatile Organic Compound Results

Sampling results from the June 2006 groundwater sampling event are presented in Table 11. Groundwater VOC results for all sampling events since 1997 are shown on Figure 19. This was the first complete sampling round since the USTs were removed. In general, VOC concentrations in and around the spill area were significantly lower than those observed during previous sampling events. In well MW-1S, the concentration of chloroethane decreased from 10,000 μg/l in 2004 to 1,900 μg/l in June 2006. No other VOCs were detected in MW-1S at levels exceeding the MDLs, including 1,1,1-TCA, 1,1-DCA and vinyl chloride, which exceeded the GWS in prior sampling rounds but were below GWS in the 2006 sampling.

In nearby deep well MW-97-1D, chloroethane was detected at the GWS of 5 μg/l and 1,1-DCA was detected at 5.1 μg/l, marginally exceeding the GWS of 5 μg/l. No VOCs were detected at MDLs. As recently as 2003, chloroethane and 1,1-DCA were detected at 1,200 μg/l and 120 μg/l, respectively in MW-1D-97. Similarly, no VOCs were detected at laboratory MDLs in well MW-00-11A, screened below the lower gray clay layer.

To the west of the spill area, no VOCs were detected in shallow well MW-98-8S. Chloroethane was detected in well MW-98-8D at 38 μg/l, suggesting continued limited contaminant transport to the west of the spill area.

To the south of the spill area, chloroethane was detected in well MW-97-4S at only 3.0 μg/l, down from 190 μg/l in 2004. No other VOCs were not detected at or above their MDLs. In well MW-00-12D, Chloroethane was detected at 1,300 μg/l, and increase from 120 μg/l in 2004. 1,1-DCA and 1,1-DCE were detected at 11 μg/l and 5.8 g/l, respectively.

In the northeast corner of the site in well MW-97-3S, no VOCs were detected at or above the MDLs. In 2004, chlorobenzene was detected at 8 μg/l, marginally exceeding the GWS of 5 μg/l. Chlorobenzene was also detected along the north central portion of the site in well MW-97-7S at 1.3 μg/l. In the northeast corner of the Site in wells MW-97-2S and MW-98-10D, chlorobenzene was detected at 16 μg/l and 7.3 μg/l, respectively, similar to their 2004 concentrations.

Along the southern Site boundary, in well MW-97-6S, about 100 feet southeast of the spill area, chloroethane (200 μg/l) was detected at concentrations exceeding its GWS. Chlorobenzene (3.8 μg/l) was detected at a concentration below the GWS. At the southeast (downgradient) corner of the Site in wells MW-97-1S and MW-98-9D, chloroethane was detected at 730 μg/l and 120 μg/l, respectively, a decrease from 2004. Chlorobenzene was detected in wells MW-97-1S and MW-98-9D at 2.5 μg/l and 12 μg/l. No other VOCs were detected at concentrations exceeding their GWS.

In off Site shallow well MW-05-14S, chloroethane was detected at 1.0 μg/l and chlorobenzene was detected at 7.7 μg/l. In deep well MW-05-15D, chloroethane was detected at 200 μg/l, a slight increase from the 120 μg/l detected in 2005. Chlorobenzene was detected at 2.4 μg/l in MW-05-15D, below its GWS.

Although the groundwater chlorinated VOC plume has extended beyond the downgradient Site boundary, the data suggest significant natural attenuation is occurring in Site groundwater. In spill area wells MW-1S and MW-1D-97, contaminant concentrations have decreased significantly over recent years. In shallow well MW-1S, 1,1,1-TCA concentrations decreased from 2,600 μg/l to less than 6.8 μg/l from 1997 to 2006, while 1,1-DCA decreased from 47,000 μg/l to less than 6.4 μg/l and chloroethane decreased from 49,000 μg/l to 1,900 μg/l over the same time period. The presence of chloroethane itself indicates reductive dechlorination of parent 1,1,1-TCA has and is occurring. Similarly, over the same time period, concentration of 1,1,1-TCA, 1,1-DCA and chloroethane in well MW-1D-97 decreased from 1,500 μg/l, 5,500 and 6,800 μg/l, respectively to less than 10 μg/l. Within 50 feet of the spill area, no 1,1,1-TCA is currently detected and the only spill-related compound currently above the GWS is chloroethane. Again, this illustrates limited extent of the plume and suggests significant natural attenuation of the chlorinated VOCs in Site groundwater. At the downgradient property boundary, chloroethane was detected in shallow and deep wells most recently at 120 μg/l and 720 μg/l, respectively. However, only 70 feet downgradient from these locations, chloroethane concentrations decreased to 1.0 μg/l and 200 μg/l, respectively, indicating that natural processes are limiting plume migration to some extent.

3.2.3.3 2006 Groundwater Geochemical Data

June 2006 in-situ physical parameter measurements made during purging are presented on Table 10. Geochemical sample data is presented in Table 12. Relevant physical and geochemical parameter data are plotted on Figure 20.

The June 2006 results for natural attenuation parameters are generally similar to those from 2004. Ethane and ethene were not detected in any wells, possibly due to elevated detection limits. Ethane was previously detected in several Site wells. Methane was detected at concentrations similar to those from 2004. Results for total and dissolved iron, alkalinity, chloride, sulfate and TOC were also close to the 2004 results.

Similarly, the in-situ parameters measured in 2006 during purging (pH, specific conductance, D.O. and ORP) were also similar to those from 2004. The pH values remain close to neutral, which will support biotic activity. The D.O. and ORP indicate that the aquifer remains anaerobic, which supports reductive dechlorination of 1,1,1-TCA, and 1,1-DCA.

Overall, Site groundwater geochemical conditions appear to be conducive to natural attenuation. The dissolved oxygen concentrations and redox potential indicate a reducing environment. Methane concentrations are indicative of methanogenesis. These conditions are supportive of reductive dechlorination of 1,1,1-TCA to 1,1-DCA, and 1,1-DCA to chloroethane, However, these same conditions may not be as conducive to complete mineralization of chloroethane.

3.2.4 Slug Testing

Slug test data was analyzed using the Bouwer-Rice method (Bouwer and Rice, 1976). Data was downloaded from the datalogger and put into a spreadsheet. Known well parameters were entered into the spreadsheet. These parameters included the screen length (d), casing radius (r_c) and well radius (r_w). For all wells , the screen length is 10 feet. As in the RI slug tests, the casing radius and well radius values of 1-inch and 2-inches were used. Based on the RI slug test results and aquifer lithology, the effective radius (R_e), or radius impacted by the slug test, was estimated at 1 foot. The Bouwer-Rice solution was estimated by adjusting the x-axis intercept (h_0) and hydraulic conductivity (K) were adjusted to graphically fit a line to the appropriate portion of the drawdown curve plotted semi-logarithmically.

Wells MW-97-1S, MW-98-9D and MW-97-6S all exhibited very little displacement (0.34 feet to 0.65 feet) and recovered most of the initial displacement within a few seconds for both the falling head and rising head slug tests. The estimated average hydraulic conductivity values for these wells ranged from 34.63 ft/day (1.22×10^{-2} cm/sec) in MW-97-6S to 44.75 ft/day (1.58×10^{-2} cm/sec) in MW-97-1S. These results agree fairly well with results from the same wells during the RI slug tests. A comparison is presented in the following table:

WELL	URS SLUG TEST		DEL. ENG. SLUG TEST	
	K (cm/sec)	K (ft/day)	K (cm/sec)	K (ft/day)
MW-97-1S	1.58×10^{-2}	44.75	2.32×10^{-2}	65.77
MW-97-6S	1.22×10^{-2}	34.63	2.64×10^{-2}	74.84
MW-98-9D	1.51×10^{-2}	42.75	3.62×10^{-2}	102.63
MW-05-14S	7.77×10^{-4}	2.20	NA	NA

The slug test results from newly installed well MW-05-14S were notably different from results from the other Site wells. The initial displacement in MW-05-14S was up to 1.28 feet. The well also took about 3 minutes to recover from the initial displacement. The estimated average hydraulic conductivity of 2.2 ft/day (7.77 cm/sec) was an order of magnitude lower than the other wells tested. A complete summary of slug testing results is presented in table 13.

3.3 SOIL VAPOR INVESTIGATION RESULTS

3.3.1 2005 Soil Gas Sampling Results

Soil gas samples were collected from 11 sampling points (SG-05-01 through SG-05-11) on September 20 and 21, 2005. Two background ambient air samples (SG-05-AMB-E and SG-05-AMB-W). Sample results are presented in Table 14 and are plotted on Figure 21. Sample results are presented in units of both micrograms per cubic meter ($\mu g/m^3$) and parts per million by volume (ppbv).

The sampling results identified several VOCs. The VOCs most prevalently identified in soil gas included 1,1,1-TCA, 1,1-DCA, chloroethane, acetone, methylene chloride, heptane, hexane, toluene, benzene, ethylbenzene, xylene, tetrachloroethene, trichloroethene, vinyl chloride, carbon disulfide, carbon tetrachloride, chlorobenzene, cyclohexane, ethanol and freon. Some of these compounds correspond to Site related activities and/or the 1988 1,1,1-TCA spill. 1,1,1-TCA concentrations in the spill area ranged from 33 $\mu g/m^3$ (6 ppbv) in SG-05-03 to 21,100 $\mu g/m^3$ (3,870 ppbv). 1,1,1-TCA was not detected in samples SG-05-01, SG-05-07 and SG-05-08. In the spill area, 1,1-DCA was detected at concentrations ranging from 2,770 $\mu g/m^3$ (733 ppbv) in SG-05-11 to 14,000 $\mu g/m^3$ (3470 ppbv) in SG-05-04. 1,1-DCA was not detected in SG-050-01. Chloroethane was detected in spill area soil gas samples at concentrations ranging from 12 $\mu g/m^3$ (4.7 ppbv) to 5,040 $\mu g/m^3$ (1,910 ppbv). Chloroethane was not detected in SG-05-09. Several of the VOCs detected in soil gas were also detected in the two ambient air samples, including acetone, benzene, heptane, methylene chloride, tetrachloroethene, trichloroethene, toluene and xylenes.

The results indicate that soil gas impacts consisting of chlorinated VOCs are present in and around the UST / spill area, but concentrations of these compounds decrease with distance from this area. However, several VOCs were detected throughout the site and may be attributable to the Site's industrial setting and historic use of the Site area as a municipal landfill.

3.3.2 2006 Soil Vapor Intrusion Sampling Results

Vapor intrusion sampling data from the August and October 2006 sampling events is presented in Table 14. Sample results are presented in units of both micrograms per cubic meter ($\mu g/m^3$) and parts per million by volume (ppbv). The data are plotted on Figure 22.

3.3.2.1 Soil Gas

Soil gas samples were obtained from the spill area and from perimeter locations of exterior areas of the Site. Highest soil gas sample results were observed in the spill area. Concentrations were shown to rapidly attenuate with distance from the spill area. Compounds that were spill-related and non-spill-related were observed in the soil gas samples suggesting that ambient conditions associated with the landfill and industrial setting of the area likely influence soil gas sample results. Data are described below.

Three soil gas samples were collected from the spill/UST area (SG-05-01, SG-05-04 and SG-05-11). As observed in the 2005 sampling, compounds related to the 1988 1,1,1-TCA spill (1,1,1-TCA, 1,1-DCA, 1,1-DCE and chloroethane), as well as compounds stored in the former USTs (hexane and methyl cyclohexane, a component of Laktane) were detected at elevated concentrations in this area. 1,1,1-TCA concentrations ranged from non-detect to 50,600 $\mu g/m^3$; 1,1-DCA concentrations ranged from non-detect to 56,700 $\mu g/m^3$; and chloroethane concentrations ranged from 356 $\mu g/m^3$ to 17,500 $\mu g/m^3$. Hexane concentrations ranged from 1,240 $\mu g/m^3$ to 20,700 $\mu g/m^3$. Tetrachloroethene (PCE) was detected at concentration ranging from non-detect to 3,280 $\mu g/m^3$ and trichloroethene was detected at non-detect to 1,590 $\mu g/m^3$. Use and storage of PCE and TCE were not reported at the site, but given Site usage for adhesive manufacturing, past usage of these compounds is possible.

Three additional soil gas samples were collected from points around the Site perimeter. Sample SG-05-05 is located along the southern Site boundary; sample SG-05-08 is located in the northwest corner of the Site; and sample SG-05-10 is located in the northeast corner of the Site. In sample SG-05-05, 1,1,1-TCA, 1,1-DCA and chloroethane were detected at 1,300 $\mu g/m^3$, 1,990$\mu g/m^3$, and 74.4 $\mu g/m^3$, respectively. Other compounds detected at elevated concentrations include PCE (963 $\mu g/m^3$), TCE (554$\mu g/m^3$), cis-1,2-DCE (140 $\mu g/m^3$) and Freon 114 (368 $\mu g/m^3$). In sample SG-05-08, 1,1-DCA and chloroethane were detected at 22 $\mu g/m^3$ and 8.7 $\mu g/m^3$, respectively. Other compounds detected at elevated concentrations include pentane (158 $\mu g/m^3$), heptane (85.7 $\mu g/m^3$) and hexane (83.2 $\mu g/m^3$). In sample SG-05-10, 1,1,1-TCA, 1,1-DCA and chloroethane were detected at 25 $\mu g/m^3$, 1,980 $\mu g/m^3$, and 1,450 $\mu g/m^3$, respectively. Other compounds detected at elevated concentrations include hexane (846 $\mu g/m^3$), pentane (724 $\mu g/m^3$), and heptane (141 $\mu g/m^3$). Overall, the 2006 soil gas sampling results are similar to those from 2005.

3.3.2.2 Sub-Slab Vapor

Three sub-slab vapor samples were collected in the former Columbia Cement building. Sample SS-06-01 was collected in the room directly north of the spill area; sample SS-06-02 was collected in the room directly west of the spill area; and sample SS-06-03 was collected northwest of the spill area. As was the case for the soil vapor samples, highest concentrations were detected in closest proximity to the spill area, and concentrations of compounds attenuated rapidly with distance. In sample SS-06-01, 1,1,1-TCA and 1,1-DCA and were detected at 189 $\mu g/m^3$ and 47.4 $\mu g/m^3$, respectively. Chloroethane was not detected. Other compounds detected in SS-06-01 at elevated concentrations include PCE (195 $\mu g/m^3$), TCE (57.5 $\mu g/m^3$), acetone (129 $\mu g/m^3$), xylenes (40 $\mu g/m^3$) and MEK (63.4 $\mu g/m^3$). In sample SS-06-02, 1,1,1-TCA, 1,1-DCA and chloroethane were detected at 86,200 $\mu g/m^3$, 30,600 $\mu g/m^3$, and 10,500 $\mu g/m^3$, respectively. Other compounds detected at elevated concentrations include PCE (2,140 $\mu g/m^3$), TCE (534 $\mu g/m^3$),1,1-DCE (308 $\mu g/m^3$), and methylene chloride (251 $\mu g/m^3$). In sample SS-06-03, 1,1,1-TCA and 1,1-DCA were detected at 14 $\mu g/m^3$ and 8.9 $\mu g/m^3$, respectively. Chloroethane was not detected. Other compounds detected at elevated concentrations include acetone (87.9 $\mu g/m^3$), PCE (43 $\mu g/m^3$), toluene (23 $\mu g/m^3$), and xylenes (36 $\mu g/m^3$).

In the Knickerbocker building, one sub-slab vapor sample was collected approximately 35 feet south of soil gas sample SG-05-05. In sample SS-06-04, 1,1,1-TCA and 1,1-DCA were detected at 27 $\mu g/m^3$ and 10 $\mu g/m^3$, respectively. Chloroethane was not detected. Other compounds detected at elevated concentrations include PCE (121 $\mu g/m^3$), TCE (7.0 $\mu g/m^3$), toluene (82.5 $\mu g/m^3$), and xylenes (140 $\mu g/m^3$).

Exterior sub-slab vapor sample SS-06-05 was collected about 10 feet west of the Rohm & Haas building. In sample SS-06-05, 1,1,1-TCA and 1,1-DCA were detected at 38 $\mu g/m^3$ and 216 $\mu g/m^3$, respectively. Chloroethane was not detected. Other compounds detected at elevated concentrations include PCE (564 $\mu g/m^3$), TCE (58 $\mu g/m^3$), acetone (208 $\mu g/m^3$), and hexane (12 $\mu g/m^3$).

The results indicate that sub-slab vapor has been impacted in the southwest portion of the site building, but the concentrations in other areas of the building are significantly lower. Also, sub-slab vapor at neighboring buildings is not significantly impacted.

3.3.2.3 Indoor Air Samples

Indoor air samples were obtained from the Columbia Cement building and the adjacent Knickerbocker building. At both locations, far fewer compounds were detected indoor air samples, and for those detected, the concentrations were significantly lower than in the sub-slab and soil vapor samples. This indicates only limited infiltration, if any, across the floor slabs of the buildings.

Two indoor air samples were collected within the former Columbia Cement building. Sample IA-06-01 was collected near sub-slab sample SS-06-02. Sample IA-06-02 was collected in the room immediately west of where sub-slab sample SS-06-03 was collected. 1,1,1-TCA, 1,1-DCA and chloroethane were not detected in sample IA-06-1. Compounds detected include toluene (18 $\mu g/m^3$), xylenes (17 $\mu g/m^3$), acetone (12 $\mu g/m^3$) and hexane (6.7 $\mu g/m^3$). In sample IA 06-02, 1,1,1-TCA was detected at a trace level of 0.93 $\mu g/m^3$. 1,1-DCA and chloroethane were not detected. Compounds detected include acetone (18 $\mu g/m^3$), toluene (8.7 $\mu g/m^3$), xylenes (7.4 $\mu g/m^3$), and hexane (3.9$\mu g/m^3$).

In the Knickerbocker building, one indoor air sample (IA-06-03) was collected adjacent to sub-slab vapor sample SS-06-04. In sample IA-06-03, 1,1,1-TCA, 1,1-DCA and chloroethane were not detected. Compounds detected were similar to those detected in the former Columbia Cement building, and included acetone (20 $\mu g/m^3$), MEK (5.9 $\mu g/m^3$), and pentane (2.3 $\mu g/m^3$).

The indoor air sampling results indicate the presence of low levels of VOCs. These VOCs consist primarily of BTEX compounds, hexane and acetone, not the chlorinated VOCs detected in the sub-slab vapor. This suggests that the slab is currently acting as an effective barrier against vapor intrusion.

3.3.2.4 Ambient Air Samples

One outdoor ambient air sample was collected on August 16, 2006 between the former UST area and the eastern property line. The compounds detected were TCE (31 $\mu g/m^3$), cis-1,2-DCE $\mu g/m^3$), acetone (1.3 $\mu g/m^3$) and the methylene chloride (0.94 $\mu g/m^3$). The source of the high ambient TCE concentration is not known, but is likely related to the industrial setting of the Site. On October 5, 2006, one ambient air sample was collected adjacent to sample SS-06-05. Compounds detected in sample AA-06-10-05 were MEK (36.3 $\mu g/m^3$), toluene (15 $\mu g/m^3$), pentane (2.7 $\mu g/m^3$) and methylene chloride (2.3 $\mu g/m^3$).

3.4 BENCH-SCALE TREATABILITY STUDY RESULTS

Bench-scale treatability testing was performed to evaluate the effectiveness of two potential remedial alternatives:

1) In-Situ Chemical Oxidation (ISCO) to treat spill area soil contamination; and

2) Enhanced Bioremediation to treat the downgradient chloroethane plume via a permeable reactive barrier (PRB).

3.4.1 In-Situ Chemical Oxidation Test

For the ISCO bench-scale test, soil was collected from boring SB-042005, which was advanced through the bottom of storm drain SD-1. Groundwater for the ISCO bench-scale test was collected from well MW-1D-97. Upon receipt at Adventus' lab, the soil and groundwater were sampled for VOCs and were spiked to match previously detected values in source area soil and groundwater. Mixtures of Site soil and groundwater were placed in jars for testing. Sodium persulfate ($Na_2S_2O_8$) was used as the oxidizing agent in the testing, as it has been demonstrated to be effective at treating chlorinated solvents. Hydrogen peroxide (H_2O_2) and ethylenediaminetetraacetic acid iron (III) sodium salt (NaFe(III)EDTA) were tested as activators to increase the oxidizing effectiveness of the persulfate. Details of the ISCO bench-scale treatability study are presented in the *Final Report – Bench Scale Test for Chemical Oxidation treatment of Chlorinated Solvent Impacted Soils* presented in Appendix G.

The results of the testing indicated that the highest removal efficiency was seen with hydrogen peroxide activated persulfate. This combination provided removal of 98.7% and 80% of 1,1,1-TCA in soil and groundwater, respectively and 99.5% and 99.4% removal of chloroethane in soil and groundwater, respectively 6 days following treatment. The iron activated sodium persulfate was much less successful at treating 1,1,1-TCA and chloroethane. Based on the testing results, the estimated treatment dosage is 42 g of sodium persulfate per Kg of soil and 60 g of hydrogen peroxide per Kg of soil.

3.4.2 Enhanced Natural Attenuation Test

For the enhanced bioremediation bench-scale test, soil was collected from boring MW-05-15D, which was advanced on the west side of Hanse Avenue and converted to monitoring well MW-

05-15D. Groundwater for the enhanced bioremediation bench-scale test was collected from well MW-98-9D. Upon receipt at Adventus' lab, the soil and groundwater were sampled for VOCs and were spiked to match previously detected values in downgradient soil and groundwater.

The objective of the enhanced natural attenuation bench scale test was to evaluate the effectiveness of HRC® and EHC® for use in a permeable reactive barrier (PRB) or other application to treat chloroethane in downgradient Site groundwater. HRC is a polylactic acid ester, which slowly releases lactic acid and other volatile organic acids (VFAs) including acetic, propionic, btyric and lactic acids in groundwater. The VFSa serve as electron donors and promote reductive chlorination of chlorinated VOCs.

EHC® is a combination of controlled-release solid carbon and zero-valent iron (ZVI) to stimulate reductive dechlorination. In contrast to HRC, the organic component of EHC is solid fibrous organic material that is nutrient rich and hydrophyllic with a high surface area for growth of bacteria. Bacterial growth causes fermentation of the carbon and release of VFAs utilized by other bacteria in reductive dechlorination. The ZVI particles stimulate direct chemical dechlorination and further reduce the redox potential, providing a more reducing environment for these processes.

The HRC and EHC were combined with site soil in column systems. A total of six column systems were prepared, including sterile and non-sterile control columns. A detailed description of the test setup is provided in the *EHC and HRC Bench Scale Testing Final Report*, presented in Appendix F. Effluent samples were analyzed on six occasions over 107 days. The fifth sampling event at 94 days indicated that HRC and EHC were capable of treating chloroethane, with 62% and 52% removals, respectively, compared with 5% and 20% respective removals in the sterile and non-sterile controls. Overall, however, at the conclusion of the testing, the HRC and EHC amended columns did not show increased chloroethane removal compared to the sterile and non-sterile control columns because after 107 days, the chloroethane removal in the sterile and non-sterile controls was 51% and 88%, respectively. The EHC amended columns showed essentially the same removal (88%) as the non-sterile control. The HRC-amended columns had chloroethane removals of 96% and 99.5%, which was only 8% to 12% greater than the non-sterile control column. Therefore, the organic substrate amendments did not provide significant enhancements over the control columns. The non-sterile control column had a chloroethane rate of 88%, indicating significant naturally occurring biological and/or chemical degradation. The lack of enhanced biotic removal of chloroethane may be due to the lack of a microbial community capable of anaerobic biodegradation of chloroethane in downgradient soil. Details of the first enhanced bioremediation bench-scale testing are provided in Appendix G. A second treatability test has evaluated aerobic biodegradation of chloroethane and the results of this test will be provided under separate cover.

4.0 SUMMARY

The results of this supplemental investigation, along with data gathered during the RI, can be summarized as follows:

- Soil contamination exceeding the NYSDEC RSCOs is present in the spill area. The contaminants present at concentration exceeding the RSCOs include spill-related compounds (1,1,1-TCA, 1,1-DCA and chloroethane), BTEX, acetone, methylene chloride and other compounds. The impacted soil has been delineated both laterally and vertically. The impacted soil is estimated to be in 4 pockets in the spill area. The estimated volume of impacted soil is 315 cubic yards, with 345 cubic yards of clean soil and fill overlying it. Contaminant concentration in adjacent borings at similar depth intervals have shown concentration decreases and signs of degradation over time. Also, the presence of 1,1,1-TCA daughter products indicates that the chlorinated VOCs are undergoing natural attenuation in the soil matrix.

- Groundwater contamination resulting from the spill has created a plume that has migrated beyond the western Site boundary. The groundwater contaminant plume also shows evidence of natural attenuation. Since 1997, 1,1,1-TCA concentrations within the source area wells have decreased approximately an order of magnitude, and with 50 feet of the spill area, 1,1,1,1-TCA is not detected in any wells. At the downgradient property boundary, chloroethane is the only spill-related compound detected, although it was also detected in offsite wells on the west side of Hanse Avenue.

- Geochemical conditions also appear to support natural attenuation of chlorinated ethanes. Dissolved oxygen and redox potential indicate a reducing environment. The dissolved oxygen concentrations and redox potential indicate a reducing environment. Ethane and methane concentrations are indicative of reductive dechlorination and methanogenesis, respectively. These conditions are supportive of reductive dechlorination of 1,1,1-TCA to 1,1-DCA, and 1,1-DCA to chloroethane. However, these conditions are not as conducive to the complete mineralization of chloroethane.

- Soil gas sampling indicated that VOCs are present in shallow soil throughout the Site. Concentrations of spill-related compounds were greatest in samples in and around the spill area, but are detected around the site. Several other VOCs were detected in multiple soil gas samples, including BTEX, PCE, TCE, methylene chloride and several other compounds. Several of these compounds were also detected in ambient air samples collected outdoors at the Site.

- In the former Columbia Cement building, the indoor air concentrations of PCE, TCE and 1,1,1-TCA are three to five orders of magnitude lower than those found in the sub-slab vapor samples. The indoor air results are not at levels that would trigger any response measures based on information provided in the guidance manual. Furthermore, the indoor air concentrations do not exceed OSHA 8 hour PELs for the noted compounds. However, the sub-slab vapor concentrations of PCE (2,140 $\mu g/m^3$), TCE (534 $\mu g/m^3$) and 1,1,1-TCA (86,200 $\mu g/m^3$) are at levels where the matrices suggest mitigation as a potential response measure regardless of indoor air concentrations. The presence of these elevated sub-slab concentrations present a potential risk should the slab be compromised due to cracking or activities that might require cutting or coring the slab. It should be noted that the Site building remains unoccupied, thereby eliminating current exposure concerns in the building at this time.

- Bench scale treatability testing was performed to evaluate potential remedial options to treat soil and groundwater contamination at the Site. One test was conducted to test the effectiveness of in-site chemical oxidation to treat residual soil contamination in the spill area. The results of the test indicate that hydrogen peroxide activated persulfate successfully removed 98.7% and 80% of 1,1,1-TCA in soil and groundwater, respectively and 99.5% and 99.4% removal of chloroethane in soil and groundwater, respectively 6 days following treatment. Testing of EHC and HRC to for enhanced bioremediation of downgradient groundwater chloroethane contamination showed that the addition of amendments did not increase removal of chloroethane significantly over un-amended control columns.

The results of this Supplemental Remedial Investigation provide information to close several data gaps and satisfy data requests made by NYSDEC and NYDOH. The data gathered in this investigation, along with data from previous investigations provides a comprehensive understanding of Site conditions, contaminant distribution and feasible remedial options. The data from this Supplemental Remedial Investigation, along with data from the RI, will be used as a basis to prepare a FS for the Site. The FS will address soil, groundwater and soil gas contamination detected at the Site and will be submitted to NYSDEC shortly.

5.0 REFERENCES

Bouwer, H., and Rice, R.C., 1976, A slug test for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells: Water Resources Research, 12(3): 423-428).

Delaware Engineering, P.C., 2003. Final Remedial Investigation Report; Poultney Street; prepared for the Remediation Management (a BP Affiliated Company), Chesterton, Indiana; July.

New York State Department of Environmental Conservation (NYSDEC), 1998. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, Water a Technical and Operational Guidance Series (TOGS) 1.1.1; Reissued June.

New York State Department of Environmental Conservation (NYSDEC), 1990. Technical and Administrative Guidance Memorandum (TAGM) #4030: Selection of Remedial Actions at Inactive Hazardous Waste Sites; January.

New York State Department of Environmental Conservation (NYSDEC), 1994. Technical and Administrative Guidance Memorandum (TAGM) #4046: Determination of Soil Cleanup Objectives and Cleanup Levels; January.

New York State Department of Health (NYSDOH), 2006. Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York; October.

Puls, R.W., and Barcelona, M.J., 1996, *Low-flow (minimal drawdown) Ground-water Sampling Procedures:* EPA/540/S-95/504.

United States Environmental Protection Agency, 1988. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, EPA/540/G-89/004, OSWER Directive 9355.3-01; October.

TABLE 1
SUMMARY OF SOIL ANALYTICAL PROGRAM
SUPPLEMENTAL REMEDIAL INVESTIGATION ACTIVITIES
FORMER COLUMBIA CEMENT FACILITY
FREEPORT, NEW YORK

Sampling Event	Location / Boring ID	Sample ID	Sample Depth (ft bgs)	Sample Date	Sampling Method	Analytical Parameters
PRE-CLOSURE SOIL BORINGS						
	Boring B1	B1-18-20	18 - 20	5/20/2004	Split Spoon	VOCs
	Boring B2	B2-16-18	16 - 18	5/20/2004	Split Spoon	VOCs
	Boring B3	B3-16-18	16 - 18	5/20/2004	Split Spoon	VOCs
	Boring B4	B4-19.5-20	19.5 - 20	5/20/2004	Split Spoon	VOCs
	Boring B5	B5-19-20	19 - 20	5/20/2004	Split Spoon	VOCs
	Boring B6	B6-17.5-18	17 - 18	5/21/2004	Split Spoon	VOCs
	Boring B7	B7-17-18	17 - 18	5/21/2004	Split Spoon	VOCs
	Boring B7	B7-19-20	19 - 20	5/21/2004	Split Spoon	VOCs
	Boring B8	B8-18-19	18 - 19	5/21/2004	Split Spoon	VOCs
	Boring B9	B9-18-19	18 - 19	5/21/2004	Split Spoon	VOCs
	Boring B10	B10-19-20	19 - 20	5/21/2004	Split Spoon	VOCs
UST CLOSURE POST-EXCAVATION SOIL SAMPLING						
	TANK #1	TANK 1	12 - 12.5	8/27/2004	Backhoe Bucket	VOCs
	TANK #2	TANK 2	12 - 12.5	8/30/2004	Backhoe Bucket	VOCs
	TANK #3	TANK 3	12 - 12.5	8/31/2004	Backhoe Bucket	VOCs
	TANK #4	TANK 4	12 - 12.5	8/31/2004	Backhoe Bucket	VOCs
	TANK #5	TANK 5	12 - 12.5	9/1/2004	Backhoe Bucket	VOCs
	TANK #6	TANK 6	12 - 12.5	9/3/2004	Backhoe Bucket	VOCs
	TANK #6	TANK 6-2	~ 8	9/3/2004	Backhoe Bucket	VOCs
	TANK #6	TANK 6-3 SIDEWALL	~ 0.8	9/3/2004	Backhoe Bucket	VOCs
	TANK #7	TANK 7	12 - 12.5	9/3/2004	Backhoe Bucket	VOCs
	TANK #8	TANK 8	12 - 12.5	9/2/2004	Backhoe Bucket	VOCs
	TANK #8	TANK 8-2 ON TOP OF 8	1 - 1.5	9/2/2004	Backhoe Bucket	VOCs
	TANK #9	TANK 9	12 - 12.5	9/2/2004	Backhoe Bucket	VOCs
	TANK #10	TANK 10	12 - 12.5	9/2/2004	Backhoe Bucket	VOCs

TABLE 1
SUMMARY OF SOIL ANALYTICAL PROGRAM
SUPPLEMENTAL REMEDIAL INVESTIGATION ACTIVITIES
FORMER COLUMBIA CEMENT FACILITY
FREEPORT, NEW YORK

Sampling Event	Location / Boring ID	Sample ID	Sample Depth (ft bgs)	Sample Date	Sampling Method	Analytical Parameters
UST CLOSURE POST-EXCAVATION SOIL SAMPLING (continued)						
	UST BACKFILL	BACKFILL 1	12 - 12.5	5/21/2004	Stockpile	VOCs
	UST BACKFILL	BACKFILL 1	12 - 12.5	5/21/2004	Stockpile	VOCs
	BENEATH SEWER PIPE	DRAIN 1	3 - 3.5	9/15/2004	Scoop	VOCs, SVOCs
	BENEATH LEAKING DRUM	DRUM 1	3 - 3.5	9/15/2004	Scoop	VOCs
	PIPE EXC. SOIL PILE	PILE 1	3 - 3.5	9/15/2004	Stockpile	VOCs
	BENEATH PIPING	PIPE 2	3 - 3.5	9/15/2004	Backhoe Bucket	VOCs
	BENEATH PIPING	PIPE 2	8 - 8.5	9/15/2004	Scoop	VOCs
	SOIL INSIDE PIPING	PIPE 3	N/A	9/1/2004	Scoop	VOCs
POST-CLOSURE SOIL BORINGS						
	Boring T-01	T-01-16-18	16 - 18	10/6/2004	Macro-Core Sampler	VOCs
	Boring T-01	T-01-20-22	20 -22	10/6/2004	Macro-Core Sampler	VOCs
	Boring T-02	T-02-16-18	16 - 18	10/6/2004	Macro-Core Sampler	VOCs
	Boring T-02	T-02-20-22	20 - 22	10/6/2004	Macro-Core Sampler	VOCs
	Boring T-02	T-02-24-26	24 - 26	10/6/2004	Macro-Core Sampler	VOCs
	Boring T-02	T-02-28-30	28 - 30	10/6/2004	Macro-Core Sampler	VOCs
	Boring T-03	T-03-16-18	16 - 18	10/6/2004	Macro-Core Sampler	VOCs
	Boring T-03	T-03-20-22	20 - 22	10/6/2004	Macro-Core Sampler	VOCs
	Boring T-03	T-03-24-26	24 - 26	10/6/2004	Macro-Core Sampler	VOCs
	Boring T-03	T-03-28-30	28 - 30	10/6/2004	Macro-Core Sampler	VOCs
	Boring T-04	T-04-16-18	16 - 18	10/6/2004	Macro-Core Sampler	VOCs
	Boring T-04	T-04-20-22	20 - 22	10/6/2004	Macro-Core Sampler	VOCs
	Boring T-05	T-05-16-18	16 - 18	10/6/2004	Macro-Core Sampler	VOCs
	Boring T-05	T-05-20-22	20 - 22	10/6/2004	Macro-Core Sampler	VOCs
	Boring T-06	T-06-16-18	16 - 18	10/6/2004	Macro-Core Sampler	VOCs
	Boring T-06	T-06-20-22	20 - 22	10/6/2004	Macro-Core Sampler	VOCs

TABLE 1
SUMMARY OF SOIL ANALYTICAL PROGRAM
SUPPLEMENTAL REMEDIAL INVESTIGATION ACTIVITIES
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

Sampling Event	Location / Boring ID	Sample ID	Sample Depth (ft bgs)	Sample Date	Sampling Method	Analytical Parameters
POST-CLOSURE SOIL BORINGS (continued)						
	Boring T-07	T-07-16-18	16 - 18	10/7/2004	Macro-Core Sampler	VOCs
	Boring T-07	T-07-20-22	20 - 22	10/7/2004	Macro-Core Sampler	VOCs
	Boring T-07	T-07-24-26	24 - 26	10/7/2004	Macro-Core Sampler	VOCs
	Boring T-07	T-07-28-30	28 - 30	10/7/2004	Macro-Core Sampler	VOCs
	Boring T-08	T-08-16-18	16 - 18	10/7/2004	Macro-Core Sampler	VOCs
	Boring T-08	T-08-20-22	20 - 22	10/7/2004	Macro-Core Sampler	VOCs
	Boring T-08	T-08-24-26	24 - 26	10/7/2004	Macro-Core Sampler	VOCs
	Boring T-09	T-09-16-18	16 - 18	10/7/2004	Macro-Core Sampler	VOCs
	Boring T-09	T-09-20-22	20 - 22	10/7/2004	Macro-Core Sampler	VOCs
	Boring T-10	T-10-16-18	16 - 18	10/7/2004	Macro-Core Sampler	VOCs
	Boring T-10	T-10-20-22	20 - 22	10/7/2004	Macro-Core Sampler	VOCs
	Boring D-01	D-01-10-12	10 - 12	10/7/2004	Macro-Core Sampler	VOCs
	Boring D-01	D-01-16-18	16 - 18	10/7/2004	Macro-Core Sampler	VOCs
	Boring D-01	D-01-20-22	20 - 22	10/7/2004	Macro-Core Sampler	VOCs
	Boring D-02	D-02-10-12	10 - 12	10/7/2004	Macro-Core Sampler	VOCs
	Boring D-02	D-02-16-18	16 - 18	10/7/2004	Macro-Core Sampler	VOCs
	Boring D-02	D-02-20-22	20 - 22	10/7/2004	Macro-Core Sampler	VOCs
	Boring D-03	D-03-10-12	10 - 12	10/8/2004	Macro-Core Sampler	VOCs
	Boring D-03	D-03-16-18	16 - 18	10/8/2004	Macro-Core Sampler	VOCs
	Boring D-03	D-03-20-22	20 - 22	10/8/2004	Macro-Core Sampler	VOCs
	Boring D-04	D-04-10-12	10 - 12	10/8/2004	Macro-Core Sampler	VOCs
	Boring D-04	D-04-16-18	16 - 18	10/8/2004	Macro-Core Sampler	VOCs
	Boring D-04	D-04-20-22	20 - 22	10/8/2004	Macro-Core Sampler	VOCs
	Boring D-05	D-05-10-12	10 - 12	10/8/2004	Macro-Core Sampler	VOCs
	Boring D-05	D-05-16-18	16 - 18	10/8/2004	Macro-Core Sampler	VOCs

TABLE 1
SUMMARY OF SOIL ANALYTICAL PROGRAM
SUPPLEMENTAL REMEDIAL INVESTIGATION ACTIVITIES
FORMER COLUMBIA CEMENT FACILITY
FREEPORT, NEW YORK

Sampling Event	Location / Boring ID	Sample ID	Sample Depth (ft bgs)	Sample Date	Sampling Method	Analytical Parameters
POST-CLOSURE SOIL BORINGS (continued)						
	Boring D-05	D-05-20-22	20 - 22	10/8/2004	Macro-Core Sampler	VOCs
	Boring D-06	D-06-10-12	10 - 12	10/8/2004	Macro-Core Sampler	VOCs
	Boring D-06	D-06-16-18	16 - 18	10/8/2004	Macro-Core Sampler	VOCs
	Boring D-06	D-06-20-22	20 - 22	10/8/2004	Macro-Core Sampler	VOCs
	Boring D-07	D-07-10-12	10 - 12	10/6/2004	Macro-Core Sampler	VOCs
	Boring D-07	D-07-16-18	16 - 18	10/6/2004	Macro-Core Sampler	VOCs
	Boring D-07	D-07-20-22	20 - 22	10/6/2004	Macro-Core Sampler	VOCs
	Boring D-08	D-08-10-12	10 - 12	10/8/2004	Macro-Core Sampler	VOCs
	Boring D-08	D-08-16-18	16 - 18	10/8/2004	Macro-Core Sampler	VOCs
	Boring D-08	D-08-20-22	20 - 22	10/8/2004	Macro-Core Sampler	VOCs
	Boring D-08	D-08-24-26	24 - 26	10/8/2004	Macro-Core Sampler	VOCs
	Boring D-09	D-09-12-14	12 - 14	10/8/2004	Macro-Core Sampler	VOCs
	Boring D-09	D-09-14-16	14 - 16	10/8/2004	Macro-Core Sampler	VOCs

NOTES:

ft bgs : Feet below ground surface

VOCs : Volatile Organic Compounds

SVOCs : Semi-Volatile organic compounds

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL PROGRAM
SUPPLEMENTAL REMEDIAL INVESTIGATION ACTIVITIES
FORMER COLUMBIA CEMENT FACILITY
FREEPORT, NEW YORK

Sampling Event	Well ID	Sample ID	Sample Date	Sampling Method	Analytical Parameters
JUNE 2004 SMPLING EVENT					
	MW-1S	MW-1S	6/7/2004	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Mn II, Chloride, Nitrate, Nitrite, Sulfate, Total Organic Carbon, Alkalinity
	MW-97-1S	MW-97-1S	6/8/2004	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Mn II, Total Mn, Chloride, Nitrate, Nitrite, Sulfate, Total Organic Carbon, Alkalinity
	MW-1D-97	MW-1D-97	6/7/2004	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Mn II, Total Mn, Chloride, Nitrate, Nitrite, Sulfate, Total Organic Carbon, Alkalinity
	MW-97-2S	MW-97-2S	6/8/2004	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Mn II, Total Mn, Chloride, Nitrate, Nitrite, Sulfate, Total Organic Carbon, Alkalinity
	MW-97-3S	MW-97-3S	6/9/2004	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Mn II, Total Mn, Chloride, Nitrate, Nitrite, Sulfate, Total Organic Carbon, Alkalinity
	MW-97-4S	MW-97-4S	6/10/2004	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Chloride, Nitrate, Nitrite, Sulfate, Total Organic Carbon, Alkalinity
	MW-97-5S	MW-97-5S	6/10/2004	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Mn II, Total Mn, Chloride, Nitrate, Nitrite, Sulfate, Total Organic Carbon, Alkalinity
	MW-97-6S	MW-97-6S	6/9/2004	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Mn II, Total Mn, Chloride, Nitrate, Nitrite, Sulfate, Total Organic Carbon, Alkalinity
	MW-97-7S	MW-97-7S	6/9/2004	Low-Flow	VOCs
	MW-98-8S	MW-98-8S	6/9/2004	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Mn II, Total Mn, Chloride, Nitrate, Nitrite, Sulfate, Total Organic Carbon, Alkalinity
	MW-98-8D	MW-98-8D	6/9/2004	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Mn II, Total Mn, Chloride, Nitrate, Nitrite, Sulfate, Total Organic Carbon, Alkalinity
	MW-98-9D	MW-98-9D	6/8/2004	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Mn II, Total Mn, Chloride, Nitrate, Nitrite, Sulfate, Total Organic Carbon, Alkalinity
	MW-98-10D	MW-98-10D	6/8/2004	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Mn II, Total Mn, Chloride, Nitrate, Nitrite, Sulfate, Total Organic Carbon, Alkalinity
	MW-00-11A	MW-00-11A	6/9/2004	Low-Flow	VOCs
	MW-00-12D	MW-00-12D	6/10/2004	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Mn II, Total Mn, Chloride, Nitrate, Nitrite, Sulfate, Total Organic Carbon, Alkalinity
	MW-03-13S	MW-03-13S	6/10/2004	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Mn II, Total Mn, Chloride, Nitrate, Nitrite, Sulfate, Total Organic Carbon, Alkalinity

TABLE 2

SUMMARY OF GROUNDWATER ANALYTICAL PROGRAM

SUPPLEMENTAL REMEDIAL INVESTIGATION ACTIVITIES

FORMER COLUMBIA CEMENT FACILITY

FREEPORT, NEW YORK

Sampling Event	Well ID	Sample ID	Sample Date	Sampling Method	Analytical Parameters
MAY 2005 SAMPLING EVENT					
	MW-97-1S	MW-97-1S	4/26/2005	Low-Flow	VOCs
	MW-98-9D	MW-98-9D	4/26/2005	Low-Flow	VOCs
	MW-00-13S	MW-00-13S	4/26/2005	Low-Flow	VOCs
	MW-05-14S	MW-05-14S	4/26/2005	Low-Flow	VOCs
	MW-05-15D	MW-05-15D	4/26/2005	Low-Flow	VOCs

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL PROGRAM
SUPPLEMENTAL REMEDIAL INVESTIGATION ACTIVITIES
FORMER COLUMBIA CEMENT FACILITY
FREEPORT, NEW YORK

Sampling Event	Well ID	Sample ID	Sample Date	Sampling Method	Analytical Parameters
JUNE 2006 SMPLING EVENT					
	MW-1S	MW-1S	6/7/2006	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Chloride, Sulfate, Total Organic Carbon, Alkalinity
	MW-97-1S	MW-97-1S	6/7/2006	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Chloride, Sulfate, Total Organic Carbon, Alkalinity
	MW-1D-97	MW-1D-97	6/7/2006	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Chloride, Sulfate, Total Organic Carbon, Alkalinity
	MW-97-2S	MW-97-2S	6/9/2006	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Chloride, Sulfate, Total Organic Carbon, Alkalinity
	MW-97-3S	MW-97-3S	6/9/2006	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Chloride, Sulfate, Total Organic Carbon, Alkalinity
	MW-97-4S	MW-97-4S	6/8/2006	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Chloride, Sulfate, Total Organic Carbon, Alkalinity
	MW-97-5S	MW-97-5S	6/9/2006	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Chloride, Sulfate, Total Organic Carbon, Alkalinity
	MW-97-6S	MW-97-6S	6/8/2006	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Chloride, Sulfate, Total Organic Carbon, Alkalinity
	MW-97-7S	MW-97-7S	6/6/2006	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Chloride, Sulfate, Total Organic Carbon, Alkalinity
	MW-98-8S	MW-98-8S	6/7/2006	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Chloride, Sulfate, Total Organic Carbon, Alkalinity
	MW-98-8D	MW-98-8D	6/7/2006	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Chloride, Sulfate, Total Organic Carbon, Alkalinity
	MW-98-9D	MW-98-9D	6/8/2006	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Chloride, Sulfate, Total Organic Carbon, Alkalinity
	MW-98-10D	MW-98-10D	6/9/2006	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Chloride, Sulfate, Total Organic Carbon, Alkalinity
	MW-00-11A	MW-00-11A	6/7/2006	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Chloride, Sulfate, Total Organic Carbon, Alkalinity
	MW-00-12D	MW-00-12D	6/8/2006	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Chloride, Sulfate, Total Organic Carbon, Alkalinity
	MW-03-13S	MW-03-13S	6/6/2006	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Chloride, Sulfate, Total Organic Carbon, Alkalinity
	MW-05-14S	MW-05-14S	6/8/2006	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Chloride, Sulfate, Total Organic Carbon, Alkalinity
	MW-05-15D	MW-05-15D	6/6/2006	Low-Flow	VOCs, Dissolved Gasses, Fe II, Total Fe, Chloride, Sulfate, Total Organic Carbon, Alkalinity

NOTES:

VOCs : Volatile Organic Compounds
Diss. Gases : Ethane, ethene and methane
Fe II : Dissolved (Ferric) Iron
Total Fe : Total Iron
Mn II : Dissolved Manganese
Total Mn : Total Manganese

TABLE 3
SUMMARY OF SOIL ANALYTICAL RESULTS
PRE-UST CLOSURE SOIL BORINGS
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

URS SAMPLE ID LAB SAMPLE ID SAMPLE DATE SAMPLE DEPTH (ft) DILUTION FACTOR UNITS	NYSDEC TAGM 4046 Recommended Soil Cleanup Objective (mg/kg)	B1-18-20 530999 05/20/04 18 - 20 1 (mg/kg)	B2-16-18 531000 05/20/04 16 - 18 1 (mg/kg)	B3-16-18 531001 05/20/04 16 - 18 1 (mg/kg)	B4-19.5-20 531002 05/20/04 19.5 - 20 1 (mg/kg)	B5-19-20 531003 05/20/04 19 - 20 1 (mg/kg)	B6-17.5-18 531004 05/21/04 17.5 - 18 1 (mg/kg)	B7-17-18 531005 05/21/04 17 - 18 1 (mg/kg)
VOCs								
1,1,1-Trichloroethane	0.8	0.0047 J	0.0056 U	0.0058 U	0.0061 U	0.006 U	0.0059 U	0.006 U
1,1,2,2-Tetrachloroethane	0.6	0.0012 U	0.0011 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U
1,1,2-Trichloroethane	NA	0.0035 U	0.0033 U	0.0035 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U
1,1-Dichloroethane	0.2	0.0024 J	0.0056 U	0.0058 U	0.0061 U	0.006 U	0.0059 U	0.006 U
1,1-Dichloroethene	0.4	0.0024 U	0.0022 U	0.0023 U	0.0024 U	0.0024 U	0.0024 U	0.0024 U
1,2-Dichloroethane	0.1	0.0024 U	0.0022 U	0.0023 U	0.0024 U	0.0024 U	0.0024 U	0.0024 U
1,2-Dichloropropane	NA	0.0012 U	0.0011 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U
2-Butanone	0.3	0.0059 U	0.0056 U	0.0058 U	0.0061 U	0.006 U	0.0059 U	0.006 U
2-Hexanone	NA	0.0059 U	0.0056 U	0.0058 U	0.0061 U	0.006 U	0.0059 U	0.006 U
Acetone	0.2	0.1	0.082	0.027	0.12	0.11	0.1	0.09
Benzene	0.06	0.0012 U	0.0011 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U
Bromodichloromethane	NA	0.0012 U	0.0011 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U
Bromoform	NA	0.0047 U	0.0044 U	0.0047 U	0.0049 U	0.0048 U	0.0048 U	0.0048 U
Bromomethane	NA	0.0059 U	0.0056 U	0.0058 U	0.0061 U	0.006 U	0.0059 U	0.006 U
Carbon Disulfide	2.7	0.0024 J	0.0012 J	0.0007 J	0.0012 J	0.0026 J	0.0018 J	0.0042 J
Carbon Tetrachloride	0.6	0.0024 U	0.0022 U	0.0023 U	0.0024 U	0.0024 U	0.0024 U	0.0024 U
Chlorobenzene	1.7	0.0059 U	0.0056 U	0.0058 U	0.0061 U	0.006 U	0.0059 U	0.006 U
Chloroethane	1.9	0.0059 U	0.0056 U	0.0058 U	0.0061 U	0.006 U	0.0059 U	0.006 U
Chloroform	0.3	0.0059 U	0.0056 U	0.0058 U	0.0061 U	0.006 U	0.0059 U	0.006 U
Chloromethane	NA	0.0059 U	0.0056 U	0.0058 U	0.0061 U	0.006 U	0.0059 U	0.006 U
cis-1,2-Dichloroethene	NA	0.0059 U	0.0056 U	0.0058 U	0.0061 U	0.006 U	0.0059 U	0.006 U
cis-1,3-Dichloropropene	NA	0.0059 U	0.0056 U	0.0058 U	0.0061 U	0.006 U	0.0059 U	0.006 U
Dibromochloromethane	NA	0.0059 U	0.0056 U	0.0058 U	0.0061 U	0.006 U	0.0059 U	0.006 U
Ethylbenzene	5.5	0.0047 U	0.0044 U	0.0047 U	0.0049 U	0.0048 U	0.0048 U	0.0048 U
4-Methyl-2-Pentanone	1	0.0059 U	0.0056 U	0.0058 U	0.0061 U	0.006 U	0.0059 U	0.006 U
Methylene Chloride	0.1	0.0014 JB	0.0007 JB	0.0035 U	0.0008 JB	0.0011 JB	0.0006 JB	0.0006 JB
Styrene	NA	0.0059 U	0.0056 U	0.0058 U	0.0061 U	0.006 U	0.0059 U	0.006 U
Tetrachloroethene	1.4	0.0012 U	0.0011 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U
Toluene	1.5	0.0059 U	0.0056 U	0.0058 U	0.0061 U	0.006 U	0.0059 U	0.006 U
trans-1,2-Dichloroethene	NA	0.0059 U	0.0056 U	0.0058 U	0.0061 U	0.006 U	0.0059 U	0.006 U
trans-1,3-Dichloropropene	NA	0.0059 U	0.0056 U	0.0058 U	0.0061 U	0.006 U	0.0059 U	0.006 U
Trichloroethene	0.7	0.0012 U	0.0011 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U
Vinyl Chloride	0.2	0.0059 U	0.0056 U	0.0058 U	0.0061 U	0.006 U	0.0059 U	0.006 U
Xylene (Total)	1.2	0.0059 U	0.0056 U	0.0058 U	0.0061 U	0.006 U	0.0059 U	0.006 U
Total Confident Conc.	NA	0.1	0.082	0.027	0.12	0.11	0.1	0.09
Total Estimated Conc. (TICs)	NA	0.129	0	0	0	0	0	0

.BLE 3
SUMMARY OF SOIL ANALYTICAL RESULTS
PRE-UST CLOSURE SOIL BORINGS
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

URS SAMPLE ID LAB SAMPLE ID SAMPLE DATE SAMPLE DEPTH (ft) DILUTION FACTOR UNITS	NYSDEC TAGM 4046 Recommended Soil Cleanup Objective (mg/kg)	B7-19-20 531006 05/21/04 19 - 20 1 (mg/kg)		B8-18-19 531009 05/21/04 18 - 19 1 (mg/kg)		B9-18-19 531010 05/21/04 18 - 19 1 (mg/kg)		B10-19-20 531011 05/21/04 19 - 20 1 (mg/kg)	
VOCs									
1,1,1-Trichloroethane	0.8	0.0055	U	0.0056	U	0.0056	U	0.0057	U
1,1,2,2-Tetrachloroethane	0.6	0.0011	U	0.0011	U	0.0011	U	0.0011	U
1,1,2-Trichloroethane	NA	0.0033	U	0.0034	U	0.0034	U	0.0034	U
1,1-Dichloroethane	0.2	0.0055	U	0.0056	U	0.0056	U	0.0057	U
1,1-Dichloroethene	0.4	0.0022	U	0.0022	U	0.0022	U	0.0023	U
1,2-Dichloroethane	0.1	0.0022	U	0.0022	U	0.0022	U	0.0023	U
1,2-Dichloropropane	NA	0.0011	U	0.0011	U	0.0011	U	0.0011	U
2-Butanone	0.3	0.0055	U	0.0056	U	0.007		0.0099	
2-Hexanone	NA	0.0055	U	0.0056	U	0.0056	U	0.0057	U
Acetone	0.2	0.092		0.098		0.08		0.11	
Benzene	0.06	0.0011	U	0.0011	U	0.0011	U	0.0011	U
Bromodichloromethane	NA	0.0011	U	0.0011	U	0.0011	U	0.0011	U
Bromoform	NA	0.0044	U	0.0045	U	0.0045	U	0.0046	U
Bromomethane	NA	0.0055	U	0.0056	U	0.0056	U	0.0057	U
Carbon Disulfide	2.7	0.0044	J	0.0014	J	0.002	J	0.0017	J
Carbon Tetrachloride	0.6	0.0022	U	0.0022	U	0.0022	U	0.0023	U
Chlorobenzene	1.7	0.0055	U	0.0056	U	0.0056	U	0.0057	U
Chloroethane	1.9	0.0055	U	0.0056	U	0.0056	U	0.0057	U
Chloroform	0.3	0.0055	U	0.0056	U	0.0056	U	0.0057	U
Chloromethane	NA	0.0055	U	0.0056	U	0.0056	U	0.0057	U
cis-1,2-Dichloroethene	NA	0.0055	U	0.0056	U	0.0056	U	0.0057	U
cis-1,3-Dichloropropene	NA	0.0055	U	0.0056	U	0.0056	U	0.0057	U
Dibromochloromethane	NA	0.0055	U	0.0056	U	0.0056	U	0.0057	U
Ethylbenzene	5.5	0.0044	U	0.0045	U	0.0045	U	0.0046	U
4-Methyl-2-Pentanone	1	0.0055	U	0.0056	U	0.0056	U	0.0057	U
Methylene Chloride	0.1	0.0006	JB	0.0034	U	0.001	JB	0.0014	JB
Styrene	NA	0.0055	U	0.0056	U	0.0056	U	0.0057	U
Tetrachloroethene	1.4	0.0011	U	0.0011	U	0.0011	U	0.0011	U
Toluene	1.5	0.0055	U	0.0056	U	0.0056	U	0.0057	U
trans-1,2-Dichloroethene	NA	0.0055	U	0.0056	U	0.0056	U	0.0057	U
trans-1,3-Dichloropropene	NA	0.0055	U	0.0056	U	0.0056	U	0.0057	U
Trichloroethene	0.7	0.0011	U	0.0011	U	0.0011	U	0.0011	U
Vinyl Chloride	0.2	0.0055	U	0.0056	U	0.0056	U	0.0057	U
Xylene (Total)	1.2	0.0055	U	0.0056	U	0.0056	U	0.0057	U
Total Confident Conc.	NA	0.092		0.098		0.087		0.1199	
Total Estimated Conc. (TICs)	NA	0		0		0		0	

TABLE 3
SUMMARY OF SOIL ANALYTICAL RESULTS
PRE-UST CLOSURE SOIL BORINGS
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

NOTES:

NA: No Standard
NR: Not analyzed.
U: The compound was not detected at the indicated concentration.
J: Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an approximate value.
B: The analyte was found in the laboratory blank as well as the sample. This indicates possible laboratory contamination of the sample.
BOLD: Result exceeds NYDEC TAGM Recommended Soil Cleanup Criteria

TABLE 4
SUMMARY OF SOIL ANALYTICAL RESULTS
POST-UST EXCAVATION SOIL SAMPLING
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

URS SAMPLE ID LAB SAMPLE ID SAMPLE DATE SAMPLE DEPTH UNITS	NYSDEC TAGM 4046 Recommended Soil Cleanup Objective mg/kg	TANK 1 N76706-1 8/27/2004 12 FT BGS mg/kg	TANK 2 N76706-2 8/30/2004 12.5 FT BGS mg/kg	TANK 3 N76706-5 8/31/2004 12 FT BGS mg/kg	TANK 4 N76706-6 8/31/2004 12 FT BGS mg/kg	TANK 5 N76706-7 9/1/2004 12 FT BGS mg/kg	TANK 6 N77152-2 9/3/2004 12 FT BGS mg/kg	TANK 6-2 N77152-3 9/3/2004 8 FT BGS mg/kg	TANK 6-3 SIDEWALL N77152-4 9/3/2004 ~0.8 FT BGS mg/kg
1,1,1-Trichloroethane	0.8	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
1,1,2,2-Tetrachloroethane	0.6	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
1,1,2-Trichloroethane	NE	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
1,1-Dichloroethane	0.2	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
1,1-Dichloroethene	0.4	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
1,2-Dichloroethane	0.1	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
1,2-Dichloroethene	NE	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
1,2-Dichloropropane	NE	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
2-Butanone	0.3	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
2-Hexanone	NE	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Acetone	0.2	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Benzene	0.06	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Bromodichloromethane	NE	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Bromoform	NE	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Carbon Disulfide	2.7	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Carbon Tetrachloride	0.6	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Chlorobenzene	1.7	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Chlorodibromomethane	NE	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Chloroform	0.3	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Cis-1,3-Dichloropropene	NE	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Ethyl Chloride	1.9	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Ethylbenzene	5.5	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Methyl Bromide	NE	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Methyl Chloride	NE	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Methyl Isobutyl Ketone	1	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Methylene Chloride	0.1	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Styrene	NE	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Tetrachloroethene	1.4	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Toluene	1.5	0.003 J	0.001 J	0.004 J	0.004 J	0.001 J	0.01 U	0.002 J	0.01 U
Trans-1,3-Dichloropropene	NE	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Trichloroethene	0.7	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Vinyl Chloride	0.2	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Xylenes (Total)	1.2	0.013 U	0.012 U	0.012 U	0.012 U	0.013 U	0.01 U	0.01 U	0.01 U
Total VOC TIC		0	0	0	0	0	0	0	0

TABLE 4
SUMMARY OF SOIL ANALYTICAL RESULTS
POST-UST EXCAVATION SOIL SAMPLING
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

URS SAMPLE ID LAB SAMPLE ID SAMPLE DATE SAMPLE DEPTH UNITS	NYSDEC TAGM 4046 Recommended Soil Cleanup Objective mg/kg	TANK 7 N77452-1 9/3/2004 12 FT BGS mg/kg	TANK 8 N76856-5 9/2/2004 12 FT BGS mg/kg	TANK 8-2 ON TOP OF 8 N76856-4 9/2/2004 ~1 FT BGS mg/kg	TANK 9 N76856-2 9/2/2004 12 FT BGS mg/kg	TANK 10 N76856-1 9/2/2004 12 FT BGS mg/kg
1,1,1-Trichloroethane	0.8	0.011 U	0.012 U	0.011 U	0.012 U	0.016
1,1,2,2-Tetrachloroethane	0.6	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
1,1,2-Trichloroethane	NE	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
1,1-Dichloroethane	0.2	0.011 U	0.012 U	0.011 U	0.012 U	0.006 J
1,1-Dichloroethene	0.4	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
1,2-Dichloroethane	0.1	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
1,2-Dichloroethene	NE	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
1,2-Dichloropropane	NE	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
2-Butanone	0.3	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
2-Hexanone	NE	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Acetone	0.2	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Benzene	0.06	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Bromodichloromethane	NE	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Bromoform	NE	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Carbon Disulfide	2.7	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Carbon Tetrachloride	0.6	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Chlorobenzene	1.7	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Chlorodibromomethane	NE	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Chloroform	0.3	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Cis-1,3-Dichloropropene	NE	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Ethyl Chloride	1.9	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Ethylbenzene	5.5	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Methyl Bromide	NE	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Methyl Chloride	NE	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Methyl Isobutyl Ketone	1	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Methylene Chloride	0.1	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Styrene	NE	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Tetrachloroethene	1.4	0.011 U	0.012 U	0.011 U	0.012 U	0.01 J
Toluene	1.5	0.011 U	0.001 J	0.006 J	0.012 U	0.002 J
Trans-1,3-Dichloropropene	NE	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Trichloroethene	0.7	0.011 U	0.012 U	0.011 U	0.012 U	0.001 J
Vinyl Chloride	0.2	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Xylenes (Total)	1.2	0.011 U	0.012 U	0.011 U	0.012 U	0.012 U
Total VOC TIC		0	0	0	0	0

.BLE 4
SUMMARY OF SOIL ANALYTICAL RESULTS
POST-UST EXCAVATION SOIL SAMPLING
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

URS SAMPLE ID LAB SAMPLE ID SAMPLE DATE SAMPLE DEPTH UNITS	NYSDEC TAGM 4046 Recommended Soil Cleanup Objective mg/kg	BACKFILL 1 N76856-3 9/2/2004 N/A mg/kg	BACKFILL 2 N77152-6 9/3/2004 N/A mg/kg	DRAIN-1 N78141-6 9/15/2004 3 FT BGS mg/kg	DRUM-1 N78141-1 9/15/2004 3 FT BGS mg/kg	PIPE-1 N78141-2 9/15/2004 3 FT BGS mg/kg	PIPE-2 N78141-3 9/15/2004 3 FT BGS mg/kg	PIPE-3 N78141-4 9/15/2004 NA mg/kg
VOLATILE ORGANIC COMPOUNDS								
1,1,1-Trichloroethane	0.8	0.011 U	0.011 U	0.008 J	0.011 U	0.011 U	0.01 U	0.49 U
1,1,2,2-Tetrachloroethane	0.6	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
1,1,2-Trichloroethane	NE	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
1,1-Dichloroethane	0.2	0.011 U	0.011 U	0.002 J	0.002 J	0.011 U	0.01 U	0.49 U
1,1-Dichloroethene	0.4	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
1,2-Dichloroethane	0.1	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
1,2-Dichloroethene	NE	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
1,2-Dichloropropane	NE	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
2-Butanone	0.3	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
2-Hexanone	NE	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
Acetone	0.2	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
Benzene	0.06	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
Bromodichloromethane	NE	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
Bromoform	NE	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
Carbon Disulfide	2.7	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
Carbon Tetrachloride	0.6	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
Chlorobenzene	1.7	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
Chlorodibromomethane	NE	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
Chloroform	0.3	0.011 U	0.011 U	0.01 U	0.002 J	0.002 J	0.002 J	0.49 U
Cis-1,3-Dichloropropene	NE	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
Ethyl Chloride	1.9	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
Ethylbenzene	5.5	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	14
Methyl Bromide	NE	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
Methyl Chloride	NE	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
Methyl Isobutyl Ketone	1	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
Methylene Chloride	0.1	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
Styrene	NE	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
Tetrachloroethene	1.4	0.011 U	0.011 U	0.016	0.011 U	0.011 U	0.01 U	9.7 U
Toluene	1.5	0.002 J	0.011 U	0.01 U	0.011 U	0.001 J	0.01 U	32 D
Trans-1,3-Dichloropropene	NE	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
Trichloroethene	0.7	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
Vinyl Chloride	0.2	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	0.49 U
Xylenes (Total)	1.2	0.011 U	0.011 U	0.01 U	0.011 U	0.011 U	0.01 U	150
Total VOC TIC		0	0	0.007 J	0	0	0	528.1 J

TABLE 4
SUMMARY OF SOIL ANALYTICAL RESULTS
POST-UST EXCAVATION SOIL SAMPLING
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

URS SAMPLE ID LAB SAMPLE ID SAMPLE DATE SAMPLE DEPTH UNITS	NYSDEC TAGM RECOMMENDED SOIL CLEANUP OBJECTIVE	DRAIN-1 N78141-6 9/15/2004 3 FT BGS mg/kg
SEMI-VOLATILE ORGANIC COMPOUNDS		
1,2,4-Trichlorobenzene	3.4	0.019 U
1,2-Dichlorobenzene	7.9	0.021 U
1,3-Dichlorobenzene	1.6	0.02 U
1,4-Dichlorobenzene	8.5	0.019 U
2,4,5-Trichlorophenol	0.1	0.021 U
2,4,6-Trichlorophenol	NA	0.02 U
2,4-Dichlorophenol	0.4	0.023 U
2,4-Dimethylphenol	NA	0.028 U
2,4-Dinitrophenol	0.2	0.04 U
2,4-Dinitrotoluene	NA	0.021 U
2,6-Dinitrotoluene	1	0.018 U
2-Chloronaphthalene	NA	0.02 U
2-Chlorophenol	0.8	0.021 U
2-Methylnaphthalene	36.4	0.02 U
2-Nitroaniline	0.43	0.024 U
2-Nitrophenol	0.33	0.026 U
3&4-Methylphenol	NA	0.039 U
3,3'-Dichlorobenzidine	NA	0.026 U
3-Nitroaniline	0.5	0.024 U
4,6-Dinitro-2-Methylphenol	NA	0.021 U
4-Bromophenyl Phenyl Ether	NA	0.02 U
4-Chloro-3-Methylphenol	0.24	0.029 U
4-Chloroaniline	0.22	0.024 U
4-Chlorophenyl Phenyl Ether	NA	0.019 U
4-Nitroaniline	NA	0.022 U
4-Nitrophenol	0.1	0.076 U
Acenaphthene	50	0.022 U
Acenaphthylene	41	0.016 U
Anthracene	50	0.02 U
Benzo(A)Anthracene	0.224	0.021 U
Benzo(A)Pyrene	0.061	0.018 U
Benzo(B)Fluoranthene	1.1	0.018 U
Benzo(G,H,I)Perylene	50	0.03 U
Benzo(K)Fluoranthene	1.1	0.03 U
Bis(2-Chloro-1-Methylethyl) Ether	NA	0.025 U
Bis(2-Chloroethoxy)Methane	NA	0.02 U
Bis(2-Chloroethyl)Ether	NA	0.024 U
Bis(2-Ethylhexyl)Phthalate	50	0.045 U
Butyl Benzyl Phthalate	50	0.028 U
Carbazole	NA	0.022 U
Chrysene	0.4	0.021 U
Dibenzo(A,H)Anthracene	0.014	0.028 U
Dibenzofuran	6.2	0.019 U
Diethyl Phthalate	7.1	0.024 U
Dimethyl Phthalate	2	0.018 U
Di-N-Butyl Phthalate	8.1	0.019 U
Fluoranthene	50	0.018 U
Fluorene	50	0.02 U
Hexachlorobenzene	0.41	0.02 U
Hexachlorobutadiene	NA	0.025 U
Hexachlorocyclopentadiene	NA	0.02 U
Hexachloroethane	NA	0.021 U
Indeno(1,2,3-cd)Pyrene	3.2	0.043 U
Isophorone	4.4	0.022 U
Naphthalene	13	0.019 U
N-Dioctyl Phthalate	50	0.024 U
Nitrobenzene	0.2	0.02 U
N-Nitrosodi-N-Propylamine	NA	0.022 U
N-Nitrosodiphenylamine	NA	0.02 U
o-Cresol	0.1	0.028 U
Pentachlorophenol	1	0.022 U
Phenanthrene	50	0.021 U
Phenol	0.03	0.029 U
Pyrene	50	0.04 U

TABLE 5
SUMMARY OF SOIL ANALYTICAL RESULTS
POST-UST EXCAVATION SOIL SAMPLING
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

NOTES:

mg/kg : Milligrams Per Kilogram (ppm)
U : Compound was not detected.
J : The result is a quantitatively estimated value.
D : Result is obtained from a diluted sample.
NE : Not Established
Boxed : Exceeds NYSDEC TAGM Recommended Soil Cleanup Objective

TABLE 5
SUMMARY OF SOIL ANALYTICAL RESULTS
POST-CLOSURE SOIL BORINGS
FORMER COLUMBIA CEMENT FACILITY
FREEPORT, NEW YORK

BORING ID	NYSDEC TAGM 4046 Recommended Soil Cleanup Objective	T-01	T-01	T-02	T-02	T-02	T-02	T-03	T-03
URS SAMPLE ID		T-01-16-18	T-01-20-22	T-02-16-18	T-02-20-22	T-02-24-26	T-02-28-30	T-03-16-18	T-03-20-22
LAB SAMPLE ID		N80188-6	N80188-7	N80188-10	N80188-11	N80188-12	N80188-13	N80188-14	N80188-15
SAMPLE DATE		10/6/2004	10/6/2004	10/6/2004	10/6/2004	10/6/2004	10/6/2004	10/6/2004	10/6/2004
SAMPLE DEPTH (ft)		16 - 18	20 - 22	16 - 18	20 - 22	24 - 26	28 - 30	16 - 18	20 - 22
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
VOC									
1,1,1-Trichloroethane	0.8	0.003 J	0.01 J	0.011 J	0.042	0.011 U	0.001 J	2.2	4800 D
1,1,2,2-Tetrachloroethane	0.6	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.16 U	4.9 U
1,1,2-Trichloroethane	NE	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.16 U	4.9 U
1,1-Dichloroethane	0.2	0.004 J	0.001 J	0.008 J	0.039	0.011 U	0.014 U	2.3	390 D
1,1-Dichloroethene	0.4	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.16 U	18
1,2-Dichloroethane	0.1	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.16 U	1.2 J
1,2-Dichloroethene	NE	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.16 U	4.9 U
1,2-Dichloropropane	NE	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.16 U	4.9 U
2-Butanone	0.3	0.074	0.011 U	0.180	0.056 U	0.011 U	0.014 U	0.16 U	4.9 U
2-Hexanone	NE	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.16 U	4.9 U
Acetone	0.2	0.27	0.011 U	0.32 D	0.043	0.011 U	0.014 U	0.270	4.9 U
Benzene	0.06	0.034	0.011 U	0.008 J	0.013 U	0.011 U	0.014 U	0.016 J	4.9 U
Bromodichloromethane	NE	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.16 U	4.9 U
Bromoform	NE	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.16 U	4.9 U
Carbon Disulfide	2.7	0.019 J	0.011 U	0.045	0.008 DJ	0.011 U	0.014 U	0.065 J	4.9 U
Carbon Tetrachloride	0.6	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.16 U	4.9 U
Chlorobenzene	1.7	0.041	0.011 U	0.038	0.004 J	0.011 U	0.014 U	0.16 U	4.9 U
Chlorodibromomethane	NE	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.16 U	4.9 U
Chloroform	0.3	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.16 U	4.9 U
Cis-1,3-Dichloropropene	NE	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.16 U	4.9 U
Chloroethane	1.9	0.42	0.004 J	0.43 D	1.1 D	0.011 U	0.014 U	16 D	15
Ethylbenzene	5.5	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.16 U	4.9 U
Methyl Bromide	NE	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.16 U	4.9 U
Methyl Chloride	NE	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.16 U	1.1 J
Methyl Isobutyl Ketone	1	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.16 U	4.9 U
Methylene Chloride	0.1	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.025 J	240 U
Styrene	NE	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.16 U	4.9 U
Tetrachloroethene	1.4	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.16 U	4.9 U
Toluene	1.5	0.003 J	0.011 U	0.008 J	0.001 J	0.011 U	0.014 U	0.079 J	4.2 J
Trans-1,3-Dichloropropene	NE	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.16 U	4.9 U
Trichloroethene	0.7	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.16 U	1.4 J
Vinyl Chloride	0.2	0.021 U	0.011 U	0.019 U	0.013 U	0.011 U	0.014 U	0.039 J	4.9 U
Xylenes (Total)	1.2	0.01 J	0.011 U	0.009 J	0.002 J	0.011 U	0.014 U	0.16 U	4.9 U
Total VOC TIC	NE	1.19 J	0.007 J	3.738 J	1.585 J	0	0	3.199 J	32.8 J

TABLE 5
SUMMARY OF SOIL ANALYTICAL RESULTS
POST-CLOSURE SOIL BORINGS
FORMER COLUMBIA CEMENT FACILITY
FREEPORT, NEW YORK

BORING ID URS SAMPLE ID LAB SAMPLE ID SAMPLE DATE SAMPLE DEPTH (ft) UNITS	NYSDEC TAGM 4046 Recommended Soil Cleanup Objective (mg/kg)	T-03 T-03-24-26 N80188-16 10/6/2004 24 - 26 (mg/kg)	T-03 T-03-28-30 N80188-17 10/6/2004 28 - 30 (mg/kg)	T-04 T-04-16-18 N80188-18 10/6/2004 16 - 18 (mg/kg)	T-04 T-04-20-22 N80188-19 10/6/2004 20 - 22 (mg/kg)	T-05 T-05-16-18 N80188-22 10/6/2004 16 - 18 (mg/kg)	T-05 T-05-20-22 N80188-23 10/6/2004 20 - 22 (mg/kg)	T-06 T-06-16-18 N80188-26 10/6/2004 16 - 18 (mg/kg)	T-06 T-06-20-22 N80188-27 10/6/2004 20 - 22 (mg/kg)
VOC									
1,1,1-Trichloroethane	0.8	0.010 J	0.019 J	0.022 J	0.011 U	0.011 U	0.011 U	0.012 U	0.023
1,1,2,2-Tetrachloroethane	0.6	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
1,1,2-Trichloroethane	NE	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
1,1-Dichloroethane	0.2	0.003 J	0.003 J	0.005 J	0.011 U	0.011 U	0.011 U	0.012 U	0.08
1,1-Dichloroethene	0.4	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
1,2-Dichloroethane	0.1	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
1,2-Dichloroethene	NE	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
1,2-Dichloropropane	NE	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
2-Butanone	0.3	0.012 U	0.012 U	0.043	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
2-Hexanone	NE	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
Acetone	0.2	0.012 U	0.012 U	0.23	0.011 U	0.011	0.011 U	0.012 U	0.011 U
Benzene	0.06	0.012 U	0.012 U	0.002 J	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
Bromodichloromethane	NE	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
Bromoform	NE	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
Carbon Disulfide	2.7	0.012 U	0.002 J	0.008 J	0.011 U	0.001 J	0.011 U	0.012 U	0.002 J
Carbon Tetrachloride	0.6	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
Chlorobenzene	1.7	0.012 U	0.012 U	0.003 J	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
Chlorodibromomethane	NE	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
Chloroform	0.3	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
Cis-1,3-Dichloropropene	NE	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
Chloroethane	1.9	0.012 U	0.012 U	0.015 J	0.011 U	0.011 U	0.011 U	0.012 U	0.031
Ethylbenzene	5.5	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
Methyl Bromide	NE	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
Methyl Chloride	NE	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
Methyl Isobutyl Ketone	1	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
Methylene Chloride	0.1	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
Styrene	NE	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
Tetrachloroethene	1.4	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
Toluene	1.5	0.012 U	0.012 U	0.003 J	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
Trans-1,3-Dichloropropene	NE	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
Trichloroethene	0.7	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
Vinyl Chloride	0.2	0.012 U	0.012 U	0.026 U	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
Xylenes (Total)	1.2	0.012 U	0.012 U	0.006 J	0.011 U	0.011 U	0.011 U	0.012 U	0.011 U
Total VOC TIC	NE	0	0	3.783 J	0	0.007 J	0.006 J	0.007 J	0

TABLE 5
SUMMARY OF SOIL ANALYTICAL RESULTS
POST-CLOSURE SOIL BORINGS
FORMER COLUMBIA CEMENT FACILITY
FREEPORT, NEW YORK

BORING ID URS SAMPLE ID LAB SAMPLE ID SAMPLE DATE SAMPLE DEPTH (ft) UNITS	NYSDEC TAGM 4046 Recommended Soil Cleanup Objective (mg/kg)	T-07 T-07-16-18 N80188-30 10/7/2004 16 - 18 (mg/kg)	T-07 T-07-20-22 N80188-31 10/7/2004 20 - 22 (mg/kg)	T-07 T-07-24-26 N80188-32 10/7/2004 24 - 26 (mg/kg)	T-07 T-07-28-30 N80188-33 10/7/2004 28 - 30 (mg/kg)	T-08 T-08-14-15 N80188-42 10/7/2004 14 - 15 (mg/kg)	T-08 T-08-16-18 N80188-34 10/7/2004 16 - 18 (mg/kg)	T-08 T-08-20-22 N80188-35 10/7/2004 20 - 22 (mg/kg)	T-09 T-09-16-18 N80188-38 10/7/2004 16 - 18 (mg/kg)
VOC									
1,1,1-Trichloroethane	0.8	0.011 U	0.002 J	0.011 U	0.012 U	0.012 U	**94 D**	0.01 U	0.006 J
1,1,2,2-Tetrachloroethane	0.6	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.054 U	0.01 U	0.018 U
1,1,2-Trichloroethane	NE	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.054 U	0.01 U	0.018 U
1,1-Dichloroethane	0.2	0.005 J	**0.49 D**	0.011 U	0.012 U	0.012 U	**32 D**	0.003 J	0.004 J
1,1-Dichloroethene	0.4	0.011 U	0.006 J	0.011 U	0.012 U	0.012 U	0.27	0.01 U	0.018 U
1,2-Dichloroethane	0.1	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.007 J	0.01 U	0.018 U
1,2-Dichloroethene	NE	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.054 U	0.01 U	0.018 U
1,2-Dichloropropane	NE	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.054 U	0.01 U	0.018 U
2-Butanone	0.3	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.054 U	0.01 U	0.018 U
2-Hexanone	NE	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.054 U	0.01 U	0.018 U
Acetone	0.2	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.054 U	0.01 U	0.008 J
Benzene	0.06	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.006 J	0.01 U	0.018 U
Bromodichloromethane	NE	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.054 U	0.01 U	0.018 U
Bromoform	NE	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.054 U	0.01 U	0.018 U
Carbon Disulfide	2.7	0.002 J	0.001 J	0.011 U	0.012 U	0.012 U	0.018	0.01 U	0.007 J
Carbon Tetrachloride	0.6	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.054 U	0.01 U	0.018 U
Chlorobenzene	1.7	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.054 U	0.01 U	0.018 U
Chlorodibromomethane	NE	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.054 U	0.01 U	0.018 U
Chloroform	0.3	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.054 U	0.01 U	0.018 U
Cis-1,3-Dichloropropene	NE	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.054 U	0.01 U	0.018 U
Chloroethane	1.9	0.011 U	0.41 D	0.011 U	0.012 U	0.012 U	**9 D**	0.01 U	0.018 U
Ethylbenzene	5.5	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.054 U	0.01 U	0.018 U
Methyl Bromide	NE	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.054 U	0.01 U	0.018 U
Methyl Chloride	NE	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.054 U	0.01 U	0.018 U
Methyl Isobutyl Ketone	1	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.054 U	0.01 U	0.018 U
Methylene Chloride	0.1	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	**0.2**	0.01 U	0.018 U
Styrene	NE	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.054 U	0.01 U	0.018 U
Tetrachloroethene	1.4	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.35 J	0.01 U	0.018 U
Toluene	1.5	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.38	0.01 U	0.018 U
Trans-1,3-Dichloropropene	NE	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.054 U	0.01 U	0.018 U
Trichloroethene	0.7	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.13 J	0.01 U	0.018 U
Vinyl Chloride	0.2	0.011 U	0.001 J	0.011 U	0.012 U	0.012 U	0.054 U	0.01 U	0.018 U
Xylenes (Total)	1.2	0.011 U	0.013 U	0.011 U	0.012 U	0.012 U	0.054 U	0.01 U	0.018 U
Total VOC TIC	NE	0.006 J	0.007 J	0	0	2.841 J	0.451 J	0.007 J	0.009 J

.BLE 5
SUMMARY OF SOIL ANALYTICAL RESULTS
POST-CLOSURE SOIL BORINGS
FORMER COLUMBIA CEMENT FACILITY
FREEPORT, NEW YORK

BORING ID	NYSDEC	T-09	T-10	T-10	D-01	D-01	D-01	D-02	D-02
URS SAMPLE ID	TAGM 4046	T-09-20-22	T-10-16-18	T-10-20-22	D-01-10-12	D-01-16-18	D-01-20-22	D-02-10-12	D-02-16-18
LAB SAMPLE ID	Recommended	N80188-39	N80188-43	N80188-44	N80188-47	N80188-48	N80188-49	N80188-52	N80188-53
SAMPLE DATE	Soil Cleanup	10/7/2004	10/7/2004	10/7/2004	10/7/2004	10/7/2004	10/7/2004	10/7/2004	10/7/2004
SAMPLE DEPTH (ft)	Objective	20 - 22	16 - 18	20 - 22	10 - 12	16 - 18	20 - 22	10 - 12	16 - 18
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
VOC									
1,1,1-Trichloroethane	0.8	0.011 U	0.003 J	0.011 U	0.17	**690 D**	0.013 U	0.01 J	0.021 U
1,1,2,2-Tetrachloroethane	0.6	0.011 U	0.019 U	0.011 U	0.012 U	0.310 U	0.013 U	0.028 U	0.021 U
1,1,2-Trichloroethane	NE	0.011 U	0.019 U	0.011 U	0.012 U	0.310 U	0.013 U	0.028 U	0.021 U
1,1-Dichloroethane	0.2	0.011 U	0.061	0.011 U	0.17	**11.0 DJ**	0.013 U	0.008 J	0.021 U
1,1-Dichloroethene	0.4	0.011 U	0.019 U	0.011 U	0.012 U	**0.92**	0.013 U	0.028 U	0.021 U
1,2-Dichloroethane	0.1	0.011 U	0.019 U	0.011 U	0.012 U	0.310 U	0.013 U	0.028 U	0.021 U
1,2-Dichloroethene	NE	0.011 U	0.019 U	0.011 U	0.012 U	0.310 U	0.013 U	0.028 U	0.021 U
1,2-Dichloropropane	NE	0.011 U	0.019 U	0.011 U	0.012 U	0.310 U	0.013 U	0.028 U	0.021 U
2-Butanone	0.3	0.011 U	0.019 U	0.011 U	0.018	**0.37**	0.015	0.03	0.021 U
2-Hexanone	NE	0.011 U	0.019 U	0.011 U	0.012 U	0.310 U	0.013 U	0.028 U	0.021 U
Acetone	0.2	0.011 U	0.018 J	0.005 J	0.022	**0.42**	0.011 J	0.086	0.015 J
Benzene	0.06	0.011 U	0.019 U	0.011 U	0.012 U	**0.096**	0.013 U	0.028 U	0.021 U
Bromodichloromethane	NE	0.011 U	0.019 U	0.011 U	0.012 U	0.310 U	0.013 U	0.028 U	0.021 U
Bromoform	NE	0.011 U	0.019 U	0.011 U	0.012 U	0.310 U	0.013 U	0.028 U	0.021 U
Carbon Disulfide	2.7	0.011 U	0.016 J	0.011 U	0.002 J	0.130 J	0.007 J	0.026 J	0.01 J
Carbon Tetrachloride	0.6	0.011 U	0.019 U	0.011 U	0.012 U	0.310 U	0.013 U	0.028 U	0.021 U
Chlorobenzene	1.7	0.011 U	0.019 U	0.011 U	0.012 U	0.064	0.013 U	0.007 J	0.021 U
Chlorodibromomethane	NE	0.011 U	0.019 U	0.011 U	0.012 U	0.310 U	0.013 U	0.028 U	0.021 U
Chloroform	0.3	0.011 U	0.019 U	0.011 U	0.012 U	0.310 U	0.013 U	0.028 U	0.021 U
Cis-1,3-Dichloropropene	NE	0.011 U	0.019 U	0.011 U	0.012 U	0.310 U	0.013 U	0.028 U	0.021 U
Chloroethane	1.9	0.011 U	0.006 J	0.011 U	0.006 J	**8.4 DJ**	0.013 U	0.028 U	0.021 U
Ethylbenzene	5.5	0.011 U	0.019 U	0.011 U	0.007 J	0.31	0.013 U	0.028 U	0.021 U
Methyl Bromide	NE	0.011 U	0.019 U	0.011 U	0.012 U	0.310 U	0.013 U	0.028 U	0.021 U
Methyl Chloride	NE	0.011 U	0.019 U	0.011 U	0.012 U	0.75 J	0.013 U	0.028 U	0.021 U
Methyl Isobutyl Ketone	1	0.011 U	0.019 U	0.011 U	0.012 U	0.310 U	0.013 U	0.028 U	0.021 U
Methylene Chloride	0.1	0.011 U	0.019 U	0.011 U	0.012 U	0.075 J	0.013 U	0.028 U	0.021 U
Styrene	NE	0.011 U	0.019 U	0.011 U	0.012 U	0.310 U	0.013 U	0.028 U	0.021 U
Tetrachloroethene	1.4	0.011 U	0.019 U	0.011 U	0.003 J	0.310 U	0.013 U	0.028 U	0.021 U
Toluene	1.5	0.011 U	0.019 U	0.011 U	0.035	1.1	0.013 U	0.016 J	0.021 U
Trans-1,3-Dichloropropene	NE	0.011 U	0.019 U	0.011 U	0.012 U	0.310 U	0.013 U	0.028 U	0.021 U
Trichloroethene	0.7	0.011 U	0.019 U	0.011 U	0.002 J	0.120	0.013 U	0.028 U	0.021 U
Vinyl Chloride	0.2	0.011 U	0.019 U	0.011 U	0.012 U	0.310 U	0.013 U	0.028 U	0.021 U
Xylenes (Total)	1.2	0.011 U	0.019 U	0.011 U	0.03	0.90	0.013 U	0.028 U	0.021 U
Total VOC TIC	NE	0	0	0	1.91 J	69.08 J	0	0.731 J	0

TABLE 5
SUMMARY OF SOIL ANALYTICAL RESULTS
POST-CLOSURE SOIL BORINGS
FORMER COLUMBIA CEMENT FACILITY
FREEPORT, NEW YORK

BORING ID URS SAMPLE ID LAB SAMPLE ID SAMPLE DATE SAMPLE DEPTH (ft) UNITS	NYSDEC TAGM 4046 Recommended Soil Cleanup Objective (mg/kg)	D-02 D-02-20-22 N80188-54 10/7/2004 20 - 22 (mg/kg)	D-03 D-03-10-12 N80188-58 10/7/2004 10 - 12 (mg/kg)	D-03 D-03-10-12 N80188-83 10/8/2004 10 - 12 (mg/kg)	D-03 D-03-16-18 N80188-59 10/8/2004 16 - 18 (mg/kg)	D-03 D-03-20-22 N80188-60 10/8/2004 20 - 22 (mg/kg)	D-04 D-04-10-12 N80188-63 10/8/2004 10 - 12 (mg/kg)	D-04 D-04-16-18 N80188-64 10/8/2004 16 - 18 (mg/kg)	D-04 D-04-20-22 N80188-65 10/8/2004 20 - 22 (mg/kg)
VOC									
1,1,1-Trichloroethane	0.8	0.013 U	0.002 J	0.021 U	0.011 U	0.011 U	0.078 U	0.016	0.011 U
1,1,2,2-Tetrachloroethane	0.6	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.078 U	0.012 U	0.011 U
1,1,2-Trichloroethane	NE	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.078 U	0.012 U	0.011 U
1,1-Dichloroethane	0.2	0.013 U	**0.26**	0.021 U	0.011 U	0.011 U	0.078 U	0.14	0.011 U
1,1-Dichloroethene	0.4	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.078 U	0.012 U	0.011 U
1,2-Dichloroethane	0.1	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.078 U	0.012 U	0.011 U
1,2-Dichloroethene	NE	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.078 U	0.012 U	0.011 U
1,2-Dichloropropane	NE	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.078 U	0.012 U	0.011 U
2-Butanone	0.3	0.013 U	0.019 U	0.032	0.011 U	0.011 U	0.078 U	0.02	0.011 U
2-Hexanone	NE	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.078 U	0.012 U	0.011 U
Acetone	0.2	0.013 U	0.014 J	0.14	0.011 U	0.011 U	0.081	0.043	0.011 U
Benzene	0.06	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.008 J	0.012 U	0.011 U
Bromodichloromethane	NE	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.078 U	0.012 U	0.011 U
Bromoform	NE	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.078 U	0.012 U	0.011 U
Carbon Disulfide	2.7	0.013 U	0.007 J	0.003 J	0.011 U	0.011 U	0.021 J	0.006 J	0.011 U
Carbon Tetrachloride	0.6	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.078 U	0.012 U	0.011 U
Chlorobenzene	1.7	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.009 J	0.012 U	0.011 U
Chlorodibromomethane	NE	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.078 U	0.012 U	0.011 U
Chloroform	0.3	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.078 U	0.012 U	0.011 U
Cis-1,3-Dichloropropene	NE	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.078 U	0.012 U	0.011 U
Chloroethane	1.9	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.28	0.012 U	0.003 J
Ethylbenzene	5.5	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.019 J	0.015	0.011 U
Methyl Bromide	NE	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.078 U	0.012 U	0.011 U
Methyl Chloride	NE	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.078 U	0.012 U	0.011 U
Methyl Isobutyl Ketone	1	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.078 U	0.012 U	0.011 U
Methylene Chloride	0.1	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.078 U	0.012 U	0.011 U
Styrene	NE	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.078 U	0.012 U	0.011 U
Tetrachloroethene	1.4	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.078 U	0.012 U	0.011 U
Toluene	1.5	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.008 J	0.002 J	0.011 U
Trans-1,3-Dichloropropene	NE	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.078 U	0.012 U	0.011 U
Trichloroethene	0.7	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.078 U	0.012 U	0.011 U
Vinyl Chloride	0.2	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.078 U	0.012 U	0.011 U
Xylenes (Total)	1.2	0.013 U	0.019 U	0.021 U	0.011 U	0.011 U	0.023 J	0.027	0.011 U
Total VOC TIC	NE	0	0	0.024 J	0	0	70.7 J	0.103 J	0.006 J

,ABLE 5
SUMMARY OF SOIL ANALYTICAL RESULTS
POST-CLOSURE SOIL BORINGS
FORMER COLUMBIA CEMENT FACILITY
FREEPORT, NEW YORK

BORING ID URS SAMPLE ID LAB SAMPLE ID SAMPLE DATE SAMPLE DEPTH (ft) UNITS	NYSDEC TAGM 4046 Recommended Soil Cleanup Objective (mg/kg)	D-05 D-05-10-12 N80188-68 10/8/2004 10 - 12 (mg/kg)	D-05 D-05-16-18 N80188-69 10/8/2004 16 - 18 (mg/kg)	D-05 D-05-20-22 N80188-70 10/8/2004 20 - 22 (mg/kg)	D-06 D-06-10-12 N80188-73 10/8/2004 10 - 12 (mg/kg)	D-06 D-06-16-18 N80188-74 10/8/2004 16 - 18 (mg/kg)	D-06 D-06-20-22 N80188-75 10/8/2004 20 - 22 (mg/kg)	D-07 D-07-10-12 N80188-1 10/6/2004 10 - 12 (mg/kg)	D-07 D-07-16-18 N80188-2 10/6/2004 16 - 18 (mg/kg)
VOC									
1,1,1-Trichloroethane	0.8	0.003 J	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	10	0.018 U
1,1,2,2-Tetrachloroethane	0.6	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	0.53 U	0.018 U
1,1,2-Trichloroethane	NE	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	0.53 U	0.018 U
1,1-Dichloroethane	0.2	0.002 J	0.012 U	0.011 U	0.004 J	0.011 U	0.011 U	75 D	0.001 J
1,1-Dichloroethene	0.4	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	0.53 U	0.018 U
1,2-Dichloroethane	0.1	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	0.53 U	0.018 U
1,2-Dichloroethene	NE	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	0.53 U	0.018 U
1,2-Dichloropropane	NE	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	0.53 U	0.018 U
2-Butanone	0.3	0.024	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	0.53 U	0.018 U
2-Hexanone	NE	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	0.53 U	0.018 U
Acetone	0.2	0.049	0.014	0.011 U	0.04	0.014	0.011 U	0.53 U	0.018 U
Benzene	0.06	0.002 J	0.012 U	0.011 U	0.067	0.011 U	0.011 U	0.53 U	0.018
Bromodichloromethane	NE	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	5.3 U	0.018 U
Bromoform	NE	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	0.53 U	0.018 U
Carbon Disulfide	2.7	0.006 J	0.002 J	0.003 J	0.014 J	0.002 J	0.002 J	0.53 U	0.018 U
Carbon Tetrachloride	0.6	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	5.3 U	0.018 U
Chlorobenzene	1.7	0.011 U	0.012 U	0.011 U	0.011 J	0.011 U	0.011 U	0.53 U	0.018 U
Chlorodibromomethane	NE	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	0.53 U	0.018 U
Chloroform	0.3	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	0.53 U	0.018 U
Cis-1,3-Dichloropropene	NE	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	0.53 U	0.018 U
Chloroethane	1.9	0.039	0.012 U	0.011 U	0.042	0.011 U	0.011 U	3.7	0.018 U
Ethylbenzene	5.5	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	0.53 U	0.018 U
Methyl Bromide	NE	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	0.53 U	0.018 U
Methyl Chloride	NE	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	0.53 U	0.018 U
Methyl Isobutyl Ketone	1	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	0.53 U	0.018 U
Methylene Chloride	0.1	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	0.53 U	0.018 U
Styrene	NE	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	0.53 U	0.018 U
Tetrachloroethene	1.4	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	0.53 U	0.018 U
Toluene	1.5	0.011 U	0.012 U	0.011 U	0.014 J	0.011 U	0.011 U	0.087 J	0.0008 J
Trans-1,3-Dichloropropene	NE	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	0.53 U	0.018 U
Trichloroethene	0.7	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	0.53 U	0.018 U
Vinyl Chloride	0.2	0.011 U	0.012 U	0.011 U	0.018 U	0.011 U	0.011 U	0.53 U	0.018 U
Xylenes (Total)	1.2	0.008 J	0.012 U	0.011 U	0.006 J	0.011 U	0.011 U	0.53 U	0.018 U
Total VOC TIC	NE	1.391 J	0	0	0.617 J	0	0	1.51 J	0

ABLE 5
SUMMARY OF SOIL ANALYTICAL RESULTS
POST-CLOSURE SOIL BORINGS
FORMER COLUMBIA CEMENT FACILITY
FREEPORT, NEW YORK

BORING ID	NYSDEC TAGM 4046 Recommended Soil Cleanup Objective (mg/kg)	D-07	D-08	D-08	D-08	D-08	D-09	D-09
URS SAMPLE ID		D-07-20-22	D-08-10-12	D-08-16-18	D-08-20-22	D-08-24-26	D-09-12-14	D-09-14-16
LAB SAMPLE ID		N80188-3	N80188-78	N80188-79	N80188-80	N80188-81	N80188-86	N80188-87
SAMPLE DATE		10/6/2004	10/8/2004	10/8/2004	10/8/2004	10/8/2004	10/8/2004	10/8/2004
SAMPLE DEPTH (ft)		20 - 22	10 - 12	16 - 18	20 - 22	24 - 26	12 - 14	14 - 16
UNITS		(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
VOC								
1,1,1-Trichloroethane	0.8	0.012 U	840 E	0.003 J	0.002 J	0.011 U	0.011 U	0.011 U
1,1,2,2-Tetrachloroethane	0.6	0.012 U	0.18 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
1,1,2-Trichloroethane	NE	0.012 U	0.18 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
1,1-Dichloroethane	0.2	0.012 U	100 D	0.001 J	0.004 J	0.011 U	0.011 U	0.011 U
1,1-Dichloroethene	0.4	0.012 U	1.3 D	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
1,2-Dichloroethane	0.1	0.012 U	0.15 J	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
1,2-Dichloroethene	NE	0.012 U	0.18 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
1,2-Dichloropropane	NE	0.012 U	0.18 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
2-Butanone	0.3	0.012 U	0.18 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
2-Hexanone	NE	0.012 U	0.18 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
Acetone	0.2	0.012 U	0.14 J	0.007 J	0.012 U	0.011 U	0.011 U	0.011 U
Benzene	0.06	0.012 U	0.054 J	0.011 U	0.012 U	0.011 U	0.009 J	0.011 U
Bromodichloromethane	NE	0.012 U	0.18 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
Bromoform	NE	0.012 U	0.18 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
Carbon Disulfide	2.7	0.012 U	0.18 U	0.002 J	0.003 J	0.011 U	0.011 U	0.011 U
Carbon Tetrachloride	0.6	0.012 U	0.18 U	0.011 U	0.012 U	0.011 U	0.002 J	0.011 U
Chlorobenzene	1.7	0.012 U	0.18 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
Chlorodibromomethane	NE	0.012 U	0.18 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
Chloroform	0.3	0.012 U	0.18 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
Cis-1,3-Dichloropropene	NE	0.012 U	0.18 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
Chloroethane	1.9	0.012 U	7.7 DJ	0.011 U	0.21	0.011 U	0.011 U	0.011 U
Ethylbenzene	5.5	0.012 U	0.18 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
Methyl Bromide	NE	0.012 U	0.18 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
Methyl Chloride	NE	0.012 U	1.0	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
Methyl Isobutyl Ketone	1	0.012 U	0.18 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
Methylene Chloride	0.1	0.012 U	1.0	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
Styrene	NE	0.012 U	0.18 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
Tetrachloroethene	1.4	0.012 U	0.11 J	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
Toluene	1.5	0.012 U	1.1	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
Trans-1,3-Dichloropropene	NE	0.012 U	1.0	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
Trichloroethene	0.7	0.012 U	0.061 J	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
Vinyl Chloride	0.2	0.012 U	0.18 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
Xylenes (Total)	1.2	0.012 U	0.18 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U
Total VOC TIC	NE	0	9.3 J	0	0.03 J	0	0	0

ABLE 5
SUMMARY OF SOIL ANALYTICAL RESULTS
POST-CLOSURE SOIL BORINGS
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

NOTES:

mg/kg : Milligrams Per Kilogram (ppm)
U : Compound was not detected.
J : The result is a quantitatively estimated value.
D : Result is obtained from a diluted sample.
NE : Not Established
Boxed : Exceeds NYSDEC TAGM Recommended Soil Cleanup Objective

ꞏABLE 6
SUMMARY OF FIELD PARAMETERS
JUNE 2004 GROUNDWATER SAMPLING
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NY

Well	MW-1S	MW-1D-97	MW-97-1S	MW-98-9D	MW-97-2S	MW-98-10D	MW-97-6S	MW-97-7S
Date	6/7/2004	6/7/2004	6/8/2004	6/8/2004	6/8/2004	6/8/2004	6/9/2004	6/9/2004
DTW (ft)	6.64	5.8	5.95	5.9	6.89	7	6.72	6.9
TD (ft)	20.96	33.62	21.14	36.56	23.93	34.94	25.73	31.75
pH (Std. Units)	6.55	6.64	6.28	6.29	6.15	6.19	6.13	6.27
ORP (mV)	-86	-51.4	-31.2	-26.6	-14.5	-207.3	-15.3	-14.3
Temp. (Deg. C)	15.74	17.68	16.57	17.71	17.56	18.83	17.05	17.55
Spec. Cond. (mS/cm)	1.48	1.84	0.794	0.85	0.982	0.899	1.401	0.905
D.O. (mg/l)	0.23	0.33	0.29	0.35	0.48	0.69	0.41	0.34
Turbidity (NTU)	1084.8	5.9	250.1	1096.1	164.7	24.8	245	371.9

NOTES:

(ft) : Feet
DTW : Depth to water from top of casing
TD : Total depth from top of casing
ph (Std. Units) : pH measured in Standard Units
ORP (mV) : Oxidation-Reduction Potential measured in millivolts
Temp. (Deg. C) : Temperature measured in degrees centigrade
Spec. Cond. (mS/cm) : Specific Conductance measured in micro-Siemens per centimeter
D.O. (mg/l) : Dissolved Oxygen measured in milligrams per liter.
Turbidity (NTU) : Turbidity measured in nephelometric turbidity units

TABLE 6
SUMMARY OF FIELD PARAMETERS
JUNE 2004 GROUNDWATER SAMPLING
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NY

Well	MW-97-3S	MW-98-8D	MW-98-8S	MW-00-11A	MW-03-13S	MW-00-12D	MW-97-4S	MW-97-5S
Date	6/9/2004	6/9/2004	6/9/2004	6/9/2004	6/10/2004	6/10/2004	6/10/2004	6/10/2004
DTW (ft)	6.99	7.17	7.25	2.46	6.18	6.77	7.14	7.01
TD (ft)	24.81	34.88	19.76	60.14	24.28	34.7	24.95	25.41
pH (Std. Units)	6.37	6.51	6.67	5.13	6.53	6.59	6.54	6.66
ORP (mV)	-165.3	-81.2	-72.8	-206.4	-42.8	-33.5	-173	-159
Temp. (Deg. C)	17.38	17.28	14.75	18.44	19.59	15.89	15.8	15.31
Spec. Cond. (mS/cm)	1.75	1.083	1.967	0.026	1.044	1.437	1.18	0.891
D.O. (mg/l)	0.33	0.36	0.35	0.25	0.43	0.35	0.25	0.28
Turbidity (NTU)	236.9	5.1	2.4	240.6	957.2	576.2	83.4	41

NOTES:

(ft) : Feet
DTW : Depth to water from top of casing
TD : Total depth from top of casing
ph (Std. Units) : pH measured in Standard Units
ORP (mV) : Oxidation-Reduction Potential measured in millivolts
Temp. (Deg. C) : Temperature measured in degrees centigrade
Spec. Cond. (mS/cm) : Specific Conductance measured in micro-Siemens per centimeter
D.O. (mg/l) : Dissolved Oxygen measured in milligrams per liter.
Turbidity (NTU) : Turbidity measured in nephelometric turbidity units

TABLE 7
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
JUNE 2004 GROUNDWATER SAMPLING
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

WELL ID FIELD SAMPLE ID LAB SAMPLE ID SAMPLE ID	NYSDEC TAGM 4046 Groundwater Standards/Criteria	MW-1S MW-1S N69045-1A 6/7/2004	MW-97-1S MW-97-1S N69150-1A 6/8/2004	MW-1D-97 MW-1D-97 N69045-2A 6/7/2004	MW-97-2S MW-97-2S N69150-4A 6/8/2004	MW-97-3S MW-97-3S N69286-4 6/9/2004	MW-97-4S MW-97-4S N69400-3 6/10/2004	MW-97-5S MW-97-5S N969400-4 6/10/2004	MW-97-6S MW-97-6S N69286-2 6/9/2004
Volatile Organic Compounds (ug/l)									
1,1,1-Trichloroethane	5	150 JD	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	5	660 JD	10 U	10 U	10 U	10 U	10 U	7 J	10 U
1,1-Dichloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	0.6	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (Total)	5	4 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	50	10 U	10 U	10 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
Acetone	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	1	15	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	5	10 U	4 J	10 U	16	8 J	1 J	10 U	11
Chlorodibromomethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	7	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cis-1,3-Dichloropropene	0.4	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethyl Chloride	5	10,000 D	430 D	10 U	10 U	10 U	190 D	79	410 D
Ethylbenzene	5	2 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl Bromide	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl Chloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl Isobutyl Ketone	NS	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	5	230 JD	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	5	4 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trans-1,3-Dichloropropene	0.4	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	2	15	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (Total)	5	10	2 J	10 U	10 U	10 U	10 U	10 U	10 U
Total VOC TIC	NE	1154 J	60 J	0	55 J	42 J	12 J	0	0
Dissolved Gasses (ug/l)									
Ethane	NE	1320	47.5	8.19	1.4	1.2	75	22.2	15
Ethene	NE	1.3	0.075 U	0.075 U	0.075 U	0.075 U	0.075 U	0.075 U	0.075 U
Methane	NE	6320	9430	907	10000	9520	2090	4210	9030

TABLE 7
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
JUNE 2004 GROUNDWATER SAMPLING
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

WELL ID FIELD SAMPLE ID LAB SAMPLE ID SAMPLE ID	NYSDEC TAGM 4046 Groundwater [illegible]	MW-1S MW-1S N690[illegible] [illegible]	MW-97-1S MW-97-1S [illegible] [illegible]	MW-1D-97 MW-1D-97 [illegible] [illegible]	MW-97-2S MW-97-2S N69150-4A 6/8/2004	MW-97-3S MW-97-3S N69286-4 6/9/2004	MW-97-4S MW-97-4S N69400-3 6/10/2004	MW-97-5S MW-97-5S N969400-4 6/10/2004	MW-97-6S MW-97-6S N69286-2 6/9/2004
[illegible]									
Total Iron	NE	26.9	23.8	9.14	29.5	0.177	2.63	8.07	30.6
Iron II	NE	11.7	13.1	1.3	19.9	100 U	1.4	1.4	15.5
Total Manganese	NE	NT	0.13	0.416	0.192	0.0471	NT	0.268	0.224
Manganese II	NE	0.43 J	1.0 U	0.39 J	0.18 J	1.0 U	NT	0.24 J	0.21 J
Miscellaneous (mg/l)									
Alkalinity, Total As CaCo3	NE	693	400	1040	606	549	701	607	814
Chloride	NE	138	54	132	38.4	388	119	59.2	79.7
Nitrate	NE	0.110 U	0.110 U	0.110 U	0.110 U	0.110 U	0.110 U	0.110 U	0.110 U
Nitrate/Nitrite Nitrogen	NE	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U	0.100 U
Nitrite	NE	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
Sulfate	NE	20.0 U	20.0 U	27.1	20.0 U	20.0 U	63.6	20.0 U	20.0 U
Total Organic Carbon	NE	10.1	6.7	10.9	8.5	22.9	6.5	6.3	10.1

TABLE 7
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
JUNE 2004 GROUNDWATER SAMPLING
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

WELL ID FIELD SAMPLE ID LAB SAMPLE ID SAMPLE ID	NYSDEC TAGM 4046 Groundwater Standards/Criteria	MW-97-7S MW-97-7S N69286-3 6/9/2004	MW-98-8S MW-98-8S N69286-6 6/9/2004	MW-98-8D MW-98-8D N69286-5 6/9/2004	MW-98-9D MW-98-9D N69150-2A 6/8/2004	MW-98-10D MW-98-10D N69150-5A 6/8/2004	MW-00-11A MW-00-11A N69286-7 6/9/2004	MW-00-12D MW-00-12D N69400-2 6/10/2004	MW-03-13S MW-03-13S N69400-1 6/10/2004
Volatile Organic Compounds (ug/l)									
1,1,1-Trichloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	0.6	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (Total)	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	1	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	50	10 U	10 U	10 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
Acetone	50	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	1	10 U	10 U	10 U	10 U	10 U	10 U	2 J	10 U
Bromodichloromethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	5	4 J	10 U	10 U	7 J	7 J	10 U	10 U	10 U
Chlorodibromomethane	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	7	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cis-1,3-Dichloropropene	0.4	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethyl Chloride	5	10 U	10 U	14	510 D	10 U	10 U	120	10 U
Ethylbenzene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl Bromide	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl Chloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl Isobutyl Ketone	NS	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trans-1,3-Dichloropropene	0.4	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	2	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (Total)	5	10 U	10 U	10 U	2 J	10 U	10 U	10 U	10 U
Total VOC TIC	NE	10 J	0	0	76 J	61 J	0	32 J	73 J
Dissolved Gasses (ug/l)									
Ethane	NE	NT	1.5	10.1	64.8	0.67	NT	145	0.31
Ethene	NE	NT	0.075 U	0.075 U	0.075 U	0.075 U	NT	0.075 U	0.075 U
Methane	NE	NT	3820	3790	9600	9360	NT	1870	6710

.BLE 7
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
JUNE 2004 GROUNDWATER SAMPLING
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

WELL ID FIELD SAMPLE ID LAB SAMPLE ID SAMPLE ID	NYSDEC TAGM 4046 Groundwater Standards/Criteria	MW-97-7S MW-97-7S N69286-3 6/9/2004	MW-98-8S MW-98-8S N69286-6 6/9/2004	MW-98-8D MW-98-8D N69286-5 6/9/2004	MW-98-9D MW-98-9D N69150-2A 6/8/2004	MW-98-10D MW-98-10D N69150-5A 6/8/2004	MW-00-11A MW-00-11A N69286-7 6/9/2004	MW-00-12D MW-00-12D N69400-2 6/10/2004	MW-03-13S MW-03-13S N69400-1 6/10/2004
Metals (mg/l)									
Total Iron	NE	NT	14	5.1	17.7	17.9	NT	10.9	22.8
Iron II	NE	NT	100 U	100 U	9.9	11	NT	2.2	3.7
Total Manganese	NE	NT	0.534	0.418	0.241	NT	NT	NT	0.152
Manganese II	NE	NT	0.49 J	0.38 J	0.20 J	NT	NT	NT	0.12 J
Miscellaneous (mg/l)									
Alkalinity, Total As CaCo3	NE	NT	1070	697	424	453	NT	988	525
Chloride	NE	NT	179	68.7	58.5	74.3	NT	121	123
Nitrate	NE	NT	0.110 U	0.110 U	0.110 U	0.110 U	NT	0.110 U	0.110 U
Nitrate/Nitrite Nitrogen	NE	NT	0.100 U	0.100 U	0.100 U	0.100 U	NT	0.100 U	0.100 U
Nitrite	NE	NT	0.010 U	0.010 U	0.010 U	0.010 U	NT	0.010 U	0.010 U
Sulfate	NE	NT	23.1	20.0 U	20.0 U	20.0 U	NT	26.9	20.0 U
Total Organic Carbon	NE	NT	11.3	7.9	7.7	6.6	NT	9.4	8.8

TABLE 7
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
JUNE 2004 GROUNDWATER SAMPLING
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

NOTES:

$\boxed{\textbf{Box/Bold}}$: Exceeds NYSDEC GW Standard

D : Result is obtained from a diluted sample.

J : The result is a quantitatively estimated value.

U : Compound was not detected.

NE : Not Established

NT : Not Tested

µg/l : Micrograms Per Liter

mg/l : Milligrams Per Liter

TABLE 8
SUMMARY OF FIELD MEASUREMENTS
APRIL 2005 GROUNDWATER SAMPLING
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NY

Well	MW-97-1S	MW-98-9D	MW-05-14S	MW-05-15D	MW-03-13S
Date	4/26/2005	4/26/2005	4/26/2005	4/26/2005	4/26/2005
DTW (ft)	5.82	5.85	5.04	4.95	6.05
TD (ft)	24.11	36.34	25.00	38.30	24.30
pH (Std. Units)	6.48	6.39	6.34	6.62	6.8
ORP (mV)	-108	-117	-86	-71	-135
Temp. (Deg. C)	17.14	17.94	16.63	17.79	15.66
Spec. Cond. (mS/cm)	0.89	0.90	14.30	0.30	0.90
D.O. (mg/l)	0.0	0.0	0.0	0.0	0.0
Turbidity (NTU)	89.1	225	61	39.2	32.8

NOTES:

(ft) : Feet
DTW : Depth to water from top of casing
TD : Total depth from top of casing
ph (Std. Units) : pH measured in Standard Units
ORP (mV) : Oxidation-Reduction Potential measured in millivolts
Temp. (Deg. C) : Temperature measured in degrees centigrade
Spec. Cond. (mS/cm) : Specific Conductance measured in micro-Siemens per centimeter
D.O. (mg/l) : Dissolved Oxygen measured in milligrams per liter.
Turbidity (NTU) : Turbidity measured in nephelometric turbidity units

TABLE 9
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
APRIL 2005 GROUNDWATER SAMPLING
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

URS Sampe ID	NYSDEC TAGM 4046 Groundwater Standards/Criteria	MW-97-1S	MW-98-9D	MW-05-14S	MW-05-15D	MW-05-15D DUP	MW-03-13S	TB042605
Laboratory Sample ID		N97288-3	N97288-2	N97288-5	N97288-6	N97288-7	N97288-4	N97288-1
Sampling Date		04/28/05	04/26/05	04/28/05	04/26/05	04/26/05	04/26/05	04/26/05
Dilution Factor		1	10	1	1	1	1	1
Units	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Volatile Organic Compounds								
1,1,1-Trichloroethane	5	10 U	100 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	5	10 U	100 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	NA	10 U	100 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	5	10 U	100 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	5	10 U	100 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	5	10 U	100 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)	NA	10 U	100 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	NA	10 U	100 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	50	10 U	100 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	NA	10 U	100 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	NA	10 U	100 U	10 U	10 U	10 U	10 U	10 U
Acetone	50	10 U	100 U	10 U	10 U	10 U	10 U	10 U
Benzene	0.7	10 U	100 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	NA	10 U	100 U	10 U	10 U	10 U	10 U	10 U
Bromoform	NA	10 U	100 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	NA	10 U	100 U	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	50	10 U	100 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	5	10 U	100 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	5	3 J	100 U	**24**	3 J	2 J	10 U	10 U
Chloroethane	50	**170**	**910 D**	13	**120**	**110**	10 U	10 U
Chloroform	7	10 U	100 U	10 U	10 U	10 U	10 U	10 U
Chloromethane	NA	10 U	100 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	NA	10 U	100 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	50	10 U	100 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	5	10 U	100 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	5	10 U	100 U	10 U	10 U	10 U	10 U	10 U
Styrene	NA	10 U	100 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5	10 U	100 U	10 U	10 U	10 U	10 U	10 U
Toluene	5	10 U	100 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	NA	10 U	100 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	5	10 U	100 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	2	10 U	100 U	10 U	10 U	10 U	10 U	10 U
Xylene (total)	5	1 J	100 U	10 U	10 U	10 U	10 U	10 U
Total Target VOCs	NA	174	910	37	123	112	0	0
Total TIC, Volatile	NA	79 J	120 J	6 J	31 J	26 J	134 J	0

.BLE 9
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
APRIL, 2005 SAMPLING EVENT
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

NOTES:

Box/Bold : Exceeds NYSDEC GW Standard

D : Result is obtained from a diluted sample.

J : The result is a quantitatively estimated value.

U : Compound was not detected.

NE : Not Established

NT : Not Tested

µg/l : Micrograms Per Liter

mg/l : Milligrams Per Liter

TABLE 10
SUMMARY OF FIELD MEASUREMENTS
JUNE 2006 GROUNDWATER SAMPLING
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NY

Well	MW-1S	MW-97-1S	MW-1D-97	MW-97-2S	MW-97-3S	MW-97-4S	MW-97-5S	MW-97-6S	MW-97-7S
Data	6/7/2006	6/7/2006	6/7/2006	6/9/2006	6/9/2006	6/8/2006	6/9/2006	6/8/2006	6/6/2006
Ref. Elevation (ft MSL)	6.84	6.46	6.89	7.52	7.47	7.69	6.73	7.57	7.61
DTW (ft)	5.62	5.33	5.85	6.52	6.10	6.64	5.47	6.42	6.73
GW Elev. (ft MSL)	1.22	1.13	1.04	1.00	1.37	1.05	1.26	1.15	0.88
TD (ft)	20.02	24.08	33.65	23.93	24.76	24.95	15.50	25.66	31.35
pH (Std. Units)	7.37	6.52	6.93	6.43	6.68	6.97	7.03	6.47	6.66
ORP (mV)	-195	-90	57	-80	-69	-102	-147	-80	-108
Temp. (Deg. C)	15.59	15.98	15.37	17.43	16.66	15.99	16.83	16.58	17.13
Spec. Cond. (mS/cm)	1.28	1.34	1.40	1.22	1.94	1.58	0.942	1.69	1.09
D.O. (mg/l)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turbidity (NTU)	83.6	7.4	0.9	77.6	29.8	7.6	266	5.8	0.7

NOTES:

Ref. Elevation (ft MSL) : Elevation of top of well casing measured in feet above Mean Seal Level
(ft) : Feet
DTW : Depth to water from top of casing
GW Elev. (ft MSL) : Groundwater elevation measued in feet above Mean Sea Level
TD : Total depth from top of casing
ph (Std. Units) : pH measured in Standard Units
ORP (mV) : Oxidation-Reduction Potential measured in millivolts
Temp. (Deg. C) : Temperature measured in degrees centigrade
Spec. Cond. (mS/cm) : Specific Conductance measured in micro-Siemens per centimeter
D.O. (mg/l) : Dissolved Oxygen measured in milligrams per liter.
Turbidity (NTU) : Turbidity measured in nephelometric turbidity units

TABLE 10
SUMMARY OF FIELD MEASUREMENTS
JUNE 2006 GROUNDWATER SAMPLING
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NY

Well	MW-98-8S	MW-98-8D	MW-98-9D	MW-98-10D	MW-00-11A	MW-00-12D	MW-03-13S	MW-05-14S	MW-05-15D
Data	6/7/2006	6/7/2006	6/8/2006	6/9/2006	6/7/2006	6/8/2006	6/6/2006	6/8/2006	6/8/2006
Ref. Elevation (ft MSL)	7.88	7.69	6.43	7.72	6.45	7.41	6.83	5.76	5.74
DTW (ft)	6.90	6.57	5.42	6.69	3.10	6.36	6.43	4.69	4.59
GW Elev. (ft MSL)	0.98	1.12	1.01	1.03	3.35	1.05	0.40	1.07	1.15
TD (ft)	20.82	34.79	36.52	34.85	60.55	34.57	24.30	24.93	38.23
pH (Std. Units)	6.84	6.87	6.46	6.51	5.36	6.92	6.83	6.56	6.29
ORP (mV)	-137	-125	-85	-84	206	-101	-163	-99	-52
Temp. (Deg. C)	15.74	16.14	16.47	17.79	15.73	16.16	19.51	16.17	16.77
Spec. Cond. (mS/cm)	2.57	2.25	1.35	1.20	0.040	1.88	1.30	9.65	0.311
D.O. (mg/l)	0.0	0.0	0.0	0.0	2.51	0.0	0.0	0.0	0.0
Turbidity (NTU)	13.9	3.1	35.1	247	1.7	8.9	216	3.9	8.2

NOTES:

Ref. Elevation (ft MSL) : Elevation of top of well casing measured in feet above Mean Seal Level
(ft) : Feet
DTW : Depth to water from top of casing
GW Elev. (ft MSL) : Groundwater elevation measued in feet above Mean Sea Level
TD : Total depth from top of casing
ph (Std. Units) : pH measured in Standard Units
ORP (mV) : Oxidation-Reduction Potential measured in millivolts
Temp. (Deg. C) : Temperature measured in degrees centigrade
Spec. Cond. (mS/cm) : Specific Conductance measured in micro-Siemens per centimeter
D.O. (mg/l) : Dissolved Oxygen measured in milligrams per liter.
Turbidity (NTU) : Turbidity measured in nephelometric turbidity units

TABLE 11
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
JUNE 2006 GROUNDWATER SAMPLING
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

URS Sampe ID Laboratory Sample ID Sampling Date Dilution Factor Units	NYSDEC TAGM 4046 Groundwater Criteria ug/l	MW-1S 743167 06/07/06 20.0 ug/L	MW-97-1S 743172 06/07/06 1.0 ug/L	DUP060706 743174 06/07/06 1.0 ug/L	MW-1D-97 743168 06/07/06 1.0 ug/L	MW-97-2S 743951 06/09/06 1.0 ug/L	MW-97-3S 743949 06/09/06 10.0 ug/L	MW-97-4S 743967 06/08/06 1.0 ug/L	MW-97-5S 743950 06/09/06 1.0 ug/L
Volatile Organic Compounds									
1,1,1-Trichloroethane	5	6.8 U	0.3 U	0.3 U	0.4	0.3 U	3.4 U	0.3 U	0.3 U
1,1,2,2-Tetrachloroethane	5	6.8 U	0.3 U	0.3 U	0.3 U	0.3 U	3.4 U	0.3 U	0.3 U
1,1,2-Trichloroethane	1	6.6 U	0.3 U	0.3 U	0.3 U	0.3 U	3.3 U	0.3 U	0.3 U
1,1-Dichloroethane	5	6.4 U	0.3 U	0.3 U	5.1	0.3 U	3.2 U	0.3 U	0.3 U
1,1-Dichloroethene	5	7.0 U	0.4 U	0.4 U	0.4 U	0.4 U	3.5 U	0.4 U	0.4 U
1,2-Dichloroethane	0.6	5.8 U	0.3 U	0.3 U	0.3 U	0.3 U	2.9 U	0.3 U	0.3 U
cis-1,2-Dichloroethene	NA	8.6 U	0.4 U	0.4 U	0.4 U	0.4 U	4.3 U	0.4 U	0.4 U
trans-1,2-Dichloroethene	NA	8.6 U	0.4 U	0.4 U	0.4 U	0.4 U	4.3 U	0.4 U	0.4 U
1,2-Dichloroethene (Total)	5	8.6 U	0.4 U	0.4 U	0.4 U	0.4 U	4.3 U	0.4 U	0.4 U
1,2-Dichloropropane	1	5.8 U	0.3 U	0.3 U	0.3 U	0.3 U	2.9 U	0.3 U	0.3 U
2-Butanone	50	19 U	0.9 U	0.9 U	0.9 U	0.9 U	9.4 U	0.9 U	0.9 U
2-Hexanone	50	10 U	0.5 U	0.5 U	0.5 U	0.5 U	5.2 U	0.5 U	0.5 U
Acetone	50	25 U	1.3 U	1.3 U	1.3 U	7.3	13 U	1.3 U	1.3 U
Benzene	1	6.6 U	0.3 U	0.3 U	0.3 U	0.3 U	3.3 U	0.3 U	0.3 U
Bromodichloromethane	5	6.4 U	0.3 U	0.3 U	0.3 U	0.3 U	3.2 U	0.3 U	0.3 U
Bromoform	5	4.4 U	0.2 U	0.2 U	0.2 U	0.2 U	2.2 U	0.2 U	0.2 U
Bromomethane	5	6.4 U	0.3 U	0.3 U	0.3 U	0.3 U	3.2 U	0.3 U	0.3 U
CarbonDisulfide	NA	6.8 U	0.3 U	0.3 U	0.3 U	0.3 U	3.4 U	0.3 U	0.3 U
CarbonTetrachloride	5	6.2 U	0.3 U	0.3 U	0.3 U	0.3 U	3.1 U	0.3 U	0.3 U
Chlorobenzene	5	9.0 U	2.5	2.6	0.4 U	16	4.5 U	0.4 U	0.4 U
Chlorodibromomethane	5	5.4 U	0.3 U	0.3 U	0.3 U	0.3 U	2.7 U	0.3 U	0.3 U
Chloroethane	5	1900	120	120	5.0	0.2 U	2.4 U	3.0	0.2 U
Chloroform	7	10 U	0.5 U	0.5 U	0.5 U	0.5 U	5.2 U	0.5 U	0.5 U
Chloromethane	5	5.8 U	0.3 U	0.3 U	0.3 U	0.3 U	2.9 U	0.3 U	0.3 U
(1) cis-1,3-Dichloropropene	0.4	4.8 U	0.2 U	0.2 U	0.2 U	0.2 U	2.4 U	0.2 U	0.2 U
Ethylbenzene	5	9.2 U	0.5 U	0.5 U	0.5 U	0.5 U	4.6 U	0.5 U	0.5 U
Methyl Isobutyl Ketone	NS	10 U	0.5 U	0.5 U	0.5 U	0.5 U	5.2 U	0.5 U	0.5 U
MethyleneChloride	5	10 U	0.5 U	0.5 U	0.5 U	0.5 U	5.1 U	0.5 U	0.5 U
Styrene	5	7.8 U	0.4 U	0.4 U	0.4 U	0.4 U	3.9 U	0.4 U	0.4 U
Tetrachloroethene	5	9.0 U	0.4 U	0.4 U	0.4 U	0.4 U	4.5 U	0.4 U	0.4 U
Toluene	5	8.0 U	0.4 U	0.4 U	0.4 U	0.4 U	4.0 U	0.4 U	0.4 U
(1) trans-1,3-Dichloropropene	0.4	4.8 U	0.2 U	0.2 U	0.2 U	0.2 U	2.4 U	0.2 U	0.2 U
Trichloroethene	5	7.4 U	0.4 U	0.4 U	0.4 U	0.4 U	3.7 U	0.4 U	0.4 U
VinylChloride	2	5.6 U	0.3 U	0.3 U	0.3 U	0.3 U	2.8 U	0.3 U	0.3 U
Xylene(Total)	5	7.6 U	0.5	0.4 U	0.4 U	0.4	3.8 U	0.4 U	0.4 U
Total Confident Conc. VOAs (s)	NE	1900	123	123	11	24	0	3.0	0
Total Estimated Conc. VOA TICs (s)	NE	71	39	20	3.8	86	0	0	0
Dissolved Gasses (ug/l)									
Methane	NE	1900	9900	11000	1900	11000	9700	1300	5000
Ethene	NE	100 U	1000 U	1000 U	100 U	500 U	1000 U	100 U	250 U
Ethane	NE	100 U	1000 U	1000 U	100 U	500 U	1000 U	100 U	250 U

TABLE 11
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
JUNE 2006 GROUNDWATER SAMPLING
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

URS Sampe ID Laboratory Sample ID Sampling Date Dilution Factor Units	NYSDEC TAGM 4046 Groundwater Criteria ug/l	MW-1S 743167 06/07/06 20.0 ug/L	MW-97-1S 743172 06/07/06 1.0 ug/L	DUP060706 743174 06/07/06 1.0 ug/L	MW-1D-97 743168 06/07/06 1.0 ug/L	MW-97-2S 743951 06/09/06 1.0 ug/L	MW-97-3S 743949 06/09/06 10.0 ug/L	MW-97-4S 743967 06/08/06 1.0 ug/L	MW-97-5S 743950 06/09/06 1.0 ug/L
Metals (mg/l)									
Total Iron	NE	27700	29300	29900	3110	34200	240	994	17200
Dissolved Iron	NE	39.7 U	150 U	150 U	39.7 U	6790	134	39.7 U	39.7 U
Miscellaneous (mg/l)									
Alkalinity - mg/l	NE	498	560	531	876	521	499	644	391
Chloride - mg/l	NE	86.7	77.5	77.4	180	42.3	294	86.1	36.7
Sulfate - mg/l	NE	1.0 U	1.0 U	1.0 U	33.1	5.0 U	5.0 U	98.1	5.0 U
TotalOrganicCarbon - mg/l	NE	6.5	11.6	11.7	10.9	9.3	20.6	6.7	5.2

.BLE 11
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
JUNE 2006 GROUNDWATER SAMPLING
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

URS Sampe ID Laboratory Sample ID Sampling Date Dilution Factor Units	NYSDEC TAGM 4046 Groundwater Criteria ug/l	MW-97-6S 743969 06/08/06 2.0 ug/L	MW-97-7S 743112 06/06/06 1.0 ug/L	MW-98-8S 743170 06/07/06 1.0 ug/L	MW-98-8D 743171 06/07/06 1.0 ug/L	MW-98-9D 743966 06/08/06 10.0 ug/L	MW-98-10D 743952 06/09/06 1.0 ug/L	MW-00-11A 743169 06/07/06 1.0 ug/L	MW-00-12D 743968 06/08/06 10.0 ug/L
Volatile Organic Compounds									
1,1,1-Trichloroethane	5	0.7 U	0.3 U	0.3 U	0.3 U	3.4 U	0.3 U	0.3 U	3.4 U
1,1,2,2-Tetrachloroethane	5	0.7 U	0.3 U	0.3 U	0.3 U	3.4 U	0.3 U	0.3 U	3.4 U
1,1,2-Trichloroethane	1	0.7 U	0.3 U	0.3 U	0.3 U	3.3 U	0.3 U	0.3 U	3.3 U
1,1-Dichloroethane	5	0.6 U	0.3 U	0.3 U	0.3 U	3.2 U	0.3 U	0.3 U	11
1,1-Dichloroethene	5	0.7 U	0.4 U	0.4 U	0.4 U	3.5 U	0.4 U	0.4 U	5.8
1,2-Dichloroethane	0.6	0.6 U	0.3 U	0.3 U	0.3 U	2.9 U	0.3 U	0.3 U	2.9 U
cis-1,2-Dichloroethene	NA	0.9 U	0.4 U	0.4 U	0.4 U	4.3 U	0.4 U	0.4 U	4.3 U
trans-1,2-Dichloroethene	NA	0.9 U	0.4 U	0.4 U	0.4 U	4.3 U	0.4 U	0.4 U	4.3 U
1,2-Dichloroethene (Total)	5	0.9 U	0.4 U	0.4 U	0.4 U	4.3 U	0.4 U	0.4 U	4.3 U
1,2-Dichloropropane	1	0.6 U	0.3 U	0.3 U	0.3 U	2.9 U	0.3 U	0.3 U	2.9 U
2-Butanone	50	1.9 U	0.9 U	0.9 U	0.9 U	9.4 U	0.9 U	0.9 U	9.4 U
2-Hexanone	50	1.0 U	0.5 U	0.5 U	0.5 U	5.2 U	0.5 U	0.5 U	5.2 U
Acetone	50	2.5 U	1.3 U	1.3 U	1.3 U	13 U	3.5	1.3 U	13 U
Benzene	1	0.7 U	0.3 U	0.3 U	0.3 U	3.3 U	0.3 U	0.3 U	3.3 U
Bromodichloromethane	5	0.6 U	0.3 U	0.3 U	0.3 U	3.2 U	0.3 U	0.3 U	3.2 U
Bromoform	5	0.4 U	0.2 U	0.2 U	0.2 U	2.2 U	0.2 U	0.2 U	2.2 U
Bromomethane	5	0.6 U	0.3 U	0.3 U	0.3 U	3.2 U	0.3 U	0.3 U	3.2 U
CarbonDisulfide	NA	0.7 U	0.3 U	0.3 U	0.3 U	3.4 U	0.3 U	0.3 U	3.4 U
CarbonTetrachloride	5	0.6 U	0.3 U	0.3 U	0.3 U	3.1 U	0.3 U	0.3 U	3.1 U
Chlorobenzene	5	3.8	1.3	0.4 U	0.4 U	12	7.3	0.4 U	4.5 U
Chlorodibromomethane	5	0.5 U	0.3 U	0.3 U	0.3 U	2.7 U	0.3 U	0.3 U	2.7 U
Chloroethane	5	200	0.2 U	0.2 U	38	730	0.2 U	0.2 U	1300
Chloroform	7	1.0 U	0.5 U	0.5 U	0.5 U	5.2 U	0.5 U	0.5 U	5.2 U
Chloromethane	5	0.6 U	0.3 U	0.3 U	0.3 U	2.9 U	0.3 U	0.3 U	2.9 U
(1) cis-1,3-Dichloropropene	0.4	0.5 U	0.2 U	0.2 U	0.2 U	2.4 U	0.2 U	0.2 U	2.4 U
Ethylbenzene	5	0.9 U	0.5 U	0.5 U	0.5 U	4.6 U	0.5 U	0.5 U	4.6 U
Methyl Isobutyl Ketone	NS	1.0 U	0.5 U	0.5 U	0.5 U	5.2 U	0.5 U	0.5 U	5.2 U
MethyleneChloride	5	1.0 U	0.5 U	0.5 U	0.5 U	5.1 U	0.5 U	0.5 U	5.1 U
Styrene	5	0.8 U	0.4 U	0.4 U	0.4 U	3.9 U	0.4 U	0.4 U	3.9 U
Tetrachloroethene	5	0.9 U	0.4 U	0.4 U	0.4 U	4.5 U	0.4 U	0.4 U	4.5 U
Toluene	5	0.8 U	0.4 U	0.4 U	0.4 U	4.0 U	0.4 U	0.4 U	4.0 U
(1) trans-1,3-Dichloropropene	0.4	0.5 U	0.2 U	0.2 U	0.2 U	2.4 U	0.2 U	0.2 U	2.4 U
Trichloroethene	5	0.7 U	0.4 U	0.4 U	0.4 U	3.7 U	0.4 U	0.4 U	3.7 U
VinylChloride	2	0.6 U	0.3 U	0.3 U	0.3 U	2.8 U	0.3 U	0.3 U	2.8 U
Xylene(Total)	5	0.8 U	0.4 U	0.4 U	0.4 U	3.8 U	0.4	0.4 U	3.8 U
Total Confident Conc. VOAs (s)	NE	204	1.3	0	38	742	11	0	1317
Total Estimated Conc. VOA TICs (s)	NE	0	3.9	0	0	51	92	0	0
Dissolved Gasses (ug/l)									
Methane	NE	12000	10000	8000	7200	11000	13000	5.0 U	1600
Ethene	NE	500 U	500 U	500 U	500 U	1000 U	1000 U	5.0 U	100 U
Ethane	NE	500 U	500 U	500 U	500 U	1000 U	1000 U	5.0 U	100 U

..BLE 11
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
JUNE 2006 GROUNDWATER SAMPLING
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

URS Sampe ID	NYSDEC	MW-97-6S	MW-97-7S	MW-98-8S	MW-98-8D	MW-98-9D	MW-98-10D	MW-00-11A	MW-00-12D
Laboratory Sample ID	TAGM 4046	743969	743112	743170	743171	743966	743952	743169	743968
Sampling Date	Groundwater	06/08/06	06/06/06	06/07/06	06/07/06	06/08/06	06/09/06	06/07/06	06/08/06
Dilution Factor	Criteria	2.0	1.0	1.0	1.0	10.0	1.0	1.0	10.0
Units	ug/l	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Metals (mg/l)									
Total Iron	NE	33900	23400	15400	15900	27800	21100	936	7110
Dissolved iron	NE	2550	39.7 U	150 U	150 U	4170	1830	268	39.7 U
Miscellaneous (mg/l)									
Alkalinity - mg/l	NE	751	468	862	916	545	488	8.07	774
Chloride - mg/l	NE	75.4	59.9	277	170	92.5	79.2	5.0 U	128
Sulfate - mg/l	NE	5.0 U	5.0 U	1.0 U	1.0 U	5.0 U	5.0 U	1.0 U	54.7
TotalOrganicCarbon - mg/l	NE	14.0	6.7	13.7	13.4	11.4	2.2	1.0 U	10.1

TABLE 11
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
JUNE 2006 GROUNDWATER SAMPLING
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

URS Sampe ID Laboratory Sample ID Sampling Date Dilution Factor Units	NYSDEC TAGM 4046 Groundwater Criteria ug/l	MW-03-13S 743110 06/06/06 1.0 ug/L	MW-05-14S 743965 06/08/06 1.0 ug/L	MW-05-15D 743964 06/08/06 1.0 ug/L	TB060906 743953 06/09/06 1.0 ug/L	FB-060606 743111 06/06/06 1.0 ug/L	TB-060606 743113 06/06/06 1.0 ug/L	FB-060606-Diss 743115 06/06/06	TB-060706 743173 06/07/06 1.0 ug/L
Volatile Organic Compounds									
1,1,1-Trichloroethane	5	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	NR	0.3 U
1,1,2,2-Tetrachloroethane	5	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	NR	0.3 U
1,1,2-Trichloroethane	1	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	NR	0.3 U
1,1-Dichloroethane	5	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	NR	0.3 U
1,1-Dichloroethene	5	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	NR	0.4 U
1,2-Dichloroethane	0.6	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	NR	0.3 U
cis-1,2-Dichloroethene	NA	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	NR	0.4 U
trans-1,2-Dichloroethene	NA	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	NR	0.4 U
1,2-Dichloroethene (Total)	5	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	NR	0.4 U
1,2-Dichloropropane	1	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	NR	0.3 U
2-Butanone	50	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	NR	0.9 U
2-Hexanone	50	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NR	0.5 U
Acetone	50	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	NR	1.3 U
Benzene	1	0.3 U	0.4	0.3 U	0.3 U	0.3 U	0.3 U	NR	0.3 U
Bromodichloromethane	5	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	NR	0.3 U
Bromoform	5	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NR	0.2 U
Bromomethane	5	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	NR	0.3 U
CarbonDisulfide	NA	0.3 U	0.4	0.3 U	0.3 U	0.3 U	0.3 U	NR	0.3 U
CarbonTetrachloride	5	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	NR	0.3 U
Chlorobenzene	5	0.4 U	7.7	2.4	0.4 U	0.4 U	0.4 U	NR	0.4 U
Chlorodibromomethane	5	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	NR	0.3 U
Chloroethane	5	0.2 U	1.0	200	0.2 U	0.2 U	0.2 U	NR	0.2 U
Chloroform	7	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NR	0.5 U
Chloromethane	5	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	NR	0.3 U
(1) cis-1,3-Dichloropropene	0.4	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NR	0.2 U
Ethylbenzene	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NR	0.5 U
Methyl Isobutyl Ketone	NS	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NR	0.5 U
MethyleneChloride	5	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NR	0.5 U
Styrene	5	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	NR	0.4 U
Tetrachloroethene	5	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	NR	0.4 U
Toluene	5	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	NR	0.4 U
(1) trans-1,3-Dichloropropene	0.4	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	NR	0.2 U
Trichloroethene	5	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	NR	0.4 U
VinylChloride	2	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	NR	0.3 U
Xylene(Total)	5	0.4 U	0.4 U	0.5	0.4 U	0.4 U	0.4 U	NR	0.4 U
Total Confident Conc. VOAs (s)	NE	0	9.5	203	0	0	0	NR	0
Total Estimated Conc. VOA TICs (s)	NE	56	0	7.9	0	0	0	NR	0
Dissolved Gasses (ug/l)									
Methane	NE	7800	11000	2600	NR	5.0 U	NR	NR	5.0 U
Ethene	NE	500 U	500 U	250 U	NR	5.0 U	NR	NR	5.0 U
Ethane	NE	500 U	500 U	250 U	NR	5.0 U	NR	NR	5.0 U

TABLE 11
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
JUNE 2006 GROUNDWATER SAMPLING
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

URS Sampe ID Laboratory Sample ID Sampling Date Dilution Factor Units	NYSDEC TAGM 4046 Groundwater Criteria ug/l	MW-03-13S 743110 06/06/06 1.0 ug/L	MW-05-14S 743965 06/08/06 1.0 ug/L	MW-05-15D 743964 06/08/06 1.0 ug/L	TB060906 743953 06/09/06 1.0 ug/L	FB-060606 743111 06/06/06 1.0 ug/L	TB-060606 743113 06/06/06 1.0 ug/L	FB-060606-Diss 743115 06/06/06	TB-060706 743173 06/07/06 1.0 ug/L
Metals (mg/l)									
Total Iron	NE	25900	21000	4480	NR	39.7 U	NR	39.7 U	NR
Dissolved iron	NE	39.7 U	1490	2900	NR	39.7 U	NR	39.7 U	NR
Miscellaneous (mg/l)									
Alkalinity - mg/l	NE	409	681	125	NR	5.0 U	NR	NR	NR
Chloride - mg/l	NE	130	2780	18.6	NR	5.0 U	NR	NR	NR
Sulfate - mg/l	NE	5.0 U	41.3	5.0 U	NR	5.0 U	NR	NR	NR
TotalOrganicCarbon - mg/l	NE	8.8	8.7	2.6	NR	1.0 U	NR	NR	NR

..BLE 11
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
JUNE, 2006 SAMPLING EVENT
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

NOTES:

Box/Bold :Exceeds NYSDEC GW Standard

D :Result is obtained from a diluted sample.

J :The result is a quantitatively estimated value.

U :Compound was not detected.

NE :Not Established

NT :Not Tested

µg/l :Micrograms Per Liter

mg/l :Milligrams Per Liter

(1) : Values listed reflect the combined standards for the cis and trans isomers of 1,3-Dichloropropene.

TABLE 12

SUMMARY OF SLUG TESTING RESULTS

FORMER COLUMBIA CEMENT COMPANY FACILITY

FREEPORT, NEW YORK

WELL	TEST	d (ft)	r_c (ft)	r_w (ft)	h_0 (ft)	HYDRAULIC CONDUCTIVITY			
						ft/d	cm/sec	Avg. (ft/d)	Avg. (cm/sec)
MW-97-1S	Falling Head	10	0.083	0.17	1.2	43.0	1.52E-02		
	Rising Head	10	0.083	0.17	1.1	46.5	1.64E-02	44.75	1.58E-02
MW-98-9D	Falling Head	10	0.083	0.17	1.3	42.5	1.50E-02		
	Rising Head	10	0.083	0.17	1.2	43.0	1.52E-02	42.75	1.51E-02
MW-05-14S	Falling Head	10	0.083	0.17	0.6	1.9	6.71E-04		
	Rising Head	10	0.083	0.17	0.75	2.5	8.83E-04	2.20	7.77E-04
MW-97-6S	Falling Head #1	10	0.083	0.17	1.2	36.5	1.29E-02		
	Rising Head #1	10	0.083	0.17	0.8	32.0	1.13E-02		
	Falling Head #2	10	0.083	0.17	1.0	31.5	1.11E-02		
	Rising Head #2	10	0.083	0.17	1.0	38.5	1.36E-02	34.63	1.22E-02

Notes

d : screen length

r_c : casing radius

r_w : borehole radius

h_0 : x-axis intercept

TABLE 13
SUMMARY OF 2005 SOIL VAPOR INTRUSION ANALYTICAL RESULTS
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

	SAMPLING LOCATION:	SG-05-01		SG-05-02		SG-05-03		SG-05-04		SG-05-05	
	SAMPLING DATE:	09/21/05		09/20/05		09/21/05		09/21/05		09/21/05	
	ACCUTEST SAMPLE ID	J10451-6		J10451-7		J10451-3		J10451-5		J10451-2	
		ug/m3	ppbv	ug/m3	ppbv	ug/m3	ppbv	ug/m3	ppbv	ug/m3	ppbv
CAS No.	GC/MS Volatiles										
67-64-1	Acetone	19 U	8 U	16	6.9	3.8 U	1.6 U	3.8 U	1.6 U	3.8 U	1.6 U
106-99-0	1,3-Butadiene	18 U	8 U	3.5 U	1.6 U	3.5 U	1.6 U	3.5 U	1.6 U	3.5 U	1.6 U
71-43-2	Benzene	61.3	19.2	14	4.3	99.4	31.1	237	74.2	57.8	18.1
75-27-4	Bromodichloromethane	54 U	8 U	11 U	1.6 U	11 U	1.6 U	11 U	1.6 U	11 U	1.6 U
75-25-2	Bromoform	83 U	8 U	17 U	1.6 U	17 U	1.6 U	17 U	1.6 U	17 U	1.6 U
74-83-9	Bromomethane	31 U	8 U	6.2 U	1.6 U	6.2 U	1.6 U	6.2 U	1.6 U	6.2 U	1.6 U
593-60-2	Bromoethene	35 U	8 U	7 U	1.6 U	7 U	1.6 U	7 U	1.6 U	7 U	1.6 U
100-44-7	Benzyl Chloride	41 U	8 U	8.2 U	1.6 U	8.2 U	1.6 U	8.2 U	1.6 U	8.2 U	1.6 U
75-15-0	Carbon disulfide	448	144	4 J	1.3 J	22	7.2	15	4.9	33	10.6
108-90-7	Chlorobenzene	37 U	8 U	7.4 U	1.6 U	7.4 U	1.6 U	7.4 U	1.6 U	7.4 U	1.6 U
75-00-3	Chloroethane	747	283	164	62.3	12	4.7	1370	521	269	102
67-66-3	Chloroform	39 U	8 U	7.8 U	1.6 U	7.8 U	1.6 U	7.8 U	1.6 U	7.8 U	1.6 U
74-87-3	Chloromethane	17 U	8 U	3.3 U	1.6 U	3.3 U	1.6 U	3.3 U	1.6 U	3.3 U	1.6 U
107-05-1	3-Chloropropene	25 U	8 U	5 U	1.6 U	5 U	1.6 U	5 U	1.6 U	5 U	1.6 U
95-49-8	2-Chlorotoluene	41 U	8 U	8.3 U	1.6 U	8.3 U	1.6 U	8.3 U	1.6 U	8.3 U	1.6 U
56-23-5	Carbon tetrachloride	50 U	8 U	10 U	1.6 U	10 U	1.6 U	10 U	1.6 U	10 U	1.6 U
110-82-7	Cyclohexane	9980	2900	5.5 U	1.6 U	308	89.5	413	120	66.8	19.4
75-34-3	1,1-Dichloroethane	32 U	8 U	9470	2340	337	83.3	14000	3470	1700	420
75-35-4	1,1-Dichloroethylene	32 U	8 U	89.2	22.5	86.4	21.8	259	65.3	53.9	13.6
106-93-4	1,2-Dibromoethane	61 U	8 U	12 U	1.6 U	12 U	1.6 U	12 U	1.6 U	12 U	1.6 U
107-06-2	1,2-Dichloroethane	32 U	8 U	6.5 U	1.6 U	6.5 U	1.6 U	6.5 U	1.6 U	6.5 U	1.6 U
78-87-5	1,2-Dichloropropane	37 U	8 U	7.4 U	1.6 U	5.1 J	1.1 J	7.4 U	1.6 U	7.4 U	1.6 U
123-91-1	1,4-Dioxane	29 U	8 U	5.8 U	1.6 U	5.8 U	1.6 U	5.8 U	1.6 U	5.8 U	1.6 U
75-71-8	Dichlorodifluoromethane	40 U	8 U	18	3.7	11	2.3	9.4	1.9	4.8 J	0.98 J
124-48-1	Dibromochloromethane	68 U	8 U	14 U	1.6 U	14 U	1.6 U	14 U	1.6 U	14 U	1.6 U
156-60-5	trans-1,2-Dichloroethylen	32 U	8 U	6.3 U	1.6 U	46.8	11.8	29	7.3	11	2.7
156-59-2	cis-1,2-Dichloroethylene	17 J	4.2 J	4.8 J	1.2 J	257	64.8	1320	332	226	57.1
10061-01-	cis-1,3-Dichloropropene	36 U	8 U	7.3 U	1.6 U	7.3 U	1.6 U	7.3 U	1.6 U	7.3 U	1.6 U
541-73-1	m-Dichlorobenzene	48 U	8 U	9.6 U	1.6 U	9.6 U	1.6 U	9.6 U	1.6 U	9.6 U	1.6 U
95-50-1	o-Dichlorobenzene	48 U	8 U	9.6 U	1.6 U	9.6 U	1.6 U	9.6 U	1.6 U	9.6 U	1.6 U
106-46-7	p-Dichlorobenzene	48 U	8 U	9.6 U	1.6 U	9.6 U	1.6 U	9.6 U	1.6 U	9.6 U	1.6 U
10061-02-	trans-1,3-Dichloropropen	36 U	8 U	7.3 U	1.6 U	7.3 U	1.6 U	7.3 U	1.6 U	7.3 U	1.6 U
64-17-5	Ethanol	38 U	20 U	7.5 U	4 U	7.5 U	4 U	17	9.1	3.2 J	1.7 J

TABLE 13
SUMMARY OF 2005 SOIL VAPOR INTRUSION ANALYTICAL RESULTS
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

	SAMPLING LOCATION: SAMPLING DATE: ACCUTEST SAMPLE ID	SG-05-01 09/21/05 J10451-6		SG-05-02 09/20/05 J10451-7		SG-05-03 09/21/05 J10451-3		SG-05-04 09/21/05 J10451-5		SG-05-05 09/21/05 J10451-2	
		ug/m³	ppbv	ug/m³	ppbv	ug/m³	ppbv	ug/m³	ppbv	ug/m³	ppbv
100-41-4	Ethylbenzene	35 U	8 U	4.8 J	1.1 J	4.3 J	1 J	3.5 J	0.81 J	6.5 J	1.5 J
141-78-6	Ethyl Acetate	29 U	8 U	5.8 U	1.6 U	5.8 U	1.6 U	5.8 U	1.6 U	5.8 U	1.6 U
622-96-8	4-Ethyltoluene	39 U	8 U	7.9 U	1.6 U	7.9 U	1.6 U	7.9 U	1.6 U	7.9 U	1.6 U
76-13-1	Freon 113	61 U	8 U	12 U	1.6 U	12 U	1.6 U	12 U	1.6 U	12 U	1.6 U
76-14-2	Freon 114	56 U	8 U	6.2 J	0.88 J	16	2.3	11 U	1.6 U	16	2.3
142-82-5	Heptane	349	85.2	4.5 J	1.1 J	88.9	21.7	77	18.8	9.8	2.4
87-68-3	Hexachlorobutadiene	85 U	8 U	17 U	1.6 U	17 U	1.6 U	17 U	1.6 U	17 U	1.6 U
110-54-3	Hexane	12200	3460	102	28.9	708	201	1740	494	59.6	16.9
591-78-6	2-Hexanone	33 U	8 U	6.5 U	1.6 U	6.5 U	1.6 U	6.5 U	1.6 U	6.5 U	1.6 U
67-63-0	Isopropyl Alcohol	20 U	8 U	3.9 U	1.6 U	3.9 U	1.6 U	3.9 U	1.6 U	3.9 U	1.6 U
75-09-2	Methylene chloride	28 U	8 U	2.7 J	0.78 J	2.8 J	0.82 J	59.1	17	15	4.3
78-93-3	Methyl ethyl ketone	24 U	8 U	4.7 U	1.6 U	4.7 U	1.6 U	4.7 U	1.6 U	4.7 U	1.6 U
108-10-1	Methyl Isobutyl Ketone	33 U	8 U	6.6 U	1.6 U	6.6 U	1.6 U	20	4.9	6.6 U	1.6 U
1634-04-4	Methyl Tert Butyl Ether	29 U	8 U	5.8 U	1.6 U	5.8 U	1.6 U	5.8 U	1.6 U	5.8 U	1.6 U
115-07-1	Propylene	34 U	20 U	6.9 U	4 U	6.9 U	4 U	534	311	199	116
100-42-5	Styrene	34 U	8 U	6.8 U	1.6 U	6.8 U	1.6 U	6.8 U	1.6 U	6.8 U	1.6 U
71-55-6	1,1,1-Trichloroethane	44 U	8 U	1840	337	33	6	5190	952	253	46.3
79-34-5	1,1,2,2-Tetrachloroethan	55 U	8 U	11 U	1.6 U	11 U	1.6 U	11 U	1.6 U	11 U	1.6 U
79-00-5	1,1,2-Trichloroethane	44 U	8 U	8.7 U	1.6 U	8.7 U	1.6 U	8.7 U	1.6 U	8.7 U	1.6 U
120-82-1	1,2,4-Trichlorobenzene	59 U	8 U	12 U	1.6 U	12 U	1.6 U	12 U	1.6 U	12 U	1.6 U
95-63-6	1,2,4-Trimethylbenzene	39 U	8 U	9.8	2	7.9 U	1.6 U	4.8 J	0.97 J	7.9 U	1.6 U
108-67-8	1,3,5-Trimethylbenzene	39 U	8 U	7.9 U	1.6 U	7.9 U	1.6 U	7.9 U	1.6 U	7.9 U	1.6 U
540-84-1	2,2,4-Trimethylpentane	1930	413	542	116	305	65.3	169	36.2	481	103
75-65-0	Tertiary Butyl Alcohol	24 U	8 U	4.9 U	1.6 U	4.9 U	1.6 U	4.9 U	1.6 U	4.9 U	1.6 U
127-18-4	Tetrachloroethylene	54 U	8 U	400	59	96.3	14.2	1030	152	209	30.8
109-99-9	Tetrahydrofuran	24 U	8 U	4.7 U	1.6 U	4.7 U	1.6 U	4.7 U	1.6 U	4.7 U	1.6 U
108-88-3	Toluene	26 J	7 J	4.5 J	1.2 J	11	3	14	3.6	17	4.4
79-01-6	Trichloroethylene	43 U	8 U	76.3	14.2	116	21.5	335	62.3	188	35
75-69-4	Trichlorofluoromethane	45 U	8 U	9 U	1.6 U	9 U	1.6 U	9 U	1.6 U	9 U	1.6 U
75-01-4	Vinyl chloride	53.2	20.8	4.1 U	1.6 U	529	207	598	234	65.7	25.7
108-05-4	Vinyl Acetate	28 U	8 U	5.6 U	1.6 U	5.6 U	1.6 U	5.6 U	1.6 U	5.6 U	1.6 U
	m,p-Xylene	45.6	10.5	14	3.3	7.8	1.8	8.3	1.9	13	3.1
95-47-6	o-Xylene	35 U	8 U	5.6 J	1.3 J	6.9 U	1.6 U	6.9 U	1.6 U	6.9 U	1.6 U
1330-20-7	Xylenes (total)	45.6	10.5	20	4.6	7.8	1.8	11	2.6	13	3.1

TABLE 13
SUMMARY OF 2005 SOIL VAPOR INTRUSION ANALYTICAL RESULTS
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

	SAMPLING LOCATION:	SG-05-06		SG-05-07		SG-05-08		SG-05-09		SG-05-10	
	SAMPLING DATE:	09/21/05		09/21/05		09/20/05		09/20/05		09/20/05	
	ACCUTEST SAMPLE ID	J10451-13		J10451-1		J10451-9		J10451-10		J10451-12	
		ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv
CAS No.	GC/MS Volatiles										
67-64-1	Acetone	69.6	29.3	3.8 U	1.6 U	128	54	3.8 U	1.6 U	3.8 U	1.6 U
106-99-0	1,3-Butadiene	3.5 U	1.6 U	3.5 U	1.6 U	3.5 U	1.6 U	3.5 U	1.6 U	3.5 U	1.6 U
71-43-2	Benzene	46	14.4	27	8.3	70	21.9	5.1 U	1.6 U	15	4.6
75-27-4	Bromodichloromethane	11 U	1.6 U	11 U	1.6 U	11 U	1.6 U	11 U	1.6 U	11 U	1.6 U
75-25-2	Bromoform	17 U	1.6 U	17 U	1.6 U	17 U	1.6 U	17 U	1.6 U	17 U	1.6 U
74-83-9	Bromomethane	6.2 U	1.6 U	6.2 U	1.6 U	6.2 U	1.6 U	6.2 U	1.6 U	6.2 U	1.6 U
593-60-2	Bromoethene	7 U	1.6 U	7 U	1.6 U	7 U	1.6 U	7 U	1.6 U	7 U	1.6 U
100-44-7	Benzyl Chloride	8.2 U	1.6 U	8.2 U	1.6 U	8.2 U	1.6 U	8.2 U	1.6 U	8.2 U	1.6 U
75-15-0	Carbon disulfide	28	9	154	49.6	333	107	11	3.5	74.4	23.9
108-90-7	Chlorobenzene	7.4 U	1.6 U	89.3	19.4	41	8.8	7.4 U	1.6 U	7.4 U	1.6 U
75-00-3	Chloroethane	1100	416	83.4	31.6	22	8.4	4.2 U	1.6 U	792	300
67-66-3	Chloroform	7.8 U	1.6 U	7.8 U	1.6 U	7.8 U	1.6 U	4.7 J	0.96 J	7.8 U	1.6 U
74-87-3	Chloromethane	3.3 U	1.6 U	3.3 U	1.6 U	3.3 U	1.6 U	3.3 U	1.6 U	3.3 U	1.6 U
107-05-1	3-Chloropropene	5 U	1.6 U	5 U	1.6 U	5 U	1.6 U	5 U	1.6 U	5 U	1.6 U
95-49-8	2-Chlorotoluene	8.3 U	1.6 U	8.3 U	1.6 U	8.3 U	1.6 U	8.3 U	1.6 U	8.3 U	1.6 U
56-23-5	Carbon tetrachloride	10 U	1.6 U	10 U	1.6 U	10 U	1.6 U	10 U	1.6 U	10 U	1.6 U
110-82-7	Cyclohexane	189	54.8	403	117	28	8.2	5.5 U	1.6 U	5.5 U	1.6 U
75-34-3	1,1-Dichloroethane	210	52	16	4	36	9	210	51.9	935	231
75-35-4	1,1-Dichloroethylene	19	4.8	6.3 U	1.6 U	6.3 U	1.6 U	6.3 U	1.6 U	56.3	14.2
106-93-4	1,2-Dibromoethane	12 U	1.6 U	12 U	1.6 U	12 U	1.6 U	12 U	1.6 U	12 U	1.6 U
107-06-2	1,2-Dichloroethane	6.5 U	1.6 U	6.5 U	1.6 U	6.5 U	1.6 U	6.5 U	1.6 U	6.5 U	1.6 U
78-87-5	1,2-Dichloropropane	7.4 U	1.6 U	7.4 U	1.6 U	7.4 U	1.6 U	7.4 U	1.6 U	7.4 U	1.6 U
123-91-1	1,4-Dioxane	5.8 U	1.6 U	5.8 U	1.6 U	5.8 U	1.6 U	5.8 U	1.6 U	5.8 U	1.6 U
75-71-8	Dichlorodifluoromethane	4.4 J	0.88 J	5.9 J	1.2 J	5.4 J	1.1 J	7.9	1.6	108	21.9
124-48-1	Dibromochloromethane	14 U	1.6 U	14 U	1.6 U	14 U	1.6 U	14 U	1.6 U	14 U	1.6 U
156-60-5	trans-1,2-Dichloroethylen	14	3.6	6.3 U	1.6 U	6.3 U	1.6 U	6.3 U	1.6 U	6.3 U	1.6 U
156-59-2	cis-1,2-Dichloroethylene	93.6	23.6	15	3.9	30	7.5	6.3 U	1.6 U	13	3.4
10061-01-	cis-1,3-Dichloropropene	7.3 U	1.6 U	7.3 U	1.6 U	7.3 U	1.6 U	7.3 U	1.6 U	7.3 U	1.6 U
541-73-1	m-Dichlorobenzene	9.6 U	1.6 U	9.6 U	1.6 U	9.6 U	1.6 U	9.6 U	1.6 U	9.6 U	1.6 U
95-50-1	o-Dichlorobenzene	9.6 U	1.6 U	9.6 U	1.6 U	9.6 U	1.6 U	9.6 U	1.6 U	9.6 U	1.6 U
106-46-7	p-Dichlorobenzene	9.6 U	1.6 U	9.6 U	1.6 U	9.6 U	1.6 U	9.6 U	1.6 U	9.6 U	1.6 U
10061-02-	trans-1,3-Dichloropropen	7.3 U	1.6 U	7.3 U	1.6 U	7.3 U	1.6 U	7.3 U	1.6 U	7.3 U	1.6 U
64-17-5	Ethanol	11	6	7.5 U	4 U	31	16.5	11	6	7.5 U	4 U

TABLE 13
SUMMARY OF 2005 SOIL VAPOR INTRUSION ANALYTICAL RESULTS
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

CAS	SAMPLING LOCATION: / SAMPLING DATE: / ACCUTEST SAMPLE ID	SG-05-06 09/21/05 J10451-13		SG-05-07 09/21/05 J10451-1		SG-05-08 09/20/05 J10451-9		SG-05-09 09/20/05 J10451-10		SG-05-10 09/20/05 J10451-12	
		ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv
100-41-4	Ethylbenzene	17	3.9	3.8 J	0.88 J	6.1 J	1.4 J	6.9 U	1.6 U	6.9 U	1.6 U
141-78-6	Ethyl Acetate	5.8 U	1.6 U	5.8 U	1.6 U	5.8 U	1.6 U	5.8 U	1.6 U	5.8 U	1.6 U
622-96-8	4-Ethyltoluene	7.9 U	1.6 U	7.9 U	1.6 U	7.9 U	1.6 U	7.9 U	1.6 U	7.9 U	1.6 U
76-13-1	Freon 113	12 U	1.6 U	12 U	1.6 U	12 U	1.6 U	12 U	1.6 U	12 U	1.6 U
76-14-2	Freon 114	10 J	1.5 J	11 U	1.6 U	9.1 J	1.3 J	11 U	1.6 U	11 U	1.6 U
142-82-5	Heptane	37	9	349	85.1	205	50.1	6.6 U	1.6 U	60.2	14.7
87-68-3	Hexachlorobutadiene	17 U	1.6 U	17 U	1.6 U	17 U	1.6 U	17 U	1.6 U	17 U	1.6 U
110-54-3	Hexane	258	73.3	990	281	145	41.2	11	3.1	807	229
591-78-6	2-Hexanone	6.5 U	1.6 U	6.5 U	1.6 U	6.5 U	1.6 U	6.5 U	1.6 U	6.5 U	1.6 U
67-63-0	Isopropyl Alcohol	3.9 U	1.6 U	3.9 U	1.6 U	3.9 U	1.6 U	3.9 U	1.6 U	3.9 U	1.6 U
75-09-2	Methylene chloride	20	5.7	2.9 J	0.83 J	5.6 U	1.6 U	5.6 U	1.6 U	5.6 U	1.6 U
78-93-3	Methyl ethyl ketone	4.7 U	1.6 U	4.7 U	1.6 U	4.7 U	1.6 U	4.7 U	1.6 U	4.7 U	1.6 U
108-10-1	Methyl Isobutyl Ketone	6.6 U	1.6 U	6.6 U	1.6 U	6.6 U	1.6 U	6.6 U	1.6 U	6.6 U	1.6 U
1634-04-4	Methyl Tert Butyl Ether	5.8 U	1.6 U	5.8 U	1.6 U	5.8 U	1.6 U	5.8 U	1.6 U	5.8 U	1.6 U
115-07-1	Propylene	6.9 U	4 U	6.9 U	4 U	6.9 U	4 U	47.6	27.7	6.9 U	4 U
100-42-5	Styrene	6.8 U	1.6 U	6.8 U	1.6 U	6.8 U	1.6 U	6.8 U	1.6 U	6.8 U	1.6 U
71-55-6	1,1,1-Trichloroethane	66.6	12.2	8.7 U	1.6 U	8.7 U	1.6 U	182	33.4	32	5.8
79-34-5	1,1,2,2-Tetrachloroethan	11 U	1.6 U	11 U	1.6 U	11 U	1.6 U	11 U	1.6 U	11 U	1.6 U
79-00-5	1,1,2-Trichloroethane	8.7 U	1.6 U	8.7 U	1.6 U	8.7 U	1.6 U	8.7 U	1.6 U	8.7 U	1.6 U
120-82-1	1,2,4-Trichlorobenzene	12 U	1.6 U	12 U	1.6 U	12 U	1.6 U	12 U	1.6 U	12 U	1.6 U
95-63-6	1,2,4-Trimethylbenzene	7.9 U	1.6 U	7.9 U	1.6 U	7.9 U	1.6 U	7.4 J	1.5 J	7.9 U	1.6 U
108-67-8	1,3,5-Trimethylbenzene	7.9	1.6	7.9 U	1.6 U	7.9 U	1.6 U	7.9 U	1.6 U	7.9 U	1.6 U
540-84-1	2,2,4-Trimethylpentane	476	102	115	24.7	338	72.4	159	34.1	1560	335
75-65-0	Tertiary Butyl Alcohol	4.9 U	1.6 U	4.9 U	1.6 U	4.9 U	1.6 U	4.9 U	1.6 U	4.9 U	1.6 U
127-18-4	Tetrachloroethylene	140	20.7	11 U	1.6 U	11 U	1.6 U	33	4.9	12	1.7
109-99-9	Tetrahydrofuran	4.7 U	1.6 U	4.7 U	1.6 U	4.7 U	1.6 U	4.7 U	1.6 U	4.7 U	1.6 U
108-88-3	Toluene	9.8	2.6	21	5.6	12	3.3	3.4 J	0.9 J	9.8	2.6
79-01-6	Trichloroethylene	67.7	12.6	8.6 U	1.6 U	8.6 U	1.6 U	4.9 J	0.91 J	8.6 U	1.6 U
75-69-4	Trichlorofluoromethane	9 U	1.6 U	9 U	1.6 U	9 U	1.6 U	9 U	1.6 U	9 U	1.6 U
75-01-4	Vinyl chloride	119	46.6	45.5	17.8	15	5.8	4.1 U	1.6 U	21	8.4
108-05-4	Vinyl Acetate	5.6 U	1.6 U	5.6 U	1.6 U	5.6 U	1.6 U	5.6 U	1.6 U	5.6 U	1.6 U
	m,p-Xylene	43.9	10.1	11	2.6	13	2.9	6.5 J	1.5 J	8.3	1.9
95-47-6	o-Xylene	41	9.4	6.9 U	1.6 U	12	2.8	6.9 U	1.6 U	6.9 U	1.6 U
1330-20-7	Xylenes (total)	84.7	19.5	11	2.6	25	5.7	6.5 J	1.5 J	8.3	1.9

.JLE 13

SUMMARY OF 2005 SOIL VAPOR INTRUSION ANALYTICAL RESULTS
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

	SAMPLING LOCATION:	SG-05-11		SG-05-AMB-E		SG-05-AMB-W	
	SAMPLING DATE:	09/21/05		09/20/05		09/20/05	
	ACCUTEST SAMPLE ID	J10451-4		J10451-11		J10451-8	
		ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv
CAS No.	GC/MS Volatiles						
67-64-1	Acetone	27.6	11.6	12	5	5	2.1
106-99-0	1,3-Butadiene	3.5 U	1.6 U	0.44 U	0.2 U	0.44 U	0.2 U
71-43-2	Benzene	33.2	10.4	15	4.8	0.35 J	0.11 J
75-27-4	Bromodichloromethane	11 U	1.6 U	1.3 U	0.2 U	1.3 U	0.2 U
75-25-2	Bromoform	17 U	1.6 U	2.1 U	0.2 U	2.1 U	0.2 U
74-83-9	Bromomethane	6.2 U	1.6 U	0.78 U	0.2 U	0.78 U	0.2 U
593-60-2	Bromoethene	7 U	1.6 U	0.87 U	0.2 U	0.87 U	0.2 U
100-44-7	Benzyl Chloride	8.2 U	1.6 U	1 U	0.2 U	1 U	0.2 U
75-15-0	Carbon disulfide	26	8.3	0.62 U	0.2 U	0.62 U	0.2 U
108-90-7	Chlorobenzene	7.4 U	1.6 U	0.92 U	0.2 U	0.92 U	0.2 U
75-00-3	Chloroethane	5040	1910	0.53 U	0.2 U	0.53 U	0.2 U
67-66-3	Chloroform	7.8 U	1.6 U	0.98 U	0.2 U	0.98 U	0.2 U
74-87-3	Chloromethane	3.3	1.6	0.7	0.34	0.72	0.35
107-05-1	3-Chloropropene	5 U	1.6 U	0.63 U	0.2 U	0.63 U	0.2 U
95-49-8	2-Chlorotoluene	8.3 U	1.6 U	1 U	0.2 U	1 U	0.2 U
56-23-5	Carbon tetrachloride	10 U	1.6 U	1.3 U	0.2 U	1.3 U	0.2 U
110-82-7	Cyclohexane	132	38.4	0.69 U	0.2 U	0.69 U	0.2 U
75-34-3	1,1-Dichloroethane	2970	733	0.81 U	0.2 U	0.81 U	0.2 U
75-35-4	1,1-Dichloroethylene	76.5	19.3	0.79 U	0.2 U	0.79 U	0.2 U
106-93-4	1,2-Dibromoethane	12 U	1.6 U	1.5 U	0.2 U	1.5 U	0.2 U
107-06-2	1,2-Dichloroethane	6.5 U	1.6 U	0.81 U	0.2 U	0.81 U	0.2 U
78-87-5	1,2-Dichloropropane	7.4 U	1.6 U	0.92 U	0.2 U	0.92 U	0.2 U
123-91-1	1,4-Dioxane	5.8 U	1.6 U	0.72 U	0.2 U	0.72 U	0.2 U
75-71-8	Dichlorodifluoromethane	7.9 U	1.6 U	2.1	0.43	2	0.41
124-48-1	Dibromochloromethane	14 U	1.6 U	1.7 U	0.2 U	1.7 U	0.2 U
156-60-5	trans-1,2-Dichloroethylen	3.6 J	0.9 J	0.79 U	0.2 U	0.79 U	0.2 U
156-59-2	cis-1,2-Dichloroethylene	13	3.2	0.79 U	0.2 U	0.79 U	0.2 U
10061-01-	cis-1,3-Dichloropropene	7.3 U	1.6 U	0.91 U	0.2 U	0.91 U	0.2 U
541-73-1	m-Dichlorobenzene	9.6 U	1.6 U	1.2 U	0.2 U	1.2 U	0.2 U
95-50-1	o-Dichlorobenzene	9.6 U	1.6 U	1.2 U	0.2 U	1.2 U	0.2 U
106-46-7	p-Dichlorobenzene	10	1.7	1.2 U	0.2 U	1.2 U	0.2 U
10061-02-	trans-1,3-Dichloropropen	7.3 U	1.6 U	0.91 U	0.2 U	0.91 U	0.2 U
64-17-5	Ethanol	24.6	13.1	12	6.4	1.7	0.9

TABLE 13
SUMMARY OF 2005 SOIL VAPOR INTRUSION ANALYTICAL RESULTS
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

	SAMPLING LOCATION:	SG-05-11		SG-05-AMB-E		SG-05-AMB-W	
	SAMPLING DATE:	09/21/05		09/20/05		09/20/05	
	ACCUTEST SAMPLE ID	J10451-4		J10451-11		J10451-8	
		ug/m^3	ppbv	ug/m^3	ppbv	ug/m^3	ppbv
100-41-4	Ethylbenzene	6.9 U	1.6 U	0.87 U	0.2 U	0.87 U	0.2 U
141-78-6	Ethyl Acetate	5.8 U	1.6 U	27	7.4	4	1.1
622-96-8	4-Ethyltoluene	7.9 U	1.6 U	0.98 U	0.2 U	0.98 U	0.2 U
76-13-1	Freon 113	202	26.3	1.3 J	0.17 J	1.3 J	0.17 J
76-14-2	Freon 114	11 U	1.6 U	1.4 U	0.2 U	1.4 U	0.2 U
142-82-5	Heptane	4.1 J	1 J	0.45 J	0.11 J	0.82 U	0.2 U
87-68-3	Hexachlorobutadiene	17 U	1.6 U	2.1 U	0.2 U	2.1 U	0.2 U
110-54-3	Hexane	276	78.2	0.7 U	0.2 U	0.39 J	0.11 J
591-78-6	2-Hexanone	6.5 U	1.6 U	0.82 U	0.2 U	0.82 U	0.2 U
67-63-0	Isopropyl Alcohol	3.9 U	1.6 U	0.49 U	0.2 U	0.49 U	0.2 U
75-09-2	Methylene chloride	128	36.8	0.63 J	0.18 J	1	0.29
78-93-3	Methyl ethyl ketone	4.7 U	1.6 U	0.59 U	0.2 U	0.59 U	0.2 U
108-10-1	Methyl Isobutyl Ketone	24	5.9	0.82 U	0.2 U	0.82 U	0.2 U
1634-04-4	Methyl Tert Butyl Ether	5.8 U	1.6 U	0.72 U	0.2 U	0.35 J	0.096 J
115-07-1	Propylene	6.9 U	4 U	0.86 U	0.5 U	0.86 U	0.5 U
100-42-5	Styrene	6.8 U	1.6 U	0.4 J	0.094 J	0.85 U	0.2 U
71-55-6	1,1,1-Trichloroethane	21100	3870	1.1 U	0.2 U	1.1 U	0.2 U
79-34-5	1,1,2,2-Tetrachloroethan	11 U	1.6 U	1.4 U	0.2 U	1.4 U	0.2 U
79-00-5	1,1,2-Trichloroethane	8.7 U	1.6 U	1.1 U	0.2 U	1.1 U	0.2 U
120-82-1	1,2,4-Trichlorobenzene	12 U	1.6 U	1.5 U	0.2 U	1.5 U	0.2 U
95-63-6	1,2,4-Trimethylbenzene	7.9 U	1.6 U	0.98 U	0.2 U	0.98 U	0.2 U
108-67-8	1,3,5-Trimethylbenzene	7.9 U	1.6 U	0.98 U	0.2 U	0.98 U	0.2 U
540-84-1	2,2,4-Trimethylpentane	193	41.4	0.93 U	0.2 U	0.93 U	0.2 U
75-65-0	Tertiary Butyl Alcohol	4.9 U	1.6 U	0.61 U	0.2 U	0.61 U	0.2 U
127-18-4	Tetrachloroethylene	1480	218	1.4	0.2	1.4 U	0.2 U
109-99-9	Tetrahydrofuran	4.7 U	1.6 U	0.59 U	0.2 U	0.59 U	0.2 U
108-88-3	Toluene	9	2.4	1.9	0.5	0.79	0.21
79-01-6	Trichloroethylene	152	28.2	1.1 U	0.2 U	1.1 U	0.2 U
75-69-4	Trichlorofluoromethane	9 U	1.6 U	1.1 J	0.19 J	1.1 J	0.19 J
75-01-4	Vinyl chloride	59.6	23.3	0.51 U	0.2 U	0.51 U	0.2 U
108-05-4	Vinyl Acetate	5.6 U	1.6 U	0.7 U	0.2 U	0.7 U	0.2 U
	m,p-Xylene	7.4	1.7	0.87 U	0.2 U	0.87 U	0.2 U
95-47-6	o-Xylene	6.9 U	1.6 U	0.87 U	0.2 U	0.87 U	0.2 U
1330-20-7	Xylenes (total)	7.4	1.7	0.43 J	0.1 J	0.4 J	0.093 J

..BLE 13

SUMMARY OF 2005 SOIL VAPOR INTRUSION ANALYTICAL RESULTS
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

NOTES:

U : Compound not detected at stated detection limit

J :The result is a quantitatively estimated value.

$\mu g/m^3$: Micrograms per cubic meter

ppbv : Parts per million by volume

TABLE 14
SUMMARY OF 206 SOIL VAPOR INTRUSION ANALYTICAL RESULTS
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

SAMPLE TYPE	AMBIENT AIR		INDOOR AIR					
SAMPLE LOCATION			COLUMBIA CEMENT BLDG.				KNICKERBOCKER	
SAMPLE ID	AA-06-01		IA-06-01		IA-06-02		IA-06-03	
SAMPLING DATE	08/16/06		08/16/06		08/16/06		08/16/06	
ACCUTEST SAMPLE ID	J38685-10		J38685-8		J38685-11		J38685-14	
GC/MS Volatiles	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv
Acetone	1.3	0.53	12	5	18	7.7	20	8.5
Benzene	0.64 U	0.20 U	5.1 U	1.6 U	1.2	0.38	0.38 J	0.12 J
Chlorobenzene	0.92 U	0.20 U	7.4 U	1.6 U	0.92 U	0.2 U	0.92 U	0.2 U
Chloroethane	0.53 U	0.20 U	4.2 U	1.6 U	0.53 U	0.2 U	0.53 U	0.2 U
1,1-Dichloroethane	0.81 U	0.20 U	6.5 U	1.6 U	0.81 U	0.2 U	0.81 U	0.2 U
1,1-Dichloroethene	0.79 U	0.20 U	6.3 U	1.6 U	0.79 U	0.2 U	0.79 U	0.2 U
1,2-Dichloroethane	0.81 U	0.20 U	6.5 U	1.6 U	0.81 U	0.2 U	0.81 U	0.2 U
trans-1,2-Dichloroethene	0.79 U	0.20 U	6.3 U	1.6 U	0.79 U	0.2 U	0.79 U	0.2 U
cis-1,2-Dichloroethene	1.4	0.35	6.3 U	1.6 U	0.79 U	0.2 U	0.79 U	0.2 U
Ethylbenzene	0.87 U	0.20 U	6.9 U	1.6 U	1.6	0.36	0.87 U	0.2 U
Freon 113	1.5 U	0.20 U	12 U	1.6 U	1.5 U	0.2 U	1.7	0.22
Freon 114	1.4 U	0.20 U	11 U	1.6 U	1.4 U	0.2 U	1.4 U	0.2 U
Heptane	0.82 U	0.20 U	3 J	0.73 J	2.2	0.54	0.82 U	0.2 U
Hexane	0.70 U	0.20 U	6.7	1.9	3.9	1.1	1.3	0.38
Methylene chloride	0.94	0.27	5.6 U	1.6 U	1	0.3	0.9	0.26
Methyl cyclohexane	ND	ND	ND	ND	ND	ND	ND	ND
Methyl ethyl ketone	0.59 U	0.20 U	4.7 U	1.6 U	2.3	0.78	5.9	2
Pentane	0.59 U	0.20 U	4.4 J	1.5 J	3.5	1.2	2.3	0.78
1,1,1-Trichloroethane	1.1 U	0.20 U	8.7 U	1.6 U	0.93 J	0.17 J	1.1 U	0.2 U
Tetrachloroethene	1.4 U	0.20 U	11 U	1.6 U	1.3 J	0.19 J	1.1 J	0.16 J
Toluene	0.75 U	0.20 U	18	4.9	8.7	2.3	0.75 U	0.2 U
Trichloroethene	31	5.8	8.6 U	1.6 U	1.1 U	0.2 U	1.1 U	0.2 U
Vinyl chloride	0.51 U	0.20 U	4.1 U	1.6 U	0.51 U	0.2 U	0.51 U	0.2 U
m,p-Xylene	0.87 U	0.20 U	12	2.8	5.6	1.3	0.87 U	0.2 U
o-Xylene	0.87 U	0.20 U	4.2 J	0.97 J	2	0.47	0.87 U	0.2 U
Xylenes (total)	0.87 U	0.20 U	17	3.8	7.4	1.7	0.87 U	0.2 U
Total TIC, Volatile		0		0		3.1 J		5.4 J

TABLE 14
SUMMARY OF 206 SOIL VAPOR INTRUSION ANALYTICAL RESULTS
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

SAMPLE TYPE	SUB-SLAB SAMPLES							
SAMPLE LOCATION	COLUMBIA CEMENT BLDG.						KNICKERBOCKER	
SAMPLE ID	SS-06-01		SS-06-02		SS-06-03		SS-06-04	
SAMPLING DATE	08/16/06		08/16/06		08/16/06		08/16/06	
ACCUTEST SAMPLE ID	J38685-13		J38685-9		J38685-7		J38685-12	
GC/MS Volatiles	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv
Acetone	129	54.4	278	117	87.9	37.0	42.0	17.7
Benzene	3.1 J	0.97 J	27 J	8.5 J	2.6 J	0.82 J	6.7	2.1
Chlorobenzene	7.4 U	1.6 U	46 U	10 U	7.4 U	1.6 U	7.4 U	1.6 U
Chloroethane	4.2 U	1.6 U	10500	3990	4.2 U	1.6 U	4.2 U	1.6 U
1,1-Dichloroethane	47.4	11.7	30600	7550	8.9	2.2	10	2.5
1,1-Dichloroethene	6.3 U	1.6 U	308	77.7	6.3 U	1.6 U	6.3 U	1.6 U
1,2-Dichloroethane	6.5 U	1.6 U	40 U	10 U	6.5 U	1.6 U	6.5 U	1.6 U
trans-1,2-Dichloroethene	6.3 U	1.6 U	40 U	10 U	6.3 U	1.6 U	6.3 U	1.6 U
cis-1,2-Dichloroethene	6.7	1.7	21 J	5.2 J	6.3 U	1.6 U	6.3 U	1.6 U
Ethylbenzene	6.5 J	1.5 J	55.6	12.8	6.1 J	1.4 J	26	5.9
Freon 113	12 U	1.6 U	77 U	10 U	12 U	1.6 U	15	1.9
Freon 114	11 U	1.6 U	101	14.5	11 U	1.6 U	17	2.4
Heptane	6.6 U	1.6 U	41 U	10 U	6.6 U	1.6 U	6.6 U	1.6 U
Hexane	5.6 U	1.6 U	86.7	24.6	3.1 J	0.89 J	6.7	1.9
Methylene chloride	5.6 U	1.6 U	251	72.3	5.6 U	1.6 U	32	9.1
Methyl cyclohexane	ND	ND	ND	ND	ND	ND	ND	ND
Methyl ethyl ketone	63.4	21.5	109	36.9	40.4	13.7	3.8 J	1.3 J
Pentane	4.7 U	1.6 U	72.7	24.7	4.7 U	1.6 U	3.8 J	1.3 J
1,1,1-Trichloroethane	189	34.6	86200	15800	14	2.6	27	4.9
Tetrachloroethene	195	28.7	2140	316	43	6.3	121	17.9
Toluene	18	4.7	55.4	14.7	23	6.1	82.5	21.9
Trichloroethene	57.5	10.7	534	99.3	5.9 J	1.1 J	7.0 J	1.3 J
Vinyl chloride	4.1 U	1.6 U	16 J	6.2 J	4.1 U	1.6 U	4.1 U	1.6 U
m,p-Xylene	29	6.6	136	31.4	25	5.8	97.7	22.5
o-Xylene	12	2.7	67.3	15.5	10	2.4	43	9.8
Xylenes (total)	40	9.3	204	47.0	36	8.2	140	32.2
Total TIC, Volatile		73.9 J		203 J		0		165.3 J

.3LE 14

SUMMARY OF 206 SOIL VAPOR INTRUSION ANALYTICAL RESULTS
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

SAMPLE TYPE	SOIL GAS SAMPLES					
SAMPLE LOCATION	SPILL / UST AREA					
SAMPLE ID	SG-05-01		SG-05-04		SG-05-11	
SAMPLING DATE	08/15/06		08/15/06		08/15/06	
ACCUTEST SAMPLE ID	J38685-3		J38685-4		J38685-2	
GC/MS Volatiles	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv
Acetone	140 U	57 U	240 U	100 U	24 U	10 U
Benzene	151 J	47.2 J	390	122	72.8	22.8
Chlorobenzene	260 U	57 U	460 U	100 U	46 U	10 U
Chloroethane	1820	689	356	135	17500	6620
1,1-Dichloroethane	230 U	57 U	56700	14000	20000	4950
1,1-Dichloroethene	230 U	57 U	678	171	199	50.1
1,2-Dichloroethane	230 U	57 U	400 U	100 U	40 U	10 U
trans-1,2-Dichloroethene	230 U	57 U	400 U	100 U	40 U	10 U
cis-1,2-Dichloroethene	230 U	57 U	2790	704	24 J	6.0 J
Ethylbenzene	250 U	57 U	430 U	100 U	43 U	10 U
Freon 113	440 U	57 U	770 U	100 U	123	16.1
Freon 114	400 U	57 U	700 U	100 U	70 U	10 U
Heptane	865	211	410 U	100 U	28 J	6.9 J
Hexane	20700	5870	2010	569	1240	351
Methylene chloride	200 U	57 U	350 U	100 U	269	77.3
Methyl cyclohexane	ND	6300 J	ND	ND	ND	ND
Methyl ethyl ketone	170 U	57 U	290 U	100 U	29 U	10 U
Pentane	1780	606	456	155	150	51.0
1,1,1-Trichloroethane	310 U	57 U	30800	5640	50600	9270
Tetrachloroethene	390 U	57 U	3280	484	1900	280
Toluene	210 U	57 U	380 U	100 U	38 U	10 U
Trichloroethene	310 U	57 U	1590	295	364	67.8
Vinyl chloride	111 J	43.4 J	322	126	164	64.1
m,p-Xylene	208 J	47.9 J	430 U	100 U	43 U	10 U
o-Xylene	250 U	57 U	430 U	100 U	43 U	10 U
Xylenes (total)	208 J	47.9 J	430 U	100 U	43 U	10 U
Total TIC, Volatile		70300 J		3820 J		4110 J

TABLE 14
SUMMARY OF 206 SOIL VAPOR INTRUSION ANALYTICAL RESULTS
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

SAMPLE TYPE	SOIL GAS SAMPLES					
SAMPLE LOCATION	SPILL / UST AREA					
SAMPLE ID	SG-05-05		SG-05-08		SG-05-10	
SAMPLING DATE	08/15/06		08/15/06		08/15/06	
ACCUTEST SAMPLE ID	J38685-6		J38685-1		J38685-5	
GC/MS Volatiles	µg/m3	ppbv	µg/m3	ppbv	µg/m3	ppbv
Acetone	146	61.5	57.0	24.0	9.5 U	4.0 U
Benzene	68.7	21.5	38.3	12.0	16	5.0
Chlorobenzene	15 U	3.2 U	15 U	3.2 U	18 U	4.0 U
Chloroethane	74.4	28.2	8.7	3.3	1450	551
1,1-Dichloroethane	1990	492	22	5.4	1980	488
1,1-Dichloroethene	56.7	14.3	13 U	3.2 U	69.8	17.6
1,2-Dichloroethane	13 U	3.2 U	13 U	3.2 U	16 U	4.0 U
trans-1,2-Dichloroethene	13 U	3.2 U	13 U	3.2 U	16 U	4.0 U
cis-1,2-Dichloroethene	140	35.2	13	3.3	17	4.2
Ethylbenzene	14 U	3.2 U	14 U	3.2 U	17 U	4.0 U
Freon 113	38	4.9	18 J	2.4 J	31 U	4.0 U
Freon 114	368	52.7	18 J	2.6 J	28 U	4.0 U
Heptane	9.8 J	2.4 J	85.7	20.9	141	34.4
Hexane	79.3	22.5	83.2	23.6	846	240
Methylene chloride	18	5.3	34.7	10.0	14 U	4.0 U
Methyl cyclohexane	ND	ND	ND	ND	ND	ND
Methyl ethyl ketone	9.4 U	3.2 U	22	7.6	12 U	4.0 U
Pentane	159	54.1	158	53.5	724	246
1,1,1-Trichloroethane	1300	239	17 U	3.2 U	25	4.5
Tetrachloroethene	963	142	22 U	3.2 U	27 U	4.0 U
Toluene	10 J	2.7 J	11 J	2.9 J	46.4	12.3
Trichloroethene	554	103	17 U	3.2 U	21 U	4.0 U
Vinyl chloride	22	8.7	8.2 U	3.2 U	67.2	26.3
m,p-Xylene	13 J	2.9 J	9.6 J	2.2 J	17 U	4.0 U
o-Xylene	14 U	3.2 U	7.4 J	1.7 J	17 U	4.0 U
Xylenes (total)	13 J	2.9 J	17	3.9	17 U	4.0 U
Total TIC, Volatile		1190 J		1672 J		3120 J

TABLE 14
SUMMARY OF 206 SOIL VAPOR INTRUSION ANALYTICAL RESULTS
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

SAMPLE TYPE	ROHM & HAAS SAMPLES							
SAMPLE LOCATION	SUB-SLAB SAMPLE				AMBIENT AIR SAMPLE			
SAMPLE ID	SS-06-05 (1 L can)		SS-06-05 (6 L can)		AA-06-10-05 (1 L can)		AA-06-10-05 (6 L can)	
SAMPLING DATE	10/05/06		10/05/06		10/05/06		10/05/06	
ACCUTEST SAMPLE ID	J43168-1		687244		J43168-2		687243	
GC/MS Volatiles	ug/m3	ppbv	µg/m3	ppbv	ug/m3	ppbv	µg/m3	ppbv
Acetone	208	87.6	330	140	2.6 U	1.1 U	12 U	5.0 U
Benzene	10	3.2	13	4.0	0.61 U	0.19 U	0.64 U	0.20 U
Chlorobenzene	2.7 U	0.59 U	4.6 U	1.0 U	2.7 U	0.59 U	0.92 U	0.20 U
Chloroethane	1.3 U	0.49 U	6.6 U	2.5 U	1.3 U	0.49 U	1.3 U	0.50 U
1,1-Dichloroethane	216	53.3	340	85	2.3 U	0.58 U	0.81 U	0.20 U
1,1-Dichloroethene	2.8 U	0.71 U	4.0 U	1.0 U	2.8 U	0.71 U	0.79 U	0.20 U
1,2-Dichloroethane	2.2 U	0.54 U	16	2.3	2.2 U	0.54 U	6.9	0.99
trans-1,2-Dichloroethene	2.2 U	0.56 U	4.0 U	1.0 U	2.2 U	0.56	0.79 U	0.20 U
cis-1,2-Dichloroethene	9.9	2.5			1.7 U	0.43 U	U	U
Ethylbenzene	5.2 J	1.2 J	6.5	1.5	1.7 U	0.39 U	0.87 U	0.20 U
Freon 113	4.7 U	0.61 U	7.7 U	1.0 U	4.7 U	0.61 U	1.5 U	0.20 U
Freon 114	2.4 U	0.35 U	7.7 U	1.0 U	2.4 U	0.35 U	1.5 U	0.20 U
Heptane	7.4	1.8	9.4	2.3	2.5 U	0.62 U	0.82 U	0.20 U
Hexane	12	3.4	17	4.9	2 J	0.57 U	1.8 U	0.50 U
Methylene chloride	4.5 J	1.3 J	8.7	2.5	2.3	0.65 J	1.7 U	0.50 U
Methyl cyclohexane	ND	ND	ND	ND	ND	ND	ND	ND
Methyl ethyl ketone	1.2 U	0.42 U	32	11	36.3 J	12.3	65	22
Pentane	35.6	12.1	ND	ND	2.7 U	0.9 J	ND	ND
1,1,1-Trichloroethane	38	7	51	9.4	2.6 U	0.47 U	1.1 U	0.20 U
Tetrachloroethene	564	83.1	290	43	3	0.44	1.4 U	0.20 U
Toluene	18	4.8	28	7.4	15 U	3.9	4.9	1.3
Trichloroethene	58	10.8	86	16	3.1 U	0.58	1.1 U	0.20 U
Vinyl chloride	1.3 U	0.51 U	2.6 U	1.0 U	1.3 U	0.51	0.51 U	0.20 U
m,p-Xylene	12	2.7	18	4.1	3.7 U	0.86 U	2.2 U	0.5 U
o-Xylene	4.8 J	1.1 J	6.5	1.5	0.83 U	0.19	0.87 U	0.20 U
Xylenes (total)	17	3.8	25	5.7			0.87 U	0.20 U
Total TIC, Volatile		254.3 J		297 J		ND		ND

TABLE 14
SUMMARY OF 2006 SOIL VAPOR INTRUSION ANALYTICAL RESULTS
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

NOTES:

µg/m3 : Micrograms per cubic meter

ppbv : Parts per billion by volume

U : Not detected at stated detection limit.

J : Estimated value

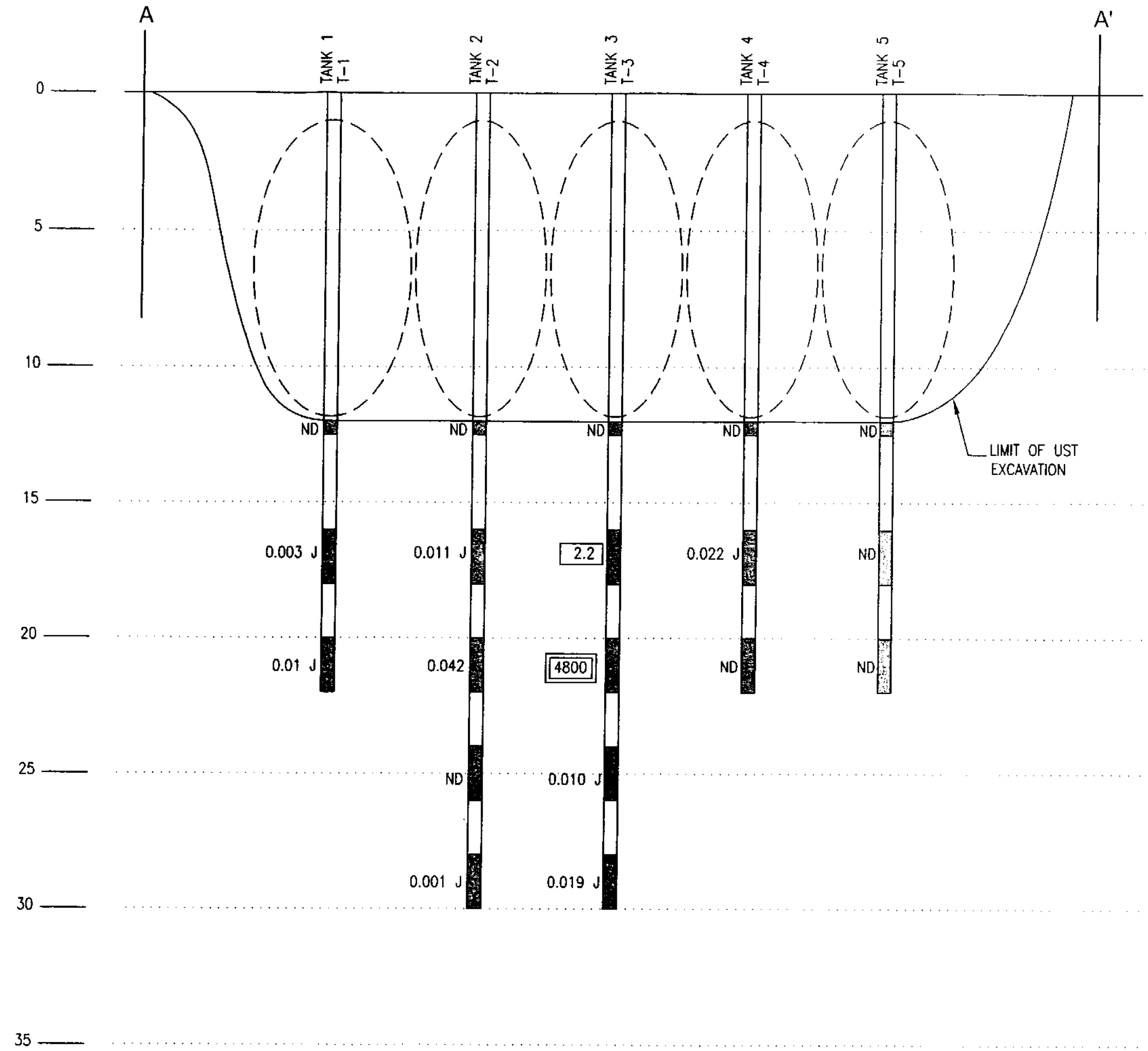
ND : Not Detected

TABLE 15
EVALUATION OF VAPOR INTRUSION DATA
AUGUST - OCTOBER 2006
FORMER COLUMBIA CEMENT COMPANY FACILITY
FREEPORT, NEW YORK

LOCATION	COMPOUND	Maximum Sub-Slab Concentration (ug/m3)	Indoor Air Concentration (ug/m3)	Ambient Air Concentration (ug/m3)	Attenuation Factor	Applicable NYSDOH Matrix	Matrix Decision	Comments
Columbia Cement	Tetrachloroethylene (PCE)	2,140	1.3	1.4	6.1E-04	2	Mitigate	2nd Indoor sample was <11
	Trichloroethylene (TCE)	534	1.1	31	2.1E-03	1	Mitigate	2nd Indoor sample was <8.6
	1,1,1-Trichloroethane (TCA	86,200	0.93	1.1	1.1E-05	2	Mitigate	2nd Indoor sample was <8.7
Knickerbocker	Tetrachloroethylene (PCE)	121	1.1	1.4	9.1E-03	2	Monitor	
	Trichloroethylene (TCE)	7.0	1.1	31	1.6E-01	1	Monitor	
	1,1,1-Trichloroethane (TCA	27	1.1	1.1	4.1E-02	2	No further action	
Rohm & Haas	Tetrachloroethylene (PCE)	564	--	3	NC	2	Monitor or Mitigate	
	Trichloroethylene (TCE)	58	--	3.1	NC	1	Monitor or Mitigate	
	1,1,1-Trichloroethane (TCA	38	--	2.6	NC	2	No further action	

Note: For non-detect results, the compound's method detection limit was used to evaluate the decision matrix.

S:\Projects\Columbia Cement\38546433\Plot\4th Quarter Report\38546433-005.dwg /22/2005 3:20:52 PM EST



SCALE HORIZONTAL 1"=10'
VERTICAL 1"=5'

LEGEND:

- SOIL BORING SAMPLE INTERVALS ARE SHARED
- FORMER UST LOCATION
- ND NOT DETECTED
- J ESTIMATED VALUE
- $\boxed{10}$ VALUE EXCEEDS NYSDEC TAGM RECOMENDED SOIL CLEANUP OBJECTIVE
- $\boxed{\boxed{10}}$ VALUE EXCEEDS NYSDEC TAGM IN RECOMMENDED SOIL CLEANUP OBJECTIVE BY AN ORDER OF MAGNITUDE

ALL CONCENTRATION EXPRESSED AS mg/kg.

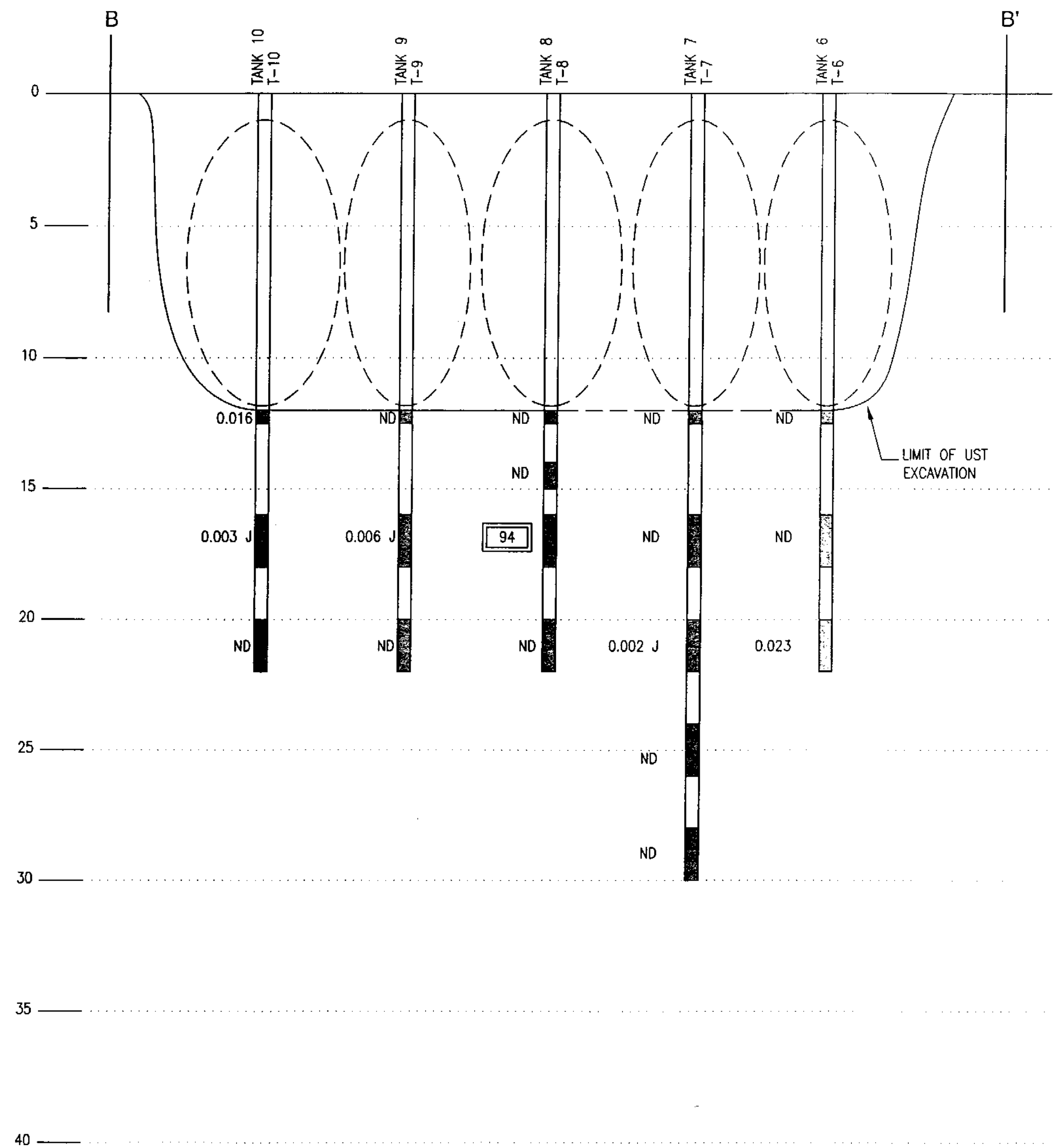
FORMER COLUMBIA CEMENT COMPANY, INC.
159 HANSEN AVENUE
FREEPORT, NEW YORK

SOIL 1,1,1-TCA CONCENTRATIONS CROSS SECTION A - A'

URS
12 COMMERCE DRIVE
CRANFORD, NJ, 07016
PHONE: (908) 272-8300
FAX: (908) 272-3940

DATE: 11/07/05
PROJECT: 38546433

FIGURE 5



SCALE HORIZONTAL 1"=10'
VERTICAL 1"=5'

LEGEND:

- SOIL BORING SAMPLE INTERVALS ARE SHARED
- FORMER UST LOCATION
- ND NOT DETECTED
- J ESTIMATED VALUE
- 10 VALUE EXCEEDS NYSDEC TAGM RECOMENDED SOIL CLEANUP OBJECTIVE
- 10 VALUE EXCEEDS NYSDEC TAGM IN RECOMMENDED SOIL CLEANUP OBJECTIVE BY AN ORDER OF MAGNITUDE

ALL CONCENTRATION EXPRESSED AS mg/kg.

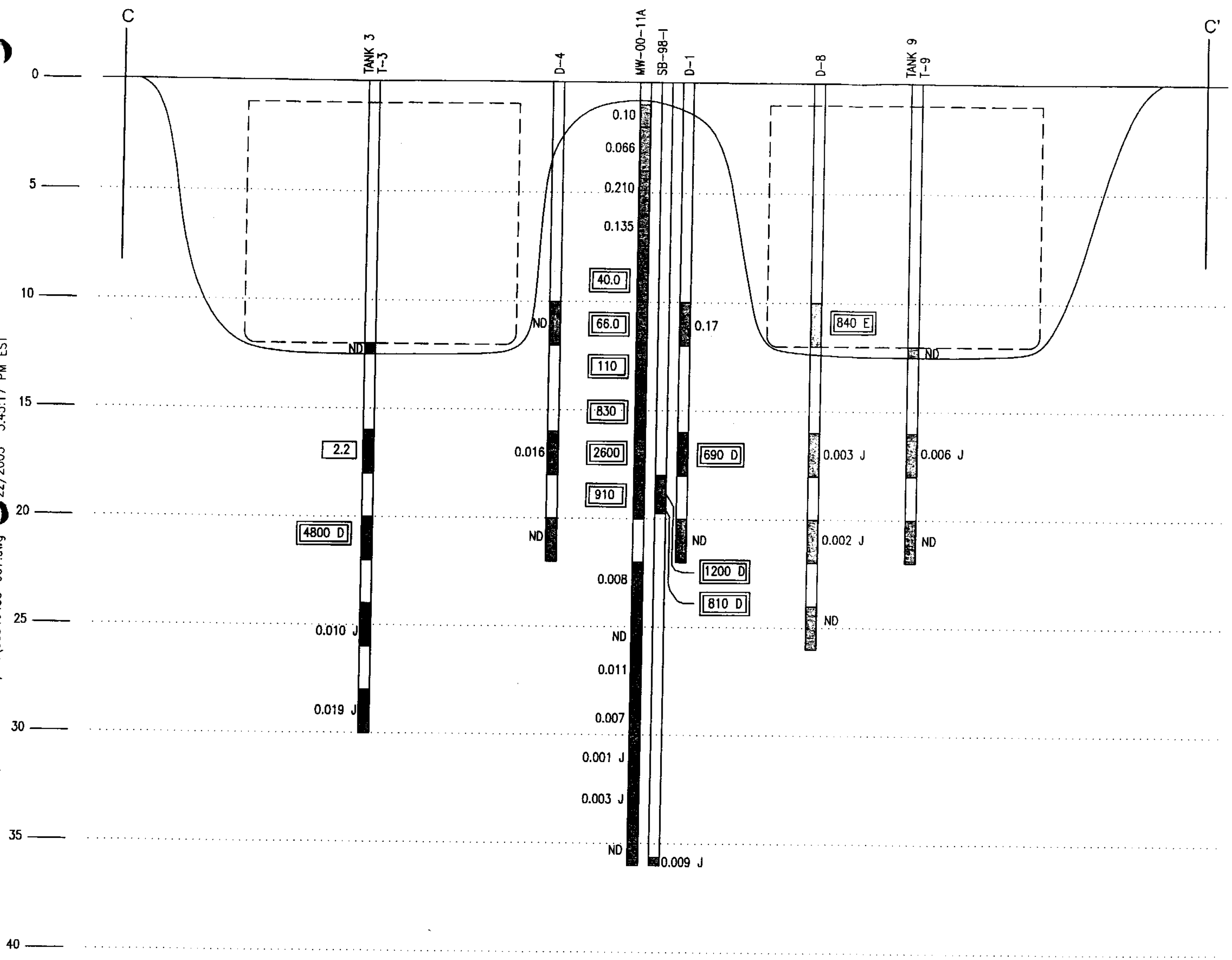
FORMER COLUMBIA CEMENT COMPANY, INC.
159 HANSEN AVENUE
FREEPORT, NEW YORK

SOIL 1,1,1,-TCA CONCENTRATIONS CROSS SECTION B - B'

URS
12 COMMERCE DRIVE
CRANFORD, NJ, 07016
PHONE: (908) 272-8300
FAX: (908) 272-3940

DATE: 11/07/05
PROJECT: 38546433

FIGURE 6



SCALE HORIZONTAL 1"=10'
VERTICAL 1"=5'

LEGEND:

- SOIL BORING SAMPLE INTERVALS ARE SHARED
- FORMER UST LOCATION
- ND NOT DETECTED
- J ESTIMATED VALUE
- D RESULT IS FROM DILUTED SAMPLE
- 10 VALUE EXCEEDS NYSDEC TAGM RECOMENDED SOIL CLEANUP OBJECTIVE
- 10 VALUE EXCEEDS NYSDEC TAGM IN RECOMMENDED SOIL CLEANUP OBJECTIVE BY AN ORDER OF MAGNITUDE

ALL CONCENTRATION EXPRESSED AS mg/kg.

FORMER COLUMBIA CEMENT COMPANY, INC.
159 HANSEN AVENUE
FREEPORT, NEW YORK

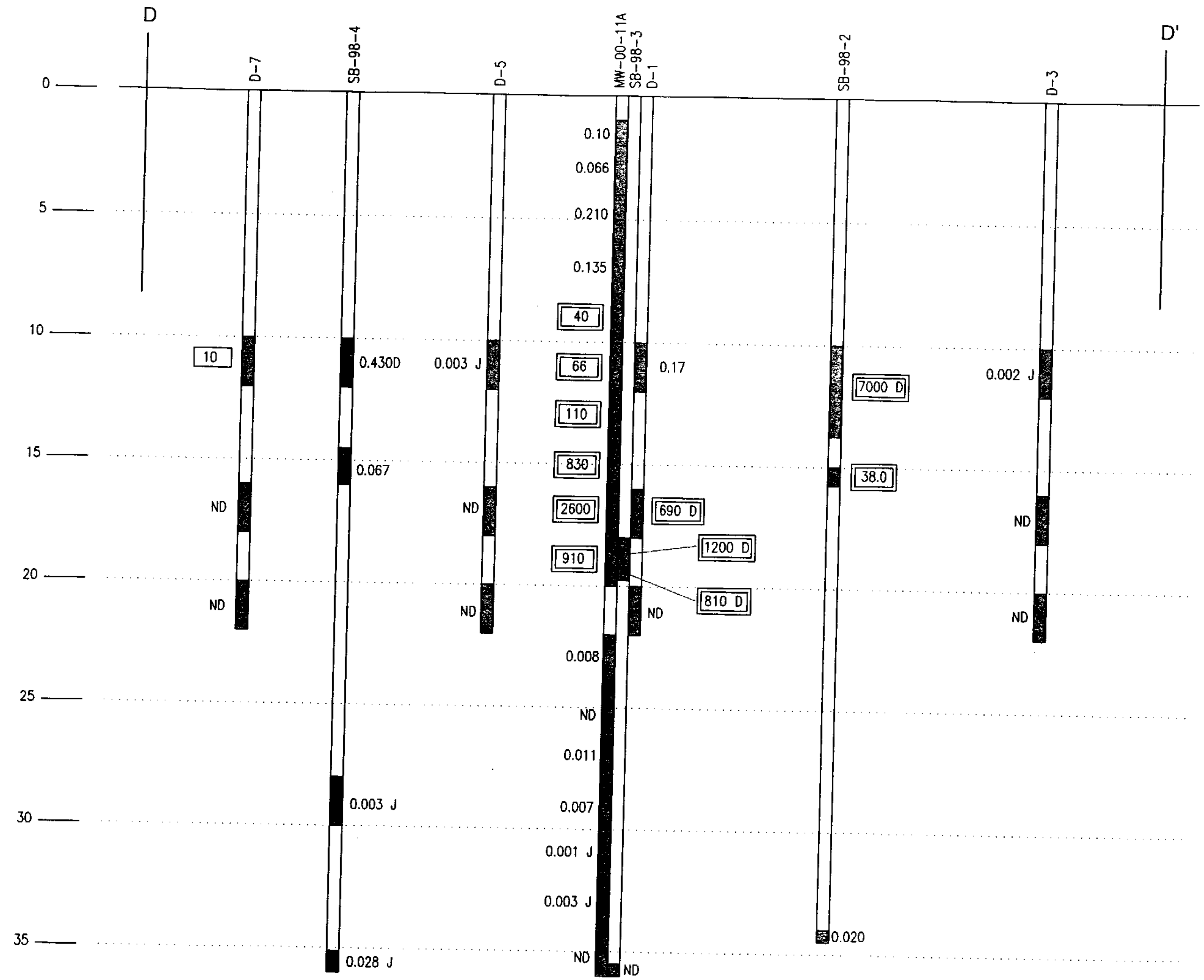
SOIL 1,1,1,-TCA CONCENTRATIONS CROSS SECTION C - C'

URS
12 COMMERCE DRIVE
CRANFORD, NJ, 07016
PHONE: (908) 272-8300
FAX: (908) 272-3940

DATE: 11/07/05
PROJECT: 38546433

FIGURE 7

S:\Projects\Columbia Cement\38546433\Plot\4th Quarter Report\38546433-008.dwg 11/22/2005 3:46:58 PM EST



SCALE HORIZONTAL 1"=10'
VERTICAL 1"=5'

LEGEND:

SOIL BORING SAMPLE INTERVALS ARE SHARED

FORMER UST LOCATION

ND NOT DETECTED

J ESTIMATED VALUE

D RESULT IS FROM DILUTED SAMPLE

$\boxed{10}$ VALUE EXCEEDS NYSDEC TAGM RECOMENDED SOIL CLEANUP OBJECTIVE

$\boxed{\boxed{10}}$ VALUE EXCEEDS NYSDEC TAGM IN RECOMMENDED SOIL CLEANUP OBJECTIVE BY AN ORDER OF MAGNITUDE

ALL CONCENTRATION EXPRESSED AS mg/kg.

FORMER COLUMBIA CEMENT COMPANY, INC.
159 HANSEN AVENUE
FREEPORT, NEW YORK

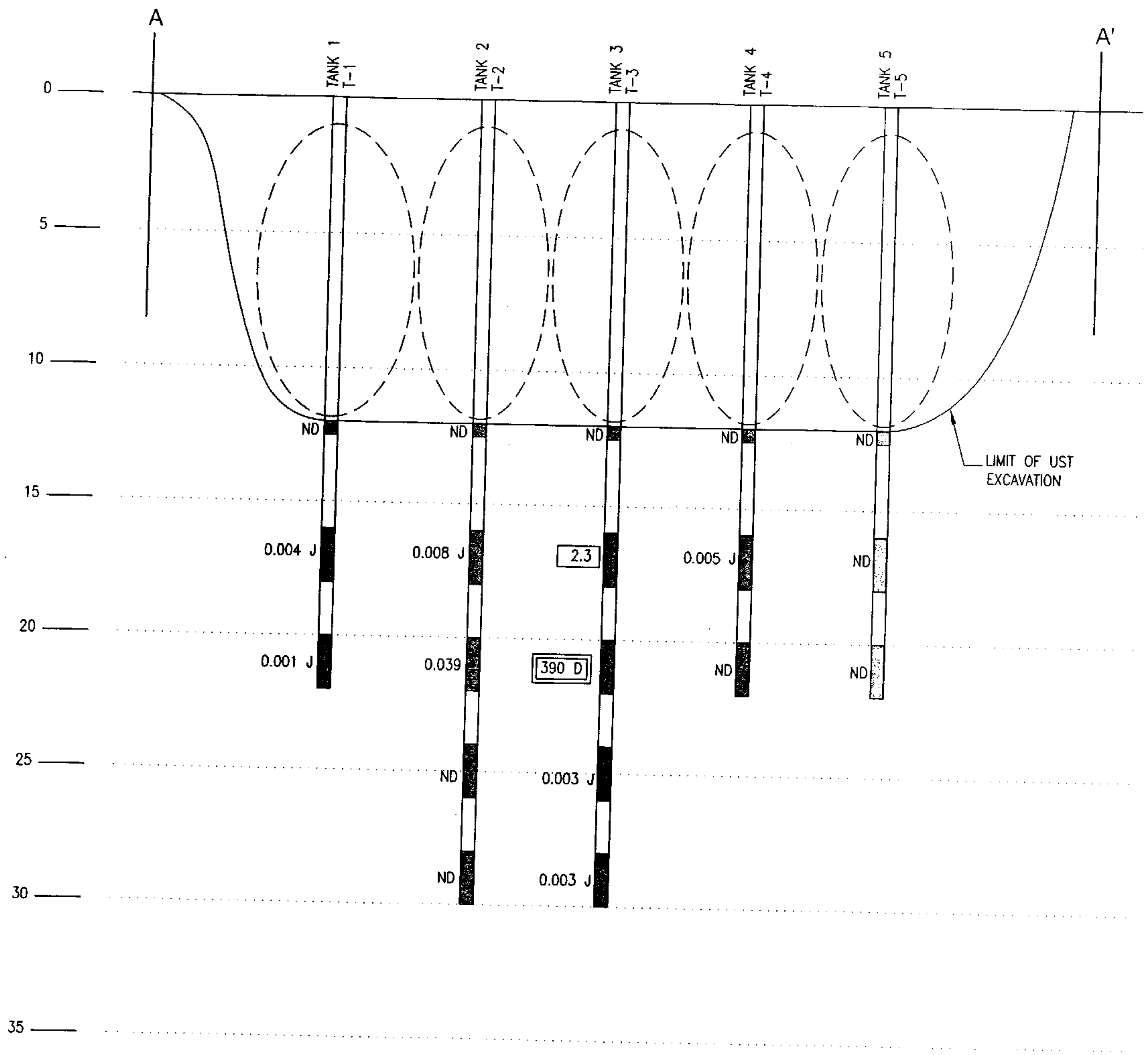
SOIL 1,1,1,-TCA CONCENTRATIONS CROSS SECTION D - D'

URS
12 COMMERCE DRIVE
CRANFORD, NJ, 07016
PHONE: (908) 272-8300
FAX: (908) 272-3940

DATE: 11/07/05
PROJECT: 38546433

FIGURE 8

S:\Projects\ umbia Cement\38546433\Plot\4th Quarter Report\38546433-009.dwg /22/2005 3:48:04 PM EST



LEGEND:

SOIL BORING SAMPLE INTERVALS ARE SHARED

FORMER UST LOCATION

ND NOT DETECTED

J ESTIMATED VALUE

D RESULT IS FROM DILUTED SAMPLE

10 VALUE EXCEEDS NYSDEC TAGM RECOMENDED SOIL CLEANUP OBJECTIVE

$\boxed{\boxed{10}}$ VALUE EXCEEDS NYSDEC TAGM IN RECOMMENDED SOIL CLEANUP OBJECTIVE BY AN ORDER OF MAGNITUDE

ALL CONCENTRATION EXPRESSED AS mg/kg.

SCALE HORIZONTAL 1"=10'
VERTICAL 1"=5'

FORMER COLUMBIA CEMENT COMPANY, INC.
159 HANSEN AVENUE
FREEPORT, NEW YORK

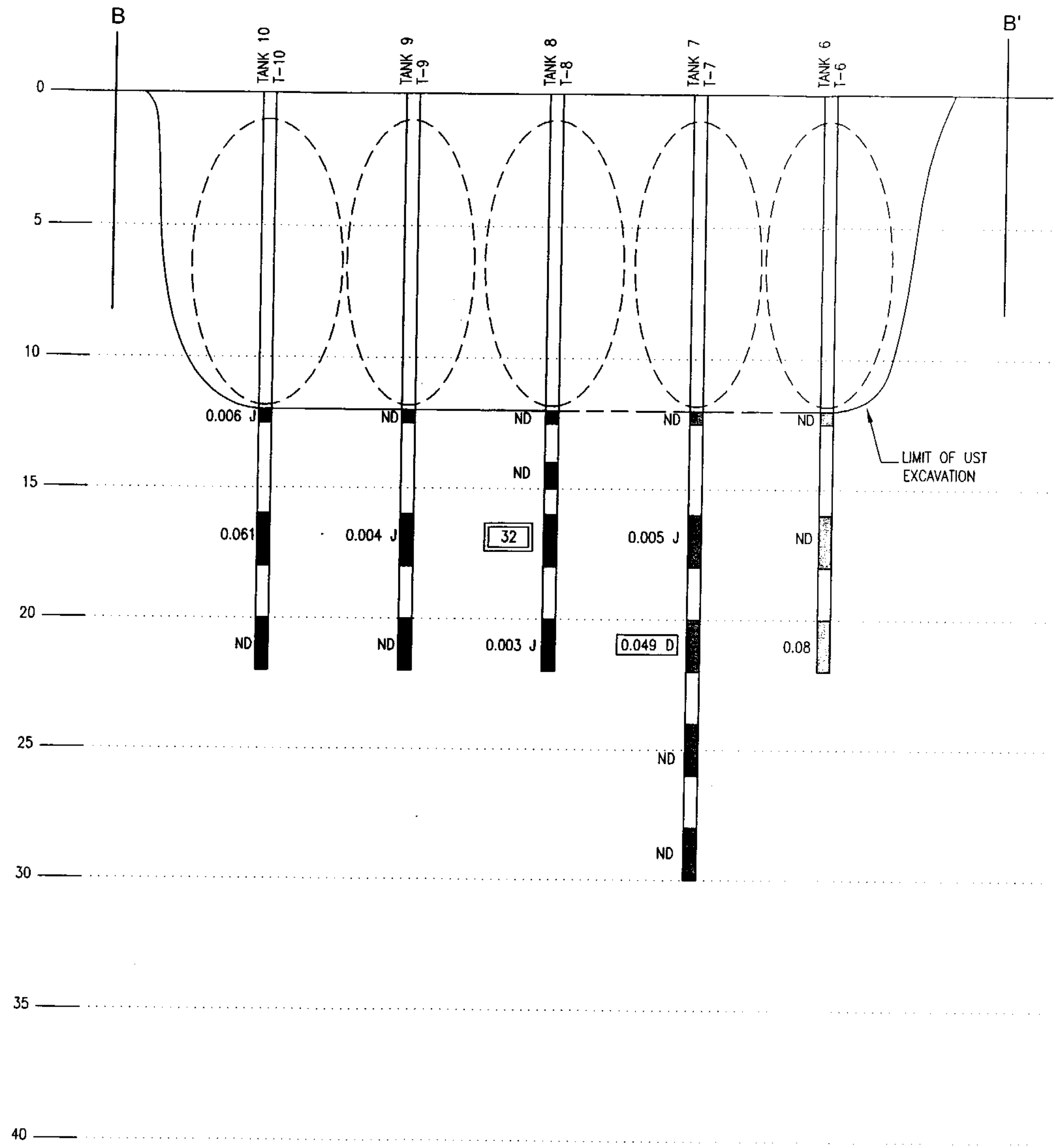
SOIL CONCENTRATIONS OF 1,1-DCA CROSS SECTION A - A'

URS

12 COMMERCE DRIVE
CRANFORD, NJ, 07016
PHONE: (908) 272-8300
FAX: (908) 272-3940

DATE: 11/07/05
PROJECT: 38546433

S:\Projects\...umbia Cement\38546433\Plot\4th Quarter Report\38546433-010.dwg .../22/2005 3:50:12 PM EST



SCALE HORIZONTAL 1"=10' VERTICAL 1"=5'

LEGEND:

- SOIL BORING SAMPLE INTERVALS ARE SHARED
- FORMER UST LOCATION
- ND NOT DETECTED
- J ESTIMATED VALUE
- D RESULT IS FROM DILUTED SAMPLE
- $\boxed{10}$ VALUE EXCEEDS NYSDEC TAGM RECOMENDED SOIL CLEANUP OBJECTIVE
- $\boxed{10}$ VALUE EXCEEDS NYSDEC TAGM IN RECOMMENDED SOIL CLEANUP OBJECTIVE BY AN ORDER OF MAGNITUDE

ALL CONCENTRATION EXPRESSED AS mg/kg.

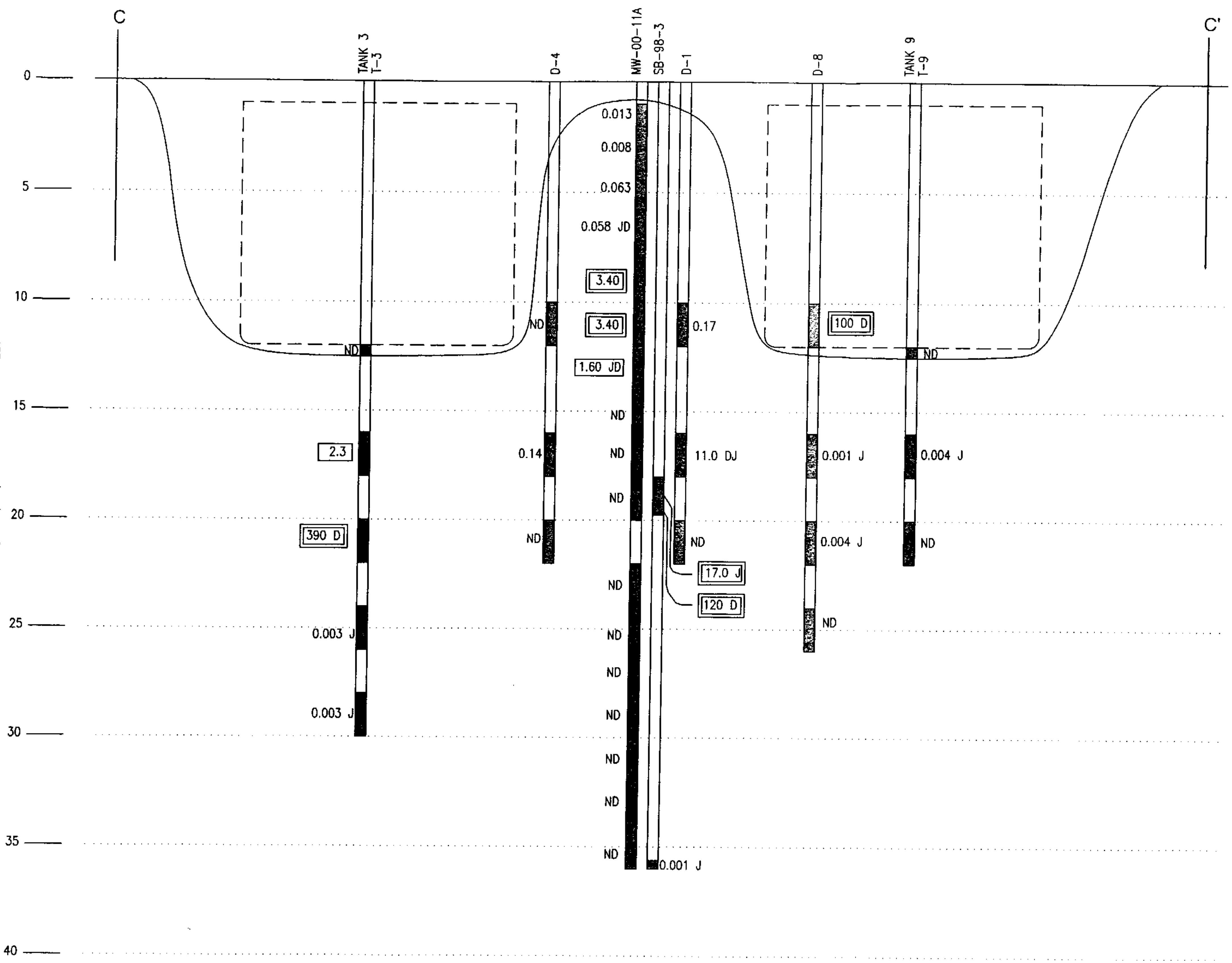
FORMER COLUMBIA CEMENT COMPANY, INC.
159 HANSEN AVENUE
FREEPORT, NEW YORK

SOIL CONCENTRATIONS OF 1,1-DCA CROSS SECTION B - B'

URS
12 COMMERCE DRIVE
CRANFORD, NJ, 07016
PHONE: (908) 272-8300
FAX: (908) 272-3940

DATE: 11/07/05
PROJECT: 38546433

FIGURE 10



LEGEND:

SOIL BORING SAMPLE INTERVALS ARE SHARED

FORMER UST LOCATION

ND NOT DETECTED

J ESTIMATED VALUE

D RESULT IS FROM DILUTED SAMPLE

10 VALUE EXCEEDS NYSDEC TAGM RECOMENDED SOIL CLEANUP OBJECTIVE

10 VALUE EXCEEDS NYSDEC TAGM IN RECOMMENDED SOIL CLEANUP OBJECTIVE BY AN ORDER OF MAGNITUDE

ALL CONCENTRATION EXPRESSED AS mg/kg.

SCALE HORIZONTAL 1"=10'
VERTICAL 1"=5'

FORMER COLUMBIA CEMENT COMPANY, INC.
159 HANSEN AVENUE
FREEPORT, NEW YORK

SOIL 1,1-DCA CONCENTRATIONS CROSS SECTION C - C'

URS

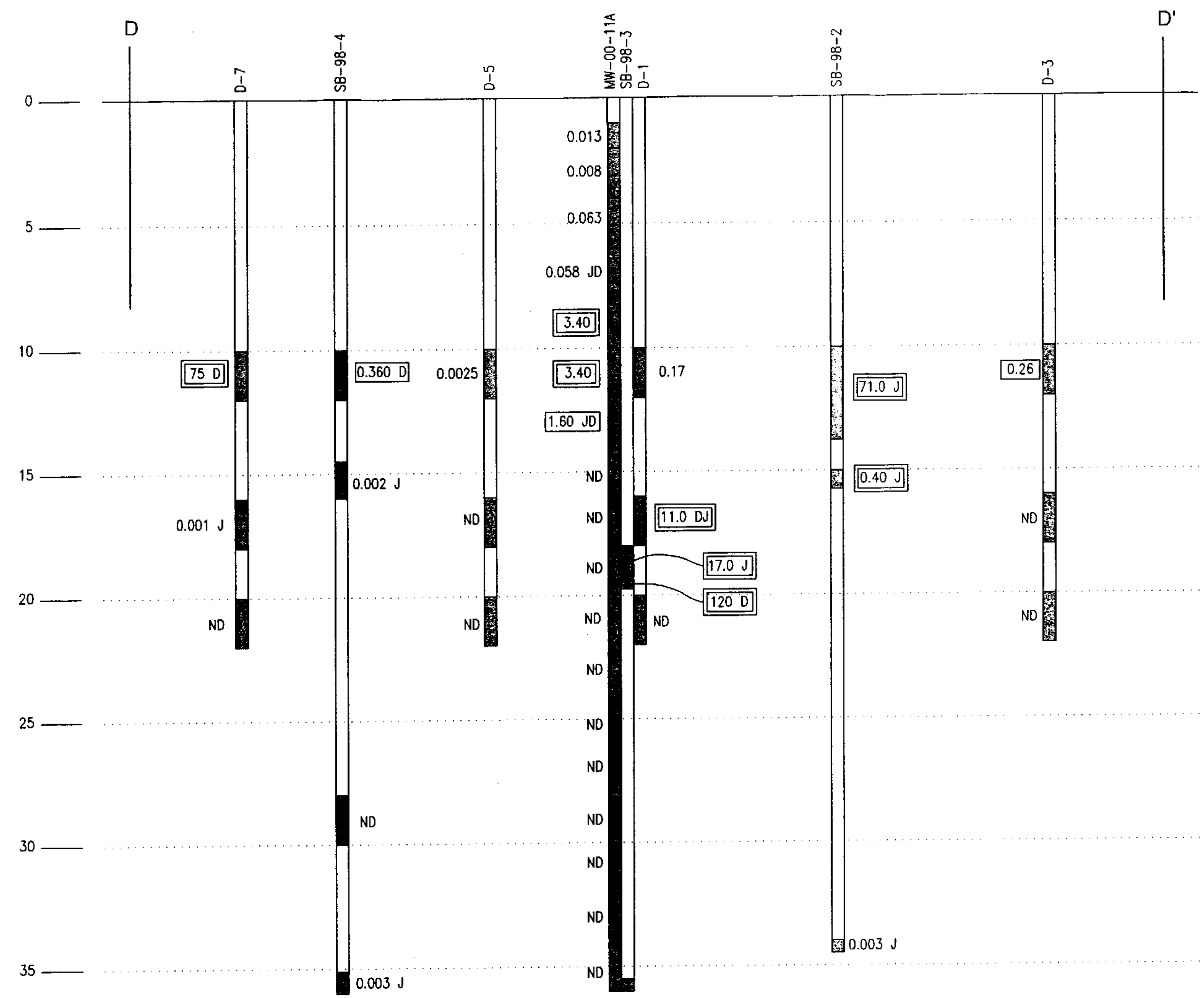
12 COMMERCE DRIVE
CRANFORD, NJ, 07016
PHONE: (908) 272-8300
FAX: (908) 272-3940

DATE: 11/07/05
PROJECT: 38546433

FIGURE 11

S:\Projects\Columbia Cement\38546433\Plot\4th Quarter Report\38546433-011.dwg /22/2005 4:02:42 PM EST

S:\Projects\ ...mbia Cement\38546433\Plot\4th Quarter Report\38546433-012.dwg ...22/2005 4:05:24 PM EST



SCALE HORIZONTAL 1"=10'
VERTICAL 1"=5'

LEGEND:

- SOIL BORING SAMPLE INTERVALS ARE SHARED
- FORMER UST LOCATION
- ND NOT DETECTED
- J ESTIMATED VALUE
- D RESULT IS FROM DILUTED SAMPLE
- 10 VALUE EXCEEDS NYSDEC TAGM RECOMENDED SOIL CLEANUP OBJECTIVE
- 10 VALUE EXCEEDS NYSDEC TAGM IN RECOMMENDED SOIL CLEANUP OBJECTIVE BY AN ORDER OF MAGNITUDE

ALL CONCENTRATION EXPRESSED AS mg/kg.

FORMER COLUMBIA CEMENT COMPANY, INC.
159 HANSEN AVENUE
FREEPORT, NEW YORK

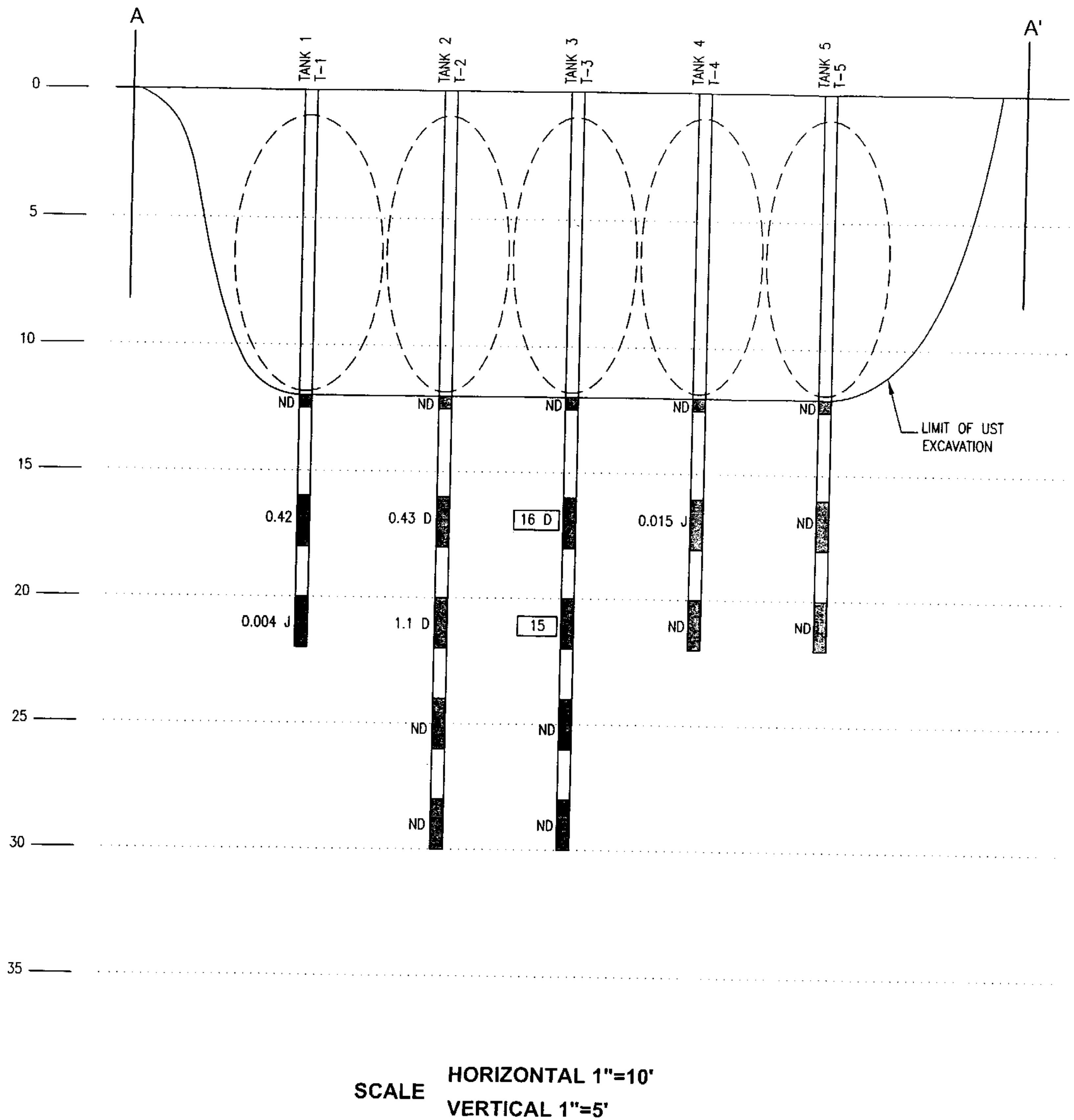
SOIL 1,1-DCA CONCENTRATIONS CROSS SECTION D - D'

URS

12 COMMERCE DRIVE
CRANFORD, NJ. 07016
PHONE: (908) 272-8300
FAX: (908) 272-3940

DATE: 11/07/05
PROJECT: 38546433

FIGURE 12



LEGEND:

SOIL BORING SAMPLE INTERVALS ARE SHARED

FORMER UST LOCATION.

ND NOT DETECTED

J ESTIMATED VALUE

D RESULT IS FROM DILUTED SAMPLE

10 VALUE EXCEEDS NYSDEC TAGM RECOMENDED SOIL CLEANUP OBJECTIVE

10 VALUE EXCEEDS NYSDEC TAGM IN RECOMMENDED SOIL CLEANUP OBJECTIVE BY AN ORDER OF MAGNITUDE

ALL CONCENTRATION EXPRESSED AS mg/kg.

FORMER COLUMBIA CEMENT COMPANY, INC.
159 HANSEN AVENUE
FREEPORT, NEW YORK

SOIL CONCENTRATIONS OF CHLOROETHANE CROSS SECTION A - A'

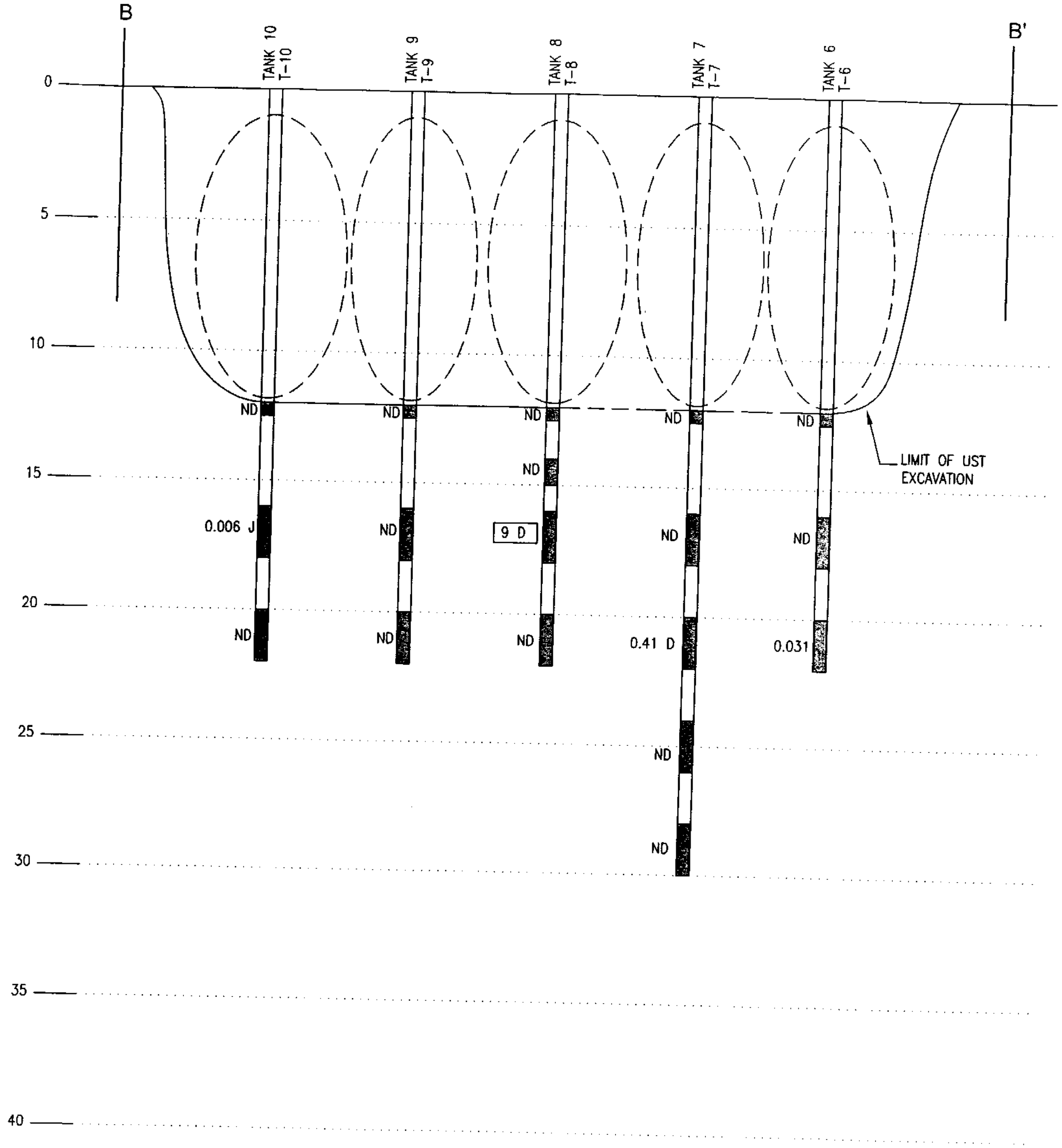
URS
12 COMMERCE DRIVE
CRANFORD, NJ, 07016
PHONE: (908) 272-8300
FAX: (908) 272-3940

DATE: 11/07/05
PROJECT: 38546433

FIGURE 13

S:\Projects\[...]umbia Cement\38546433\Plot\4th Quarter Report\38546433-013.dwg [...]/22/2005 4:10:55 PM EST

S:\Project[illegible]lumbia Cement\38546433\Plot\4th Quarter Report\38546433-014.dwg [illegible]/22/2005 4:13:43 PM EST



SCALE HORIZONTAL 1"=10'
VERTICAL 1"=5'

LEGEND:

SOIL BORING SAMPLE INTERVALS ARE SHARED

FORMER UST LOCATION

ND NOT DETECTED

J ESTIMATED VALUE

D RESULT IS FROM DILUTED SAMPLE

10 VALUE EXCEEDS NYSDEC TAGM RECOMENDED SOIL CLEANUP OBJECTIVE

10 VALUE EXCEEDS NYSDEC TAGM IN RECOMMENDED SOIL CLEANUP OBJECTIVE BY AN ORDER OF MAGNITUDE

ALL CONCENTRATION EXPRESSED AS mg/kg.

FORMER COLUMBIA CEMENT COMPANY, INC.
159 HANSEN AVENUE
FREEPORT, NEW YORK

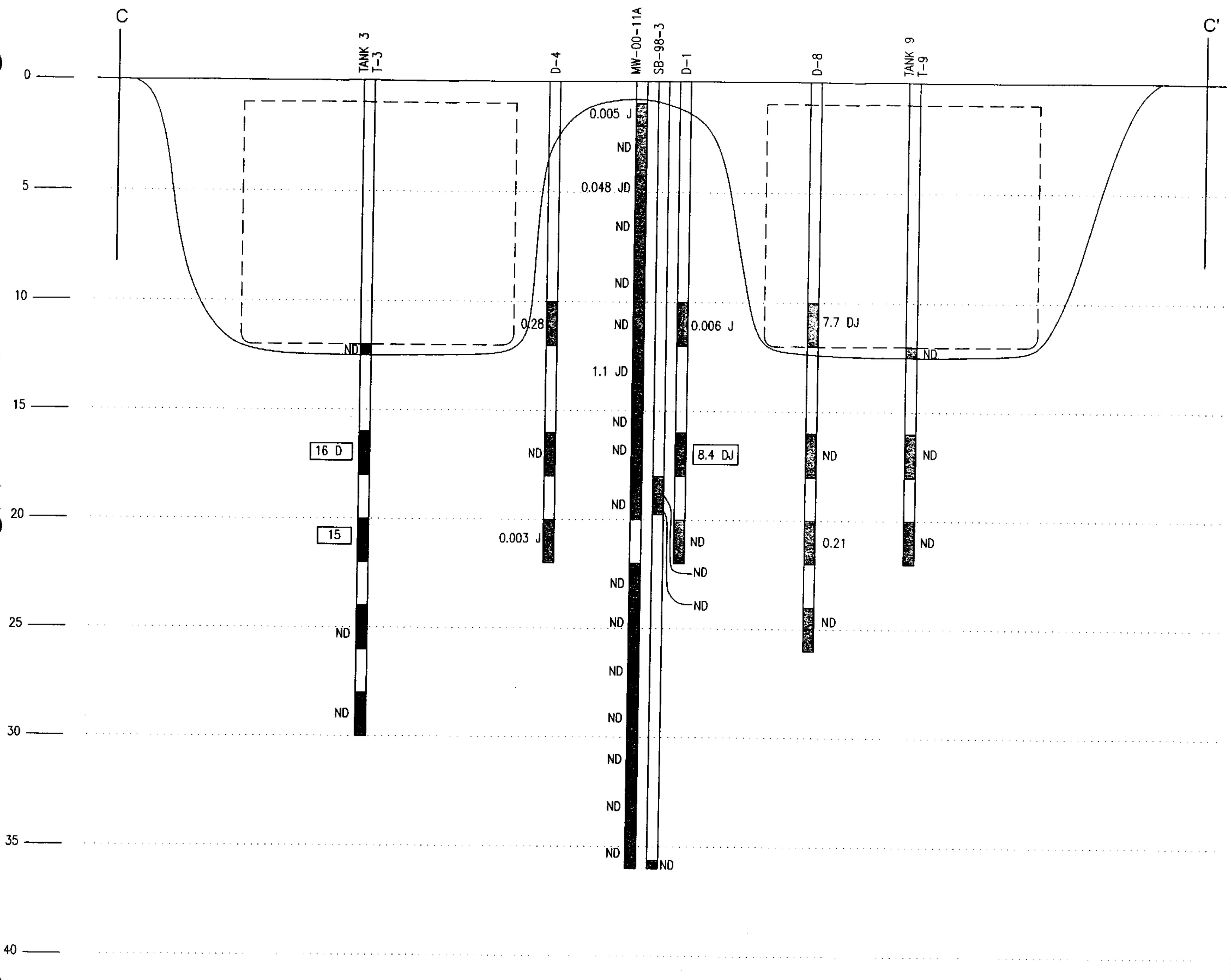
SOIL CONCENTRATIONS OF CHLOROETHANE CROSS SECTION B - B'

URS 12 COMMERCE DRIVE
CRANFORD, NJ, 07016
PHONE: (908) 272-8300
FAX: (908) 272-3940

DATE: 11/07/05
PROJECT: 38546433

FIGURE 14

S:\Projec[illegible]olumbia Cement\38546433\Plot\4th Quarter Report\38546433-015.dwg [illegible]/22/2005 4:17:07 PM EST



LEGEND:

SOIL BORING SAMPLE INTERVALS ARE SHARED

FORMER UST LOCATION

ND NOT DETECTED

J ESTIMATED VALUE

D RESULT IS FROM DILUTED SAMPLE

10 VALUE EXCEEDS NYSDEC TAGM RECOMENDED SOIL CLEANUP OBJECTIVE

10 VALUE EXCEEDS NYSDEC TAGM IN RECOMMENDED SOIL CLEANUP OBJECTIVE BY AN ORDER OF MAGNITUDE

ALL CONCENTRATION EXPRESSED AS mg/kg.

SCALE HORIZONTAL 1"=10'
VERTICAL 1"=5'

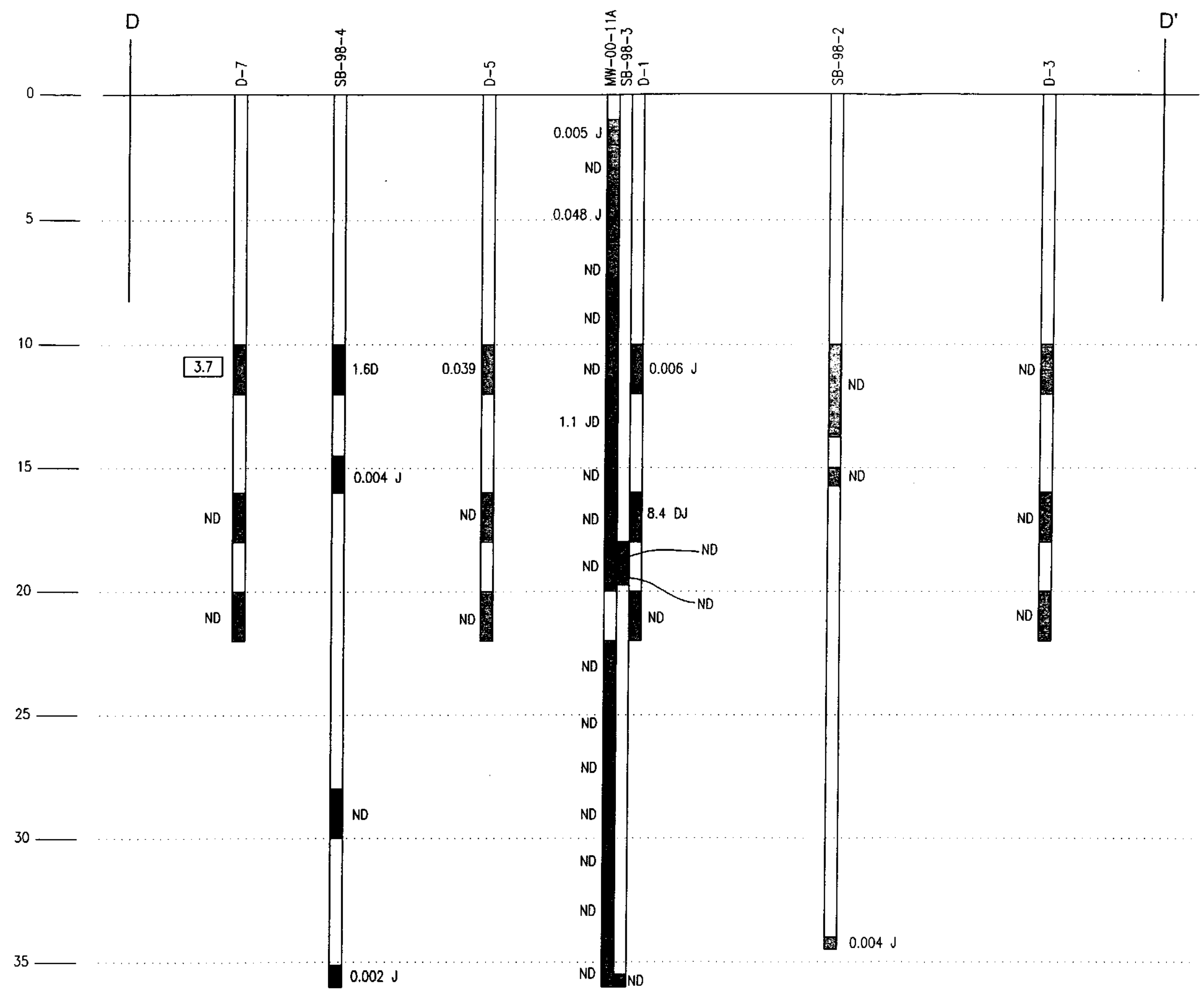
FORMER COLUMBIA CEMENT COMPANY, INC.
159 HANSEN AVENUE
FREEPORT, NEW YORK

SOIL CONCENTRATIONS OF CHLOROETHANE
CROSS SECTION C - C'

URS
12 COMMERCE DRIVE
CRANFORD, NJ, 07016
PHONE: (908) 272-8300
FAX: (908) 272-3940

DATE: 11/07/05
PROJECT: 38546433

FIGURE 15



LEGEND:

- SOIL BORING SAMPLE INTERVALS ARE SHARED
- FORMER UST LOCATION
- ND NOT DETECTED
- J ESTIMATED VALUE
- D RESULT IS FROM DILUTED SAMPLE
- 10 VALUE EXCEEDS NYSDEC TAGM RECOMENDED SOIL CLEANUP OBJECTIVE
- 10 VALUE EXCEEDS NYSDEC TAGM IN RECOMMENDED SOIL CLEANUP OBJECTIVE BY AN ORDER OF MAGNITUDE

ALL CONCENTRATION EXPRESSED AS mg/kg.

SCALE HORIZONTAL 1"=10' VERTICAL 1"=5'

FORMER COLUMBIA CEMENT COMPANY, INC.
159 HANSEN AVENUE
FREEPORT, NEW YORK

SOIL CONCENTRATIONS OF CHLOROETHANE CROSS SECTION D - D'

URS
12 COMMERCE DRIVE
CRANFORD, NJ, 07016
PHONE: (908) 272-8300
FAX: (908) 272-3940

DATE: 11/07/05
PROJECT: 38546433

FIGURE 16

APPENDIX A

DELAWARE ENGINEERING
DECEMBER 2003 RIR DATA TABLES

Table 1
Summary of Site Stratigraphy
Former Columbia Cement Company, Inc. Facility
Freeport, Nassau County, New York

Boring I.D.	Fill[1] (Interval-Feet BGS/[Elevation])	Tidal Marsh[2] (Interval-Feet BGS/[Elevation])	Gravelly Sand[3] (Interval-Feet BGS/[Elevation])	Gray Clay and Silt Lower Confining Unit[4] (Interval-Feet BGS/[Elevation])	Gray Sand[5] (Interval-Feet BGS/[Elevation])
B-8	0-7.0	7.0-12.0	12.0->35.0	NE	NE
MW-1S				NE	NE
MW-1D-97	0-11.50 [97.96-86.46]	11.50-15.30 [86.46-82.66]	15.30-34.9 [82.66-63.06]	34.9->38 [63.06-<59.96]	NE
MW-97-1S	0-6.10 [97.63-91.53]	6.10-7.25 [91.53-90.38]	7.25->26.0 [90.38-<71.63]	NE	NE
MW-97-2S	0-9.75 [98.83-89.08]	9.75-11.25 [89.08-87.58]	11.25->25.25 [87.58-<73.41]	NE	NE
MW-97-3S	0-7.90 [98.66-90.76]	7.90-13.35 [90.76-85.31]	13.35->25.0 [85.31-<73.66]	NE	NE
MW-97-4S	0-9.10 [98.86-89.76]	9.10-13.15 [89.76-85.71]	13.15->25.5 [85.71-<73.36]	NE	NE
MW-97-5S	0-9.80 [98.59-88.79]	9.80-11.55 [88.79-87.04]	11.55->26.0 [87.04-<72.59]	NE	NE
MW-97-6S	0-10.10 [98.69-88.59]	10.10-12.95 [88.59-85.74]	12.95->26.0 [85.74-<72.69]	NE	NE
MW-97-7S	0-17.60 [98.79-81.19]	NE	17.60->32.0 [81.19-<66.79]	NE	NE
MW-98-8S					
MW-98-8D	0-7.70[98.68-90.98]	7.70-13.55[90.98-85.13]	13.55-35.3[85.13-63.38]	35.30->38.0[63.38-<60.68]	NE
MW-98-9D	0-5.65 [97.54-91.89]	5.65-11.7[91.89-85.84]	11.70-37.0[85.84-60.54]	37.0->40.0[60.54-<57.54]	NE
MW-98-10D	0-9.85 [98.75-88.90]	9.85-10.75[88.90-88.00]	10.75-37.10[88.00-61.65]	37.1->38.0[61.65-<60.75]	NE
MW-00-11A	0-18.5 [97.89 - 79.39]	NE	18.5-34.6 [79.39 - 63.29]	34.6-48.55 [63.29 - 49.34]	48.55->61.5 [49.34 - <36.39]
MW-00-12D	0-8.45 [98.6 - 90.15]	8.45-12.95 [90.15 - 85.65]	12.95-34.7 [85.65 - 63.90]	34.7-50.0 [63.90 - 48.60]	50.0->52.5 [48.60 - <46.10]
MW-03-13S	0-10.85 [98.05-87.20]	10.85-14.65 [87.20-83.40]	14.65->25.5 [83.4->72.55]	NE	NE
TB-97-1	0-10.9 [98.43-87.53]	10.9-13.3 [87.53-85.13]	13.3->26.0 [85.13-<72.43]	NE	NE
TB-97-2	0-9.77 [98.11-88.34]	9.77-22.4 [88.34-75.71]	22.4->26.0 [75.71-<72.11]	NE	NE
TB-97-3	0-22.9 [98.24-75.34]	NE	22.9->26.0 [75.34-<72.24]	NE	NE
TB-97-4	0-7.75 [98.28-90.53]	7.75-12.1 [90.53-86.18]	12.1->25.0 [86.18-<73.28]	NE	NE
TB-97-5	0-3.10 [98.43-95.33]	3.10-13.35 [95.33-85.08]	13.35->25.0 [85.08-<73.43]	NE	NE
TB-97-6	0-7.80 [99.07-91.27]	7.80-13.70 [91.27-85.37]	13.7->25.0 [85.37-<74.07]	NE	NE
SB-98-2	0-15.10[97.64-82.54]	NE	15.10-34.0[82.54-63.64]	34.0->38.0[63.64-<59.64]	NE
SB-98-3	0-19.35[97.83-78.48]	19.35-19.58[78.48-78.25]	19.58-35.67[78.25-62.16]	35.67->38.0[62.16-<59.83]	NE
SB-98-4	0-14.55[98.44-83.89]	NE	14.55-35.16[83.89-63.28]	35.16->38.0[63.28-<60.44]	NE
SB-98-5	0-12.65[99.01-86.36]	12.65-13.49[86.36-85.52]	13.49->14.0[85.52-<85.01]	NE	NE
BSB-98-7	0-11.35[98.94-87.59]	11.35-13.63[87.59-85.31]	13.63-34.55[85.31-64.39]	34.55->38.0[64.39-<60.94]	NE

Notes:
BGS = Below Ground Surface; NE = Not Encountered
Elevations based on a benchmark established by Rust E&I at utility pole F34, assumed site datum = 100.00
[1] = Fill consists of soil (20-75%) and landfill debris [(80-25%); cinders, brick, stone, concrete, glass, wood, textile debris & metal].
[2] = Tidal Marsh unit generally consists of a dark brown to dark gray-black organic clayey silt to occasional clay and silt with frequent roots and wood; occasionally peat-like.
[3] = Gravelly Sand unit generally consists of a brown to light gray coarse, medium(+) to fine sand, little medium to fine(+) subrounded gravel.
[4] = Gray Clay and Silt unit or "Lower Confining" unit consists of a gray silt and clay, trace fine sand grading downward to a non-plastic clay and silt, trace fine sand.
[5] = Gray Sand unit generally conists of a brownish gray to light medium to fine (+) fine Sand, little silt.

TABLE 2A
Groundwater Elevation Data
Former Columbia Cement Company, Inc. Facility
Freeport, New York
December 30, 1998 Data

Monitoring Well	Round 1 feet	Round 2 feet	Round 3 feet	Round 4 feet	Round 5 feet	Round 6 feet	Round 7 feet	Round 8 feet	Round 9 feet
MW-1S	91.81	91.84	91.85	91.82	91.82	91.79	91.73	91.66	91.59
MW-1D-97	91.83	91.85	91.86	91.86	91.84	91.79	91.74	91.67	91.62
MW-97-1S	91.65	91.63	91.60	91.65	91.60	91.53	91.49	91.43	91.37
MW-97-2S	91.48	91.52	91.51	91.51	91.51	91.48	91.45	91.42	91.37
MW-97-3S	91.95	91.98	91.98	91.99	91.94	91.91	91.85	91.75	91.66
MW-97-4S	91.85	91.85	91.86	91.85	91.83	91.75	91.73	91.66	91.59
MW-97-5S	91.85	91.87	91.86	91.85	91.84	91.78	91.72	91.65	91.57
MW-97-6S	91.74	91.73	91.71	91.73	91.71	91.65	91.64	91.59	91.54
MW-97-7S	91.64	91.67	91.67	91.66	91.66	91.64	91.59	91.56	91.50
MW-98-8S	91.93	92.24	91.98	91.93	91.92	91.86	91.80	91.73	91.65
MW-98-8D	91.92	91.96	91.97	91.97	91.94	91.89	91.82	91.76	91.66
MW-98-9D	91.66	91.66	91.62	91.66	91.60	91.56	91.51	91.46	91.39
MW-98-10D	91.53	91.57	91.56	91.55	91.52	91.52	91.50	91.44	91.42

	Round 10 feet	Round 11 feet	Round 12 feet	Round 13 feet	Round 14 feet	Round 15 feet	Round 16 feet	Round 17 feet	Round 18 feet
MW-1S	91.52	91.41	91.34	91.22	91.16	91.06	90.97	90.96	90.93
MW-1D-97	91.54	91.44	91.34	91.23	91.17	91.08	91	91.01	90.95
MW-97-1S	91.29	91.23	91.16	91.07	91.02	90.95	90.93	90.92	90.93
MW-97-2S	91.33	91.28	91.22	91.16	91.13	91.08	91.03	91.01	90.99
MW-97-3S	91.56	91.44	91.31	91.18	91.11	91.01	90.93	90.89	90.89
MW-97-4S	91.51	91.42	91.33	91.21	91.14	91.05	91.00	90.97	90.93
MW-97-5S	91.49	91.39	91.29	91.17	91.11	91.01	90.92	90.90	90.89
MW-97-6S	91.48	91.40	91.32	91.26	91.19	91.13	91.06	91.03	91.01
MW-97-7S	91.46	91.40	91.32	91.26	91.22	91.16	91.09	91.07	91.06
MW-98-8S	91.55	91.47	91.34	91.21	91.20	91.05	90.96	90.93	90.90
MW-98-8D	91.56	91.46	91.35	91.22	91.16	91.04	90.95	90.93	90.91
MW-98-9D	91.31	91.25	91.18	91.10	91.05	90.98	90.95	90.94	90.95
MW-98-10D	91.38	91.31	91.25	91.18	91.17	91.12	91.08	91.05	91.04

	Round 19 feet	Round 20 feet	Round 21 feet	Round 22 feet	Round 23 feet	Round 24 feet	Round 25 feet	Round 26 feet
MW-1S	90.93	90.95	90.97	91.03	91.07	91.10	91.15	91.20
MW-1D-97	90.96	90.97	90.99	91.06	91.08	91.11	91.17	91.23
MW-97-1S	90.93	90.98	90.99	91.02	91.05	91.06	91.10	91.14
MW-97-2S	91.01	91.01	91.21	91.03	91.05	91.06	91.07	91.10
MW-97-3S	90.9	90.93	90.88	91.04	91.09	91.1	91.19	91.23
MW-97-4S	90.94	90.95	90.99	91.03	91.06	91.06	91.1	91.15
MW-97-5S	90.89	90.92	90.95	91	91.05	91.06	91.09	91.14
MW-97-6S	91.01	91.01	91.06	91.04	91.07	91.07	91.1	91.15
MW-97-7S	91.05	91.05	91.06	91.08	91.09	91.11	91.15	91.17
MW-98-8S	90.91	90.91	90.97	91.05	91.08	91.10	91.20	91.22
MW-98-8D	90.91	90.92	90.98	91.04	91.08	91.08	91.19	91.23
MW-98-9D	90.95	91.00	91.01	91.04	91.07	91.08	91.12	91.17
MW-98-10D	91.04	91.05	91.05	91.10	91.11	91.11	91.14	91.16

	Minimum	Maximum	Max-Min
MW-1S	90.93	91.85	0.92
MW-1D-97	90.95	91.86	0.91
MW-97-1S	90.92	91.65	0.73
MW-97-2S	90.99	91.52	0.53
MW-97-3S	90.88	91.99	1.11
MW-97-4S	90.93	91.86	0.93
MW-97-5S	90.89	91.87	0.98
MW-97-6S	91.01	91.74	0.73
MW-97-7S	91.05	91.67	0.62
MW-98-8S	90.9	92.24	1.34
MW-98-8D	90.91	91.97	1.06
MW-98-9D	90.94	91.66	0.72
MW-98-10D	91.04	91.57	0.53

TABLE 2B
Groundwater Elevation Data
Former Columbia Cement Company, Inc. Facility
Freeport New York
February 16, 1999 Data

	Round 1 feet	Round 2 feet	Round 3 feet	Round 4 feet	Round 5 feet	Round 6 feet	Round 7 feet	Round 8 feet	Round 9 feet
MW-1S	91.62	91.64	91.64	91.66	91.66	91.61	91.58	91.55	91.49
MW-1D-97	91.65	91.65	91.68	91.69	91.69	91.68	91.64	91.58	91.52
MW-97-1S	91.43	91.43	91.42	91.41	91.40	91.39	91.36	91.32	91.25
MW-97-2S	91.34	91.35	91.36	91.35	91.34	91.35	91.34	91.33	91.29
MW-97-3S	91.73	91.75	91.77	91.78	91.77	91.74	91.68	91.61	91.53
MW-97-4S	91.63	91.65	91.65	91.67	91.67	91.65	91.62	91.58	91.51
MW-97-5S	91.63	91.66	91.66	91.66	91.67	91.65	91.60	91.54	91.47
MW-97-6S	91.53	91.54	91.55	91.57	91.57	91.56	91.53	91.51	91.47
MW-97-7S	91.50	91.52	91.53	91.54	91.54	91.53	91.52	91.49	91.46
MW-98-8S	91.74	91.75	91.77	91.78	91.78	91.75	91.68	91.64	91.57
MW-98-8D	91.72	91.72	91.75	91.75	91.75	91.72	91.64	91.61	91.61
MW-98-9D	91.44	91.44	91.42	91.43	91.41	91.41	91.37	91.33	91.26
MW-98-10D	91.36	91.38	91.38	91.39	91.38	91.37	91.36	91.33	91.29

	Round 10 feet	Round 11 feet	Round 12 feet	Round 13 feet	Round 14 feet	Round 15 feet	Round 16 feet	Round 17 feet	Round 18 feet
MW-1S	91.43	91.36	91.26	91.22	91.15	91.08	91.06	91.05	91.06
MW-1D-97	91.47	91.40	91.31	91.24	91.17	91.14	91.08	91.07	91.07
MW-97-1S	91.19	91.14	91.09	91.03	90.99	90.96	90.96	90.97	90.97
MW-97-2S	91.25	91.20	91.16	91.12	91.09	91.05	91.05	91.04	91.05
MW-97-3S	91.45	91.36	91.25	91.17	91.09	91.01	90.99	91.00	91.00
MW-97-4S	91.44	91.38	91.29	91.22	91.15	91.09	91.04	91.04	91.04
MW-97-5S	91.41	91.34	91.25	91.18	91.11	91.05	91.01	91.01	91.01
MW-97-6S	91.43	91.35	91.32	91.26	91.21	91.16	91.13	91.13	91.13
MW-97-7S	91.43	91.37	91.33	91.28	91.24	91.19	91.17	91.17	91.17
MW-98-8S	91.50	91.42	91.33	91.25	91.18	91.10	91.08	91.08	91.08
MW-98-8D	91.47	91.38	91.29	91.20	91.11	91.04	91.01	91.02	91.01
MW-98-9D	91.20	91.15	91.10	91.04	91.00	90.97	90.98	90.98	90.98
MW-98-10D	91.25	91.22	91.17	91.13	91.11	91.07	91.06	91.05	91.06

	Round 19 feet	Round 20 feet	Round 21 feet	Round 22 feet	Round 23 feet	Round 24 feet	Round 25 feet	Round 26 feet	Round 27 feet
MW-1S	91.11	91.15	91.21	91.29	91.36	91.42	91.48	91.55	91.57
MW-1D-97	91.15	91.19	91.25	91.30	91.39	91.44	91.50	91.58	91.60
MW-97-1S	91.07	91.10	91.12	91.21	91.24	91.28	91.36	91.38	91.39
MW-97-2S	91.08	91.10	91.15	91.17	91.21	91.22	91.25	91.32	91.33
MW-97-3S	91.10	91.16	91.23	91.31	91.42	91.49	91.57	91.63	91.68
MW-97-4S	91.12	91.16	91.23	91.31	91.38	91.43	91.50	91.56	91.59
MW-97-5S	91.09	91.15	91.30	91.28	91.34	91.43	91.47	91.55	91.59
MW-97-6S	91.19	91.21	91.22	91.27	91.33	91.41	91.45	91.46	91.51
MW-97-7S	91.20	91.22	91.26	91.30	91.33	91.39	91.43	91.46	91.49
MW-98-8S	91.17	91.21	91.30	91.36	91.55	91.51	91.58	91.65	91.69
MW-98-8D	91.12	91.17	91.25	91.31	91.41	91.45	91.55	91.62	91.65
MW-98-9D	91.08	91.11	91.14	91.22	91.24	91.30	91.35	91.38	91.40
MW-98-10D	91.10	91.13	91.14	91.20	91.23	91.26	91.31	91.35	91.36

	Round 28 feet	Round 29 feet	Round 30 feet	Round 31 feet	Round 32 feet	Minimum feet	Maximum feet	Max-Min feet
MW-1S	91.61	91.60	91.55	91.57	91.53	91.05	91.66	0.61
MW-1D-97	91.64	91.64	91.58	91.60	91.55	91.07	91.69	0.62
MW-97-1S	91.40	91.39	91.38	91.40	91.40	90.96	91.43	0.47
MW-97-2S	91.35	91.34	91.32	91.35	91.35	91.04	91.36	0.32
MW-97-3S	91.70	91.71	91.63	91.67	91.63	90.99	91.78	0.79
MW-97-4S	91.62	91.61	91.56	91.58	91.55	91.04	91.67	0.63
MW-97-5S	91.62	91.62	91.55	91.61	91.58	91.01	91.67	0.66
MW-97-6S	91.52	91.51	91.46	91.49	91.45	91.13	91.57	0.44
MW-97-7S	91.51	91.51	91.46	91.49	91.49	91.17	91.54	0.37
MW-98-8S	91.72	91.68	91.65	91.64	91.61	91.08	91.78	0.70
MW-98-8D	91.68	91.68	91.62	91.66	91.62	91.01	91.75	0.74
MW-98-9D	91.41	91.39	91.38	91.40	91.41	90.97	91.44	0.47
MW-98-10D	91.36	91.37	91.35	91.35	91.35	91.05	91.39	0.34

Table 2C
Summary of Water Table Elevation Data (May 3, 2000)
Former Columbia Cement Company, Inc. Facility
Freeport, Nassau County, New York

Well I.D.	Measuring Point Elevation[1]	Depth to Water During Low Tide[2]	Elevation of Water Table During Low Tide[2]	Depth to Water During High Tide[3]	Elevation of Water Table During High Tide[3]
MW-1S	97.60	6.57	91.03	5.93	91.67
MW-1D-97	97.72	6.66	91.06	6.02	91.70
MW-97-1S	97.22	6.20	91.02	5.70	91.52
MW-97-2S	98.26	7.19	91.07	6.78	91.48
MW-97-3S	98.21	7.16	91.05	6.32	91.89
MW-97-4S	98.46	7.41	91.05	6.76	91.70
MW-97-5S	98.33	7.33	91.00	6.62	91.71
MW-97-6S	98.35	7.22	91.13	6.74	91.61
MW-97-7S	98.37	7.19	91.18	6.78	91.59
MW-98-8S	98.71	7.56	91.15	6.83	91.88
MW-98-8D	98.49	7.50	90.99	6.71	91.78
MW-98-9D	97.22	6.25	90.97	5.73	91.49
MW-98-10D	98.46	7.39	91.07	7.02	91.44
MW-00-11A	97.22	---	NM	---	NM
MW-00-12D	98.20	7.14	91.06	6.46	91.74

Notes:

Elevations based on a benchmark established by Rust E&I at utility pole F34, assumed site datum = 100.00
[1] = Measuring point elevation is at marked Top of 2" I.D. PVC.
[2] = Low Tide (May 3, 2000 at 3:57 P.M.).
[3] = High Tide (May 3, 2000 at 10:22 P.M.).

Table 3

Summary of Hydraulic Conductivity Test Results
Former Columbia Cement Company, Inc. Facility
Freeport, New York

Monitoring Well I.D.	Test Method			
	Hvorslev		Bouwer & Rice	
	(cm/sec)	(ft/day)	(cm/sec)	(ft/day)
MW-1S	6.15E-04	1.74	4.45E-04	1.26
MW-97-1S	3.16E-02	89.59	2.32E-02	65.77
MW-97-2S	3.03E-02	85.90	2.33E-02	66.06
MW-97-3S	1.36E-02	38.56	1.44E-02	40.82
MW-97-4S	3.96E-02	112.27	2.41E-02	68.32
MW-97-5S	2.49E-02	70.59	1.58E-02	44.79
MW-97-6S	3.64E-02	103.19	2.64E-02	74.84
MW-97-7S	2.24E-02	63.50	2.08E-02	58.97
MW-98-8S	7.23E-03	20.50	4.24E-03	12.02
MW-03-13S	1.90E-02	53.86	1.12E-02	31.75
MW-1D-97	1.23E-02	34.87	1.02E-02	28.92
MW-98-8D	1.21E-02	34.30	7.47E-03	21.18
MW-98-9D	4.15E-02	117.65	3.62E-02	102.63
MW-98-10D	1.63E-02	46.21	1.08E-02	30.62
MW-00-12D	1.30E-02	36.85	1.37E-02	38.83
MW-00-11A	2.12E-02	60.09	1.28E-02	36.28
Min.	6.15E-04	1.74	4.45E-04	1.26
Max.	4.15E-02	117.65	3.62E-02	102.63
Average	2.15E-02	60.60	1.59E-02	45.19
Geometric Mean	1.61E-02	45.64	1.20E-02	34.02

NOTE:
The application of the Hvorslev method assumes unconfined conditions for all "S" wells and "D" wells at the site. Confined conditions are assumed for monitoring well MW-00-11A; therefore, the application of the Hvorslev method is considered most appropriate.

Table 4

Summary of Well Construction Details
Former Columbia Cement Company, Inc. Facility
Freeport, Nassau County, New York

Well I.D.	Ground Surface Elevation[1]	Concrete Seal depth in feet BGS/[Elevation]	Cement-Bentonite Grout depth in feet BGS/[Elevation]	Bentonite Seal depth in feet BGS/[Elevation]	Sand Pack depth in feet BGS/[Elevation]	Screen depth in feet BGS/[Elevation]
MW-1S	98.04	~0-3.0	~3.0-8.0	~8.0-10.0	~10.0-21.0	~11.0-21.0
MW-1D-97	97.96	0-3.0	3.0-22.0 [94.96-75.96]	22.0-27.5 [75.96-70.46]	27.5-34.5 [70.46-63.46]	28.65-33.65 [69.31-64.31]
MW-97-1S	97.63	0-3.0	3.0-9.2 [94.63-88.43]	9.15-12.25 [88.43-85.38]	12.25-25.0 [85.38-72.63]	14.25-24.25 [83.38-73.38]
MW-97-2S	98.83	0-3.0	3.0-9.3 [95.83-89.53]	9.3-12.5 [89.53-86.33]	12.5-25.0 [86.33-73.83]	14.5-24.5 [84.33-74.33]
MW-97-3S	98.66	0-3.0	3.0-11.0 [95.66-87.66]	11.0-14.0 [87.66-84.66]	14.0-25.25 [84.66-73.41]	15.0-25.0 [83.66-73.66]
MW-97-4S	98.86	0-3.0	3.0-11.0 [95.86-87.86]	11.0-14.0 [87.86-84.86]	14.0-25.5 [84.86-73.36]	15.25-25.25 [83.61-73.61]
MW-97-5S	98.59	0-3.0	3.0-9.7 [95.59-88.89]	9.7-13.0 [88.89-85.59]	13.0-26.0 [85.59-72.59]	15.80-25.80 [82.79-72.79]
MW-97-6S	98.69	0-3.0	3.0-10.6 [95.69-88.09]	10.55-14.0 [88.09-84.69]	14.0-25.5 [84.69-73.19]	15.5-25.5 [83.19-73.19]
MW-97-7S	98.79	0-3.0	3.0-16.1 [95.79-82.69]	16.1-20.0 [82.69-78.79]	20.0-31.5 [78.79-67.29]	21.35-31.35 [77.44-67.44]
MW-98-8S	98.89	0-3.0	3.0-5.0 [95.89-93.89]	5.0-8.0 [93.89-90.89]	8.0-21.0 [90.89-77.89	10.0-20.0 [88.89-78.89]
MW-98-8D	98.68	0-3.0	3.0-20.0 [95.68-78.68]	20.0-23.0 [78.68-75.68]	23.0-35.3 [75.68-63.38]	25.0-35.0 [73.68-63.68]
MW-98-9D	97.54	0-3.0	3.0-23.0 [94.54-74.54]	23.0-26.0 [74.54-71.54]	26.0-37.1 [71.54-60.44]	27.0-37.0 [70.54-60.54]
MW-98-10D	98.75	0-3.0	3.0-23.0 [95.75-75.75]	23.0-26.0 [75.75-72.75]	26.0-37.1 [72.75-61.65	27.0-37.0 [71.75-61.75]
MW-00-11A	97.89	0-3.0	3.0-45.0 [94.89-52.89]	45.0-48.5 [52.89-49.39]	48.5-61.5 [49.39-36.39]	51.0-61.0 [46.89-36.89]
MW-00-12D	98.60	0-3.0	3.0-19.0 [95.60-79.60]	19.0-22.5 [79.60-76.10]	22.50-38.0 [79.60-60.60]	25.0-35.0 [73.60-63.60]
MW-03-13S	98.05	0-3.0	3.0-5.0 [95.05-93.05]	5.0-8.0 [93.05-90.05]	8.0-25.5 [90.05-72.55]	10.0-25.0 [88.05-73.05]

Note:
Elevations based on a benchmark established by Rust E&I at utility pole F34, assumed site datum = 100.00
Survey of monitoring well MW-03-13S was performed by Donald Stedge, L.S. of Central Valley, New York on June 26, 2003

Table 5

Volatile Organic Analytical Data Summary - Soil Borings

Former Columbia Cement Company, Inc. Facility
Freeport, New York

Sampling Dates: December 1998 (MW-00-11 and MW-00-12 April 2000)

Sample ID / Compound	SB-98-2 (10-13.7') Fill	SB-98-2 (15.1-15.67') Fill/Tp GrSnd	SB-98-2 (34.0-34.5') Gr Clay/Silt	SB-98-3 (18-19.35') Fill	X-1 SB-98-3 (18-19.35')]	SB-98-3 (19.35-19.58') Tidal Marsh	SB-98-3 (35.67-36') Gr Clay/Silt	SB-98-4 (10-12') Fill	SITE SPECIFIC RSCO
1,1,1-Trichloroethane	**7,000,000 D**	**38,000**	20	**1,200,000 D**	**1,800,000 D**	**810,000 D**	9 J	430 D	1,049
1,1,2,2-Tetrachloroethane	240,000 U	2,400 U	10 U	48,000 U	96,000 U	2,400 U	10 U	10 U	NA
1,1,2-Trichloroethane	240,000 U	320 J	10 U	48,000 U	96,000 U	2,400 U	10 U	10 U	386
1,1-Dichloroethane	**71,000 J**	**400 J**	3 J	**17,000 J**	96,000 U	**120,000 D**	1 J	**360 D**	207
1,1-Dichloroethene	240,000 U	2,400 U	10 U	48,000 U	96,000 U	**1,100 J**	10 U	6 J	449
1,2-Dichloroethane	240,000 U	2,400 U	10 U	48,000 U	96,000 U	2,400 U	10 U	10 U	NA
1,2-Dichloroethene (total)	240,000 U	2,400 U	10 U	48,000 U	96,000 U	2,400 U	10 U	10 U	NA
1,2-Dichloropropane	240,000 U	2,400 U	10 U	48,000 U	96,000 U	2,400 U	10 U	10 U	NA
2-Butanone	240,000 U	2,400 U	4 J	48,000 U	96,000 U	2,400 U	6 J	84	311
2-Hexanone	240,000 U	2,400 U	10 U	48,000 U	96,000 U	2,400 U	10 U	10 U	1,587
4-Methyl-2-Pentanone	240,000 U	2,400 U	10 U	48,000 U	96,000 U	2,400 U	10 U	10 U	1,311
Acetone	240,000 U	2,400 U	27	48,000 U	96,000 U	2,400 U	31	**570 D**	152
Benzene	240,000 U	2,400 U	10 U	48,000 U	96,000 U	2,400 U	10 U	52	115
Bromodichloromethane	240,000 U	2,400 U	10 U	48,000 U	96,000 U	2,400 U	10 U	10 U	NA
Bromoform	240,000 U	**460 J**	10 U	48,000 U	96,000 U	2,400 U	10 U	10 U	366
Bromomethane	240,000 U	2,400 U	10 U	48,000 U	96,000 U	2,400 U	10 U	10 U	NA
Carbon Disulfide	240,000 U	2,400 U	10 U	48,000 U	96,000 U	2,400 U	10 U	13	3,726
Carbon Tetrachloride	240,000 U	2,400 U	10 U	48,000 U	96,000 U	2,400 U	10 U	10 U	NA
Chlorobenzene	240,000 U	2,400 U	10 U	48,000 U	96,000 U	2,400 U	10 U	10 U	NA
Chloroethane	240,000 U	2,400 U	4 J	48,000 U	96,000 U	2,400 U	10 U	**1,600 D**	255
Chloroform	240,000 U	2,400 U	10 U	48,000 U	96,000 U	2,400 U	10 U	10 U	299
Chloromethane	240,000 U	2,400 U	10 U	48,000 U	96,000 U	2,400 U	10 U	10 U	NA
cis-1,3-Dichloropropene	240,000 U	2,400 U	10 U	48,000 U	96,000 U	2,400 U	10 U	10 U	NA
Dibromochloromethane	240,000 U	2,400 U	10 U	48,000 U	96,000 U	2,400 U	10 U	10 U	NA
Ethylbenzene	**250,000**	2,400 U	10 U	48,000 U	96,000 U	2,400 U	10 U	13	7,590
Methylene Chloride	240,000 U	2,400 U	10 U	48,000 U	96,000 U	2,400 U	10 U	23	145
Styrene	240,000 U	2,400 U	10 U	48,000 U	96,000 U	2,400 U	10 U	10 U	6,348
Tetrachloroethene	240,000 U	2,400 U	10 U	48,000 U	96,000 U	450 J	10 U	50	1,911
Toluene	**660,000**	820 J	10 U	48,000 U	96,000 U	**8,200**	10 U	10 U	2,070
trans-1,3-Dichloropropene	240,000 U	2,400 U	10 U	48,000 U	96,000 U	2,400 U	10 U	10 U	NA
Trichloroethene	240,000 U	2,400 U	10 U	48,000 U	96,000 U	350 J	10 U	10 U	869
Vinyl Chloride	240,000 U	2,400 U	10 U	48,000 U	96,000 U	2,400 U	10 U	10 U	157
Xylene (total)	**1,500,000**	420 J	10 U	48,000 U	96,000 U	400 J	10 U	34	1,656

Table 5

Volatile Organic Analytical Data Summary - Soil Borings

Former Columbia Cement Company, Inc. Facility
Freeport, New York

Sampling Dates: December 1998 (MW-00-11 and MW-00-12 April 2000)

Sample ID / Compound	SB-98-4 (14.55-16') Fill/Gr Snd	SB-98-4 (28-30') Gr Snd	SB-98-4 (35.16-36') Gr Clay/Silt	SB-98-5 (8-10') Fill	BSB-98-7 (8-10') Fill	BSB-98-7 (11.35-13.63') Tidal Marsh	BSB-98-7 (28-30') Gr Snd	BSB-98-7 (34.55-36') Gr Clay/Silt	SITE SPECIFIC RSCO
1,1,1-Trichloroethane	67	3 J	28	75	10 U	10 U	10 U	10 U	1,049
1,1,2,2-Tetrachloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
1,1,2-Trichloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	386
1,1-Dichloroethane	2 J	10 U	3 J	5 J	10 U	10 U	10 U	10 U	207
1,1-Dichloroethene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	449
1,2-Dichloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
1,2-Dichloroethene (total)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
1,2-Dichloropropane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
2-Butanone	10	10	5 J	10 U	34	4 J	2 J	8 J	311
2-Hexanone	10 U	6 J	10 U	10 U	10 U	10 U	10 U	10 U	1,587
4-Methyl-2-Pentanone	10 U	10	10 U	10 U	10 U	10 U	10 U	10 U	1,311
Acetone	42	42	65	55	210	62	24	36	152
Benzene	2 J	10 U	10 U	5 J	10 U	10 U	10 U	10 U	115
Bromodichloromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Bromoform	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	366
Bromomethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Carbon Disulfide	10 U	10 U	10 U	10 U	10 U	2 J	10 U	10 U	3,726
Carbon Tetrachloride	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Chlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Chloroethane	4 J	10 U	2 J	10 U	10 U	10 U	10 U	10 U	255
Chloroform	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	299
Chloromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
cis-1,3-Dichloropropene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Dibromochloromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Ethylbenzene	10 U	10 U	10 U	3 J	10 U	10 U	10 U	10 U	7,590
Methylene Chloride	10 U	2 J	2 J	2 J	17	10	2 J	9 J	145
Styrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	6,348
Tetrachloroethene	10 U	10 U	10 U	5 J	10 U	10 U	10 U	10 U	1,911
Toluene	10	10 U	10 U	32	10 U	10 U	10 U	10 U	2,070
trans-1,3-Dichloropropene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Trichloroethene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	869
Vinyl Chloride	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	157
Xylene (total)	4 J	10 U	10 U	22	10 U	10 U	10 U	3 J	1,656

Table 5

Volatile Organic Analytical Data Summary - Soil Borings

Former Columbia Cement Company, Inc. Facility

Freeport, New York

Sampling Dates: December 1998 (MW-00-11 and MW-00-12 April 2000)

Sample ID Compound	MW-98-8D (4-6') Fill	MW-98-8D (7.7-8') Tidal Marsh	MW-98-8D (34.75-36') Gr Clay/Silt	MW-98-9D (6.1-6.5') Tidal Marsh	MW-98-9D (12-14') TM/Gr Snd	MW-98-9D (37-38') Gr Clay/Silt	MW-98-10D (9.85-10.2') Tidal Marsh	MW-98-10D (12-14') Gr Snd	MW-98-10D (37.1-38') Gr Clay/Silt	SITE SPECIFIC RSCO
1,1,1-Trichloroethane	22	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	1,049
1,1,2,2-Tetrachloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
1,1,2-Trichloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	386
1,1-Dichloroethane	2 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	207
1,1-Dichloroethene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	449
1,2-Dichloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
1,2-Dichloroethene (total)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
1,2-Dichloropropane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
2-Butanone	10 U	19	10 U	15	10 U	10 U	7 J	10 U	10 U	311
2-Hexanone	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	1,587
4-Methyl-2-Pentanone	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	1,311
Acetone	13	78	14	80	26	36	33	11	32	152
Benzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	115
Bromodichloromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Bromoform	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	366
Bromomethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Carbon Disulfide	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	3,726
Carbon Tetrachloride	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Chlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Chloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	255
Chloroform	10 U	17	10 U	10 U	10 U	10 U	10 U	10 U	10 U	299
Chloromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
cis-1,3-Dichloropropene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Dibromochloromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Ethylbenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	7,590
Methylene Chloride	3 J	10 U	10 U	2 J	10 U	10 U	10 U	10 U	10 U	145
Styrene	10 U	9 J	10 U	10 U	10 U	10 U	10 U	10 U	10 U	6,348
Tetrachloroethene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	1,911
Toluene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	2,070
trans-1,3-Dichloropropene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	NA
Trichloroethene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	869
Vinyl Chloride	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	157
Xylene (total)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	1,656

Table 5

Volatile Organic Analytical Data Summary - Soil Borings

Former Columbia Cement Company, Inc. Facility
Freeport, New York

Sampling Dates: December 1998 (MW-00-11 and MW-00-12 April 2000)

Sample ID / Compound	MW-00-12D (8.0-8.5') Fill	MW-00-12D (8.5-10')	MW-00-12D (34.7-36')	MW-00-11A (1-2') Fill	MW-00-11A (2-4') Fill	MW-00-11A (4-6') Fill	MW-00-11A (6-8') Fill	MW-00-11A (8-10') Fill	MW-00-11A (10-12') Fill	SITE SPECIFIC RSCO
1,1,1-Trichloroethane	10 J	10 U	6 U	100	66	210	135	**40000**	**66000**	1,049
1,1,2,2-Tetrachloroethane	12 U	10 U	6 U	6 U	6 U	120 U	64 U	1500 U	3000 U	NA
1,1,2-Trichloroethane	12 U	10 U	6 U	6 U	6 U	60 U	64 U	1500 U	3000 U	386
1,1-Dichloroethane	10 J	10 U	6 U	13	8	63	58 JD	**3400**	**3400**	207
1,1-Dichloroethene	12 U	10 U	6 U	6 U	6 U	60 U	64 U	1500 U	3000 U	449
1,2-Dichloroethane	12 U	10 U	6 U	6 U	6 U	60 U	64 U	1500 U	3000 U	NA
1,2-Dichloropropane	12 U	10 U	6 U	12 U	12 U	60 U	64 U	1500 U	3000 U	NA
2-Butanone-(MEK)	49	19 U	13 U	12 U	12 U	160	200	3000 U	6000 U	NA
2-Hexanone	23 U	19 U	13 U	12 U	12 U	120 U	130 U	3000 U	6000 U	311
4-Methyl-2-Pentanone (MIBK)	23 U	19 U	13 U	12 U	12 U	120 U	130 U	3000 U	6000 U	1,587
Acetone	210 UB	19 U	22 U	84 U	140 U	420 U	810 U	**2300** JD	**3300** JD	1,311
Benzene	4 J	2 J	6 U	6	4 J	17 JD	64 U	1500 U	3000 U	152
Bromodichloromethane	12 U	10 U	6 U	6 U	6 U	60 U	64 U	1500 U	3000 U	115
Bromoform	12 U	10 U	6 U	6 U	6 U	60 U	64 U	1500 U	3000 U	NA
Bromomethane	23 U	19 U	13 U	12 U	12 U	120 U	130 U	3000 U	6000 U	366
Carbon Disulfide	12 U	10 U	6 U	3 J	2 J	27 JD	64 U	1500 U	3000 U	NA
Carbon Tetrachloride	12 U	10 U	6 U	6 U	6 U	60 U	64 U	1500 U	3000 U	3,726
Chlorobenzene	12 U	10 U	6 U	6 U	6 U	60 U	64 U	1500 U	3000 U	NA
Chloroethane	14 J	19 U	2 J	5 J	12 U	48 JD	130 U	3000 U	6000 U	NA
Chloroform	5 J	10 U	6 U	9	7	60 U	64 U	1500 U	3000 U	255
Chloromethane	23 U	19 U	13 U	12 U	12 U	120 U	130 U	3000 U	6000 U	299
cis-1,2-Dichloroethene	12 U	10 U	6 U	6 U	6 U	60 U	64 U	1500 U	3000 U	NA
cis-1,3-Dichloropropene	12 U	10 U	6 U	12 U	12 U	60 U	64 U	1500 U	3000 U	NA
Dibromochloromethane	12 U	10 U	6 U	6 U	6 U	60 U	64 U	1500 U	3000 U	NA
Ethylbenzene	12 U	10 U	6 U	6 U	6 U	60 U	64	1500 U	3000 U	7,590
Methylene Chloride	25 U	10 U	7 U	20 U	17 U	170 U	150 U	**5500**	**4900**	145
Styrene	12 U	10 U	6 U	6 U	6 U	60 U	64 U	1500 U	3000 U	6,348
Tetrachloroethene	12 U	10 U	13 U	2 J	1 J	60 U	64 U	350 JD	3000 U	1,911
Toluene	3 J	10 U	6 U	7	10	33 JD	48 JD	1500 JD	1400 JD	2,070
trans-1,2-Dichloroethene	12 U	10 U	6 U	6 U	6 U	60 U	64 U	1500 U	3000 U	NA
trans-1,3-Dichloropropene	12 U	10 U	6 U	6 U	6 U	60 U	64 U	1500 U	3000 U	869
Trichloroethene	12 U	10 U	6 U	6 U	6 U	60 U	64 U	**1200** JD	3000 U	157
Vinyl Chloride	23 U	19 U	13 U	12 U	12 U	120 U	130 U	3000 U	6000 U	1,656
Xylene (total)	12 U	10 U	6 U	6 U	6 U	60 U	17 JD	400 JD	3000 U	1,660

Table 5

Volatile Organic Analytical Data Summary - Soil Borings

Former Columbia Cement Company, Inc. Facility
Freeport, New York

Sampling Dates: December 1998 (MW-00-11 and MW-00-12 April 2000)

Sample ID / Compound	MW-00-11A (12-14') Fill	MW-00-11A (14-16') Fill	MW-00-11A (16-18') Fill	MW-00-11A (18-20') Fill/Gr Snd	MW-00-11A (22-24') Gr Snd	MW-00-11A (24-26') Gr Snd	MW-00-11A (26-28') Gr Snd	MW-00-11A (28-30') Gr Snd	MW-00-11A (30-32') Gr Snd	SITE SPECIFIC RSCO
1,1,1-Trichloroethane	**110000**	**830000**	**2600000**	**910000**	8	6 U	11	7	1 J	1,049
1,1,2,2-Tetrachloroethane	3200 U	42000 U	77000 U	31000 U	6 U	6 U	6 U	6 U	6 U	NA
1,1,2-Trichloroethane	3200 U	42000 U	77000 U	31000 U	6 U	6 U	6 U	6 U	6 U	386
1,1-Dichloroethane	**1600** JD	42000 U	77000 U	31000 U	6 U	6 U	6 U	6 U	6 U	207
1,1-Dichloroethene	3200 U	42000 U	77000 U	31000 U	6 U	6 U	6 U	6 U	6 U	449
1,2-Dichloroethane	3200 U	42000 U	77000 U	31000 U	6 U	6 U	6 U	6 U	6 U	NA
1,2-Dichloropropane	3200 U	42000 U	77000 U	31000 U	6 U	6 U	6 U	6 U	6 U	NA
2-Butanone-(MEK)	6400 U	84000 U	150000 U	62000 U	12 U	12 U	13 U	12 U	12 U	NA
2-Hexanone	6400 U	84000 U	150000 U	62000 U	12 U	12 U	13 U	12 U	12 U	311
4-Methyl-2-Pentanone (MIBK)	6400 U	84000 U	150000 U	62000 U	12 U	12 U	13 U	12 U	12 U	1,587
Acetone	**3500** JD	**31000** JD	**170000**	**17000**	12 U	12 U	17 U	9 U	16 U	1,311
Benzene	3200 U	42000 U	77000 U	31000 U	6 U	6 U	6 U	6 U	6 U	152
Bromodichloromethane	3200 U	42000 U	77000 U	31000 U	6 U	6 U	6	6 U	6 U	115
Bromoform	3200 U	42000 U	77000 U	31000 U	6 U	6 U	6 U	6 U	6 U	NA
Bromomethane	6400 U	84000 U	150000 U	62000 U	12 U	12 U	13 U	12 U	12 U	366
Carbon Disulfide	3200 U	42000 U	77000 U	31000 U	6 U	6 U	2 J	1 J	6 U	NA
Carbon Tetrachloride	3200 U	42000 U	77000 U	31000 U	6 U	6 U	6 U	6 U	6 U	3,726
Chlorobenzene	3200 U	42000 U	77000 U	31000 U	6 U	6 U	6 U	6 U	6 U	NA
Chloroethane	**1100** JD	84000 U	150000 U	62000 U	12 U	12 U	13 U	12 U	12 U	NA
Chloroform	3200 U	42000 U	77000 U	31000 U	6 U	6 U	6 U	6 U	6 U	255
Chloromethane	6400 U	84000 U	150000 U	62000 U	12 U	12 U	13 U	12 U	12 U	299
cis-1,2-Dichloroethylene	3200 U	42000 U	77000 U	31000 U	6 U	6 U	6 U	6 U	6 U	NA
cis-1,3-Dichloropropene	3200 U	42000 U	77000 U	31000 U	6 U	6 U	6 U	6 U	6 U	NA
Dibromochloromethane	3200 U	42000 U	77000 U	31000 U	6 U	6 U	6 U	6 U	6 U	NA
Ethylbenzene	3200 U	42000 U	77000 U	31000 U	6 U	6 U	6 U	6 U	6 U	7,590
Methylene Chloride	**3100** JD	**25000** JD	**42000** JD	**19000**	6 U	6 U	6 U	6 U	6 U	145
Styrene	3200 U	42000 U	77000 U	31000 U	6 U	6 U	6 U	6 U	6 U	6,348
Tetrachloroethene	3200 U	42000 U	77000 U	31000 U	6 U	6 U	6 U	6 U	6 U	1,911
Toluene	**2500** JD	42000 U	77000 U	31000 U	6 U	6 U	6 U	6 U	6 U	2,070
trans-1,2-Dichloroethene	3200 U	42000 U	77000 U	31000 U	6 U	6 U	6 U	6 U	6 U	NA
trans-1,3-Dichloropropene	3200 U	42000 U	77000 U	31000 U	6 U	6 U	6 U	6 U	6 U	869
Trichloroethene	3200 U	42000 U	77000 U	31000 U	6 U	6 U	6 U	6 U	6 U	157
Vinyl Chloride	6400 U	84000 U	150000 U	62000 U	12 U	12 U	13 U	12 U	12 U	1,656
Xylene (total)	3200 U	42000 U	77000 U	31000 U	6 U	6 U	6 U	6 U	6 U	1,660

Table 5

Volatile Organic Analytical Data Summary - Soil Borings

Former Columbia Cement Company, Inc. Facility

Freeport, New York

Sampling Dates: December 1998 (MW-00-11 and MW-00-12 April 2000)

Sample ID / Compound	MW-00-11A (32-34') Gr Snd	MW-00-11A (34-36') Gr Snd / Gr Clay/Silt	MW-00-11A (38-40') Gr Clay/Silt	MW-00-11A (40-42') Gr Clay/Silt	MW-00-11A (42-44') Gr Clay/Silt	MW-00-11A (44-46') Gr Clay/Silt	MW-00-11A (46-48') Gr Clay/Silt	MW-00-11A (48-50') Gr Clay/Silt and Gray Sand	MW-00-11A (50-52') Gray Sand	SITE SPECIFIC RSCO
1,1,1-Trichloroethane	3 J	6 U	6 U	5 J	3 J	2 J	6 U	7 U	7 U	1,049
1,1,2,2-Tetrachloroethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	7 U	7 U	NA
1,1,2-Trichloroethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	7 U	7 U	386
1,1-Dichloroethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	7 U	7 U	207
1,1-Dichloroethene	6 U	6 U	6	6 U	6 U	6 U	6 U	7 U	7 U	449
1,2-Dichloroethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	7 U	7 U	NA
1,2-Dichloropropane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	7 U	7 U	NA
2-Butanone-(MEK)	13 U	12 U	13 U	10 J	13 U	33	6 J	13 U	13 U	NA
2-Hexanone	13 U	12 U	13 U	13 U	13 U	13 U	13 U	13 U	13 U	311
4-Methyl-2-Pentanone (MIBK)	13 U	12 U	13	13 U	13 U	13 U	13 U	13 U	13 U	1,587
Acetone	13 U	25 UB	42 UB	52 UB	61 UB	140 UB	36 UB	10 J	13 U	1,311
Benzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	7 U	7 U	152
Bromodichloromethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	7 U	7 U	115
Bromoform	6 U	6 U	6 U	6 U	6 U	6 U	6 U	7 U	7 U	NA
Bromomethane	13 U	12 U	13 U	13 U	13 U	13 U	13 U	13 U	13 U	366
Carbon Disulfide	4 J	6 U	6 U	6 U	6 U	6 U	6 U	7 U	7 U	NA
Carbon Tetrachloride	6 U	6 U	6 U	6 U	6 U	6 U	6 U	7 U	7 U	3,726
Chlorobenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	7 U	7 U	NA
Chloroethane	13 U	12 U	13 U	13 U	13 U	13 U	13 U	13 U	13 U	NA
Chloroform	6 U	6 U	6 U	2 J	3 J	5 J	2 J	7 U	7 U	255
Chloromethane	13 U	12 U	13 U	13 U	13 U	13 U	13 U	13 U	13 U	299
cis-1,2-Dichloroethylene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	7 U	7 U	NA
cis-1,3-Dichloropropene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	7 U	7 U	NA
Dibromochloromethane	6 U	6 U	6 U	6 U	6 U	6 U	6 U	7 U	7 U	NA
Ethylbenzene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	7 U	7 U	7,590
Methylene Chloride	6 U	6 U	6 U	6 U	9 U	15 UB	8 U	7 U	7 U	145
Styrene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	7 U	7 U	6,348
Tetrachloroethene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	7 U	7 U	1,911
Toluene	6 U	6 U	6 U	6 U	2 J	2 J	6 U	7 U	7 U	2,070
trans-1,2-Dichloroethene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	7 U	7 U	NA
trans-1,3-Dichloropropene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	7 U	7 U	869
Trichloroethene	6 U	6 U	6 U	6 U	6 U	6 U	6 U	7 U	7 U	157
Vinyl Chloride	13 U	12 U	13 U	13 U	13 U	13 U	13 U	13 U	13 U	1,656
Xylene (total)	6 U	6 U	6 U	6 U	6 U	6 U	6 U	7 U	7 U	1,660

Table 5

Volatile Organic Analytical Data Summary - Soil Borings
Former Columbia Cement Company, Inc. Facility
Freeport, New York

Sampling Dates: December 1998 (MW-00-11 and MW-00-12 April 2000)

Sample ID / Compound	MW-00-11A (54-56') Gray Sand		MW-00-11A (56-58') Gray Sand		MW-00-11A (58-60') Gray Sand		SITE SPECIFIC RSCO
1,1,1-Trichloroethane	5	U	6	U	6	U	1,049
1,1,2,2-Tetrachloroethane	5	U	6	U	6	U	NA
1,1,2-Trichloroethane	5	U	6	U	6	U	386
1,1-Dichloroethane	5	U	6	U	6	U	207
1,1-Dichloroethene	5		6	U	6	U	449
1,2-Dichloroethane	5	U	6	U	6	U	NA
1,2-Dichloropropane	5	U	6	U	6	U	NA
2-Butanone-(MEK)	10	U	13	U	12	U	NA
2-Hexanone	10	U	13	U	12	U	311
4-Methyl-2-Pentanone (MIBK)	10	U	13	U	12	U	1,587
Acetone	15		13	U	28		1,311
Benzene	5	U	6	U	6	U	152
Bromodichloromethane	5	U	6	U	6	U	115
Bromoform	5	U	6	U	6	U	NA
Bromomethane	10	U	13	U	12	U	366
Carbon Disulfide	5	U	6	U	7		NA
Carbon Tetrachloride	5	U	6	U	6	U	3,726
Chlorobenzene	5	U	6	U	6	U	NA
Chloroethane	10	U	13	U	12	U	NA
Chloroform	5	U	6	U	3	J	255
Chloromethane	10	U	13	U	12	U	299
cis-1,2-Dichloroethylene	5	U	6	U	6	U	NA
cis-1,3-Dichloropropene	5	U	6	U	6	U	NA
Dibromochloromethane	5	U	6	U	6	U	NA
Ethylbenzene	5	U	6	U	6	U	7,590
Methylene Chloride	5	U	4	U	8	U	145
Styrene	5	U	6	U	6	U	6,348
Tetrachloroethene	5	U	6	U	6	U	1,911
Toluene	5	U	6	U	2	J	2,070
trans-1,2-Dichloroethene	5	U	6	U	6	U	NA
trans-1,3-Dichloropropene	5	U	6	U	6	U	869
Trichloroethene	5	U	6	U	6	U	157
Vinyl Chloride	10	U	13	U	12	U	1,656
Xylene (total)	5	U	6	U	6	U	1,660

All results expressed in ug/Kg.
Concentration in bold exceeds the RSCO (Based on Site Specific Organic Carbon Content of 1.38 percent).
U-indicates not detected at or above the listed concentration.
J- indicates estimated concentration below the contract required reporting limit but above the instrument detection limit.
D- indicates sample was diluted prior to analysis.
Gr Snd - indicates Gravelly Sand Unit and Gr Clay/Silt indicated Gray Clay and Silt Unit

Table 6

Semivolatile Organic Analytical Data Summary - Soil Borings

Former Columbia Cement Company, Inc. Facility
Freeport, New York

Sampling Dates: December 15, 16, 22 and 23, 1998

Compound / Sample ID	SB-98-2 (10-13.7') Fill	SB-98-4 (28-30') Gr Snd	SB-98-3 (18-19.35') Fill	X-1 SB-98-3 (18-19.35') SB-98-3 (18-19.35')	BSB-98-7 (8-10') Fill	BSB-98-7 (11.35-13.63') Tidal Marsh	BSB-98-7 (34.55-36') Gr Clay/Silt	MW-98-8D (4-6') Fill	SITE SPECIFIC RSCO
Phenol	380 U	380 U	**340 J**	410 U	510 U	640 U	420 U	440 U	37.26
bis(2-Chloroethyl)Ether	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
2-Chlorophenol	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
1,3-Dichlorobenzene	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
1,4-Dichlorobenzene	380 U	*230 J*	450 U	410 U	510 U	640 U	420 U	440 U	11,730
1,2-Dichlorobenzene	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
2-Methylphenol	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
2,2'-oxybis(1-Chloropropane)	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
4-Methylphenol	380 U	380 U	450 U	*89 J*	510 U	640 U	420 U	440 U	1,173
N-Nitroso-di-n-propylamine	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
Hexachloroethane	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
Nitrobenzene	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
Isophorone	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
2-Nitrophenol	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
2,4-Dimethylphenol	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
2,4-Dichlorophenol	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
1,2,4-Trichlorobenzene	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
Naphthalene	*660*	380 U	1300	*720*	510 U	640 U	420 U	*49 J*	17,940
4-Chloroaniline	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
Hexachlorobutadiene	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
bis(2-Chloroethoxy)methane	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
4-Chloro-3-Methylphenol	380 U	380 U	**980**	410 U	510 U	640 U	420 U	440 U	324
2-Methylnaphthalene	*360 J*	380 U	450 U	*320 J*	510 U	640 U	420 U	440 U	50,000
Hexachlorocyclopentadiene	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
2,4,6-Trichlorophenol	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
2,4,5-Trichlorophenol	930 U	920 U	1100 U	990 U	1200 U	1500 U	1000 U	1100 U	
2-Chloronaphthalene	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
2-Nitroaniline	930 U	920 U	1100 U	990 U	1200 U	1500 U	1000 U	1100 U	
Dimethylphthalate	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
Acenaphthylene	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
2,6-Dinitrotoluene	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
3-Nitroaniline	930 U	920 U	1100 U	990 U	1200 U	1500 U	1000 U	1100 U	
Acenaphthene	*240 J*	380 U	*740*	410 U	510 U	640 U	420 U	440 U	50.000
2,4-Dinitrophenol	930 U	920 U	1100 U	990 U	1200 U	1500 U	1000 U	1100 U	
4-Nitrophenol	930 U	380 U	1100 U	990 U	1200 U	1500 U	1000 U	1100 U	
Dibenzofuran	380 U	380 U	450 U	410 U	510 U	640 U	420 U	*120 J*	8,478
2,4-Dinitrotoluene	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	

Table 6

Semivolatile Organic Analytical Data Summary - Soil Borings

Former Columbia Cement Company, Inc. Facility
Freeport, New York

Sampling Dates: December 15, 16, 22 and 23, 1998

Compound / Sample ID	SB-98-2 (10-13.7') Fill	SB-98-4 (28-30') Gr Snd	SB-98-3 (18-19.35') Fill	X-1 SB-98-3 (18-19.35') SB-98-3 (18-19.35')	BSB-98-7 (8-10') Fill	BSB-98-7 (11.35-13.63') Tidal Marsh	BSB-98-7 (34.55-36') Gr Clay/Silt	MW-98-8D (4-6') Fill	SITE SPECIFIC RSCO
Diethylphthalate	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
4-Chlorophenyl-phenylether	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
Fluorene	*380 J*	380 U	450 U	*130 J*	510 U	640 U	420 U	*200 J*	50,000
4-Nitroaniline	930 U	920 U	1100 U	990 U	1200 U	1500 U	1000 U	1100 U	
4,6-Dinitro-2-methylphenol	930 U	920 U	1100 U	990 U	1200 U	1500 U	1000 U	1100 U	
N-Nitrosodiphenylamine	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
4-Bromophenyl-phenylether	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
Hexachlorobenzene	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
Pentachlorophenol	930 U	380 U	1100 U	990 U	1200 U	1500 U	1000 U	1100 U	
Phenanthrene	*5300*	380 U	*4200*	*700*	*330 J*	*170 J*	420 U	*830*	50,000
Anthracene	*210 J*	380 U	450 U	410 U	510 U	640 U	420 U	*260 J*	50,000
Carbazole	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
Di-n-butylphthalate	2900	1800	*520*	*660*	*80 J*	640 U	420 U	440 U	11,178
Fluoranthene	*3600*	380 U	*2500*	*420*	*700*	*480 J*	*130 J*	*890*	50,000
Pyrene	*560*	380 U	*920*	*160 J*	*720*	*450 J*	420 U	*570*	50,000
Butylbenzylphthalate	380 U	380 U	450 U	*520*	510 U	640 U	420 U	*100 J*	50,000
3,3'-Dichlorobenzidine	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
Benzo(a)anthracene	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
Chrysene	**2200**	380 U	450 U	410 U	*480 J*	640 U	420 U	440 U	552
bis(2-Ethylhexyl)phthalate	**56,000 D**	*340 J*	*20,000 E*	**74,000 D**	**96,000 D**	*1,800*	*180 J*	*1,400*	50,000
Di-n-octylphthalate	*6200*	380 U	*1300*	*2,800*	*410 J*	640 U	420 U	440 U	50,000
Benzo(b)fluoranthene	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
Benzo(k)fluoranthene	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
Benzo(a)pyrene	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
Indeno(1,2,3-cd)pyrene	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
Dibenz(a,h)anthracene	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	
Benzo(g,h,i)perylene	380 U	380 U	450 U	410 U	510 U	640 U	420 U	440 U	

All results expressed in ug/Kg.
Concentration in bold exceeds the RSCO (Based on Site Specific Organic Carbon Content of 1.38 percent).
U-indicates not detected at or above the listed concentration.
J- indicates estimated concentration below the contract required reporting limit but above the instrument detection limit.
D- indicates sample was diluted prior to analysis.
E- indicates estimated value, concentration exceeded the instrument calibration range.

Table 7

Pesticide/PCB Analytical Data Summary - Soil Borings

Former Columbia Cement Company, Inc. Facility
Freeport, New York

Sampling Dates: December 15, 16, 22 and 23, 1998

Compound / Sample ID	SB-98-2 (10-13.7')	SB-98-4 (28-30')	SB-98-3 (18-19.35')	X-1 *SB-98-3 (18-19.35')*	BSB-98-7 (8-10')	BSB-98-7 (11.35-13.63')	BSB-98-7 (34.55-36')	MW-98-8D (4-6')	SITE SPECIFIC RSCO
alpha-BHC	2.0 U	0.05 U	2.3 U	2.1 U	2.6 U	3.3 U	2.2 U	2.3 U	
beta-BHC	2.0 U	0.05 U	2.3 U	2.1 U	2.6 U	3.3 U	2.2 U	2.3 U	
delta-BHC	2.0 U	0.05 U	2.3 U	2.1 U	2.6 U	3.3 U	2.2 U	2.3 U	
gamma-BHC (Lindane)	2.0 U	0.05 U	2.3 U	2.1 U	2.6 U	3.3 U	2.2 U	2.3 U	
Heptachlor	2.0 U	0.05 U	2.3 U	2.1 U	2.6 U	3.3 U	2.2 U	2.3 U	
Aldrin	2.0 U	0.05 U	2.3 U	2.1 U	2.6 U	3.3 U	2.2 U	2.3 U	
Heptachlor epoxide	2.0 U	0.05 U	2.3 U	2.1 U	2.6 U	3.3 U	2.2 U	2.3 U	
Endosulfan I	2.0 U	0.05 U	2.3 U	2.1 U	2.6 U	3.3 U	2.2 U	2.3 U	
Dieldrin	3.8 U	0.1 U	4.5 U	4.1 U	*6.0*	6.4 U	4.2 U	4.4 U	44
4,4'-DDE	3.8 U	0.1 U	4.5 U	4.1 U	5.1 U	6.4 U	4.2 U	4.4 U	
Endrin	3.8 U	0.1 U	4.5 U	4.1 U	5.1 U	6.4 U	4.2 U	4.4 U	
Endosulfan II	3.8 U	0.1 U	4.5 U	4.1 U	5.1 U	6.4 U	4.2 U	4.4 U	
4,4'-DDD	3.8 U	0.1 U	4.5 U	4.1 U	5.1 U	6.4 U	4.2 U	*25*	2,900
Endosulfan sulfate	3.8 U	0.1 U	4.5 U	4.1 U	5.1 U	6.4 U	4.2 U	4.4 U	
4,4'-DDT	*210*	0.1 U	4.5 U	4.1 U	5.1 U	6.4 U	4.2 U	4.4 U	2,100
Methoxychlor	20 U	10 U	23 U	21 U	26 U	33 U	22 U	*8.6 J*	10,000
Endrin ketone	3.8 U	0.1 U	4.5 U	4.1 U	5.1 U	6.4 U	4.2 U	4.4 U	
Endrin aldehyde	3.8 U	0.1 U	4.5 U	4.1 U	5.1 U	6.4 U	4.2 U	4.4 U	
alpha-Chlordane	2.0 U	0.05 U	2.3 U	2.1 U	2.6 U	3.3 U	2.2 U	2.3 U	
gamma-Chlordane	2.0 U	0.05 U	*20 P*	2.1 U	2.6 U	3.3 U	2.2 U	2.3 U	540
Toxaphene	200 U	100 U	230 U	210 U	260 U	330 U	220 U	230 U	
Aroclor-1016	38 U	1 U	45 U	41 U	51 U	64 U	42 U	44 U	
Aroclor-1221	78 U	2 U	91 U	83 U	100 U	130 U	85 U	90 U	
Aroclor-1232	38 U	1 U	45 U	41 U	51 U	64 U	42 U	44 U	
Aroclor-1242	38 U	1 U	45 U	41 U	51 U	64 U	42 U	44 U	
Aroclor-1248	38 U	1 U	45 U	41 U	51 U	64 U	42 U	44 U	
Aroclor-1254	38 U	1 U	45 U	41 U	51 U	64 U	42 U	44 U	
Aroclor-1260	38 U	1 U	45 U	41 U	51 U	64 U	42 U	44 U	

All results expressed in ug/Kg.
U-indicates not detected at or above the listed concentration.
J- indicates estimated concentration below the contract required reporting limit but above the instrument detection limit.
Concentration in bold exceeds the RSCO (Based on Site Specific Organic Carbon Content of 1.38 percent).

Table 8

Inorganic Analytical Data Summary - Soil Borings

Former Columbia Cement Company, Inc. Facility
Freeport, New York

Sampling Dates: December 15, 16, 22 and 23, 1998

Sample ID / Analyte	SB-98-2 Fill (10-13.7')	SB-98-3 Fill (18-19.35')	X-1 *Fill* *SB-98-3 (18-19.35')*	SB-98-4 Gr Snd (28-30')	BSB-98-7 Fill (8-10')	BSB-98-7 Tidal Marsh (11.35-13.63')	BSB-98-7 Gr Clay/Silt (34.55-36')	MW-98-8D Fill (4-6')	NYS RSCO
Aluminum	715	1100	585	2280	6070	11600	8270	8350	SB
Antimony	0.85 U	34.7	**97.6**	0.87 U	22.7	3.9	0.09 U	33.2	SB
Arsenic	0.8	3.2	0.46 U	0.07 U	28.9	15.3	12.2	6.6	7.5 or SB
Barium	21.2	52.7	45.3	9.3	954	119	21.3	707	300 or SB
Beryllium	0.11 U	0.12 U	0.11 U	0.11 U	0.21 B	0.64	0.35	**0.39**	0.16 or SB
Cadmium	0.09 U	0.1 U	0.1 U	0.09 U	7.5	1.8	0.21	6	1 or SB
Calcium	28800	2070	3340	288	21000	2520	1000	21200	SB
Chromium	10	**217**	17.6	5	64	36.3	18.8	49.9	10 or SB
Cobalt	4	3.5	0.1 U	1.3 B	19.7	6.5	8.9	13.8	30 or SB
Copper	71.2	41.9	119	2.3	633	76.2	10	447	25 or SB
Iron	26100	32700	**92900**	3340	5200	79300	39800	63900	2,000 or SB
Lead	44.8	42.5	872	0.8	3160	230	4.6	1590	SB
Magnesium	**15500**	391	655	715	1910	4140	4060	2750	SB
Manganese	139	223	350	26	919	175	137	449	SB
Mercury	0.09	0.1	**0.31**	0.04 U	0.96	0.70	0.08	**0.70**	0.1
Nickel	14.4	26.5	0.21 U	2.8	82.7	19.4	15.2	65.1	13 or SB
Potassium	65.2 B	180 B	1.9 U	242 B	3310	8020	3830	941	SB
Selenium	0.09 U	0.09 U	1.5 U	0.09 U	0.1 U	0.1 U	0.1 U	0.19 U	2 or SB
Silver	0.27 U	0.29 U	0.29 U	0.28 U	0.02 U	0.02 U	0.02 U	3.1	SB
Sodium	81.5 B	140 B	234 B	64.2 B	6070	4530	411 B	725	SB
Thallium	0.15 U	0.16 U	1.1 U	0.15 U	2.6	0.17 U	0.17 U	0.5 B	SB
Vanadium	4.7	47.2	0.1 U	5.8	20.6	38.9	26	32.5	150 or SB
Zinc	240	282	478	10.9	2380	456	49.8	2230	20 or SB

All results expressed in mg/Kg.
Concentration in bold exceeds the RSCO
Note: Boring sample BSB-98-7 represents site background (SB)
U - indicates not detected at or above the listed concentration
B- indicates estimated concentration below the contract required reporting limit but above the instrument detection limit

Table 9

Total Organic Carbon Analytical Data Summary

Former Columbia Cement Company, Inc. Facility
Freeport, New York

Sampling Dates: December 15, 16, 17, 18, 21, 22 and 23, 1998

	Sample ID	TOC Result (mg/Kg)	TOC (%)
Fill			
	BSB-98-7 (8-10')	16,300	1.63
	MW-98-8D (4-6')	15,700	1.57
	SB-98-2 (10-13.7')	2,150	0.215
	SB-98-3 (18-19.35')	6,110	0.611
	X-1 *[SB-98-3 (18-19.35')]*	8,200	0.82
	SB-98-4 (10-12')	17,600	1.76
Tidal Marsh			
	SB-98-3 (19.35-19.58')	29,800	2.98
	BSB-98-7 (11.35-13.63')	17,700	1.77
	MW-98-8D (7.7-8')	13,300	1.33
	MW-98-9D (6.1-6.5')	15,300	1.53
	MW-98-10D (9.85-10.2')	4,240	0.424
Gravelly Sand			
	SB-98-4 (14.55-16')	2,640	0.264
	SB-98-4 (28-30')	551	0.0551
	BSB-98-7 (28-30')	2,700	0.27
	MW-98-10D (12-14')	891	0.0891
Gray Clay & Silt			
	SB-98-2 (34.0-34.5')	2,300	0.23
	SB-98-3 (35.67-36')	1,310	0.131
	BSB-98-7 (34.55-36')	3,460	0.346
	SB-98-4 (35.16-36')	2,200	0.22
	MW-98-9D (37-38')	1,150	0.115
	MW-98-10D (37.1-38')	3,100	0.31
Transition Samples			
	*SB-98-2 (15.1-15.67')	3,780	0.378
	**MW-98-8D (34.75-36')	2,110	0.211
	***MW-98-9D (12-14')	10,300	1.03
Dry Well Sediments			
	DWSS-08 (0-6")	10,500	1.05
	DWSS-08 (24-30")	25,900	2.59
	X-2 *[DWSS-08 (24-30")]*	18,500	1.85

* Transition from Fill to Gravelly Sand

** Transition from Gravelly Sand to Gray Clay & Silt

*** Transition from Tidal Marsh to Gravelly Sand

Table 10
Volatile Organic Analytical Data Summary-Ground Water
Former Columbia Cement Company, Inc. Facility
Freeport, New York
Sampling Dates: January 1999; April 2000; May 2003

Sample ID	MW-1S			MW-97-1D			MW-97-1S			MW-97-2S			NYS Groundwater Standard
Screened Interval (depth ft. below g	~11.0 - 21.0			28.65-33.65			14.25-24.25			14.5-24.5			
Screened Interval (Elevation)				69.31-64.31			83.38-73.38			84.33-74.33			
Date Sampled	1/4/1999	4/2000	5/2003	1/4/1999	4/2000	5/2003	1/4/1999	4/2000	5/2003	1/4/1999	4/2000	5/2003	
Compound													
Chloromethane	1,000 U	10 U	1,000 U	100 U	10 U	100 U	10 U	10 U	20 U	10 U	10 U	10 U	5
Bromomethane	1,000 U	10 U	1,000 U	100 U	10 U	100 U	10 U	10 U	20 U	10 U	10 U	10 U	5
Vinyl Chloride	1,000 U	**26**	1,000 U	100 U	**9 J**	100 U	10 U	10 U	20 U	10 U	10 U	10 U	2
Chloroethane	**11,000**	**12,000 D**	**13,000**	**500**	**480 D**	**1200**	**120**	**320 D**	**220**	10 U	10 U	**7 J**	5
Methylene Chloride	**170 J**	**580 BD**	500 U	**500**	**840 BD**	50 U	10 U	**20**	10 U	10 U	**15**	5 U	5
Acetone	**300 J**	10 U	1,000 U	**230 J**	10 U	100 U	10 U	7 J	20 U	10 U	8 J	10 U	50
Carbon Disulfide	1,000 U	5 U	500 U	500 U	5 U	50 U	10 U	5 U	10 U	10 U	5 U	5 U	NS
1,1-Dichloroethene	1,000 U	**23**	500 U	500 U	**5**	50 U	10 U	5 U	10 U	10 U	5 U	5 U	5
1,1-Dichloroethane	**4,300**	**2,600 D**	**690**	**4,100**	**350 D**	**140**	10 U	5 U	10 U	10 U	5 U	5 U	5
1,2-Dichloroethene (total)	1,000 U	5 U	500 U	500 U	5 U	50 U	10 U	5 U	10 U	10 U	5 U	5 U	5
Chloroform	1,000 U	5 U	500 U	500 U	5 U	50 U	10 U	5 U	10 U	10 U	5 U	5 U	7
1,2-Dichloroethane	1,000 U	5 U	500 U	500 U	5 U	50 U	10 U	5 U	10 U	10 U	5 U	5 U	5
2-Butanone	1,000 U	10 U	1,000 U	500 U	10 U	100 U	10 U	10 U	20 U	10 U	10 U	10 U	50GV
1,1,1-Trichloroethane	**350 J**	**140 JD**	500 U	**5,100**	2 J	50 U	10 U	5 U	10 U	10 U	5 U	5 U	5
Carbon Tetrachloride	1,000 U	5 U	500 U	500 U	5 U	50 U	10 U	5 U	10 U	10 U	5 U	5 U	5
Bromodichloromethane	1,000 U	5 U	500 U	500 U	5 U	50 U	10 U	5 U	10 U	10 U	5 U	5 U	5
1,2-Dichloropropane	1,000 U	5 U	500 U	500 U	5 U	50 U	10 U	5 U	10 U	10 U	5 U	5 U	1
cis-1,3-Dichloropropene	1,000 U	5 U	500 U	500 U	5 U	50 U	10 U	5 U	10 U	10 U	5 U	5 U	0.4*
Trichloroethene	1,000 U	4 J	500 U	500 U	**9**	50 U	10 U	5 U	10 U	10 U	5 U	5 U	5
Dibromochloromethane	1,000 U	5 U	500 U	500 U	5 U	50 U	10 U	5 U	10 U	10 U	5 U	5 U	5
1,1,2-Trichloroethane	1,000 U	5 U	500 U	500 U	5 U	50 U	10 U	5 U	10 U	10 U	5 U	5 U	1
Benzene	1,000 U	**23**	500 U	500 U	5 U	50 U	10 U	5 U	10 U	10 U	5 U	5 U	1
trans-1,3-Dichloropropene	1,000 U	5 U	500 U	500 U	5 U	50 U	10 U	1 J	10 U	10 U	1 J	5 U	0.4*
Bromoform	1,000 U	5 U	500 U	500 U	5 U	50 U	10 U	5 U	10 U	10 U	5 U	5 U	5
4-Methyl-2-Pentanone	1,000 U	10 U	1,000 U	500 U	5 U	50 U	10 U	5 U	10 U	10 U	5 U	5 U	NS
2-Hexanone	1,000 U	10 U	1,000 U	500 U	10 U	100 U	10 U	10 U	20 U	10 U	10 U	10 U	50 GV
Tetrachloroethene	1,000 U	1 J	500 U	500 U	10 U	100 U	10 U	10 U	20 U	10 U	10 U	10 U	5
1,1,2,2-Tetrachloroethane	1,000 U	5 U	500 U	500 U	1 J	50 U	10 U	5 U	10 U	10 U	5 U	5 U	5
Toluene	1,000 U	**76**	500 U	500 U	5 U	50 U	10 U	5 U	10 U	10 U	5 U	5 U	5
Chlorobenzene	1,000 U	2 J	500 U	500 U	**11**	50 U	10 U	5 U	10 U	10 U	5 U	5 U	5
Ethylbenzene	1,000 U	**5 J**	500 U	500 U	5 U	50 U	10 U	**11**	10 U	**20**	**15**	**12**	5
Styrene	1,000 U	5 U	500 U	500 U	5 U	50 U	10 U	5 U	10 U	10 U	1 J	5 U	5
Xylene (total)	1,000 U	**19**	500 U	500 U	1 J	50 U	1 J	2 J	10 U	10 U	2 J	5 U	5**

7/15/03

Table 10
Volatile Organic Analytical Data Summary-Ground Water
Former Columbia Cement Company, Inc. Facility
Freeport, New York
Sampling Dates: January 1999; April 2000; May 2003

Sample ID	MW-97-3S			MW-97-4S			MW-97-5S			MW-97-6S			NYS Groundwater Standard
Screened Interval (depth ft. below g		15.0-25.0			15.25-25.25			15.80-25.80			15.5-25.5		
Screened Interval (Elevation)		83.66-73.66			83.61-73.61			82.79-72.79			83.19-73.19		
Date Sampled	1/4/1999	4/2000	5/2003	1/4/1999	4/2000	5/2003	1/4/1999	4/2000	5/2003	1/4/1999	4/2000	5/2003	
Compound													
Chloromethane	10 U	10 U	10 U	100 U	10 U	10 U	50 U	10 U	500 U	50 U	10 U	500 U	5
Bromomethane	10 U	10 U	10 U	100 U	10 U	10 U	50 U	10 U	500 U	50 U	10 U	500 U	5
Vinyl Chloride	10 U	10 U	10 U	100 U	10 U	10 U	50 U	10 U	500 U	50 U	10 U	500 U	2
Chloroethane	1 J	**8 J**	10 U	**500**	**8 J**	**140**	**260**	**810 D**	**3,600**	**400**	**910 D**	**2,600**	5
Methylene Chloride	10 U	5 U	5 U	100 U	5 U	5 U	50 U	5 U	250 U	50 U	5 U	250 U	5
Acetone	10 U	10 U	10 U	100 U	10 U	10 U	50 U	10 U	500 U	50 U	10 U	500 U	50
Carbon Disulfide	10 U	5 U	1 J	100 U	5 U	5 U	50 U	5 U	250 U	50 U	5 U	250 U	60GV
1,1-Dichloroethene	10 U	5 U	5 U	100 U	5 U	5 U	50 U	5 U	250 U	50 U	5 U	250 U	5
1,1-Dichloroethane	10 U	5 U	5 U	100 U	5 U	5 U	50 U	2 J	**860**	50 U	5 U	250 U	5
1,2-Dichloroethene (total)	10 U	5 U	5 U	100 U	5 U	5 U	50 U	5 U	250 U	50 U	5 U	250 U	5
Chloroform	10 U	5 U	5 U	100 U	5 U	5 U	50 U	5 U	250 U	50 U	5 U	250 U	7
1,2-Dichloroethane	10 U	5 U	5 U	100 U	5 U	5 U	50 U	5 U	250 U	50 U	5 U	250 U	5
2-Butanone	10 U	10 U	10 U	100 U	10 U	10 U	50 U	10 U	500 U	50 U	10 U	500 U	50GV
1,1,1-Trichloroethane	10 U	5 U	5 U	100 U	5 U	5 U	50 U	5 U	250 U	**13 J**	5 U	250 U	5
Carbon Tetrachloride	10 U	5 U	5 U	100 U	5 U	5 U	50 U	5 U	250 U	50 U	5 U	250 U	5
Bromodichloromethane	10 U	5 U	5 U	100 U	5 U	5 U	50 U	5 U	250 U	50 U	5 U	250 U	5
1,2-Dichloropropane	10 U	5 U	5 U	100 U	5 U	5 U	50 U	5 U	250 U	50 U	5 U	250 U	1
cis-1,3-Dichloropropene	10 U	5 U	5 U	100 U	5 U	5 U	50 U	5 U	250 U	50 U	5 U	250 U	0.4*
Trichloroethene	10 U	5 U	5 U	100 U	5 U	5 U	50 U	5 U	250 U	50 U	5 U	250 U	5
Dibromochloromethane	10 U	5 U	5 U	100 U	5 U	5 U	50 U	5 U	250 U	50 U	5 U	250 U	5
1,1,2-Trichloroethane	10 U	5 U	5 U	100 U	5 U	5 U	50 U	5 U	250 U	50 U	5 U	250 U	1
Benzene	10 U	5 U	5 U	100 U	5 U	5 U	50 U	**2 J**	250 U	50 U	**2 J**	250 U	1
trans-1,3-Dichloropropene	10 U	5 U	5 U	100 U	5 U	5 U	50 U	5 U	250 U	50 U	5 U	250 U	0.4*
Bromoform	10 U	5 U	5 U	100 U	5 U	5 U	50 U	5 U	250 U	50 U	5 U	250 U	5
4-Methyl-2-Pentanone	10 U	10 U	10 U	100 U	10 U	10 U	50 U	10 U	500 U	50 U	10 U	500 U	NS
2-Hexanone	10 U	10 U	10 U	100 U	10 U	10 U	50 U	10 U	500 U	50 U	10 U	500 U	50 GV
Tetrachloroethene	10 U	5 U	5 U	100 U	5 U	5 U	50 U	5 U	250 U	50 U	5 U	250 U	5
1,1,2,2-Tetrachloroethane	10 U	5 U	5 U	100 U	5 U	5 U	50 U	5 U	250 U	50 U	5 U	250 U	5
Toluene	10 U	5 U	5 U	100 U	5 U	5 U	50 U	5 U	250 U	50 U	5 U	250 U	5
Chlorobenzene	10 U	**8**	7	100 U	5 U	3 J	50 U	5 U	250 U	50 U	**32**	250 U	5
Ethylbenzene	10 U	5 U	5 U	100 U	5 U	5 U	50 U	5 U	250 U	50 U	5 U	250 U	5
Styrene	10 U	5 U	5 U	100 U	5 U	5 U	50 U	5 U	250 U	50 U	5 U	250 U	5
Xylene (total)	10 U	5 U	5 U	100 U	5 U	5 U	50 U	5 U	250 U	50 U	1 J	250 U	5**

7/15/03

Table 10
Volatile Organic Analytical Data Summary-Ground Water
Former Columbia Cement Company, Inc. Facility
Freeport, New York
Sampling Dates: January 1999; April 2000; May 2003

Sample ID	MW-97-7S			MW-98-8S			MW-98-8D			MW-98-9D			NYS Groundwater Standard
Screened Interval (depth ft. below g	21.35-31.35			10.0-20.0			25.0-35.0			27.0-37.0			
Screened Interval (Elevation)	77.44-67.44			78.89-68.89			73.68-63.68			70.54-60.54			
Date Sampled	1/4/1999	4/2000	5/2003	1/4/1999	4/2000	5/2003	4/1/1999	4/2000	5/2003	4/1/1999	4/2000	5/2003	
Compound													
Chloromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	100 U	5
Bromomethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	100 U	5
Vinyl Chloride	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	100 U	2
Chloroethane	10 U	10 U	10 U	10 U	2 J	10 U	**93**	**46**	10 U	**38**	**290 D**	**810**	5
Methylene Chloride	10 U	**19**	5 U	10 U	**13**	5 U	3 J	5 U	5 U	10 U	5 U	50 U	5
Acetone	10 U	9 J	10 U	10 U	18	10 U	13	10 U	10 U	10 U	10 U	100 U	50
Carbon Disulfide	10 U	5 U	5 U	10 U	1 J	1 J	10 U	5 U	5 U	10 U	5 U	50 U	60GV
1,1-Dichloroethene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	50 U	5
1,1-Dichloroethane	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	50 U	5
1,2-Dichloroethene (total)	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	50 U	5
Chloroform	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	2 J	5 U	50 U	7
1,2-Dichloroethane	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	50 U	5
2-Butanone	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	100 U	50GV
1,1,1-Trichloroethane	10 U	5 U	5 U	10 U	5 U	5 U	4 J	5 U	5 U	10 U	5 U	50 U	5
Carbon Tetrachloride	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	50 U	5
Bromodichloromethane	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	50 U	5
1,2-Dichloropropane	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	50 U	1
cis-1,3-Dichloropropene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	50 U	0.4*
Trichloroethene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	50 U	5
Dibromochloromethane	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	50 U	5
1,1,2-Trichloroethane	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	50 U	1
Benzene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	50 U	1
trans-1,3-Dichloropropene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	50 U	0.4*
Bromoform	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	50 U	5
4-Methyl-2-Pentanone	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	100 U	NS
2-Hexanone	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	100 U	50 GV
Tetrachloroethene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	50 U	5
1,1,2,2-Tetrachloroethane	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	50 U	5
Toluene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	50 U	5
Chlorobenzene	10 U	3 J	**6**	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	50 U	5
Ethylbenzene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U	**5**	50 U	5
Styrene	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	50 U	5
Xylene (total)	10 U	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	10 U	2 J	50 U	5**

Ta..e 10
Volatile Organic Analytical Data Summary-Ground Water
Former Columbia Cement Company, Inc. Facility
Freeport, New York
Sampling Dates: January 1999; April 2000; May 2003

Sample ID	MW-98-10D			MW-00-11A		MW-00-12D		MW-03-13S	NYS Groundwater Standard
Screened Interval (depth ft. below gr	27.0-37.0			51.0-61.0		25.0-35.0			
Screened Interval (Elevation)	71.75-61.75			46.89-36.89		73.6-63.6			
Date Sampled	1/4/1999	4/2000	5/2003	4/2000	5/2003	4/2000	5/2003	5/2003	
Compound									
Chloromethane	10 U	10 U	10 U	10 U	10 U	10 U	1,000 U	10 U	5
Bromomethane	10 U	10 U	10 U	10 U	10 U	10 U	1,000 U	10 U	5
Vinyl Chloride	10 U	10 U	10 U	10 U	10 U	10 U	1,000 U	10 U	2
Chloroethane	10 U	10 U	**11**	10 U	10 U	**17**	**8,400**	10 U	5
Methylene Chloride	10 U	**23**	5 U	5 U	5 U	**16**	520 U	5 U	5
Acetone	10 U	10 J	10 U	34	10 U	**69**	1,000 U	10 U	50
Carbon Disulfide	10 U	5 U	5 U	5 U	5 U	5 U	500 U	1 J	60GV
1,1-Dichloroethene	10 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	5
1,1-Dichloroethane	10 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	5
1,2-Dichloroethene (total)	10 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	5
Chloroform	1 J	5 U	5 U	5 U	5 U	5 U	500 U	5 U	7
1,2-Dichloroethane	10 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	5
2-Butanone	10 U	10 U	10 U	10 U	10 U	10 U	500 U	10 U	50GV
1,1,1-Trichloroethane	10 U	5 U	5 U	4 J	5 U	**10**	1,000 U	5 U	5
Carbon Tetrachloride	10 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	5
Bromodichloromethane	10 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	5
1,2-Dichloropropane	10 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	1
cis-1,3-Dichloropropene	10 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	0.4*
Trichloroethene	10 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	5
Dibromochloromethane	10 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	5
1,1,2-Trichloroethane	10 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	5
Benzene	10 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	1
trans-1,3-Dichloropropene	10 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	0.4*
Bromoform	10 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	5
4-Methyl-2-Pentanone	10 U	10 U	10 U	10 U	10 U	10 U	1,000 U	10 U	NS
2-Hexanone	10 U	10 U	10 U	10 U	10 U	10 U	1,000 U	10 U	50 GV
Tetrachloroethene	10 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	5
1,1,2,2-Tetrachloroethane	10 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	5
Toluene	10 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	5
Chlorobenzene	10 U	**6**	**6**	5 U	5 U	5 U	500 U	5 U	5
Ethylbenzene	10 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	5
Styrene	10 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	5
Xylene (total)	10 U	5 U	5 U	5 U	5 U	5 U	500 U	5 U	5**

All results expressed in ug/L.
NS indicates no groundwater standard.
GV indicates guidance value.
* Standard applies to the sum of the cis and trans isomers.
** Standard applies to the sum of the isomers.
Value in bold exceeds the groundwater standard
U-indicates not detected at or above the listed concentration.
J- indicates estimated concentration below the contract required reporting limit but above the instrument detection limit.

Table 11

Semivolatile Organic Analytical Data Summary - Groundwater

Former Columbia Cement Company, Inc. Facility

Freeport, New York

Sampling Date: January 4, 1999

Compound / Sample ID	MW-1S	X-3 (MW-1S)	MW-97-1D	MW-98-8S	MW-98-8D	NYS Groundwater Standard
Phenol	10 U	10 U	10 U	10 U	10 U	1 **
bis(2-Chloroethyl)Ether	10 U	10 U	10 U	10 U	10 U	1
2-Chlorophenol	10 U	10 U	10 U	10 U	10 U	1 **
1,3-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U	3*
1,4-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U	3*
1,2-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U	3*
2-Methylphenol	10 U	10 U	10 U	10 U	10 U	1 **
2,2'-oxybis(1-Chloropropane)	10 U	10 U	10 U	10 U	10 U	5
4-Methylphenol	10 U	10 U	10 U	10 U	10 U	1 **
N-Nitroso-di-n-propylamine	10 U	10 U	10 U	10 U	10 U	NS
Hexachloroethane	10 U	10 U	10 U	10 U	10 U	5
Nitrobenzene	10 U	10 U	10 U	10 U	10 U	0.4
Isophorone	10 U	10 U	10 U	10 U	10 U	50 GV
2-Nitrophenol	10 U	10 U	10 U	10 U	10 U	1 **
2,4-Dimethylphenol	10 U	10 U	10 U	10 U	10 U	1 **
2,4-Dichlorophenol	10 U	10 U	10 U	10 U	10 U	1 **
1,2,4-Trichlorobenzene	10 U	10 U	10 U	10 U	10 U	5*
Naphthalene	*8 J*	*8 J*	10 U	10 U	10 U	10 GV
4-Chloroaniline	10 U	10 U	10 U	10 U	10 U	5
Hexachlorobutadiene	10 U	10 U	10 U	10 U	10 U	0.5
bis(2-Chloroethoxy)methane	10 U	10 U	10 U	10 U	10 U	5
4-Chloro-3-Methylphenol	10 U	10 U	10 U	10 U	10 U	1 **
2-Methylnaphthalene	*1 J*	*1 J*	10 U	10 U	10 U	NS
Hexachlorocyclopentadiene	10 U	10 U	10 U	10 U	10 U	5
2,4,6-Trichlorophenol	10 U	10 U	10 U	10 U	10 U	1 **
2,4,5-Trichlorophenol	25 U	25 U	25 U	25 U	25 U	1 **
2-Chloronaphthalene	10 U	10 U	10 U	10 U	10 U	10 GV
2-Nitroaniline	25 U	25 U	25 U	25 U	25 U	5
Dimethylphthalate	10 U	10 U	10 U	10 U	10 U	50 GV
Acenaphthylene	10 U	10 U	10 U	10 U	10 U	NS
2,6-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U	5
3-Nitroaniline	25 U	25 U	25 U	25 U	25 U	5
Acenaphthene	10 U	10 U	*6 J*	10 U	*1 J*	20 GV
2,4-Dinitrophenol	25 U	25 U	25 U	25 U	25 U	1 **
4-Nitrophenol	25 U	25 U	25 U	25 U	25 U	1 **
Dibenzofuran	10 U	10 U	*2 J*	10 U	10 U	NS
2,4-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U	1
Diethylphthalate	10 U	10 U	10 U	10 U	10 U	50 GV
4-Chlorophenyl-phenylether	10 U	10 U	10 U	10 U	10 U	NS

Table 11

Semivolatile Organic Analytical Data Summary - Groundwater

Former Columbia Cement Company, Inc. Facility
Freeport, New York

Sampling Date: January 4, 1999

Sample ID / Compound	MW-1S	X-3 (MW-1S)	MW-97-1D	MW-98-8S	MW-98-8D	NYS Groundwater Standard
Fluorene	10 U	10 U	4 J	10 U	10 U	50 GV
4-Nitroaniline	25 U	25 U	25 U	25 U	25 U	5
4,6-Dinitro-2-methylphenol	25 U	25 U	25 U	25 U	25 U	1 **
N-Nitrosodiphenylamine	10 U	10 U	10 U	10 U	10 U	50 GV
4-Bromophenyl-phenylether	10 U	10 U	10 U	10 U	10 U	5
Hexachlorobenzene	10 U	10 U	10 U	10 U	10 U	0.04
Pentachlorophenol	25 U	25 U	25 U	25 U	25 U	1 **
Phenanthrene	10 U	10 U	10 U	10 U	10 U	50 GV
Anthracene	10 U	10 U	10 U	10 U	10 U	50 GV
Carbazole	10 U	10 U	10 U	10 U	10 U	NS
Di-n-butylphthalate	1 J	2 J	1 J	10 U	1 J	NS
Fluoranthene	10 U	10 U	10 U	10 U	10 U	50 GV
Pyrene	10 U	10 U	10 U	10 U	10 U	50 GV
Butylbenzylphthalate	1 J	10 U	10 U	10 U	10 U	50 GV
3,3'-Dichlorobenzidine	10 U	10 U	10 U	10 U	10 U	5
Benzo(a)anthracene	10 U	10 U	10 U	10 U	10 U	0.002
Chrysene	10 U	10 U	10 U	10 U	10 U	0.002
bis(2-Ethylhexyl)phthalate	10 U	10 U	10 U	10 U	10 U	5
Di-n-octylphthalate	2 J	1 J	10 U	10 U	10 U	50 GV
Benzo(b)fluoranthene	10 U	10 U	10 U	10 U	10 U	0.002
Benzo(k)fluoranthene	10 U	10 U	10 U	10 U	10 U	0.002
Benzo(a)pyrene	10 U	10 U	10 U	10 U	10 U	Non Detect
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	10 U	10 U	0.002
Dibenz(a,h)anthracene	10 U	10 U	10 U	10 U	10 U	NS
Benzo(g,h,i)perylene	10 U	10 U	10 U	10 U	10 U	NS

All results expressed in ug/L.

* Standard applies to each isomer individually.

** Standard applies to sum of total phenolic compounds

Table 12

Pesticide/PCB Analytical Data Summary - Groundwater

Former Columbia Cement Company, Inc. Facility
Freeport, New York

Sampling Date: January 4, 1999

Sample ID / Compound	MW-1S	X-3 (MW-1S)	MW-97-1D	MW-98-8S	MW-98-8D	NYS Groundwater Standard
alpha-BHC	0.026 U	0.026 U	0.026 U	0.026 U	0.028 U	0.05
beta-BHC	0.026 U	0.026 U	0.026 U	0.026 U	0.028 U	0.01
delta-BHC	0.026 U	0.026 U	0.026 U	0.026 U	0.028 U	0.04
gamma-BHC (Lindane)	0.026 U	0.026 U	0.026 U	0.026 U	0.028 U	0.05
Heptachlor	0.026 U	0.026 U	0.026 U	0.026 U	0.028 U	0.04
Aldrin	0.026 U	0.026 U	0.026 U	0.026 U	0.028 U	Non-Detect
Heptachlor epoxide	0.026 U	0.026 U	0.026 U	0.026 U	0.028 U	0.03
Endosulfan I	0.026 U	0.026 U	0.026 U	0.026 U	0.028 U	NS
Dieldrin	0.053 U	0.051 U	0.053 U	0.052 U	0.057 U	0.004
4,4'-DDE	0.053 U	0.051 U	0.053 U	0.052 U	0.057 U	0.2
Endrin	0.053 U	0.051 U	0.053 U	0.052 U	0.057 U	Non-Detect
Endosulfan II	0.053 U	0.051 U	0.053 U	0.052 U	0.057 U	NS
4,4'-DDD	0.053 U	0.051 U	0.053 U	0.052 U	0.057 U	0.3
Endosulfan sulfate	0.053 U	0.051 U	0.053 U	0.052 U	0.057 U	NS
4,4'-DDT	0.053 U	0.051 U	0.053 U	0.052 U	0.057 U	0.2
Methoxychlor	0.26 U	0.26 U	0.26 U	0.26 U	0.28 U	35
Endrin ketone	0.053 U	0.051 U	0.053 U	0.052 U	0.057 U	5
Endrin aldehyde	0.053 U	0.051 U	0.053 U	0.052 U	0.057 U	5
alpha-Chlordane	0.026 U	0.026 U	0.026 U	0.026 U	0.028 U	0.05
gamma-Chlordane	0.026 U	0.026 U	0.026 U	0.026 U	0.028 U	0.05
Toxaphene	2.6 U	2.6 U	2.6 U	2.6 U	2.8 U	NS
Aroclor-1016	0.53 U	0.51 U	0.53 U	0.52 U	0.57 U	0.09
Aroclor-1221	1 U	1 U	1 U	1 U	1.1 U	0.09
Aroclor-1232	0.53 U	0.51 U	0.53 U	0.52 U	0.57 U	0.09
Aroclor-1242	0.53 U	0.51 U	0.53 U	0.52 U	0.57 U	0.09
Aroclor-1248	0.53 U	0.51 U	0.53 U	0.52 U	0.57 U	0.09
Aroclor-1254	0.53 U	0.51 U	0.53 U	0.52 U	0.57 U	0.09
Aroclor-1260	0.53 U	0.51 U	0.53 U	0.52 U	0.57 U	0.09

All results expressed in ug/L.
U-indicates not detected at or above the listed concentration.
J- indicates estimated concentration below the contract required reporting limit but above the instrument detection limit.

Table 13

Inorganic Analytical Data Summary - Groundwater

Former Columbia Cement Company, Inc. Facility
Freeport, New York

Sampling Date: January 4, 1999

Sample ID / Analyte	MW-1S	X-3 (MW-1S)	MW-97-1D	MW-98-8S	MW-98-8D	NYS Groundwater Standard
Aluminum	176 B	198 B	1430	282	3380	
Antimony	15.9 U	15.9 U	15.9 U	15.9 U	15.9 U	3
Arsenic	2.3 B	1.3 B	1.3 U	1.3 U	1.3 U	25
Barium	468	467	703	**1540**	65.3	1,000
Beryllium	2 U	2 U	2 U	2 U	2 U	3 GV
Cadmium	1.9 B	1.7 U	1.7 U	1.7 U	1.7 U	5
Calcium	63,400	63,200	196,000	243,000	37,000	
Chromium	2.7 U	4.1 B	4.8 B	2.7 U	13.5	50
Cobalt	3.2 B	4.4 B	5.6 B	10.3 B	3.1 B	
Copper	1.1 U	1.1 U	1.1 U	1.1 U	12.3 B	200
Iron	**25,900**	**28,600**	**12,900**	**13,400**	**5,640**	300
Lead	1 B	1.8 B	0.9 U	0.9 U	7	25
Magnesium	13,500	13,500	31,400	34,900	5,380	35,000 GV
Manganese	**357**	**361**	**306**	**321**	125	300
Mercury	0.38	0.2 U	0.2 U	0.35	0.44	2
Nickel	15 B	19.6 B	47.4	52.6	13.3 B	
Potassium	19,300	19,400	49,500	70,400	6,780	
Selenium	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	10
Silver	5.1 U	5.1 U	5.1 U	5.1 U	5.1 U	50
Sodium	**48,400**	**48,400**	**155,000**	**232,000**	**35,400**	20,000
Thallium	2.8 U	2.8 U	2.8 U	**7.2 B**	2.8 U	0.5 GV
Vanadium	1.7 U	1.8 B	6.2 B	1.7 U	19.4 B	
Zinc	247	199	71	48.7	116	2,000
Cyanide	10 U	10 U	10 U	10 U	10 U	200

All results expressed in ug/L.
GV indicates guidance value
Concentration in bold exceeds the groundwater standard
U - indicates not detected at or above the listed concentration
B- indicates estimated concentration below the contract required reporting limit but above the instrument detection limit

Table 14

Volatile Organic Analytical Data Summary - Soil Gas
Former Columbia Cement Company, Inc. Facility
Freeport, New York

Sampling Dates: December 16 and 17, 1998

Compound / Sample ID	SG-04	SG-06	SG-07	SG-X2	SG-11	SG-13	SG-15
Chloromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	10 U	10 U	10 U	10 U	10 U	**1 J**	10 U
Dibromochloromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	10 U	10 U	10 U	10 U	**2 J**	10 U	10 U
Benzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylene (total)	10 U	10 U	10 U	10 U	10 U	10 U	10 U

All results expressed in mg/m^3.

U- indicates not detected at or above the listed concentration

J - indicates estimated concentration below the laboratory reporting limit but above the instrument detection limit

Table 14

Volatile Organic Analytical Data Summary - Soil Gas
Former Columbia Cement Company, Inc. Facility
Freeport, New York

Sampling Dates: December 16 and 17, 1998

Compound / Sample ID	SG-16	SG-17	SG-X1	SG-20	BACK-01	BACK-02
Chloromethane	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	17	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	6 J	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	10 U	10 U	10 U	10 U	1 J	10 U
1,1,2,2-Tetrachloroethane	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	10 U	10 U	10 U	10 U	1 J	10 U
Styrene	10 U	10 U	10 U	10 U	1 J	10 U
Xylene (total)	10 U	10 U	10 U	2 J	4 J	10 U

All results expressed in mg/m^3.
U- indicates not detected at or above the listed concentration
J - indicates estimated concentration below the laboratory reporting limit but above the instrument detection limit

Table 15
Soil Gas Analytical Results
Former Columbia Cement Company, Inc. Facililty
Freeport, New York
April 2000

Parameter	SG-1A		SG-2A		SG-3A	
1,1,1-Trichloroethane	30.00		240.00		710.00	D
1,1,2,2-Tetrachloroethane	6.90	U	6.90	U	6.90	U
1,1,2-Trichloroethane	5.50	U	5.50	U	5.50	U
1,1-Dichloroethane	13.00		51.00		50.00	
1,1-Dichloroethene	4.00	U	4.00	U	9.90	
1,2,4-Trichlorobenzene	7.40	U	7.40	U	7.40	U
1,2,4-Trimethylbenzene	4.90	U	7.60		5.10	
1,2-Dibromoethane	7.70	U	7.70	U	7.70	U
1,2-Dichlorobenzene	6.00	U	6.00	U	6.00	U
1,2-Dichloroethane	4.00	U	4.00	U	4.00	U
1,2-Dichloropropane	4.60	U	4.60	U	4.60	U
1,3,5-Trimethylbenzene	4.90	U	4.90	U	4.90	U
1,3-Butadiene	2.50	U	2.50	U	2.50	U
1,3-Dichlorobenzene	6.00	U	6.00	U	6.00	U
1,4-Dichlorobenzene	6.00	U	6.00	U	6.00	U
1,4-Dioxane	3.60	U	3.60	U	3.60	U
2,2,4-Trimethylpentane	5.40	U	5.40	U	5.40	U
2-Chlorotoluene	5.20	U	5.20	U	5.20	U
3-Chloropropene	3.10	U	3.10	U	3.10	U
4-Ethyltoluene	4.90	U	4.90	U	4.90	U
Acetone	510.00	D	340.00	D	320.00	D
Benzene	3.20	U	6.50		5.10	
Bromodichloromethane	6.70	U	6.70	U	6.70	U
Bromoethene	4.40	U	4.40	U	4.40	U
Bromoform	10.00	U	10.00	U	10.00	U
Bromomethane	3.90	U	3.90	U	3.90	U
Carbon Disulfide	3.10	U	6.20		9.90	
CarbonTetrachloride	6.30	U	6.30	U	6.30	U
Chlorobenzene	4.60	U	4.60	U	4.60	U
Chloroethane	2.60	U	2.60	U	100.00	
Chloroform	13.00		4.90	U	4.90	U
Chloromethane	2.10	U	2.10	U	2.10	U
cis-1,2-Dichloroethene	4.00	U	4.00	U	4.00	U
cis-1,3-Dichloropropene	4.50	U	4.50	U	4.50	U
Cyclohexane	35.00		18.00		16.00	
Dibromochloromethane	9.90	U	9.90	U	9.90	U
Dichlorodifluoromethane	4.90	U	4.90	U	4.90	U
Dichlorotetrafluoroethane	7.00	U	7.00	U	7.00	U
Ethylbenzene	4.30	U	4.30	U	4.30	U
FreonTF	7.70	U	7.70	U	7.70	U
Hexachlorobutadiene	11.00	U	11.00	U	11.00	U
IsopropylAlcohol	2.50	U	2.50	U	2.50	U

Table 15
Soil Gas Analytical Results
Former Columbia Cement Company, Inc. Facililty
Freeport, New York
April 2000

Parameter	SG-1A		SG-2A		SG-3A	
Methyl Butyl Ketone	4.10	U	4.10	U	4.10	U
Methyl Ethyl Ketone	33.00		33.00		52.00	
Methyl Isobutyl Ketone	4.10	U	4.10	U	4.10	U
Methylene Chloride	30.00		140.00		93.00	
Methyltert-ButylEther	3.60	U	3.60	U	3.60	U
n-Heptane	4.10	U	4.10	U	4.10	U
n-Hexane	94.00		54.00		22.00	
Styrene	4.30	U	4.30	U	4.30	U
Tetrachloroethene	53.00		29.00		16.00	
Tetrahydrofuran	2.90	U	2.90	U	2.90	U
Toluene	44.00		31.00		37.00	
trans-1,2-Dichloroethene	4.00	U	4.00	U	4.00	U
trans-1,3-Dichloropropene	4.50	U	4.50	U	4.50	U
Trichloroethene	5.40	U	5.40	U	5.40	U
Trichlorofluoromethane	5.60	U	5.60	U	5.60	U
VinylChloride	2.60	U	2.60	U	2.60	U

All values expressed in ug/M^3
U indicates not detected at or above the listed concentration
D indicates analysis based on diluted sample

	855.00000	956.30	1446.00

TABLE 16

Former Columbia Cement Company, Inc. Facility
Freeport, New York

Soil Gas Analytical Data Summary

Sampling Dates: December 1998 and April 2000

Compound / Sample ID	SG-11	SG-13	SG-16	SG-20	SG-1A	SG-2A	SG-3A	BACK-01	ACGIH TLV TWA ppm	ACGIH TLV TWA mg/m³	NIOSH ppm	NIOSH mg/m³	OSHA ppm	OSHA mg/m³	Conversion Factor	TYPICAL INDOOR AIR BACKGROUND CONC. mg/m³	ATSDR MRLs mg/m³
1,1,1-Trichloroethane	10 U	10 U	6	10 U	0.030	0.24	0.71	10 U	350	1900	C 350	1900	350	1900	1 ppm = 5.46 mg/m³	0.267	3.82 int
1,1,2-Trichloroethane	2 J	10 U	10 U	10 U	0.0055 U	0.0055 U	0.0055 U	10 U	10	55	10	55	10	55	1 ppm = 5.46 mg/m³	NAV	NAV
1,1-Dichloroethane	10 U	10 U	17	10 U	0.013	0.051	0.050	10 U	100	400	100	400	100	400	1 ppm = 4.05 mg/m³	NAV	NAV
1,1-Dichloroethene	10 U	10 U	10 U	10 U	0.004 U	0.004 U	0.0099 U	10 U	200	810	100	400	100	400	1 ppm = 4.05 mg/m³	0.797	0.08 int
1,2,4-Trimethylbenzene	NA	NA	NA	NA	0.0049 U	0.0076	0.0051	NA	25	123	25	120	25	120	1 ppm = 4.92 mg/m³	0.0028	NAV
Acetone	10 U	10 U	10 U	10 U	0.5100	0.3400	0.3200	10 U	750	1780	250	590	100	2400	1 ppm = 2.38 mg/m³	0.019	30.94 chr
Benzene	10 U	10 U	10 U	10 U	0.0032 U	0.0065	0.0051	10 U	10	32	0.1 (1/ST)	0.3	1 (5/ST)	3	1 ppm = 3.19 mg/m³	0.016	0.013 int
Carbon Disulfide	10 U	10 U	10 U	10 U	0.0031 U	0.0062	0.0099	10 U	10	31	1 (3/ST)	3	20	62	1 ppm = 3.11 mg/m³	NAV	0.93 chr
Chloroethane	10 U	10 U	10 U	10 U	0.0026 U	0.0026 U	0.1000	10 U	1000	2640	NE	NE	1000	2600	1 ppm = 2.64 mg/m³	NAV	39.6 ac
Chloroform	10 U	10 U	10 U	10 U	0.0130	0.0049 U	0.0049 U	10 U	20	49	2/ST	9.76	50	240	1 ppm = 4.88 mg/m³	0.004	0.098 chr
Cyclohexane	NA	NA	NA	NA	0.0350	0.0180	0.0160	NA	300	1030	300	1050	300	1050	1 ppm = 3.44 mg/m³	0.0047	NAV
Ethylbenzene	10 U	10 U	10 U	10 U	0.0043 U	0.0043 U	0.0043 U	1 J	100	430	100/ST 125	430/ST 540	100	430	1 ppm = 4.34 mg/m³	0.0125	4.34 int
Methyl Ethyl Ketone	10 U	10 U	10 U	10 U	0.0330	0.0330	0.0520	10 U	200	590	200	590	200	590	1 ppm = 2.95 mg/m³	0.0273	NAV
Methylene Chloride	10 U	10 U	10 U	10 U	0.0300	0.1400	0.0930	10 U	50	174	NE	NE	25	87.5	1 ppm = 3.5 mg/m³	NAV	1.05 chr
n-Hexane	NA	NA	NA	NA	0.0940	0.0540	0.0220	NA	50	176	50	180	500	1800	1 ppm = 3.53 mg/m³	0.002	2.11 chr
Styrene	10 U	10 U	10 U	10 U	0.0043 U	0.0043 U	0.0043 U	1 J	20	85	50/ST 100	210/ST 430	100/C 200	430/C 850	1 ppm = 4.26 mg/m³	NAV	0.25 int
Tetrachloroethene	10 U	10 U	10 U	10 U	0.0530	0.0290	0.0160	1 J	25	170	NE	NE	100/C 200	680/C 1400	1 ppm = 6.78 mg/m³	0.024	0.27 chr
Toluene	10 U	10 U	10 U	10 U	0.0440	0.0310	0.0370	10 U	50	188	100	375	100	375	1 ppm = 3.77 mg/m³	0.0026	1.51 chr
Trichloroethene	10 U	1 J	10 U	10 U	0.0054 U	0.0054 U	0.0054 U	10 U	50	270	NE	NE	100/C 200	540/C 1100	1 ppm = 5.37 mg/m³	0.0072	0.54 int
Xylene (total)	10 U	10 U	10 U	2 J				4 J	100	430	100/ST 150	430/ST 650	100	430	1 ppm = 4.34 mg/m³	0.0125	0.43 chr

Notes:

1) All sample results expressed in milligrams per cubic meter (mg/m^3).
2) The following standards have been provided for comparison values and are presented in both parts per million (ppm) and mg/m^3:
- American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) Time-Weighted Average (TWA) and Short-Term Exposure Limit (STEL) values;
- National Institute for Occupational Safety and Health (NIOSH) exposure limits *(ST indicates a short-term exposure limit, * indicates the lowest feasible concentration)*; and
- Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) values *(C indicates a ceiling value)*.

Please note that the conversion factor for ppm to mg/m^3 for each compound has been provided in the far right column.
ACGIH TLVs are from the 1998 TLV book; the NIOSH and OSHA exposure limits are from the June 1997 edition of the NIOSH Pocket Guide to Hazardous Materials.

3) "U" indicates that the compound was not detected at or above the reporting limit indicated.
4) "J" indicates that the result reported is below the reporting limit but greater than the method detection limit (MDL) and the reported concentration is considered estimated. Although the laboratory reporting limit is 10 mg/m3, the MDL for each compound is significantly lower and estimated results greater than the MDL but less than the reporting limit have been reported.
5) No target compounds were detected in the following samples: SG-04, SG-06, SG-07, SG-X2 (a blind duplicate of SG-07), SG-15, SG-17, SG-X1 (a blind duplicate of SG-17) and BACK-02.
6) Samples BACK-01 and BACK-02 are background samples of ambient air collected as part of the soil gas survey using the same sampling train.
7) NA indicates not analyzed
8) NE indicated none established
9) SG-1A, SG-2A and SG-3A collected in April 2000
10) NAV indicates data not available
11) Typical Indoor Air data from USEPA "National Ambient Volatile Organic Compounds (VOCs) Data Base Update", EPA/600/3-88/010a, March 1988
12) ATSDR MRLs from Agency For Toxic Substances and Disease Registry, Minimal Risk Levels for Hazardous Substances
13) ac = acute; chr = chronic; int = intermediate exposures

Table 17A

Remedial Investigation
SD-8 Volatile Organic Analytical Data Summary
Former Columbia Cement Company, Inc. Facility
Freeport, New York

Sample ID Date Depth Sample Taken Compound	SD-8 12/23/98 (0-6")	SD-8 12/23/98 (24-30")	SD-8 4/7/99 (0-6")	SD-8 4/7/99 (6-12")	SD-8 4/7/99 (12-18")	SD-8 4/7/99 (18-24")	SD-8 4/7/99 (24-30")	NYSDEC RSCO
Chloromethane	13 U	11 U	10 U	10 U	10 U	10 U	10 U	
Bromomethane	13 U	11 U	10 U	10 U	10 U	10 U	10 U	
Vinyl Chloride	13 U	11 U	6 J	10 U	10 U	10 U	10 U	200
Chloroethane	13 U	11 U	10 U	10 U	10 U	10 U	37	1,900
Methylene Chloride	3 J	11 U	16	4 J	2 J	3 J	88	100
Acetone	13	11 U	130 B	44 U	5 U	30 U	55 B	200
Carbon Disulfide	13 U	11 U	10 U	10 U	10 U	10 U	10 U	
1,1-Dichloroethene	13 U	11 U	10 U	10 U	10 U	6 J	2 J	400
1,1-Dichloroethane	24	4 J	10 U	10 U	10 U	10 U	39	100
1,2-Dichloroethene (total)	13 U	11 U	10 U	10 U	10 U	10 U	2 J	
Chloroform	13 U	11 U	10 U	10 U	10 U	10 U	10 U	
1,2-Dichloroethane	13 U	11 U	10 U	10 U	10 U	9 J	10 U	
2-Butanone	13 U	11 U	45	28 U	10 U	87	10 J	
1,1,1-Trichloroethane	380 D	850 D	33	45 U	59	10 U	96	800
Carbon Tetrachloride	13 U	11 U	10 U	10 U	10 U	10 U	10 U	
Bromodichloromethane	13 U	11 U	10 U	10 U	10 U	10 U	10 U	
1,2-Dichloropropane	13 U	11 U	10 U	10 U	10 U	10 U	10 U	
cis-1,3-Dichloropropene	13 U	11 U	10 U	10 U	10 U	10 U	10 U	
Trichloroethene	13 U	11 U	2 J	10 U	0.6 J	10 U	2 J	700
Dibromochloromethane	13 U	11 U	10 U	10 U	10 U	10 U	10 U	
1,1,2-Trichloroethane	13 U	11 U	10 U	10 U	10 U	10 U	10 U	
Benzene	13 U	11 U	10 U	10 U	10 U	10 U	10 U	
trans-1,3-Dichloropropene	13 U	11 U	10 U	10 U	10 U	10 U	10 U	
Bromoform	13 U	11 U	10 U	10 U	10 U	10 U	10 U	
4-Methyl-2-Pentanone	13 U	11 U	6 J	10 U	10 U	10 U	2 J	
2-Hexanone	13 U	11 U	10 U	10 U	10 U	10 U	10 U	
Tetrachloroethene	13 U	11 U	10 U	10 U	0.3 J	10 U	1 J	
1,1,2,2-Tetrachloroethane	13 U	11 U	10 U	10 U	10 U	10 U	10 U	
Toluene	3 J	2 J	24	6 J	10 U	4 J	6 J	1,500
Chlorobenzene	13 U	11 U	10 U	10 U	10 U	10 U	10 U	
Ethylbenzene	13 U	11 U	12 J	4 J	10 U	4 J	10 J	
Styrene	13 U	11 U	2 J	1 J	10 U	10 U	10 U	
Xylene (total)	2 J	1 J	45	20	10 U	19	45	1,200

Table 17A

Remedial Investigation
SD-8 Volatile Organic Analytical Data Summary
Former Columbia Cement Company, Inc. Facility
Freeport, New York

Sample ID Date Depth Sample Taken Compound	SD-8 4/7/1999 (30-36")	SD-8 4/7/1999 (36-42")	SD-8 4/7/1999 (42-48")	SD-8 4/7/1999 (48-53")	SD-8 4/2000 (0-12")	NYSDEC RSCO
Chloromethane	10 U	10 U	10 U	10 U	7 U	
Bromomethane	10 U	10 U	10 U	10 U	14 U	
Vinyl Chloride	10 U	10 U	10 U	10 U	14 U	200
Chloroethane	13	780	140	200	14 U	1,900
Methylene Chloride	9 J	23 J	17 J	5 J	12 U	100
Acetone	25 U	300 B	150 B	44 B	18 U	200
Carbon Disulfide	10 U	16 J	3 J	10 U	7 U	
1,1-Dichloroethene	10 U	10 U	10 U	10 U	7 U	400
1,1-Dichloroethane	21	74	33	12 J	17	100
1,2-Dichloroethene (total)	10 U	10 U	10 U	10 U	7 U	
Chloroform	10 U	10 U	10 U	10 U	7 U	
1,2-Dichloroethane	10 U	10 U	10 U	10 U	7 U	
2-Butanone	7 J	93	51	22 J	14 U	
1,1,1-Trichloroethane	49	52	34	11 J	4800 D	800
Carbon Tetrachloride	10 U	10 U	10 U	10 U	7 U	
Bromodichloromethane	10 U	10 U	10 U	10 U	7 U	
1,2-Dichloropropane	10 U	10 U	10 U	10 U	7 U	
cis-1,3-Dichloropropene	10 U	10 U	10 U	10 U	7 U	
Trichloroethene	0.8 J	10 U	10 U	10 U	7 U	700
Dibromochloromethane	10 U	10 U	10 U	10 U	7 U	
1,1,2-Trichloroethane	10 U	10 U	3 J	3 J	7 U	
Benzene	10 U	10 U	1 J	10 U	7 U	
trans-1,3-Dichloropropene	10 U	10 U	10 U	10 U	7 U	
Bromoform	10 U	10 U	10 U	10 U	7 U	
4-Methyl-2-Pentanone	10 U	10 U	4 J	10 U	14 U	
2-Hexanone	10 U	10 U	10 U	10 U	14 U	
Tetrachloroethene	10 U	10 U	10 U	10 U	7 U	
1,1,2,2-Tetrachloroethane	10 U	10 U	10 U	10 U	7 U	
Toluene	1 J	15 J	8 J	4 J	2 J	1,500
Chlorobenzene	10 U	10 U	10 U	10 U	7 U	
Ethylbenzene	2 J	10 U	4 J	10 U	7 U	
Styrene	10 U	10 U	10 U	10 U	7 U	
Xylene (total)	6 J	23 J	15 J	3 J	4 J	1,200

Table 17B

Remedial Investigation
SD-8 Volatile Organic Analytical Data Summary
Former Columbia Cement Company, Inc. Facility
Freeport, New York

Parameter	SD-1 0-12"	SD-2 0-12"	SD-3 0-12"	X-1 0-12"	SD-4 0-12"	SD-5 0-12"	SD-6 0-12"	SD-7 0-12"	SD-8 0-12"	RSCO
Volatile Organic Compounds (ug/Kg)										
Chloromethane	<1000	<6	<7	<7	<8	<60	<6	<6	<7	N/A
Vinyl Chloride	<2000	<12	<14	<14	<16	<120	<11	<12	<14	200
Bromomethane	<2000	<12	<14	<14	<16	<120	<11	<12	<14	N/A
Chloroethane	<2000	<12	<14	<14	<16	<120	<11	<12	<14	1900
Trichlorofluoromethane	<2000	<12	<14	<14	<16	<120	<11	<12	<14	N/A
Acetone	<1700	<58	<14	<16	<26	<210	<86	<22	<18	200
1,1-Dichloroethene	<1000	<6	<7	<7	<8	<60	<6	<6	<7	N/A
Acrylonitrile	<2000	<12	<14	<14	<16	<120	<11	<12	<14	N/A
Iodomethane	<1000	<6	<7	<7	<8	<60	<6	<6	<7	N/A
Methylene Chloride	**22000**	<11	<14	<14	<21	<67	<6	<13	<12	100
Carbon Disulfide	<1000	2	<7	<7	<8	6	<6	<6	<7	2700
trans-1,2-Dichloroethene	<1000	<6	<7	<7	<8	<60	<6	<6	<7	N/A
1,1-Dichloroethane	<1000	<6	<7	<7	<8	<60	<6	<6	17	200
Vinyl Acetate	<2000	<12	<14	<14	<16	<120	<11	<12	<14	N/A
2-Butanone-(MEK)	<2000	<12	<14	<14	<16	<120	<11	<12	<14	300
cis-1,2-Dichloroethylene	<1000	<6	<7	<7	<8	<60	<6	<6	<7	N/A
Bromochloromethane	<1000	<6	<7	<7	<8	<60	<6	<6	<7	N/A
Chloroform	<1000	<6	<7	<7	<8	<60	<6	<6	<7	300
1,2-Dichloroethane	<1000	<6	<7	<7	<8	<60	<6	<6	<7	100
1,1,1-Trichloroethane	<1000	2	<7	<7	4	<60	<6	<6	**4,800**	800
Carbon Tetrachloride	<1000	<6	<7	<7	<8	<60	<6	<6	<7	600
Benzene	<1000	<6	<7	<7	<8	<60	<6	<6	<7	60
Dibromomethane	<1000	<6	<7	<7	<8	<60	<6	<6	<7	N/A
1,2-Dichloropropane	<1000	<6	<7	<7	<8	<60	<6	<6	<7	N/A
Trichloroethene	<1000	<6	<7	<7	<8	<60	<6	<6	<7	700
Bromodichloromethane	<1000	<6	<7	<7	<8	<60	<6	<6	<7	N/A
cis-1,3-Dichloropropene	<1000	<6	<7	<7	<8	<60	<6	<6	<14	N/A
4-Methyl-2-Pentanone (MIBK)	<2000	<12	<14	<14	<16	<120	32	<12	<7	1000
trans-1,3-Dichloropropene	<1000	<6	<7	<7	<8	<60	<6	<6	<7	N/A
1,1,2-Trichloroethane	<1000	<6	<7	<7	<8	<60	<6	<6	<7	N/A
Toluene	560	<6	<7	2	<8	26	<6	<6	2	1500
2-Hexanone	<2000	<12	<14	<14	<16	<60	<11	<12	<14	N/A
Dibromochloromethane	<1000	<6	<7	<7	<8	<60	<6	<6	<7	N/A
1,2-Dibromoethane	<1000	<6	<7	<7	<8	<60	<6	<6	<7	N/A
Tetrachloroethene	<1000	<6	<7	<7	<8	<60	<6	<6	<7	N/A
1,1,1,2-Tetrachloroethane	<1000	<6	<7	<7	<8	<60	<6	<6	<7	N/A
Chlorobenzene	<1000	<6	<7	<7	<8	<60	<6	<6	<7	1700
Ethylbenzene	230	<6	2	2	<8	270	2	<6	<7	N/A
Total Xylenes	<1000	<6	3j	5	4j	**1750**	9j	2j	4	1200
Bromoform	<1000	<6	<7	<7	<8	<60	<6	<6	<7	N/A
Styrene	<1000	<6	<7	<7	<8	<60	<6	<6	<7	N/A
1,1,2,2-Tetrachloroethane	**970**	<6	<7	<7	<8	<60	<6	<6	<7	600
1,3-Dichlorobenzene	<1000	<6	<7	<7	<8	<60	<6	<6	<7	1600
1,4-Dichlorobenzene	<1000	<6	<7	<7	<8	<60	<6	<6	<7	8500
1,2-Dichlorobenzene	<1000	<6	<7	<7	<8	<60	<6	<6	<7	7900
1,2-Dibromo-3-Chloropropane	<2000	<12	<14	<14	<16	<120	<11	<12	<14	N/A

Table 17B

Remedial Investigation
SD-8 Volatile Organic Analytical Data Summary
Former Columbia Cement Company, Inc. Facility
Freeport, New York

Semi-volatile Organic Compounds (ug/Kg)	SD-2	SD-3	X-1	SD-4	SD-5	SD-6	SD-7	SD-8	RSCO
bis(2-Chloroethyl)ether	<210	<2350	<240	<2600	<2000	<1950	<210	<235	N/A
1,3-Dichlorobenzene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	N/A
1,4-Dichlorobenzene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	N/A
Benzyl Alcohol	<400	<4600	<470	<5100	<4000	<3800	<400	<460	N/A
1,2-Dichlorobenzene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	N/A
bis(2-Chloroisopropyl)ether	<210	<2350	<240	<2600	<2000	<1950	<210	<235	N/A
N-Nitroso-di-n-propylamine	<210	<2350	<240	<2600	<2000	<1950	<210	<235	N/A
Hexachloroethane	<210	<2350	<240	<2600	<2000	<1950	<210	<235	N/A
Nitrobenzene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	200
Isophorone	<210	<2350	<240	<2600	<2000	<1950	<210	<235	4400
Benzoic Acid	<400	<4600	<470	<5100	<4000	<3800	<400	<460	N/A
Bis(2-Chloroethoxy)-methane	<210	<2350	<240	<2600	<2000	<1950	<210	<235	N/A
1,2,4-Trichlorobenzene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	N/A
Naphthalene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	13000
4-Chloroaniline	<210	<2350	<240	<2600	<2000	<1950	<210	<235	220
Hexachlorobutadiene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	N/A
2-MethylNaphthalene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	36400
Hexachlorocyclopentadiene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	N/A
2-Chloronaphthalene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	N/A
2-Nitroaniline	<1010	<11500	<1200	<12900	<10000	<9500	<1000	<1150	430
Dimethyl Phthalate	<400	<4600	<470	<5100	<4000	<3800	<400	<460	2000
Acenaphthylene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	41000
Acenapthene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	50000
2,6-Dinitrotoluene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	1000
3-Nitroaniline	<1010	<11500	<1200	<12900	<10000	<9500	<1000	<1150	500
Dibenzofuran	<210	<2350	<240	<2600	<2000	<1950	<210	<235	6200
2,4-Dinitrotoluene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	N/A
Diethyl Phthalate	<400	<4600	<470	<5100	<4000	<3800	<400	<460	7100
4-Chlorophenyl Phenyl Ether	<210	<2350	<240	<2600	<2000	<1950	<210	<235	N/A
Fluorene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	50000
4-Nitroaniline	<1010	<11500	<1200	<12900	<10000	<9500	<1000	<1150	N/A
N-Nitrosodiphenylamine	<210	<2350	<240	<2600	<2000	<1950	<210	<235	N/A
4-Bromophenyl Phenyl Ether	<210	<2350	<240	<2600	<2000	<1950	<210	<235	N/A
Hexachlorobenzene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	410
Phenanthrene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	50000
Anthracene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	50000
Di-n-butylphthalate	<400	<4600	<470	<5100	<4000	<3800	<400	<460	8100
Fluoranthene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	50000
Pyrene	<210	<2350	<240	4100	7100	<1950	410	<235	50000
Benzidine	<210	<2350	<240	<2600	<2000	<1950	<210	<235	N/A
Butyl Benzyl Phthalate	<400	<4600	<470	<5100	<4000	<3800	<400	<460	50000
Benzo(a)anthracene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	224
3,3'-Dichlorbenzidine	<400	<4600	<470	<5100	<4000	<3800	<400	<460	N/A
Chrysene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	400
bis(2-Ethylhexyl)phthalate	350 J	6900	<470	7600	19700	<3800	4600	<460	50000
Di-n-octyl phthalate	<400	<4600	<470	<5100	<4000	9500	<400	<460	50000
Benzo(b)fluoranthene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	1100
Benzo(k)fluoranthene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	1100
Benzo(a)pyrene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	61
Indeno (1,2,3-cd)Pyrene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	3200

Table 17B

Remedial Investigation
SD-8 Volatile Organic Analytical Data Summary
Former Columbia Cement Company, Inc. Facility
Freeport, New York

	SD-2	SD-3	X-1	SD-4	SD-5	SD-6	SD-7	SD-8	RSCO	
Dibenzo(a,h)Anthracene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	14	
Benzo (g,h,I)perylene	<210	<2350	<240	<2600	<2000	<1950	<210	<235	50000	
Phenol	<210	<2350	<240	<2600	<2000	<1950	<210	<235	30	
2-Chlorophenol	<210	<2350	<240	<2600	<2000	<1950	<210	<235	800	
2-Nitrophenol	<210	<2350	<240	<2600	<2000	<1950	<210	<235	330	
2,4-Dimethylphenol	<210	<2350	<240	<2600	<2000	<1950	<210	<235	N/A	
2,4-Dichlorophenol	<1010	<11500	<1200	<12900	<10000	<9500	<1000	<1150	400	
4-Chloro-3-methylphenol (p-	<210	<2350	<240	<2600	<2000	<1950	<210	<235	240	
2,4,6-Trichlorophenol	<210	<2350	<240	<2600	<2000	<1950	<210	<235	N/A	
2,4-Dinitrophenol	<1010	<11500	<1200	<12900	<10000	<9500	<1000	<1150	200	
4-Nitrophenol	<1010	<11500	<1200	<12900	<10000	<9500	<1000	<1150	100	
2-Methyl-4,6-dinitrophenol	<1010	<11500	<1200	<12900	<10000	<9500	<1000	<1150	N/A	
2,4,5-Trichlorophenol	<1010	<11500	<1200	<12900	<10000	<9500	<1000	<1150	100	
Pentachlorophenol	<1010	<11500	<1200	<12900	<10000	<9500	<1000	<1150	100	
2-Methylphenol (o-Cresol)	<210	<2350	<240	<2600	<2000	<1950	<210	<235	100	
4-Methylphenol (p-Cresol)	<210	<2350	<240	<2600	<2000	<1950	<210	<235	900	
METALS (mg/Kg)	SD-2	SD-3	X-1	SD-4	SD-5	SD-6	SD-7	SD-8	RSCO	SITE BACKGROUND BSB-98-7 FILL
Arsenic	16	6.6	11	13	11	5.5	4.2	8	7.5 or SB	28.9
Barium	79	49	49	63	31	18	32	53	300 or SB	954
Cadmium	1.6	4.1	5.4	7.4	2	1.3	1.7	2.8	1 or SB	7.5
Chromium	16	18	21	27	14	7.5	11	22	10 or SB	64
Lead	210	88	89	130	140	31	180	140	SB	3160
Mercury	1.0	0.06	0.07	0.1	0.1	0.04	0.32	0.1	0.1	0.96
Selenium	<7.3	<7.9	<7.7	<8.4	<6.4	<4.5	<5.3	<6.0	2 or SB	<0.1
Silver	<1.2	**5.8**	**2.1**	**4.2**	**2.1**	**2.8**	**5**	**1.3**	SB	<0.02
Diesel Range Organics (mg/Kg)	<61	<69	<72	<77	<60	<57	700	<69		
Percent Solids	81.8	72.3	69.5	64.3	83.2	87.1	82.1	71.9		

Notes:
1) SB indicates site Background
2) N/A indicates not applicable
3)J-indicates estimated concentration below the contract required reporting limit but above the instrument detection limit.
4) Value in bold exceeds the Recommended Soil Cleanup Objective (RSCO).
5) < indicates not detected at or above the listed concentration

Table 18

Volatile Organic Analytical Data Summary - Surface Water Freeport Creek

Former Columbia Cement Company, Inc. Facility
Freeport, New York
Sampling Date: April 2000

Sample ID / Compound	OutFall X-1	OutFall Shallow	100' Up Stream Center Deep	100' Up Stream Center Shallow	100' Down Stream Center Deep	100' Down Stream Center Shallow	100' Upstream 25' From Shore Deep	100' Upstream 25' From Shore Shallow	100' Down Stream 25' From Shore Deep	100' Down Stream 25' From Shore Side Shallow	NYSDEC Water Standard
Chloromethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5
Vinyl Chloride	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	
Bromomethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5
Chloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5
Acetone	10 U	13 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	14 U	50 (GV)
1,1-Dichloroethene	5 U	5 U	5 U	5 U	5 U	<5 U	5 U	5 U	5 U	5 U	NS
Methylene Chloride	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5
Carbon Disulfide	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NS
trans-1,2-Dichloroethene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5
1,1-Dichloroethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5
2-Butanone-(MEK)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	50 (GV)
cis-1,2-Dichloroethylene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	NS
Chloroform	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	7
1,2-Dichloroethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.6
1,1,1-Trichloroethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5
Carbon Tetrachloride	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	5
Benzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1
1,2-Dichloropropane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1
Trichloroethene	5 U	5 U	5 U	1 J	5 U	5 U	5 U	5 U	5 U	5 U	5
Bromodichloromethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 (GV)
cis-1,3-Dichloropropene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.4*
trans-1,3-Dichloropropene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	0.4*
1,1,2-Trichloroethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1
Dibromochloromethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 (GV)
Bromoform	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	50 (GV)
4-Methyl-2-Pentanone (MIBK)	10 U	10 U	10 U	4 J	10 U	10 U	10 U	10 U	10 U	10 U	NS
Toluene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5
2-Hexanone	10 U	10 U	10 U	10 U	5 U	10 U	10 U	10 U	10 U	10 U	50 (GV)
Tetrachloroethene	5 U	5 U	5 U	5 U	1 J	5 U	5 U	5 U	5 U	5 U	5
Chlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5
Ethyl benzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5
Styrene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5
Total Xylenes	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5
1,1,2,2-Tetrachloroethane	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5

Note:
* Standard applies to the sum of the cis and trans isomers.
GV indicates guidance value.

Table 19

Volatile Organic Analytical Data Summary - Sediment Freeport Creek

Former Columbia Cement Company, Inc. Facility
Freeport, New York
Sampling Date: April 2000

Sample ID / Compound	100' UP Stream 25' FromShore	100' UP Stream 100' From Shore	100' UP Stream 200' From Shore	100' Down Stream 25' From Shore	100' Down Stream 100' From Shore	100' Down Stream 200' From Shore	200' Down Stream 25' From Shore	200' Down Stream 50' From Shore	200' Down Stream 100' From Shore	Out Fall	X-1 Out Fall
Chloromethane	12 U	17 U	22 U	8 U	17 U	18 U	25 U	20 U	19 U	8 U	8 U
Vinyl Chloride	25 U	34 U	43 U	15 U	34 U	35 U	49 U	40 U	38 U	15 U	15 U
Bromomethane	25 U	34 U	43 U	15 U	34 U	35 U	49 U	40 U	38 U	15 U	15 U
Chloroethane	25 U	34 U	43 U	15 U	34 U	35 U	49 U	40 U	38 U	15 U	15 U
Acetone	250	390	290	16	98	400	75	440	590	33	35
1,1-Dichloroethylene	12 U	17 U	22 U	8 U	17 U	18 U	25 U	20 U	19 U	8 U	8 U
Methylene Chloride	12 U	17 U	22 U	15 U	17 U	18 U	25 U	20 U	19 U	8 U	17 U
Carbon Disulfide	54	49	56	8 U	11 J	65	12 J	120	200	8 U	8 U
trans-1,2-Dichloroethene	12 U	17 U	22 U	8 U	17 U	18 U	25 U	20 U	19 U	8 U	8 U
1,1-Dichloroethane	12 U	17 U	22 U	8 U	17 U	18 U	25 U	20 U	19 U	8 U	8 U
2-Butanone-(MEK)	66	110	83	15 U	34 U	130	49 U	140	170	15 U	15 U
cis-1,2-Dichloroethene	12 U	17 U	22 U	8 U	17 U	18 U	25 U	20 U	19 U	8 U	8 U
Chloroform	12 U	17 U	22 U	13	17 U	18 U	25 U	20 U	19 U	2 J	9
1,2-Dichloroethane	12 U	17 U	22 U	8 U	17 U	18 U	25 U	20 U	19 U	8 U	8 U
1,1,1-Trichloroethane	12 U	17 U	22 U	8 U	17 U	18 U	25 U	20 U	9 J	8 U	8 U
Carbon Tetrachloride	25 U	34 U	43 U	15 U	34 U	35 U	49 U	40 U	38 U	15 U	15 U
Benzene	12 U	17 U	22 U	8 U	17 U	18 U	25 U	20 U	19 U	8 U	8 U
1,2-Dichloropropane	12 U	17 U	22 U	8 U	17 U	18 U	25 U	20 U	19 U	8 U	8 U
Trichloroethene	12 U	17 U	22 U	8 U	17 U	18 U	25 U	20 U	19 U	8 U	8 U
Bromodichloromethane	12 U	17 U	22 U	8 U	17 U	18 U	25 U	20 U	19 U	8 U	8 U
cis-1,3-Dichloropropene	12 U	17 U	22 U	8 U	17 U	18 U	25 U	20 U	19 U	8 U	8 U
trans-1,3-Dichloropropene	12 U	17 U	22 U	8 U	17 U	18 U	25 U	20 U	19 U	8 U	8 U
1,1,2-Trichloroethane	12 U	17 U	22 U	8 U	17 U	18 U	25 U	20 U	19 U	8 U	8 U
Dibromochloromethane	12 U	17 U	22 U	8 U	17 U	18 U	25 U	20 U	19 U	8 U	8 U
Bromoform	12 U	17 U	22 U	8 U	17 U	18 U	25 U	20 U	19 U	8 U	8 U
4-Methyl-2-Pentanone (MIBK)	25 U	34 U	43 U	15 U	34 U	35 U	49 U	40 U	38 U	15 U	15 U
Toluene	7 J	17 U	22 U	8 U	17 U	18 U	25 U	20 U	19 U	8 U	8 U
2-Hexanone	25 U	34 U	43 U	15 U	34 U	35 U	49 U	40 U	38 U	15 U	15 U
Tetrachloroethene	12 U	17 U	22 U	8 U	17 U	18 U	25 U	20 U	19 U	8 U	8 U
Chlorobenzene	12 U	17 U	22 U	8 U	17 U	18 U	25 U	20 U	19 U	8 U	8 U
Ethylbenzene	12 U	17 U	22 U	8 U	17 U	18 U	25 U	20 U	19 U	8 U	8 U
Styrene	12 U	17 U	22 U	8 U	17 U	18 U	25 U	20 U	19 U	8 U	8 U
Total Xylenes	12 U	17 U	22 U	8 U	17 U	59 U	25 U	20 U	19 U	8 U	8 U
1,1,2,2-Tetrachloroethane	12 U	17 U	22 U	8 U	17 U	18 U	25 U	20 U	19 U	8 U	8 U
Total Organic Carbon (mg/Kg)	495	720	1010	397	880	645	3160	1180	1130	575	450
Percent Solids	40.7	29	27	77	29.6	28.4	20.4	24.7	26.2	65.8	65

Table 20
Physical/Chemical Properties
Chemicals of Concern
Former Columbia Cement Company, Inc. Facility
Freeport, New York

COMPOUND	Solubility mg/L	Density g/mL	Partition Coeficient mL/g OC	Henry's Law Constant atm m3/mol	Octanol/Water Partition Coeficient Log Kow	Bioconcentration Factor (Fish)
1,1,1-Trichloroethane	1,334	1.3376	152	2.76E-02	2.5	5.6
1,1-Dichloroethane	5,500	1.174	30	4.31E-03	1.79	Low
1,1-Dichloroethene	2,225	1.218	65	3.40E-02	1.84	5.6
Acetone	Miscible	0.791	2.2	2.06E-05	-2.40E-01	Low
Benzene	1,750	0.8786	83	5.59E-03	2.12	5.2
Chloroethane	5,740	0.92	37	6.15E-04	1.49	Low
Ethylbenzene	152	0.867	1100	6.43E-03	3.15	37.5
Methylene Chloride	20,000	1.3266	8.8	2.03E-03	1.3	5
Toluene	535	0.867	300	6.37E-03	2.73	10.7
Vinyl Chloride	2,670	0.9121	57	8.19E-02	1.38	1.17
Xylene	198	0.868	240	7.04E-03	3.26	Low

References

NYSDEC Technical and Administrative Guidance Memorandum, Determination of Soil Cleanup Objectives and Cleanup Levels, JWR-94-4046, January 24, 1991

United States Environmental Protection Agency, Chemical Summary For Methylchloroform, EPA 749-f-94-014a, August 1994

USEPA, Superfund Public Health Evaluation Manual, EPA 540/1-86/060, 1986

United States Army Corps of Engineers, Riverine Emergency Management Model, Chemical Properties Table, August 1997

Verschueren, K., Handbook of Environmental Data on Organic Chemicals, Van Nostrand Reinhold Company, 1983

Table 21
Former Columbia Cement Company, Inc., Facility
Vegetation Identified in Natural Areas
Within One-Half Mile of the Site

Successional Shrub Field (SSF)

White Birch	Betula papyrifera
Pitch Pine	Pinus rigida
White Cedar	Chamaccyparis thyoides
Ailanthus	Ailanthus altissima
Staghorn Sumac	Rhus typhina
Tartarian Honeysuckle	Lonicera tatarica
Arrowwood	Viburnum dentatum
Pin Oak	Quercus palustris
White Poplar	Populus alba
Weeping Willow	Salix babylonica
Bay Berry	Myrica heterophylla
Groundsel tree	Baccharis halimifolia
Japanese Honeysuckle	Lonicera Japonica
Common Reed	Phragmities australis
Glass Wort	Salicornia europaca
Seaside Golden Rod	Solidago sempervirens
Red Raspberry	Rubus strigosus
Poke Weed	Phytolacca rigida

SMG: Salt Marsh Grass

Spartina species

Table 22
Former Columbia Cement Co., Inc., Facility
Mammal/Amphibian/Reptile/Fish /Bird Species That Could Potentially Utilize Habitats Within One-Half Mile Of The Site

COMMON NAME	GENUS AND SPECIES
Mammals	
Eastern Cottontail	Sylvilagus floridanus
Star-nosed Mole	Condylura cristata
Deer Mouse	Peromyscus maniculatus
House Mouse	Mus musculus
Meadow Jumping Mouse	Zapus hudsonius
House Mouse	Mus musculus
Raccoon	Procyon lotor
Norway Rat	Rattus norvegicus
Striped Skunk	Mephitis mephitis
Gray Squirrel	Sciurus carolinensis
Eastern Chipmunk	Tamias striatus
Eastern Mole	Scalopus aquaticus
Opossum	Didelphis virginiana
Meadow Vole	Microtus pennsylvanicus
Muskrat	Ondatra zibethicus
Amphibians/Reptiles	
Diamondback Terrapin	Malaclemys terrapin
Bull Frog	Rana catesbeiana
Green Frog	Rana clamitans
Pickerel Frog	Rana palustris
Spring Peeper	Hyla crucifer
Brown Snake	Storeria dekayi
Eastern Ribbon Snake	Thammophis sauritus
Northern Water Snake	Nerodia sipedon
Fish	
Blue Fish	Pomatomus saltatrix
Winter Flounder	Pleuronectes americanus
Fluke	Paralichthys dentatus
Atlantic Mackerel	Scomber scombrus
Scup	Stenotomus chrysops
Cunner	Tautogolabrus adspersus
Striped Bass	Morone saxatilis
Skates	Rajidae
Atlantic Silversides	Menidia menidia

COMMON NAME	GENUS AND SPECIES
Birds	
American Crow	Corvus brachyrhynchos
American Goldfinch	Carduelis trustis
American Kestrel	Falco sparverius
American Robin	Turdus migratorius
Barn Swallow	Hirudo rustica
Black-capped Chickadee	Parus atricapillus
Blue Jay	Cyanocitta cristata
Brown-headed Cowbird	Molothrus ater
Bufflehead	Bucephala albeola
Canada Goose	Branta canadensis
Chimney Swift	Chaetura pelagica
Common Erget	Casmerodius albus
Common Goldeneye	Bucepala clangula americana
Common Grackle	Quiscalus guiscula
Common Merganser	Mergus merganser americanus
Common Tern	Sterna hirundo
Cormorant	Phalacrocorax auritus
Eastern Phoebe	Sayonis phoebe
European Starling	Stumus vulgaris
Glossy Ibis	Plegadis falcinellus
Great Blue Heron	Ardea herodias
Great Egret	Ardea alba
Greater Scaup	Aythya marila mariloides
Herring Gulls	Larus argentatus
Hooded Merganser	Mergus cucullatus
House Sparrow	Passer domesticus
Killdeer	Charadrius vociferus
Least Tern	Sterna antillarum
Lesser Scaup	Aythya affinis
Little Blue Heron	Egretta caerulea
Mallard	Anas platyrhynchos
Mourning Dove	Zenaida macroura
Northern Cardinal	Cardinalis cardinalis
Old Squaw	Clangula hyemalis
Red-winged Blackbird	Agelaius phoneniceus
Rough-winged Swallow	Stelgidoptery ruficollis
Snowy Egret	Egretta thula
Song Sparrow	Melospiza melodia
Spotted Sandpiper	Actitis macularia
Yellow- Crowned Night-Heron	Nyctanassa violacea
Invertebrates	
Atlantic Horseshoe Crab	Limulus polypemus
Long finned Squid	Loligo pealei
Short finned Squid	Illex illecebrosus
New England Neptue	Neptuna decemcostata
Knobbed Whelk	Busycon carica
Northern Lobster	Homarus americanus

COMMON NAME	GENUS AND SPECIES
Northern Seastar	Asterias vulgaris
Spider Crab	Halicarcinus maenas
Northern Quahog	Mercenaria mercenaria
Blue Mussels	Mytilus edulis
Moon Jelly	Aurelia aurita
Acorn Barnacles	Balanus eburncus
Common Periwinkles	Littorina littorea
Common Northern Moon Snail	Lunatia heros

APPENDIX B

SOIL BORING LOGS

URS CORPORATION
Soil Boring Log

Location of Boring	Job No.:	Client:	Location:
See Figure 2 for boring location	38546433	BP ATLANTIC RICHFIELD	COLUMBIA CEMENT FREEPORT, NY
	Logged By: ANDREW KOHLBECKER		Boring No.: T-01
	Driller: ZEBRA ENVIRONMENTAL, INC		
	Drilling Method: 2" GEOPROBE		Sheet: 2 of 2
	Sampling Method: GEOPROBE DIRECT PUSH		Drilling — Start Time: 9:57 / Finish Time: 10:43
	Water Level: ~7 FEET BELOW GRADE		
	Depth of Screen: N/A		
	Depth of Gravel: N/A		Date: 10/6/2004 / Date: 10/6/2004
	Depth of Bentonite: N/A		

Sampler Type	Sample No. / Depth	Inches Driv. / Recov.	Blow Count / 6"	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Surface Conditions
		48 / 18		0.0		21		Dark brown organic clay with cloth, leather, glass and wood fragments, soft, moist (Fill)
				0.0		22	SP	Grey medium to coarse SAND with gravel, medium dense, wet
				0.0		23		
				0.0		24		
		48 / 24		0.0		25		Grey medium to coarse SAND, some gravel, medium dense, wet
				0.0		26		
				0.0		27		
				0.0		28		Grey medium to fine SAND, medium dense, wet
		48 / 18		0.0		29	SP	
				0.0		30		
				0.0		31		
				0.0		32		
						33	EOB	
						34		
						35		
						36		
						37		
						38		
						39		
						40		

NOTES:

1. SAMPLE / DEPTH / TIME / ANALYSIS

SAMPLE	DEPTH	TIME	ANALYSIS
T-01-16-18	16-18 FBG	10:05	VOC
T-01-20-22	20-22 FBG	10:15	VOC
T-01-24-26	24-26 FBG	10:25	VOC
T-01-28-30	28-30 FBG	10:35	VOC

2. EVIDENCE OF CONTAMINATION
   ODOR: None
   STAINING: None

3. DEPTH OF BORING - 32 FEET BELOW GROUND SURFACE

URS CORPORATION
Soil Boring Log

Location of Boring	Job No.:	Client:	Location:
See Figure 2 for boring location	38546433	BP ATLANTIC RICHFIELD	COLUMBIA CEMENT FREEPORT, NY

Logged By:	ANDREW KOHLBECKER	Boring No.: T-02
Driller:	ZEBRA ENVIRONMENTAL, INC	Sheet: 1 of 2
Drilling Method:	2" GEOPROBE	
Sampling Method:	GEOPROBE DIRECT PUSH	Drilling
Water Level:	~7 FEET BELOW GRADE	Start Time 10:49 / Finish Time 11:36
Depth of Screen:	N/A	
Depth of Gravel:	N/A	Date 10/6/2004 / Date 10/6/2004
Depth of Bentonite:	N/A	

Surface Conditions: CRUSHED GRAVEL FILL

Sampler Type	Sample No. / Depth	Inches Driv. / Recov.	Blow Count / 6"	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Description
						0		Advanced boring through backfill to 12'.
						2		Crushed stone backfill
						4	FILL	
						7	▼	
		48 / 36		0.0		12		Black CLAY, some sand, gravel and debris (wood fragments, broken glass, anf brick), soft, moist.
				0.0		13		
				0.0		14	FILL	
				0.0		15		
		48 / 24		0.5		16		Black organic CLAY with debris (wood, glass and plastic), soft, wet
				0.5		17		
						20		

URS CORPORATION

Soil Boring Log

Location of Boring: See Figure 2 for boring location	Job No.: 38546433	Client: BP ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY
	Logged By: ANDREW KOHLBECKER		Boring No.: T-02
	Driller: ZEBRA ENVIRONMENTAL, INC		Sheet: 2 of 2
	Drilling Method: 2" GEOPROBE		
	Sampling Method: GEOPROBE DIRECT PUSH		Drilling Start Time: 10:49 / Finish Time: 11:36
	Water Level: ~7 FEET BELOW GRADE		
	Depth of Screen: N/A		
	Depth of Gravel: N/A		Date: 10/6/2004 / Date: 10/6/2004
	Depth of Bentonite: N/A		

Sampler Type	Sample No. /	Inches Driv. /	Blow Count /	PID (ppm)	Analytical Sa	Depth (ft.)	Soil Graph	Surface Conditions
		48 / 24		0.0				Black medium to coarse SAND with fine gravel, medium dense, wet
				0.0		21	SP	
				3.9		22		Grading with slight odor
				0.0		23		
		48 / 36		0.0		24		Light grey medium to coarse SAND with fine gravel, loose, wet
				0.0		25		
				0.0		26	SP	Grey medium to fine SAND, medium dense, wet
				0.0		27		
		48		0.0		28		Grey medium to fine micaeous SAND, dense, wet
				0.0		29		
				0.0		30	SP	
				0.0		31		Grey medium to coarse SAND, some medium rounded gravel, dense, wet
						32	EOB	
						33		
						34		NOTES:
						35		
						36		
						37		
						38		
						39		
						40		

NOTES:

1. SAMPLE / DEPTH / TIME / ANALYSIS

SAMPLE	DEPTH	TIME	ANALYSIS
T-02-16-18	16-18	11:05	VOC
T-02-20-22	20-22	11:15	VOC
T-02-24-26	24-26	11:25	VOC
T-02-28-30	28-30	11:35	VOC

2. EVIDENCE OF CONTAMINATION
   ODOR: 22 - 23 fbg
   STAINING: None
3. DEPTH OF BORING - 32 FEET BELOW GROUND SURFACE

URS CORPORATION
Soil Boring Log

Location of Boring	Job No.: 38546433	Client: BP ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY
See Figure 2 for boring location	Logged By: ANDREW KOHLBECKER		Boring No.: T-03
	Driller: ZEBRA ENVIRONMENTAL, INC		Sheet: 1 of 2
	Drilling Method: 2" GEOPROBE		Drilling Start Time: 1147 / Finish Time: 1227
	Sampling Method: GEOPROBE DIRECT PUSH		Date: 10/6/2004 / Date: 10/6/2007
	Water Level: ~7 FEET BELOW GRADE		
	Depth of Screen: N/A		
	Depth of Gravel: N/A		
	Depth of Bentonite: N/A		

Surface Conditions

CRUSHED GRAVEL FILL

Sampler Type	Sample No. / Depth	Inches Driv. / Recov.	Blow Count / 6"	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Description
						0	FILL	Advanced boring through backfill to 12'.
						1		
						2		Crushed stone backfill
						3		
						4		
						5		
						6		
						7		
						8		
						9		
						10		
						11		
		48 / 30		0.0		12	FILL	Black organic CLAY with debris (broken glass, wood and concrete fragments) moist (Fill)
				0.0		13		
				0.0		14		
				1.2		15		Grading with medium sand
		48 / 12		4.2		16		Black organic clay with debris (broken glass, brick fragments and plant mater), medium stiff, moist (Fill)
				4.2		17		
				4.2		18		
				4.2		19		
						20		

URS CORPORATION

Soil Boring Log

Location of Boring	Job No.: 38546433	Client: BP ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY
See Figure 2 for boring location	Logged By: ANDREW KOHLBECKER		Boring No.: T-03
	Driller: ZEBRA ENVIRONMENTAL, INC		
	Drilling Method: 2" GEOPROBE		Sheet: 2 of 2
	Sampling Method: GEOPROBE DIRECT PUSH		Drilling — Start Time: 11:47; Finish Time: 12:27
	Water Level: ~7 FEET BELOW GRADE		
	Depth of Screen: N/A		
	Depth of Gravel: N/A		Date: 10/6/2004; Date: 10/6/2007
	Depth of Bentonite: N/A		

Sampler Typ	Sample No. /	Inches Driv. /	Blow Count /	PID (ppm)	Analytical Sa	Depth (ft.)	Soil Graph	Surface Conditions
		48 / 36		0.0			OH	Black organic CLAY, soft, moist
				11.2		21		Gading with organic odor, oily residue on Macrocore
				0.4		22	SP	Dark brown medium SAND with peat, trace fine gravel, wet
				0.4		23		
		48 / 44		0.2		24		Light grey medium to coarse SAND with fine gravel, medium dense, wet
				0.2		25		
				0.2		26		
				0.2		27		Grey fine to medium SAND, medium dense, wet
		48 / 48		0.0		28		
				0.0		29	SP	
				0.0		30		
				0.0		31		
						32	EOB	
						33		
						34		NOTES:
						35		
						36		
						37		
						38		
						39		
						40		

NOTES:

1. SAMPLE / DEPTH / TIME / ANALYSIS

SAMPLE	DEPTH	TIME	ANALYSIS
T-03-16-18	16-18	11:55	VOC
T-03-20-22	20-22	12:05	VOC
T-03-24-26	24-26	12:15	VOC
T-03-28-30	28-30	12:25	VOC

2. EVIDENCE OF CONTAMINATION
   ODOR: 21-22 fbg
   STAINING: 21-22 fbg

3. DEPTH OF BORING - 32 FEET BELOW GROUND SURFACE

URS CORPORATION

Soil Boring Log

Location of Boring	Job No.:	Client:	Location:
See Figure 2 for boring location	38546433	BP ATLANTIC RICHFIELD	COLUMBIA CEMENT FREEPORT, NY
	Logged By:	ANDREW KOHLBECKER	Boring No.: T-04
	Driller: ZEBRA ENVIRONMENTAL, INC		
	Drilling Method: 2" GEOPROBE		Sheet: 1 of 2
	Sampling Method: GEOPROBE DIRECT PUSH		Drilling Start Time: 12:45 / Finish Time: 13:28
	Water Level:	~7 FEET BELOW GRADE	
	Depth of Screen:	N/A	
	Depth of Gravel:	N/A	Date: 10/6/2004 / Date: 10/6/2004
	Depth of Bentonite:	N/A	

Surface Conditions

CRUSHED GRAVEL FILL

Sampler Type	Sample No. / Depth	Inches Driv. / Recov	Blow Count / 6"	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Description
						0	FILL	Advanced boring through backfill to 12'.
						1		
						2		Crushed stone backfill
						3–7	FILL ▼	
						8–11		
		48 / 30		0.0		12	SC	Dark greyish brown medium to coarse SAND with fine gravel, medium dense, wet
				0.0		13	SM	Dark brown silty fine to medium SAND with debris (wood, glass, plastic), odor noted, loose, wet
				0.0		14		
				0.0		15		
		48 / 42		7.5		16		Dark brown silty fine to medium SAND with debris, loose, wet
				5.2		17		Dark brown silty fine to medium SAND with landfill debris, loose, wet
				2.1		18	OH/PT	Dark brown organic CLAY with plant matter, soft, moist
				0.2		19		
						20		

URS CORPORATION
Soil Boring Log

Location of Boring: See Figure 2 for boring location	Job No.: 38546433	Client: BP ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY
	Logged By: ANDREW KOHLBECKER		Boring No.: T-04
	Driller: ZEBRA ENVIRONMENTAL, INC		
	Drilling Method: 2" GEOPROBE		Sheet: 2 of 2
	Sampling Method: GEOPROBE DIRECT PUSH		Drilling Start Time: 12:45 / Finish Time: 13:28
	Water Level: ~7 FEET BELOW GRADE		
	Depth of Screen: N/A		
	Depth of Gravel: N/A		Date: 10/6/2004 / Date: 10/6/2004
	Depth of Bentonite: N/A		

Sampler Type	Sample No.	Inches Driv.	Blow Count	PID (ppm)	Analytical Sa	Depth (ft.)	Soil Graph	Surface Conditions
		48 / 44		0.0		21	OH/ PT	Dark brown organic CLAY, 6" of peat, soft, moist
				0.0		22		
				0.0		23		Light grey medium to coarse SAND with fine gravel, medium dense, wet
				0.0		24	SP	
		48 / 48		0.0		25		
				0.0		26		
				0.0		27		Grey medium to fine SAND, dense, wet
				0.0		28		
		48 / 48		0.0		29		
				0.0		30	SP	
				0.0		31		
				0.0		32		
						33	EOB	
						34		
						35		
						36		
						37		
						38		
						39		
						40		

NOTES:

1. SAMPLE

SAMPLE	DEPTH	TIME	ANALYSIS
T-04-16-18	16-18	13:00	VOC
T-04-20-22	20-22	13:10	VOC
T-04-24-26	24-26	13:20	VOC
T-04-28-30	28-30	13:30	VOC

2. EVIDENCE OF CONTAMINATION
   ODOR: 13-16 fbg
   STAINING: None

3. DEPTH OF BORING - 32 FEET BELOW GROUND SURFACE

URS CORPORATION
Soil Boring Log

Location of Boring	Job No.:	Client:	Location:
See Figure 2 for boring location	38546433	BP ATLANTIC RICHFIELD	COLUMBIA CEMENT FREEPORT, NY
	Logged By:	ANDREW KOHLBECKER	Boring No.: T-05
	Driller:	ZEBRA ENVIRONMENTAL, INC	Sheet: 1 of 2
	Drilling Method:	2" GEOPROBE	
	Sampling Method:	GEOPROBE DIRECT PUSH	Drilling
	Water Level:	~7 FEET BELOW GRADE	Start Time: 13:38 / Finish Time: 14:20
	Depth of Screen:	N/A	
	Depth of Gravel:	N/A	Date: 10/6/2004 / Date: 10/6/2004
	Depth of Bentonite:	N/A	

Surface Conditions: CRUSHED GRAVEL FILL

Sampler Type	Sample No. / Depth	Inches Driv. / Recov.	Blow Count / 6"	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Description
						0	FILL	Advanced boring through backfill to 12'.
						1		
						2		Crushed stone backfill
						3		
						4		
						5		
						6		
						7	▼	
						8		
						9		
						10		
						11		
		48 / 36		0.0		12	FILL	Black PEAT with fine sand, some gravel, wood fragments, soft, moist (Fill)
				0.0		13		
				0.0		14		
				0.0		15		
		48 / 30		0.0		16	GP	Black to dark brown sandy fine to medium GRAVEL
				0.0		17		
				0.0		18	SP	Brown medium to coarse SAND with fine rounded gravel, loose, wet
				0.0		19		
						20		

URS CORPORATION

Soil Boring Log

Location of Boring	Job No.: 38546433	Client: BP ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY
See Figure 2 for boring location	Logged By: ANDREW KOHLBECKER		Boring No.: T-05
	Driller: ZEBRA ENVIRONMENTAL, INC		
	Drilling Method: 2" GEOPROBE		Sheet: 2 of 2
	Sampling Method: GEOPROBE DIRECT PUSH		Drilling
	Water Level: ~7 FEET BELOW GRADE		Start Time 13:38 / Finish Time 14:20
	Depth of Screen: N/A		
	Depth of Gravel: N/A		Date 10/6/2004 / Date 10/6/2004
	Depth of Bentonite: N/A		

Sampler Type	Sample No. / Depth	Inches Driv. / Recov.	Blow Count / 6"	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Surface Conditions
		48 / 30		0.0				Light gray to brown medium to coarse SAND with fine gravel, medium dense, wet
				0.0		21	SP	
				0.0		22		
				0.0		23	GP	Light gray sandy GRAVEL, wet
		48 / 36		0.0		24		Light gray coarse SAND and fine to medium GRAVEL, wet
				0.0		25	SP	Gray fine to medium SAND, well sorted, medium dense, wet
				0.0		26		
				0.0		27		
		48 / 24		0.0		28		Gray fine to medium SAND, well sorted, medium dense, wet
				0.0		29	SP	
				0.0		30		
				0.0		31		
						32	EOB	
						33		
						34		NOTES:
						35–40		

NOTES:

1. SAMPLE / DEPTH / TIME / ANALYSIS

SAMPLE	DEPTH	TIME	ANALYSIS
T-05-16-18	16-18	13:50	VOC
T-05-20-22	20-22	14:00	VOC
T-05-24-26	24-26	14:10	VOC
T-05-28-30	28-30	14:20	VOC

2. EVIDENCE OF CONTAMINATION
   ODOR: None
   STAINING: None

3. DEPTH OF BORING - 32 FEET BELOW GROUND SURFACE

URS CORPORATION

Soil Boring Log

Location of Boring	Job No.:	Client:	Location:
See Figure 2 for boring location	38546433	BP REMEDIATION MANAGEMENT	COLUMBIA CEMENT CO. FREEPORT, NY

Logged By:	ANDREW KOHLBECKER	Boring No.: T-06
Driller:	ZEBRA ENVIRONMENTAL, INC	
Drilling Method:	2" GEOPROBE	Sheet: 1 of 2
Sampling Method:	GEOPROBE DIRECT PUSH	Drilling
Water Level:	~7 FEET BELOW GRADE	Start Time: 14:35 / Finish Time: 15:30
Depth of Screen:	N/A	
Depth of Gravel:	N/A	Date: 10/6/2004 / Date: 10/6/2004
Depth of Bentonite:	N/A	

Surface Conditions

CRUSHED GRAVEL FILL

Sampler Type	Sample No. / Depth	Inches Driv. / Recov.	Blow Count / 6"	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Description
						0	FILL	Advanced boring through backfill to 12'.
						1		
						2		Crushed stone backfill
						3–6		
						7	▼	
						8–11		
		48 / 36		0.0		12	GP	Dark brown coarse SAND and GRAVEL, medium dense, wet
				0.0		13		
				0.0		14		
				0.0		15		
		48 / 36		0.0		16	SP	Brown coarse SAND, medium dense, wet
				0.0		17		
				0.0		18		Brown medium to fine SAND
				0.0		19		
						20		

URS CORPORATION

Soil Boring Log

Location of Boring	Job No.: 38546433	Client: BP REMEDIATION MANAGEMENT	Location: COLUMBIA CEMENT CO. FREEPORT, NY
See Figure 2 for boring location	Logged By: ANDREW KOHLBECKER		Boring No.: T-06
	Driller: ZEBRA ENVIRONMENTAL, INC		Sheet: 2 of 2
	Drilling Method: 2" GEOPROBE		Drilling
	Sampling Method: GEOPROBE DIRECT PUSH		Start Time: 14:35 / Finish Time: 15:30
	Water Level: ~7 FEET BELOW GRADE		
	Depth of Screen: N/A		
	Depth of Gravel: N/A		Date: 10/6/2004 / Date: 10/6/2004
	Depth of Bentonite: N/A		

Sampler Type	Sample No.	Inches Driv. / Rec.	Blow Count	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Surface Conditions
		48 / 34		0.0		21	SP	Light gray gravelly SAND, medium dense, wet
				0.0		22		
				0.0		23		
				0.0		24		
		48 / 30		0.0		25		Light gray to medium coarse SAND with some gravel, medium dense, wet
				0.0		26		
				0.0		27		
				0.0		28		Gray medium to fine SAND, dense, wet
		48		0.0		29	SP	
				0.0		30		
				0.0		31		
				0.0		32		
						33	EOB	
						34		NOTES:
						35–40		

NOTES:

1 SAMPLE

SAMPLE	DEPTH	TIME	ANALYSIS
T-06-16-18	16-18	14:50	VOC
T-06-20-22	20-22	15:05	VOC
T-06-24-26	24-26	15:15	VOC
T-06-28-30	28-30	15:30	VOC

2 EVIDENCE OF CONTAMINATION

ODOR: None

STAINING: None

3 DEPTH OF BORING - 32 FEET BELOW GROUND SURFACE

URS CORPORATION
Soil Boring Log

Location of Boring	Job No.:	Client:	Location:
See Figure 2 for boring location	38546433	BP ATLANTIC RICHFIELD	COLUMBIA CEMENT FREEPORT, NY

Logged By:	ANDREW KOHLBECKER	Boring No.:	T-07
Driller:	ZEBRA ENVIRONMENTAL, INC		
Drilling Method:	2" GEOPROBE	Sheet:	1 of 2
Sampling Method:	GEOPROBE DIRECT PUSH	Drilling Start Time	Finish Time
Water Level:	~7 FEET BELOW GRADE	8:25	9:25
Depth of Screen:	N/A		
Depth of Gravel:	N/A	Date	Date
Depth of Bentonite:	N/A	10/7/2004	10/7/2004

Surface Conditions

CRUSHED GRAVEL FILL

Sampler Type	Sample No. / Depth	Inches Driv. / Recov	Blow Count / 6"	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Description
						0	FILL	Advanced boring through backfill to 12'.
						1		
						2		Crushed stone backfill
						3		
						4		
						5		
						6	▼	
						7		
						8		
						9		
						10		
						11		
		48 / 24		0.0		12	OL/ PT	Gray organic clay with plant matter, soft, moist, odor
				0.0		13		
				1.3		14	SC	Dark brown to black gravelly sand with black organic sitly caly, loose, wet
				0.1		15		
		48 / 30		0.0		16	SC	Brown SAND with medium to fine rounded gravel, loose, wet
				0.0		17		
				0.0		18		
				0.0		19		Brown fine to coarse SAND, well sorted, wet
						20		

URS CORPORATION
Soil Boring Log

Location of Boring: See Figure 2 for boring location	Job No.: 38546433	Client: BP ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY
	Logged By: ANDREW KOHLBECKER		Boring No.: T-07
	Driller: ZEBRA ENVIRONMENTAL, INC		Sheet: 2 of 2
	Drilling Method: 2" GEOPROBE		Drilling
	Sampling Method: GEOPROBE DIRECT PUSH		Start Time: 8:25 / Finish Time: 9:25
	Water Level: ~7 FEET BELOW GRADE		
	Depth of Screen: N/A		Date: 10/7/2004 / Date: 10/7/2004
	Depth of Gravel: N/A		
	Depth of Bentonite: N/A		

Sampler Type	Sample No.	Inches Driv.	Blow Count	PID (ppm)	Analytical Sa	Depth (ft.)	Soil Graph	Surface Conditions
		48 / 6		0.0				Brown to gray gravelly SAND, medium dense, wet
				0.0		21	SC	
				0.0		22		
				0.0		23		
		48 / 24		0.0		24		Light gray SAND, some rounded gravel, medium dense, wet
				0.0		25	SC	
				0.0		26		
				0.0		27		
		48 / 24		0.1		28		Gray fine to medium SAND, well sorted, dense, wet
				0.1		29	SC	
				0.1		30		
				0.1		31		
						32	EOB	
						33		
						34		NOTES:
						35		
						36		
						37		
						38		
						39		
						40		

NOTES:

1

SAMPLE	DEPTH	TIME	ANALYSIS
T-07-16-18	16-18	8:45	VOC
T-07-20-22	20-22	9:00	VOC
T-07-24-26	24-26	9:10	VOC
T-07-28-30	28-30	9:25	VOC

2 EVIDENCE OF CONTAMINATION
ODOR: None
STAINING: None

3 DEPTH OF BORING - 32 FEET BELOW GROUND SURFACE

URS CORPORATION

Soil Boring Log

Location of Boring	Job No.: 38546433	Client: BP ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY
See Figure 2 for boring location	Logged By:	ANDREW KOHLBECKER	Boring No.: T-08
	Driller:	ZEBRA ENVIRONMENTAL, INC	
	Drilling Method: 2" GEOPROBE		Sheet: 1 of 2
	Sampling Method: GEOPROBE DIRECT PUSH		Drilling: Start Time 9:30 / Finish Time 10:10
	Water Level:	~7 FEET BELOW GRADE	
	Depth of Screen:	N/A	
	Depth of Gravel:	N/A	Date 10/7/2004 / Date 10/7/2004
	Depth of Bentonite:	N/A	

Sampler Type	Sample No. / Depth	Inches Driv. / Recov.	Blow Count / 6"	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Surface Conditions
								CRUSHED GRAVEL FILL
						0–12	FILL	Advanced boring through backfill to 12'.
								Crushed stone backfill
						7	▼	
		48 / 24		0.0		12	FILL	Orange coarse to fine SAND, some silt, loose, wet (Fill)
				0.0		13		
				56.6		14		
				12.2		15	OH	Gray organic CLAY, medium stiff, moist
		48		0.0		16		
				14.8		17		
				0.5		18		
				0.5		19	SW	Brown - reddish brown gravelly SAND, medium dense, wet
						20		

URS CORPORATION

Soil Boring Log

Location of Boring	Job No.:	Client:	Location:
See Figure 2 for boring location	38546433	BP ATLANTIC RICHFIELD	COLUMBIA CEMENT FREEPORT, NY
	Logged By:	ANDREW KOHLBECKER	Boring No.: T-08
	Driller: ZEBRA ENVIRONMENTAL, INC		Sheet: 2 of 2
	Drilling Method: 2" GEOPROBE		Drilling
	Sampling Method: GEOPROBE DIRECT PUSH		Start Time: 9:30 / Finish Time: 10:10
	Water Level:	~7 FEET BELOW GRADE	
	Depth of Screen:	N/A	Date: 10/7/2004 / Date: 10/7/2004
	Depth of Gravel:	N/A	
	Depth of Bentonite:	N/A	

Sampler Type	Sample No. /	Inches Driv. /	Blow Count /	PID (ppm)	Analytical Sa	Depth (ft.)	Soil Graph	Surface Conditions
		48 / 30		0.6				Brown/reddish brown gravelly SAND, medium dense, wet
				0.6		21	SW	
				0.6		22		
				0.6		23		Grades into a light gray medium to coarse SAND
		48 / 24		0.6		24		
				0.6		25		
				0.6		26		
				0.9		27	GP	Light gray sandy GRAVEL, wet
		48 / 24		0.0		28		Gray coarse to medium SAND with fine gravel, wet
				0.0		29	SW	
				0.7		30		
				0.9		31		
						32	EOB	
						33		
						34		NOTES:
						35		
						36		
						37		
						38		
						39		
						40		

NOTES:

1

SAMPLE	DEPTH	TIME	ANALYSIS
T-08-14-15	14-15	9:35	VOC
T-08-16-18	16-18	9:45	VOC
T-08-20-22	20-22	9:50	VOC
T-08-24-26	24-26	10:00	VOC
T-08-28-30	28-30	10:10	VOC

2 EVIDENCE OF CONTAMINATION

ODOR: None

STAINING: None

3 DEPTH OF BORING - 32 FEET BELOW GROUND SURFACE

URS CORPORATION

Soil Boring Log

Location of Boring: See Figure 2 for boring location	Job No.: 38546433	Client: BP ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY	
	Logged By: ANDREW KOHLBECKER		Boring No.: T-09	
	Driller: ZEBRA ENVIRONMENTAL, INC		Sheet: 1 of 2	
	Drilling Method: 2" GEOPROBE		Drilling	
	Sampling Method: GEOPROBE DIRECT PUSH		Start Time	Finish Time
	Water Level: ~7 FEET BELOW GRADE		10:35	11:15
	Depth of Screen: N/A			
	Depth of Gravel: N/A		Date	Date
	Depth of Bentonite: N/A		10/7/2004	10/7/2004

Sampler Type	Sample No. / Depth	Inches Driv. / Recov	Blow Count / 6"	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Surface Conditions
								CRUSHED GRAVEL FILL
							FILL	Advanced boring through backfill to 12'.
						1		
						2		Crushed stone backfill
						3		
						4		
						5		
						6		
						7	▼	
						8		
						9		
						10		
						11		
		48 / 30		0.4		12	SM	Orange medium to fine SAND, some silt, loose, wet
				0.4		13		
				0.4		14		
				0.9		15		Light brown medium to fine SAND, some silt, loose, wet
		48 / 24		1.9		16	OC	Organic gray clay
				1.9		17		
				1.9		18		
				0.5		19	GC	Sandy GRAVEL with dark gray organic silty clay
						20		

URS CORPORATION
Soil Boring Log

Location of Boring: See Figure 2 for boring location	Job No.: 38546433	Client: BP ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY
	Logged By: ANDREW KOHLBECKER		Boring No.: T-09
	Driller: ZEBRA ENVIRONMENTAL, INC		
	Drilling Method: 2" GEOPROBE		Sheet: 2 of 2
	Sampling Method: GEOPROBE DIRECT PUSH		Drilling — Start Time: 10:35 — Finish Time: 11:15
	Water Level: ~7 FEET BELOW GRADE		
	Depth of Screen: N/A		
	Depth of Gravel: N/A		Date: 10/7/2004 — Date: 10/7/2004
	Depth of Bentonite: N/A		

Sampler Typ	Sample No. /	Inches Driv. /	Blow Count /	PID (ppm)	Analytical Sa	Depth (ft.)	Soil Graph	Surface Conditions
		48 / 30		0.3		21	GC	Sandy GRAVEL with dark gray organic silty clay
				0.3		22		
				0.3		23	SP	Brown medium to fine SAND, medium dense, wet
				0.2		24		
		48 / 30		0.2		25		Gray gravelly SAND, wet
				0.2		26		
				0.2		27		
				0.2		28		
		48 / 24		0.2		29		Gray coarse to medium SAND, trace fine gravel, dense, wet
				0.2		30		
				0.2		31		
				0.2		32		Gray fine to medium sand, dense (starting at 31.75 fbg)
						33	EOB	
						34		NOTES:
						35–40		

NOTES:

1 SAMPLE

SAMPLE	DEPTH	TIME	ANALYSIS
T-09-16-18	16-18	10:50	VOC
T-09-20-22	20-22	10:55	VOC
T-09-24-26	24-26	11:05	VOC
T-09-28-30	28-30	11:15	VOC

2 EVIDENCE OF CONTAMINATION

ODOR: None

STAINING: None

3 DEPTH OF BORING - 32 FEET BELOW GROUND SURFACE

URS CORPORATION

Soil Boring Log

Location of Boring	Job No.: 38546433	Client: BP ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY
See Figure 2 for boring location	Logged By: ANDREW KOHLBECKER		Boring No.: **T-10**
	Driller: ZEBRA ENVIRONMENTAL, INC		Sheet: 1 of 2
	Drilling Method: 2" GEOPROBE		
	Sampling Method: GEOPROBE DIRECT PUSH		Drilling: Start Time 11:25 / Finish Time 11:55
	Water Level: ~7 FEET BELOW GRADE		
	Depth of Screen: N/A		
	Depth of Gravel: N/A		Date 10/7/2004 / Date 10/7/2004
	Depth of Bentonite: N/A		

Surface Conditions

CRUSHED GRAVEL FILL

Sampler Type	Sample No. / Depth	Inches Driv. / Recov	Blow Count / 6"	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Description
						0–1	FILL	Advanced boring through backfill to 12'.
						2–3		Crushed stone backfill
						3–7	FILL ▼	
						7–12		
		48 / 40		0.2		12–13	FILL	Brown medium to coarse SAND, some gravel, trace clay, looose, wet
				0.3		13–14		Orange medium to coarse SAND, some silt, trace gravel (fill)
				0.3		14–15		
				0.2		15–16		Grey SAND with layer of organic gray organic clay, with debris (glass) at 16 ft (Fill)
		48 / 30		3.6		16–17		Gray organic CLAY with debris (glass) and leaves, loose, wet (Fill)
							OL	Gray organic CLAY, soft, moist
				3.6		17–18		
				0.3		18–19	SP/OL	Gravelly SAND with dark brown organic silty clay, wet
				0.3		19–20		
						20		

URS CORPORATION
Soil Boring Log

Location of Boring See Figure 2 for boring location	Job No.: 38546433	Client: BP ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY
	Logged By: ANDREW KOHLBECKER		Boring No.: T-10
	Driller: ZEBRA ENVIRONMENTAL, INC		Sheet: 2 of 2
	Drilling Method: 2" GEOPROBE		Drilling
	Sampling Method: GEOPROBE DIRECT PUSH		Start Time / Finish Time
	Water Level: ~7 FEET BELOW GRADE		11:25 / 11:55
	Depth of Screen: N/A		
	Depth of Gravel: N/A		Date / Date
	Depth of Bentonite: N/A		10/7/2004 / 10/7/2004

Sampler Type	Sample No. /	Inches Driv. /	Blow Count /	PID (ppm)	Analytical Sa	Depth (ft.)	Soil Graph	Surface Conditions
		48 / 30		0.2			SP/ OL	Gravelly SAND with dark brown organic silty clay, wet
				0.2		21		
				0.3		22	SP	Brown medium to coarse SAND with dark brown organic silty clay, wet
				0.3		23		
		48 / 24		0.3		24		Brown SAND and rounded fine GRAVEL (1/4-1/2" dia)
				0.3		25		
				0.3		26		
				0.3		27		
		48 / 30		0.0		28	SP	Light gray medium to coarse SAND, some rounded fine gravel, wet
				0.0		29		
				0.4		30		
				0.6		31		
						32	EOB	
						33		
						34		NOTES:
						35		
						36		
						37		
						38		
						39		
						40		

NOTES:

1 SAMPLE / DEPTH / TIME / ANALYSIS

SAMPLE	DEPTH	TIME	ANALYSIS
T-10-16-18	16-18	11:30	VOC
T-10-20-22	20-22	11:40	VOC
T-10-24-26	24-26	11:45	VOC
T-10-28-30	31-32	11:55	VOC

2 EVIDENCE OF CONTAMINATION
ODOR: None
STAINING: None

3 DEPTH OF BORING - 32 FEET BELOW GROUND SURFACE

URS CORPORATION

Soil Boring Log

Location of Boring: See Figure 2 for boring location	Job No.: 38546433	Client: BP ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY
	Logged By: ANDREW KOHLBECKER		Boring No.: D-01
	Driller: ZEBRA ENVIRONMENTAL, INC		Sheet: 1 of 2
	Drilling Method: 2" GEOPROBE		Drilling
	Sampling Method: GEOPROBE DIRECT PUSH		Start Time: 12:30 / Finish Time: 13:20
	Water Level: ~7 FEET BELOW GRADE		
	Depth of Screen: N/A		
	Depth of Gravel: N/A		Date: 10/7/2004 / Date: 10/7/2004
	Depth of Bentonite: N/A		

Surface Conditions

CRUSHED GRAVEL FILL

Sampler Type	Sample No. / Depth	Inches Driv. / Recov.	Blow Count / 6"	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Description
						0–1	FILL	Advanced boring through backfill to 4'.
						1–2		Crushed stone backfill
						2–3		
						3–4		
		48 / 30		0.0		4–5	FILL	Dark gray to black fine to coarse SAND with fine gravel, trace clay lenses (Fill)
				0.7		5–6		
				0.0		6–7	▼	
				1.8		7–8		
		48 / 30		0.0		8–9		
				0.0		9–10		
				1.0		10–11		
				4.0		11–12		
		48 / 24		4.0		12–13		Dark brown to gray silty CLAY with some fine to coarse sand, with landfill debris (glass, wood, paper) (Fill)
				8.6		13–14		
				8.6		14–15		
				8.6		15–16		
		48 / 30		0.0		16–17		
				0.0		17–18		
				1.9		18–19	SP	Gray medium SAND, well sorted, medium dense, wet
				1.9		19–20		
						20–		

URS CORPORATION
Soil Boring Log

Location of Boring	Job No.:	Client:	Location:
See Figure 2 for boring location	38546433	BP ATLANTIC RICHFIELD	COLUMBIA CEMENT FREEPORT, NY

Logged By:	ANDREW KOHLBECKER	Boring No.:	D-01
Driller:	ZEBRA ENVIRONMENTAL, INC	Sheet:	2 of 2
Drilling Method:	2" GEOPROBE	Drilling	
Sampling Method:	GEOPROBE DIRECT PUSH	Start Time	Finish Time
Water Level:	~7 FEET BELOW GRADE	12:30	13:20
Depth of Screen:	N/A	Date	Date
Depth of Gravel:	N/A	10/7/2004	10/7/2004
Depth of Bentonite:	N/A		

Sampler Type	Sample No.	Inches Driv.	Blow Count	PID (ppm)	Analytical Sa	Depth (ft.)	Soil Graph	Surface Conditions
		48 / 30		1.2				Gray medium SAND and rounded fine GRAVEL, loose, wet
				1.2		21	SP	
				1.2		22		
				1.2		23		
		48 / 24		1.2		24		Gray medium to coarse SAND and rounded fine GRAVEL, loose, wet
				1.2		25		
				1.2		26		
				1.2		27		
		48 / 24		7.1		28		Grey medium SAND, dense, wet
				7.1		29	SP	
				7.1		30		Grading witrh fine gravel
				7.1		31		
						32	EOB	
						33		NOTES:
						34–40		

NOTES:

1 SAMPLE	DEPTH	TIME	ANALYSIS
D-01-10-12	6-8	12:40	VOC
D-01-16-18	15-16	12:50	VOC
D-01-20-22	16-18	12:55	VOC
D-01-24-26	20-22	13:05	VOC
D-01-28-30	24-26	13:15	VOC
D-01-32-34	28-30	13:20	VOC

2 EVIDENCE OF CONTAMINATION

ODOR: None

STAINING: None

3 DEPTH OF BORING - 32 FEET BELOW GROUND SURFACE

URS CORPORATION
Soil Boring Log

Location of Boring: See Figure 2 for boring location	Job No.: 38546433	Client: BP ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY
	Logged By: ANDREW KOHLBECKER		Boring No.: D-02
	Driller: ZEBRA ENVIRONMENTAL, INC		Sheet: 1 of 2
	Drilling Method: 2" GEOPROBE		Drilling
	Sampling Method: GEOPROBE DIRECT PUSH		Start Time: 13:35 / Finish Time: 14:15
	Water Level: ~7 FEET BELOW GRADE		
	Depth of Screen: N/A		
	Depth of Gravel: N/A		Date: 10/7/2004 / Date: 10/7/2004
	Depth of Bentonite: N/A		

Surface Conditions: CRUSHED GRAVEL FILL

Sampler Type	Sample No. / Depth	Inches Driv. / Recov	Blow Count / 6"	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Description
						0–1	FILL	Advanced boring through backfill to 8'.
						2–3	FILL	Crushed stone backfill
						3–7	FILL	
		48 / 18		0.2		8	FILL	Black organic clay with debris (paper, glass, wood), loose, wet
				0.2		9	FILL	
				0.2		10	FILL	
				0.2		11	FILL	
		48 / 36		0.0		12	OL/PT	Dark grey organic CLAY with leaves and small roots
				1.2		13	OL/PT	
				7.9		14	OL/PT	
				8.2		15	OL/PT	
		48 / 30		1.1		16	SP	Brown medium SAND with fine gravel, plant root fibers
				1.1		17	SP	
				1.1		18	SP	Brown medium SAND with fine gravel, medium dense, wet
				1.1		19	SP	
						20		

URS CORPORATION
Soil Boring Log

Location of Boring	Job No.:	Client:	Location:
See Figure 2 for boring location	38546433	BP ATLANTIC RICHFIELD	COLUMBIA CEMENT FREEPORT, NY

Logged By:	ANDREW KOHLBECKER	Boring No.:	D-02
Driller:	ZEBRA ENVIRONMENTAL, INC	Sheet:	2 of 2
Drilling Method:	2" GEOPROBE	Drilling	
Sampling Method:	GEOPROBE DIRECT PUSH	Start Time	Finish Time
Water Level:	~7 FEET BELOW GRADE	1335	1415
Depth of Screen:	N/A	Date	Date
Depth of Gravel:	N/A		
Depth of Bentonite:	N/A	10/7/2004	10/7/2004

Sampler Type	Sample No.	Inches Driv.	Blow Count	PID (ppm)	Analytical Sa	Depth (ft.)	Soil Graph	Surface Conditions
		48 / 30		0.4				Brown medium to coarse SAND with rounded fine gravel, medium dense, wet
				0.4		21	SP	
				0.4		22		
				0.4		23		
		48 / 30		0.5		24		Gray coarse SAND with fine gravel, dense, wet
				0.5		25		
				0.5		26	SP	
				0.5		27		
		48 / 30		0.0		28		
				0.0		29		
				0.0		30		
				0.0		31		Gray medium to fine sand, well sorted, dense, wet
						32	EOB	
						33		
						34		
						35		
						36		
						37		
						38		
						39		
						40		

NOTES:

1

SAMPLE	DEPTH	TIME	ANALYSIS
D-02-10-12	10-12	13:40	VOC
D-02-16-18	15-16	13:50	VOC
D-02-20-22	20-22	13:55	VOC
D-02-24-26	24-26	14:05	VOC
D-02-28-30	28-30	14:15	VOC

2 EVIDENCE OF CONTAMINATION

ODOR: None

STAINING: None

3 DEPTH OF BORING - 32 FEET BELOW GROUND SURFACE

URS CORPORATION

Soil Boring Log

Location of Boring See Figure 2 for boring location	Job No.: 38546433	Client: BP ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY
	Logged By: ANDREW KOHLBECKER		Boring No.: D-03
	Driller: ZEBRA ENVIRONMENTAL, INC		Sheet: 1 of 2
	Drilling Method: 2" GEOPROBE		
	Sampling Method: GEOPROBE DIRECT PUSH		Drilling Start Time: 8:35 / Finish Time: 9:50
	Water Level: ~7 FEET BELOW GRADE		
	Depth of Screen: N/A		
	Depth of Gravel: N/A		Date: 10/8/2004 / Date: 10/8/2004
	Depth of Bentonite: N/A		

Sampler Type	Sample No. / Depth	Inches Driv. / Recov	Blow Count / 6"	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Surface Conditions
								CRUSHED GRAVEL FILL
							FILL	Advanced boring through backfill to 8'.
						1		
						2		Crushed stone backfill
						3		
						4		
						5		
						6		
						7	▼	
		48 / 36		0.0		8	OL/ PT	Gray organic CLAY with peat (leaves and roots fibers), moist
				1.0		9		
				7.7		10		
				16.0		11		
		48 / 30				12	SP	Brown medium to coarse SAND, some fine to coarse gravel, trace clay, wet
				3.3		13		
				0.5		14		
				0.5		15		
		48 / 30		0.1		16		Brown medium to coarse SAND with fine gravel, medium dense, wet
				0.1		17		
				0.1		18	SP	Brown medium SAND, trace gravel, well sorted, wet
				0.1		19		
						20		

URS CORPORATION

Soil Boring Log

Location of Boring	Job No.: 38546433	Client: BP ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY
See Figure 2 for boring location	Logged By: ANDREW KOHLBECKER		Boring No.: D-03
	Driller: ZEBRA ENVIRONMENTAL, INC		
	Drilling Method: 2" GEOPROBE		Sheet: 1 of 2
	Sampling Method: GEOPROBE DIRECT PUSH		Drilling Start Time 8:35 / Finish Time 9:50
	Water Level: ~7 FEET BELOW GRADE		
	Depth of Screen: N/A		
	Depth of Gravel: N/A		Date 10/8/2004 / Date 10/8/2004
	Depth of Bentonite: N/A		

Sampler Type	Sample No.	Inches Driv. /	Blow Count /	PID (ppm)	Analytical Sa	Depth (ft.)	Soil Graph	Surface Conditions
		48 / 30		0.1				Tan to light gray medium SAND, trace gravel, medium dense, wet
				0.1		21	SP	
				0.0		22		
				0.0		23		Gray coarse SAND and fine, rounded gravel, wet
		48 / 30		0.0		24		
				0.0		25		
				0.0		26		Gray medium SAND, well sorted, dense, wet
				0.0		27		Gray fine to medium SAND, some silt, well sorted
		48 / 30		0.0		28		
				0.0		29	SP	
				0.0		30		
				0.0		31		
						32	EOB	
						33		
						34		NOTES:
						35		
						36		
						37		
						38		
						39		
						40		

NOTES:

1

SAMPLE	DEPTH	TIME	ANALYSIS
D-03-10-12	10-12	8:45	VOC
D-03-16-18	16-18	9:15	VOC
D-03-20-22	20-22	9:25	VOC
D-03-24-26	24-26	9:35	VOC
D-03-28-30	28-30	9:50	VOC

2 EVIDENCE OF CONTAMINATION

ODOR: None

STAINING: None

3 DEPTH OF BORING - 32 FEET BELOW GROUND SURFACE

URS CORPORATION

Soil Boring Log

Location of Boring	Job No.:	Client:	Location:
See Figure 2 for boring location	38546433	BP ATLANTIC RICHFIELD	COLUMBIA CEMENT FREEPORT, NY
	Logged By:	ANDREW KOHLBECKER	Boring No.: D-04
	Driller:	ZEBRA ENVIRONMENTAL, INC	
	Drilling Method:	2" GEOPROBE	Sheet: 1 of 2
	Sampling Method:	GEOPROBE DIRECT PUSH	Drilling — Start Time: 9:55 / Finish Time: 10:45
	Water Level:	~7 FEET BELOW GRADE	
	Depth of Screen:	N/A	
	Depth of Gravel:	N/A	Date: 10/8/2004 / Date: 10/8/2004
	Depth of Bentonite:	N/A	

Surface Conditions: CRUSHED GRAVEL FILL

Sampler Type	Sample No. / Depth	Inches Driv. / Recov.	Blow Count / 6"	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Description
						0	FILL	Advanced boring through backfill to 8'.
						1		
						2		Crushed stone backfill
						3		
						4		
						5		
						6		
						7	▼	
		48 / 30				8	FILL	Black silty CLAY with paper, glass and wood fragments, organic odor (FILL)
				46.6		9		
				1.7		10	SP	Black coarse to medium SAND and rounded fine GRAVEL, loose, wet
				0.7		11		
		48 / 18		0.2		12		Grading with clay
				0.2		13		
				0.2		14		
				0.2		15		
		48 / 1		0.0		16		No Recovery
				0.0		17		
				0.0		18		
				0.0		19		
						20		

URS CORPORATION
Soil Boring Log

Location of Boring: See Figure 2 for boring location	Job No.: 38546433	Client: BP ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY
	Logged By: ANDREW KOHLBECKER		Boring No.: D-04
	Driller: ZEBRA ENVIRONMENTAL, INC		
	Drilling Method: 2" GEOPROBE		Sheet: 1 of 2
	Sampling Method: GEOPROBE DIRECT PUSH		Drilling: Start Time / Finish Time
	Water Level: ~7 FEET BELOW GRADE		9:55 / 10:45
	Depth of Screen: N/A		
	Depth of Gravel: N/A		Date / Date
	Depth of Bentonite: N/A		10/8/2004 / 10/8/2004

Sampler Type	Sample No.	Inches Driv. / Rec.	Blow Count	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Surface Conditions
		48 / 24		0.1				Brown medium to coarse SAND, medium dense, wet
				0.1		21	SP	
				0.1		22		
				0.1		23		Light gray medium to coarse SAND and fine GRAVEL, dense, wet
		48 / 38		0.1		24		Light gray coarse SAND, some fine gravel, wet
				0.1		25		
				0.1		26		
				0.1		27		Gray fine micaceous SAND. Dense, wet
		48 / 44		0.1		28	SP	
				0.1		29		
				0.1		30		
				0.1		31		
						32	EOB	
						33		
						34		
						35		
						36		
						37		
						38		
						39		
						40		

NOTES:

1 SAMPLE

SAMPLE	DEPTH	TIME	ANALYSIS
D-04-10-12	10-12	10:00	VOC
D-04-16-18	15-16	10:15	VOC
D-04-20-22	20-22	10:25	VOC
D-04-24-26	24-26	10:35	VOC
D-04-28-30	28-30	10:45	VOC

2 EVIDENCE OF CONTAMINATION

ODOR: None

STAINING: None

3 DEPTH OF BORING - 32 FEET BELOW GROUND SURFACE

URS CORPORATION
Soil Boring Log

Location of Boring	Job No.:	Client:	Location:
See Figure 2 for boring location	38546433	BP ATLANTIC RICHFIELD	COLUMBIA CEMENT FREEPORT, NY
	Logged By: ANDREW KOHLBECKER		Boring No.: D-05
	Driller: ZEBRA ENVIRONMENTAL, INC		
	Drilling Method: 2" GEOPROBE		Sheet: 1 of 2
	Sampling Method: GEOPROBE DIRECT PUSH		Drilling Start Time: 11:00 / Finish Time: 11:55
	Water Level: ~7 FEET BELOW GRADE		
	Depth of Screen: N/A		
	Depth of Gravel: N/A		Date: 10/8/2004 / Date: 10/8/2004
	Depth of Bentonite: N/A		

Surface Conditions: CRUSHED GRAVEL FILL

Sampler Type	Sample No. / Depth	Inches Driv. / Recov	Blow Count / 6"	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Description
						0	FILL	Advanced boring through backfill to 8'.
						2		Crushed stone backfill
						7	▼	
		48 / 24		0.4		8	FILL	Black gravelly coarse to medium SAND, loose, wet (Fill)
				0.4		9		
				0.4		10		
				0.6		11		Black clayey medium SAND with debris (wood, glass, paper), loose, wet (Fill)
		48 / 20		2.6		12		
				2.6		13		
				0.4		14	SP	Black coarse SAND and fine rounded gravel, medium dense, wet
				0.4		15		
		48 / 30		0.2		16		Dark brown to black medium to fine SAND, trace fine rounded gravel, medium dense, wet
				0.2		17		
				0.2		18		
				0.2		19	SP	
						20		

URS CORPORATION
Soil Boring Log

Location of Boring	Job No.:	Client:	Location:
See Figure 2 for boring location	38546433	BP ATLANTIC RICHFIELD	COLUMBIA CEMENT FREEPORT, NY
	Logged By: ANDREW KOHLBECKER		Boring No.: D-05
	Driller: ZEBRA ENVIRONMENTAL, INC		
	Drilling Method: 2" GEOPROBE		Sheet: 1 of 2
	Sampling Method: GEOPROBE DIRECT PUSH		Drilling Start Time: 11:00 / Finish Time: 11:55
	Water Level: ~7 FEET BELOW GRADE		
	Depth of Screen: N/A		
	Depth of Gravel: N/A		Date: 10/8/2004 / Date: 10/8/2004
	Depth of Bentonite: N/A		

Sampler Typ	Sample No./	Inches Driv./	Blow Count /	PID (ppm)	Analytical Sa	Depth (ft.)	Soil Graph	Surface Conditions
		48/30		0.2			SP	Light gray to tan medium to coarse SAND and fine rounded GGRAVEL, medium dense, wet
				0.2		21		
				0.2		22		
				0.2		23		Light gray medium to fine SAND, some fine rounded gravel
		48/24		0.1		24		
				0.1		25		
				0.1		26		
				0.1		27	SM	Gray fine micaceous SAND and SILT, dense, wet
		48/48		0.1		28		
				0.1		29		
				0.1		30		
				0.1		31		
						32	EOB	
						33		
						34		NOTES:
						35		
						36		
						37		
						38		
						39		
						40		

NOTES:

1 SAMPLE	DEPTH	TIME	ANALYSIS
D-05-10-12	10-12	11:05	VOC
D-05-16-18	16-18	11:15	VOC
D-05-20-22	20-22	11:30	VOC
D-05-24-26	24-26	11:40	VOC
D-05-28-30	28-30	11:50	VOC

2 EVIDENCE OF CONTAMINATION

ODOR: None

STAINING: None

3 DEPTH OF BORING - 32 FEET BELOW GROUND SURFACE

URS CORPORATION

Soil Boring Log

Location of Boring	Job No.:	Client:	Location:
See Figure 2 for boring location	38546433	BP ATLANTIC RICHFIELD	COLUMBIA CEMENT FREEPORT, NY

Logged By:	ANDREW KOHLBECKER	Boring No.: D-06
Driller:	ZEBRA ENVIRONMENTAL, INC	
Drilling Method:	2" GEOPROBE	Sheet: 1 of 2
Sampling Method:	GEOPROBE DIRECT PUSH	Drilling — Start Time: 12:10 / Finish Time: 13:03
Water Level:	~7 FEET BELOW GRADE	
Depth of Screen:	N/A	
Depth of Gravel:	N/A	Date: 10/8/2004 / Date: 10/8/2004
Depth of Bentonite:	N/A	

Surface Conditions: CRUSHED GRAVEL FILL

Sampler Type	Sample No. / Depth	Inches Driv. / Recov	Blow Count / 6"	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Description
						0	FILL	Advanced boring through backfill to 8'.
						1		
						2		Crushed stone backfill
						3		
						4–7	▼ (7)	
		48 / 1		1.8		8	FILL	Black silty CLAY with debris (paper, wood) (Fill)
				1.8		9		
				1.8		10		
				1.8		11		
		48 / 36		0.6		12	OL/ PT	Gray organic clay with plant fibers, soft, moist
				0.2		13		
				0.2		14	SP	Dark brown coarse SAND and rounded fine GRAVEL, medium dense, wet
				0.2		15		
		48 / 30		0.1		16		
				0.1		17		
				0.2		18	SP	Brown medium SAND, some rounded fine gravel, medium dense, wet
				0.2		19		
						20		

URS CORPORATION
Soil Boring Log

Location of Boring	Job No.: 38546433	Client: BP ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY
See Figure 2 for boring location	Logged By: ANDREW KOHLBECKER		Boring No.: D-06
	Driller: ZEBRA ENVIRONMENTAL, INC		Sheet: 1 of 2
	Drilling Method: 2" GEOPROBE		Drilling
	Sampling Method: GEOPROBE DIRECT PUSH		Start Time: 12:10 / Finish Time: 13:03
	Water Level: ~7 FEET BELOW GRADE		
	Depth of Screen: N/A		
	Depth of Gravel: N/A		Date: 10/8/2004 / Date: 10/8/2004
	Depth of Bentonite: N/A		

Sampler Type	Sample No.	Inches Driv.	Blow Count	PID (ppm)	Analytical Sa	Depth (ft.)	Soil Graph	Surface Conditions
		48 / 18		0.1			SP	Light gray coarse SAND with rounded fine gravel, medium dense, wet
				0.1		21		
				0.1		22		
				0.1		23		
		48 / 24		0.1		24		
				0.1		25		
				0.1		26		
				0.1		27		
		48 / 32		0.2		28	SM	Light gray micaceous silty fine SAND, dense, wet
				0.2		29		
				0.2		30		
				0.2		31		
						32	EOB	
						33		
						34		NOTES:
						35		
						36		
						37		
						38		
						39		
						40		

NOTES:

1 SAMPLE

SAMPLE	DEPTH	TIME	ANALYSIS
D-06-10-12	12-13	12:20	VOC
D-06-16-18	16-18	12:30	VOC
D-06-20-22	20-22	12:40	VOC
D-06-24-26	24-26	12:50	VOC
D-06-28-30	28-30	13:05	VOC

2 EVIDENCE OF CONTAMINATION
ODOR: None
STAINING: None

3 DEPTH OF BORING - 32 FEET BELOW GROUND SURFACE

URS CORPORATION
Soil Boring Log

Location of Boring: See Figure 2 for boring location	Job No.: 38546433	Client: BP ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY
	Logged By: ANDREW KOHLBECKER		Boring No.: D-07
	Driller: ZEBRA ENVIRONMENTAL, INC		
	Drilling Method: 2" GEOPROBE		Sheet: 1 of 2
	Sampling Method: GEOPROBE DIRECT PUSH		Drilling Start Time: 8:55 / Finish Time: 9:46
	Water Level: ~7 FEET BELOW GRADE		
	Depth of Screen: N/A		
	Depth of Gravel: N/A		Start Date: 10/6/2004 / Finish Date: 10/6/2004
	Depth of Bentonite: N/A		

Surface Conditions: CRUSHED GRAVEL FILL

Sampler Type	Sample No. / Depth	Inches Driv. / Recov.	Blow Count / 6"	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Description
						0	FILL	Advanced boring through backfill to 8'.
						1		
						2		Crushed stone backfill
						3		
						4		
						5		
						6		
						7	▼	
						8	OL/PT	Dark brown organic CLAY, with plant fibers, organic odor
						9		
		48 / 36		0.0		10		
				0.0		11		
				0.1		12		
				0.0		13		Dark brown sandy organic CLAY, trace plant fibers, organic odor
						14		
						15		
		48 / 36		0.0		16	SP	Dark brown to black medium to coarse gravelly SAND, organic odor, loose, wet
				0.0		17		Dark brown to black gravelly SAND, organic odor
				0.0		18		Brown to tan medium to coarse SAND, trace fine gravel ,well sorted, wet
				0.0		19		
						20		

URS CORPORATION
Soil Boring Log

Location of Boring: See Figure 2 for boring location	Job No.: 38546433	Client: BP ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY
	Logged By: ANDREW KOHLBECKER		Boring No.: D-07
	Driller: ZEBRA ENVIRONMENTAL, INC		Sheet: 1 of 2
	Drilling Method: 2" GEOPROBE		
	Sampling Method: GEOPROBE DIRECT PUSH		Drilling Start Time: 8:55 / Finish Time: 9:46
	Water Level: ~7 FEET BELOW GRADE		
	Depth of Screen: N/A		
	Depth of Gravel: N/A		Start Date: 10/6/2004
	Depth of Bentonite: N/A		Finish Date: 10/6/2004

Sampler Type	Sample No. /	Inches Driv. /	Blow Count /	PID (ppm)	Analytical Sa	Depth (ft.)	Soil Graph	Surface Conditions
		48 / 36		0.0				Light gray medium SAND, trace fine rounded gravel, medium dense, wet
				0.0		21	SP	
				0.0		22		
				0.0		23		
		48 / 12		0.0		24		Light gray coarse SAND with fine gravel, loose, wet
				0.0		25		
				0.0		26		
				0.0		27	SP	
		48 / 18		0.0		28		Light gray medium SAND, well sorted, dense, wet
				0.0		29		
				0.0		30		
				0.0		31		
						32	EOB	
						33		
						34		
						35		
						36		
						37		
						38		
						39		
						40		

NOTES:

1

SAMPLE	DEPTH	TIME	ANALYSIS
D-07-10-12	10-12	9:00	VOC
D-07-16-18	16-18	9:10	VOC
D-07-20-22	20-22	9:20	VOC
D-07-24-26	24-26	9:30	VOC
D-07-28-30	28-30	9:45	VOC

2 EVIDENCE OF CONTAMINATION

ODOR: None

STAINING: None

3 DEPTH OF BORING - 32 FEET BELOW GROUND SURFACE

URS CORPORATION
Soil Boring Log

Location of Boring	Job No.: 38546433	Client: BP ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY
See Figure 2 for boring location	Logged By: ANDREW KOHLBECKER		Boring No.: D-08
	Driller: ZEBRA ENVIRONMENTAL, INC		Sheet: 1 of 2
	Drilling Method: 2" GEOPROBE		
	Sampling Method: GEOPROBE DIRECT PUSH		Drilling — Start Time: 13:10; Finish Time: 14:10
	Water Level: ~7 FEET BELOW GRADE		
	Depth of Screen: N/A		
	Depth of Gravel: N/A		Date: 10/8/2004; Date: 10/8/2004
	Depth of Bentonite: N/A		

Sampler Type	Sample No. / Depth	Inches Driv. / Recov	Blow Count / 6"	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Surface Conditions
								CRUSHED GRAVEL FILL
						0	FILL	Advanced boring through backfill to 8'.
						1		
						2		Crushed stone backfill
						3		
						4		
						5		
						6	▼	
						7		
		48 / 20		0.2		8	FILL	Orange medium to fine SAND, some silt, loose, wet (Fill)
				0.2		9		
				0.2		10		
				1.2		11	OL	Gray organic CLAY soft, moist
		48 / 36		0.7		12	SP	Dark brown coarse SAND with fine rounded gravel, loose, wet
				0.7		13		
				0.7		14		
				0.2		15		Brown coarse SAND, medium dense, wet
		48 / 24		0.2		16	SP	
				0.2		17		
				0.3		18		Light gray medium to coarse SAND, well sorted, wet
				0.3		19		
						20		

URS CORPORATION
Soil Boring Log

Location of Boring See Figure 2 for boring location	Job No.: 38546433	Client: BP ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY
	Logged By: ANDREW KOHLBECKER		Boring No.: D-08
	Driller: ZEBRA ENVIRONMENTAL, INC		
	Drilling Method: 2" GEOPROBE		Sheet: 1 of 2
	Sampling Method: GEOPROBE DIRECT PUSH		Drilling
			Start Time: 13:10 / Finish Time: 14:10
	Water Level: ~7 FEET BELOW GRADE		
	Depth of Screen: N/A		
	Depth of Gravel: N/A		Date: 10/8/2004 / Date: 10/8/2004
	Depth of Bentonite: N/A		

Sampler Typ	Sample No.	Inches Driv.	Blow Count	PID (ppm)	Analytical Sa	Depth (ft.)	Soil Graph	Surface Conditions
		48/30		0.5		21	SP	Light gray medium to coarse SAND, with fine, rounded gravel, medium dense, moist
				0.5		22		
				4.5		23		Light gray medium to coarse SAND, little gravel, wet
				4.5		24		
		48/24		0.2		25		
				0.2		26		
				0.2		27		
				0.2		28	SP/SM	Gray fine micaceous SAND and SILT, dense, wet
		48/36		0.5		29		
				0.5		30	SP	Gray fine to medium SAND, dense, wet
				0.5		31		
				0.5		32		
						33	EOB	
						34		NOTES:
						35–40		

NOTES:

1 SAMPLE

SAMPLE	DEPTH	TIME	ANALYSIS
D-08-10-12	10-12	13:15	VOC
D-08-16-18	16-18	13:30	VOC
D-08-20-22	22-23	13:45	VOC
D-08-24-26	24-26	13:55	VOC
D-08-28-30	28-30	14:10	VOC

2 EVIDENCE OF CONTAMINATION
ODOR: None
STAINING: None

3 DEPTH OF BORING - 32 FEET BELOW GROUND SURFACE

URS CORPORATION
Soil Boring Log

Location of Boring: See Figure 2 for boring location	Job No.: 38546433	Client: BP/BELCI
	Location: FREEPORT, NY	
	Logged By: ANDREW KOHLBECKER	Boring No.: D-09
	Driller: ZEBRA ENVIRONMENTAL, INC	Sheet: 1 of 1
	Drilling Method: 2" GEOPROBE	
	Sampling Method: GEOPROBE DIRECT PUSH	Drilling Start Time: 14:15 / Finish Time: 14:20
	Water Level: ~7 FEET BELOW GRADE	
	Depth of Screen: N/A	
	Depth of Gravel: N/A	Date (Start): 10/8/2004
	Depth of Bentonite: N/A	Date (Finish): 10/8/2004

Sampler Type	Sample No. / Depth	Inches Driv. / Recov.	Blow Count / 6"	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Surface Conditions
								CRUSHED GRAVEL FILL
						0–1	FILL	Advanced boring through backfill to 12'.
						2–3	FILL	Crushed stone backfill
						3–12	FILL	
		48 / 30		2.0		12–13	SP	Brown coarse SAND and fine rounded GRAVEL, medium dense, wet
				2.0		13–14	SP	
				0.2		14–15	SP	
				0.2		15–16	SP	
						16	EOB	

NOTES:

1 SAMPLE	DEPTH	TIME	ANALYSIS
D-09-12-14	12-14	14:20	VOC
D-09-14-16	14-16	14:25	VOC

2 DEPTH OF BORING - 16 FEET BELOW GROUND SURFACE

APPENDIX C

GROUNDWATER SAMPLING LOGS

JUNE 2004 SAMPLING LOGS

Well MW-1S

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID	MW-1S	Start	10:28	Team	AK.JRR	
Date	6/7/2004	Finish	11:40	Diameter	4 inches	

						Yes/No		Yes/No
Depth to Water	6.64	ft TOC			2-inch pump ?	N	Duplicate?	N
Total Depth	20.96	ft TOC			Whale Pump ?	N	MS/MSD?	N
Depth to Pump	15	ft TOC			Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.45	L/min			Comments:	PERISTALTIC		
adjusted to:		L/min	at	minutes				
adjusted to:		L/min	at	minutes				

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	10:28	6.64						
5	10:33	6.77	6.63	-72	16.01	1.57	0.62	28.5
10	10:38	6.75	6.67	-75.5	15.80	1.55	0.47	158.7
15	10:43	6.72	6.65	-76.9	15.78	1.53	0.38	74.8
20	10:48	6.72	6.64	-75.9	15.81	1.53	0.33	451.3
25	10:53	6.74	6.61	-78.7	15.77	1.50	0.29	1084.8
30	10:58	6.73	6.59	-81.7	15.95	1.49	0.27	463.3
35	11:03	6.72	6.58	-88.8	15.77	1.47	0.25	1084.8
40	11:08	6.69	6.54	-84.4	15.83	1.49	0.24	1085.0
45	11:13	6.67	6.55	-86	15.74	1.48	0.23	1084.8
0								
0								
0								

Analyses		
VOC, TOC		☐
ALK, CHL		☐
TOT FE		☐
DIS GASSES		☐
SO4, NO3		☐
MN II, TOT MN		☐

	clear	cloudy	turbid
Water Quality	☒	☐	☐

Comments	
80 SUNNY	

Duplicate ID	

Shipped		SDG	

Well MW-97-1D

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID		MW-97-1D	Start	12:25	Team	AK, JRR	
Date		6/7/2004	Finish	13:30	Diameter	2 inches	
						Yes/No	Yes/No
Depth to Water		5.80	ft TOC		2-inch pump ?	N	Duplicate? N
Total Depth		33.62	ft TOC		Whale Pump ?	N	MS/MSD? N
Depth to Pump		31	ft TOC		Peristaltic Pump?	Y	Split-Sample? N
Pump Rate		0.48	L/min		Comments:	PERISTALTIC	
adjusted to:			L/min	at	minutes		
adjusted to:			L/min	at	minutes		

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	12:25	5.80						
5	12:30	5.92	6.43	-68.0	17.45	1.099	0.81	37.5
10	12:35	5.92	6.60	-55.7	17.89	1.640	0.53	8.7
15	12:40	5.91	6.62	-53.8	17.93	1.862	0.46	14.7
20	12:45	5.91	6.63	-52.0	17.66	1.853	0.40	12.4
25	12:50	5.90	6.64	-51.7	17.71	1.855	0.37	3.4
30	12:55	5.89	6.64	-51.2	17.68	1.852	0.35	5.4
35	13:00	5.88	6.64	-53.1	17.49	1.840	0.34	5.7
40	13:05	5.89	6.64	-53.1	17.71	1.848	0.34	3.1
45	13:10	5.88	6.64	-52.2	17.70	1.844	0.33	4.9
50	13:15	5.88	6.64	-51.4	17.68	1.840	0.33	5.9
0								
0								

Analyses			
VOC, TOC			☐
ALK, CHL			☐
TOT FE			☐
DIS GASSES			☐
SO4, NO3			☐
MN II, TOT MN			☐

	clear	cloudy	turbid
Water Quality	X	☐	☐

Comments	
85 SUNNY	

Duplicate ID	

Shipped		SDG	

Well MW-97-1S

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID	MW-97-1S	Start	8:00	Team	AK, JRR
Date	6/8/2004	Finish	9:00	Diameter	2 inches

				Yes/No		Yes/No
Depth to Water	5.95	ft TOC	2-inch pump ?	N	Duplicate?	N
Total Depth	21.14	ft TOC	Whale Pump ?	N	MS/MSD?	N
Depth to Pump	19	ft TOC	Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.49	L/min	Comments:	PERISTALTIC		
adjusted to:		L/min	at		minutes	
adjusted to:		L/min	at		minutes	

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	8:00	5.95						
14	8:14	5.99	6.33	-6.6	16.48	0.798	0.77	53.2
19	8:19	5.98	6.23	-9.8	16.44	0.794	0.40	31.5
24	8:24	5.99	6.25	-16.2	16.51	0.793	0.34	25.3
29	8:29	5.99	6.27	-22.3	16.49	0.791	0.32	23.3
34	8:34	5.99	6.28	-26.2	16.48	0.790	0.30	35.7
39	8:39	5.99	6.27	-28.6	16.53	0.801	0.28	59.6
44	8:44	5.98	6.28	-31.2	16.57	0.794	0.29	250.1
0								
0								
0								
0								
0								

Analyses		
VOC, TOC		☐
ALK, CHL		☐
TOT FE		☐
DIS GASSES		☐
SO4, NO3		☐
MN II, TOT MN		☐

	clear	cloudy	turbid
Water Quality	☒	☐	☐

Comments	
75 SUNNY PID: 0.6 ppm	

Duplicate ID	

Shipped		SDG	

Well MW-97-2S

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID	MW-97-2S	Start	11:05	Team	AK, JRR	
Date	6/8/2004	Finish	11:55	Diameter	2 inches	

				Yes/No		Yes/No
Depth to Water	6.89	ft TOC	2-inch pump ?	N	Duplicate?	N
Total Depth	23.93	ft TOC	Whale Pump ?	N	MS/MSD?	N
Depth to Pump	19	ft TOC	Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.48	L/min	Comments:	PERISTALTIC		
adjusted to:		L/min	at	minutes		
adjusted to:		L/min	at	minutes		

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	11:05	6.89						
5	11:10	6.88	6.17	8.2	17.61	0.981	0.87	1052.3
10	11:15	6.89	6.15	4.1	17.59	0.958	0.61	191.4
15	11:20	6.88	6.15	-1.6	17.58	0.970	0.48	138.5
20	11:25	6.88	6.16	-6.8	17.57	0.972	0.43	179.2
25	11:30	6.88	6.16	-8.8	17.63	0.964	0.55	200.7
30	11:35	6.88	6.16	-11.4	17.58	0.980	0.51	252.7
35	11:40	6.88	6.15	-14.5	17.56	0.982	0.48	164.7
0								
0								
0								
0								
0								

Analyses		
VOC, TOC		☐
ALK, CHL		☐
TOT FE		☐
DIS GASSES		☐
SO4, NO3		☐
MN II, TOT MN		☐

	clear	cloudy	turbid
Water Quality	X	☐	☐

Comments	
85 SUNNY PID:0.3ppm	

Duplicate ID	

Shipped		SDG	

Well MW-97-3S

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID	MW-97-3S	Start	9:57	Team	AK, JRR	
Date	6/9/2004	Finish	10:45	Diameter	2 inches	

				Yes/No		Yes/No
Depth to Water	6.99	ft TOC	2-inch pump ?	N	Duplicate?	N
Total Depth	24.81	ft TOC	Whale Pump ?	N	MS/MSD?	N
Depth to Pump	20	ft TOC	Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.47	L/min	Comments:	PERISTALTIC		
adjusted to:		L/min	at	minutes		
adjusted to:		L/min	at	minutes		

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	9:57	6.99						
5	10:02	7.00	6.48	-101	17.48	1.802	1.25	1119.9
10	10:07	7.00	6.43	-119.7	17.32	1.780	0.60	991.8
15	10:12	7.00	6.40	-135.9	17.23	1.757	0.33	1139.0
20	10:17	7.01	6.39	-146.8	17.41	1.765	0.31	616.8
25	10:22	7.00	6.37	-156.6	17.47	1.763	0.30	348.0
30	10:27	7.00	6.38	-158.9	17.28	1.762	0.32	540.2
35	10:32	7.00	6.37	-165.3	17.38	1.750	0.33	236.9
0								
0								
0								
0								
0								

Analyses		
VOC, TOC		☐
ALK, CHL		☐
TOT FE		☐
DIS GASSES		☐
SO4, NO3		☐
MN II, TOT MN		☐

	clear	cloudy	turbid
Water Quality	X	☐	☐

Comments
85 SUNNY PID: 0.00ppm

Duplicate ID	

Shipped		SDG	

Well MW-97-4S

Groundwater Sampling Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID		MW-97-4S	Start	10:00	Team	AK, JRR
Date		6/10/2004	Finish	11:25	Diameter	2 inches

					Yes/No		Yes/No
Depth to Water		7.14	ft TOC	2-inch pump ?	N	Duplicate?	N
Total Depth		24.95	ft TOC	Whale Pump ?	N	MS/MSD?	N
Depth to Pump		20	ft TOC	Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate		0.48	L/min	Comments:	PERISTALTIC		
adjusted to:			L/min at	minutes			
adjusted to:			L/min at	minutes			

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	10:00	7.14						
15	10:15	7.15	6.62	-45.2	16.38	1.134	0.64	18.8
20	10:20	7.17	6.56	-52.3	16.20	1.146	0.40	30.1
25	10:25	7.17	6.56	-63.8	15.96	1.149	0.36	61.3
30	10:30	7.17	6.56	-76.3	15.95	1.148	0.32	63.1
35	10:35	7.18	6.56	-85.0	15.97	1.161	0.30	216.7
40	10:40	7.18	6.56	-104.0	15.92	1.170	0.28	198.0
45	10:45	7.18	6.55	-128.6	15.88	1.176	0.27	493.4
50	10:50	7.18	6.56	-149.8	15.81	1.174	0.27	27.8
55	10:55	7.19	6.55	-176.2	15.85	1.173	0.26	217.1
60	11:00	7.19	6.54	-182.5	15.91	1.178	0.26	112.6
65	11:05	7.19	6.54	-179.0	15.81	1.193	0.26	227.9
70	11:10	7.19	6.54	-173.0	15.80	1.180	0.25	83.4

Analyses		
VOC, TOC		☐
ALK, CHL		☐
TOT FE		☐
DIS GASSES		☐
SO4, NO3		☐
MN II, TOT MN		☐

	clear	cloudy	turbid
Water Quality	X	☐	☐

Comments
80-85 CLOUDY
PID: 0.6 ppm

Duplicate ID			
Shipped		SDG	

Well MW-97-5S

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID	MW-97-5S	Start	11:30	Team	AK, JRR
Date	6/10/2004	Finish	12:30	Diameter	2 inches

				Yes/No		Yes/No
Depth to Water	7.01	ft TOC	2-inch pump ?	N	Duplicate?	N
Total Depth	25.41	ft TOC	Whale Pump ?	N	MS/MSD?	N
Depth to Pump	20	ft TOC	Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.48	L/min	Comments:	PERISTALTIC		
adjusted to:		L/min	at		minutes	
adjusted to:		L/min	at		minutes	

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	11:30	7.01						
5	11:35	7.07	6.65	-90.8	15.60	0.419	0.77	167.9
10	11:40	7.08	6.59	-104.2	15.49	0.515	0.52	874.3
15	11:45	7.08	6.60	-137.1	15.39	0.674	0.40	49.2
20	11:50	7.07	6.62	-154.4	15.41	0.765	0.35	29.4
25	11:55	7.06	6.63	-159.6	15.41	0.815	0.32	18.2
30	12:00	7.06	6.63	-163.9	15.42	0.859	0.30	15.9
35	12:05	7.06	6.65	-164.7	15.37	0.881	0.29	81.9
40	12:10	7.06	6.66	-159.0	15.31	0.891	0.28	41.0
0								
0								
0								
0								

Analyses		
VOC, TOC		☐
ALK, CHL		☐
TOT FE		☐
DIS GASSES		☐
SO4, NO3		☐
MN II, TOT MN		☐

	clear	cloudy	turbid
Water Quality	☒	☐	☐

Comments
85 CLOUDY
PID: 0.4 ppm

Duplicate ID			
Shipped		SDG	

Well MW-97-6S

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID		MW-97-6S	Start	7:50	Team	AK, JRR
Date		6/9/2004	Finish	8:35	Diameter	2 inches

					Yes/No		Yes/No
Depth to Water	6.72	ft TOC		2-inch pump ?	N	Duplicate?	N
Total Depth	25.73	ft TOC		Whale Pump ?	N	MS/MSD?	N
Depth to Pump	20	ft TOC		Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.49	L/min		Comments:	PERISTALTIC		
adjusted to:		L/min	at	minutes			
adjusted to:		L/min	at	minutes			

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	7:50	6.72						
5	7:55	6.85	6.03	-3.9	16.96	1.391	0.58	295.1
10	8:00	6.86	6.07	-9.4	16.95	1.393	0.50	268.7
15	8:05	6.86	6.11	-11.3	16.97	1.394	0.45	232.5
20	8:10	6.87	6.12	-12	17.02	1.392	0.44	261.5
25	8:15	6.87	6.12	-10.7	17.03	1.400	0.40	399.0
30	8:20	6.88	6.13	-15.3	17.05	1.401	0.41	245.0
0								
0								
0								
0								
0								
0								

Analyses		
VOC, TOC		☐
ALK, CHL		☐
TOT FE		☐
DIS GASSES		☐
SO4, NO3		☐
MN II, TOT MN		☐

	clear	cloudy	turbid
Water Quality	☒	☐	☐

Comments	
75 SUNNY PID:25.3	

Duplicate ID	

Shipped		SDG	

Well MW-97-7S

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID		MW-97-7S	Start	9:00	Team	AK,JRR	
Date		6/9/2004	Finish	9:35	Diameter	2 inches	
						Yes/No	Yes/No
Depth to Water		6.90	ft TOC		2-inch pump ?	N	Duplicate? N
Total Depth		31.75	ft TOC		Whale Pump ?	N	MS/MSD? N
Depth to Pump		26	ft TOC		Peristaltic Pump?	Y	Split-Sample? N
Pump Rate		0.48	L/min		Comments:	PERISTALTIC	
adjusted to:			L/min	at	minutes		
adjusted to:			L/min	at	minutes		

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	9:00	6.90						
5	9:05	6.91	6.21	7.4	17.62	0.922	0.90	390.2
10	9:10	6.93	6.20	3.7	17.55	0.916	0.57	665.0
15	9:15	6.93	6.22	-5.5	17.51	0.907	0.43	1139.8
20	9:20	6.93	6.26	-9.1	17.53	0.905	0.39	829.2
25	9:25	6.93	6.26	-12.2	17.51	0.904	0.36	551.7
30	9:30	6.94	6.27	-14.3	17.55	0.905	0.34	371.9
0								
0								
0								
0								
0								
0								

Analyses			
VOC, TOC			☐
ALK, CHL			☐
TOT FE			☐
DIS GASSES			☐
SO4, NO3			☐
MN II, TOT MN			☐

	clear	cloudy	turbid
Water Quality	☒	☐	☐

Comments	
80 SUNNY PID: 24/8ppm	

Duplicate ID	

Shipped		SDG	

Well MW-98-8S

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID	MW-98-8S	Start	12:00	Team	AK, JRR
Date	6/9/2004	Finish	12:50	Diameter	2 inches

					Yes/No		Yes/No
Depth to Water	7.25	ft TOC		2-inch pump ?	N	Duplicate?	N
Total Depth	19.76	ft TOC		Whale Pump ?	N	MS/MSD?	N
Depth to Pump	15	ft TOC		Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.46	L/min		Comments:	PERISTALTIC		
adjusted to:		L/min	at	minutes			
adjusted to:		L/min	at	minutes			

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	12:00	7.25						
13	12:13	7.32	6.71	-66.1	17.14	1.986	1.17	6.9
18	12:18	7.32	6.66	-57.1	17.07	1.983	0.71	4.3
23	12:23	7.31	6.67	-60.8	17.00	1.980	0.52	3.4
28	12:28	7.30	6.66	-65.4	16.85	1.972	0.44	1.6
33	12:33	7.30	6.68	-69.7	16.86	1.972	0.39	4.0
38	12:38	7.29	6.68	-72.2	16.74	1.965	0.37	0.9
43	12:43	7.28	6.67	-72.8	14.75	1.967	0.35	2.4
0								
0								
0								
0								
0								

Analyses		
VOC, TOC		☐
ALK, CHL		☐
TOT FE		☐
DIS GASSES		☐
SO4, NO3		☐
MN II, TOT MN		☐

	clear	cloudy	turbid
Water Quality	☒	☐	☐

Comments

90 SUNNY & WINDY
PID: 0.3 ppm

Duplicate ID		Shipped	SDG	

Well MW-98-8D

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID		MW-98-8D	Start	11:00	Team	AK, JRR	
Date		6/9/2004	Finish	11:55	Diameter	2 inches	

				Yes/No		Yes/No
Depth to Water	7.17	ft TOC	2-inch pump ?	N	Duplicate?	N
Total Depth	34.88	ft TOC	Whale Pump ?	N	MS/MSD?	N
Depth to Pump	30	ft TOC	Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.46	L/min	Comments:	PERISTALTIC		
adjusted to:		L/min at	minutes			
adjusted to:		L/min at	minutes			

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	11:00	7.17						
7	11:07	7.19	6.56	-48.8	17.95	1.079	1.42	217.0
12	11:12	7.19	6.46	-54.4	17.56	1.080	0.75	109.1
17	11:17	7.19	6.47	-54	17.50	1.078	0.56	78.0
22	11:22	7.19	6.49	-62.3	17.31	1.058	0.48	22.3
27	11:27	7.18	6.50	-69.8	17.22	1.059	0.42	75.0
32	11:32	7.17	6.51	-71.2	17.19	1.073	0.39	327.0
37	11:37	7.14	6.52	-77.1	17.26	1.079	0.37	1138.8
42	11:42	7.13	6.51	-81.2	17.28	1.083	0.36	5.1
0								
0								
0								
0								

Analyses		
VOC, TOC		☐
ALK, CHL		☐
TOT FE		☐
DIS GASSES		☐
SO4, NO3		☐
MN II, TOT MN		☐

	clear	cloudy	turbid
Water Quality	☒	☐	☐

Comments
85 SUNNY & WINDY
PID: 1.3ppm

Duplicate ID

Shipped | SDG

Well MW-98-9D

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID	MW-98-9D	Start	9:29	Team	AK, JRR	
Date	6/8/2004	Finish	10:35	Diameter	2 inches	

					Yes/No		Yes/No
Depth to Water	5.90	ft TOC		2-inch pump ?	N	Duplicate?	N
Total Depth	36.56	ft TOC		Whale Pump ?	N	MS/MSD?	N
Depth to Pump	33	ft TOC		Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.43	L/min		Comments:	PERISTALTIC		
adjusted to:		L/min	at	minutes			
adjusted to:		L/min	at	minutes			

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	9:29	5.90						
5	9:34	5.93	6.29	6.2	17.41	0.857	2.28	73.5
10	9:39	5.91	6.25	-5.6	17.69	0.850	1.20	427.3
15	9:44	5.91	6.28	-12.2	17.62	0.849	0.86	133.1
20	9:49	5.91	6.28	-10.5	17.71	0.849	0.65	299.1
25	9:54	5.91	6.29	-9.3	17.73	0.850	0.53	75.5
30	9:59	5.91	6.29	-9.4	17.71	0.855	0.46	1096.3
35	10:04	5.91	6.29	-16.2	17.77	0.851	0.40	321.8
40	10:09	5.91	6.29	-21.3	17.75	0.852	0.37	307.8
45	10:14	5.90	6.29	-26.6	17.71	0.850	0.35	1096.1
0								
0								
0								

Analyses		
VOC, TOC		☐
ALK, CHL		☐
TOT FE		☐
DIS GASSES		☐
SO4, NO3		☐
MN II, TOT MN		☐

	clear	cloudy	turbid
Water Quality	X	☐	☐

Comments	
SUNNY 75	
PID: 1.2ppm	

Duplicate ID	MW-9D-98D

Shipped		SDG	

Well MW-98-10D

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID	MW-98-10D	Start	12:25	Team	AK, JRR
Date	6/8/2004	Finish	13:30	Diameter	2 inches

				Yes/No		Yes/No
Depth to Water	7.00	ft TOC	2-inch pump ?	N	Duplicate?	N
Total Depth	34.94	ft TOC	Whale Pump ?	N	MS/MSD?	N
Depth to Pump	31	ft TOC	Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.48	L/min	Comments:	PERISTALTIC		
adjusted to:		L/min	at		minutes	
adjusted to:		L/min	at		minutes	

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	12:25	7.00						
5	12:30	7.02	6.07	-0.8	18.94	0.932	1.94	7.7
10	12:35	7.01	6.08	-33.7	18.87	0.925	1.21	18.7
15	12:40	7.01	6.10	-57.4	18.83	0.917	1.05	6.8
20	12:45	7.00	6.15	-73.4	18.77	0.910	0.92	3.8
25	12:50	7.00	6.15	-87.2	18.96	0.910	0.86	7.2
30	12:55	7.00	6.16	-113.7	17.90	0.898	0.80	7.5
35	13:00	6.99	6.18	-178.5	19.01	0.909	0.75	678.0
40	13:05	7.00	6.18	-196.1	18.95	0.898	0.72	399.5
45	13:10	7.00	6.19	-201.4	18.86	0.896	0.71	393.3
50	13:15	6.98	6.19	-207.3	18.83	0.899	0.69	24.8
0								
0								

Analyses			
VOC, TOC			☐
ALK, CHL			☐
TOT FE			☐
DIS GASSES			☐
SO4, NO3			☐
MN II, TOT MN			☐

	clear	cloudy	turbid
Water Quality	☒	☐	☐

Comments
85 SUNNY & WINDY
PID:0.5ppm

Duplicate ID

Shipped | SDG

Well MW-00-11A

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID	MW-00-11A	Start	13:00	Team	AK, JRR	
Date	6/9/2004	Finish	14:15	Diameter	2 inches	
					Yes/No	Yes/No
Depth to Water	2.46	ft TOC		2-inch pump ?	N	Duplicate? N
Total Depth	60.14	ft TOC		Whale Pump ?	N	MS/MSD? N
Depth to Pump	55	ft TOC		Peristaltic Pump?	Y	Split-Sample? N
Pump Rate	0.49	L/min		Comments:	PERISTALTIC	
adjusted to:		L/min	at	minutes		
adjusted to:		L/min	at	minutes		

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	13:00	2.46						
20	13:20	2.46	5.14	89.9	18.76	0.028	0.98	271.6
25	13:25	2.46	5.04	103.2	18.72	0.027	0.63	607.2
30	13:30	2.46	5.00	80.4	18.68	0.027	0.41	1143.8
35	13:35	2.45	5.00	52.2	18.59	0.027	0.37	1143.5
40	13:40	2.44	4.99	34.2	18.62	0.027	0.33	761.2
45	13:45	2.43	5.02	-25.7	18.51	0.027	0.30	1108.0
50	13:50	2.42	5.04	-110.4	18.58	0.027	0.29	1080.5
55	13:55	2.40	5.12	-153.4	18.50	0.027	0.28	1142.9
60	14:00	2.41	5.09	-171.4	18.42	0.026	0.28	318.8
65	14:05	2.40	5.10	-203.5	18.48	0.026	0.27	228.3
70	14:10	2.40	5.10	-200.8	18.54	0.026	0.26	189.5
75	14:15	2.40	5.13	-206.4	18.44	0.026	0.25	240.6

Analyses		
VOC, TOC		☐
ALK, CHL		☐
TOT FE		☐
DIS GASSES		☐
SO4, NO3		☐
MN II, TOT MN		☐

	clear	cloudy	turbid
Water Quality	☐	X	☐

Comments
90 SUNNY & WINDY
PID: 0.5 ppm

Duplicate ID			
Shipped		SDG	

Well MW-00-12D

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID	MW-00-12D	Start	9:00	Team	AK, JRR	
Date	6/10/2004	Finish	9:55	Diameter	2 inches	
					Yes/No	Yes/No
Depth to Water	6.77	ft TOC		2-inch pump ?	N	Duplicate? N
Total Depth	34.70	ft TOC		Whale Pump ?	N	MS/MSD? N
Depth to Pump	30	ft TOC		Peristaltic Pump?	Y	Split-Sample? N
Pump Rate	0.48	L/min		Comments:	PERISTALTIC	
adjusted to:		L/min	at	minutes		
adjusted to:		L/min	at	minutes		

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	9:00	6.77						
15	9:15	6.81	6.56	-12	16.05	1.430	0.26	1187.1
20	9:20	6.81	6.54	-11.6	15.92	1.427	0.53	1186.7
25	9:25	6.81	6.55	-21.1	15.85	1.435	0.45	178.0
30	9:30	6.83	6.57	-26.4	16.85	1.436	0.42	231.5
35	9:35	6.85	6.59	-30.4	15.91	1.439	0.38	182.4
40	9:40	6.86	6.59	-28.2	15.89	1.437	0.36	25.1
45	9:45	6.86	6.59	-33.5	15.89	1.437	0.35	576.2
0								
0								
0								
0								
0								

Analyses		
VOC, TOC		☐
ALK, CHL		☐
TOT FE		☐
DIS GASSES		☐
SO4, NO3		☐
MN II, TOT MN		☐

	clear	cloudy	turbid
Water Quality	☒	☐	☐

Comments

75-80 PARTLY CLOUDY
PID: 6.6 ppm

Duplicate ID	

Shipped		SDG	

Well MW-13-3S

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID	MW-03-3S	Start	7:45	Team	AK, JRR	
Date	6/10/2004	Finish	8:45	Diameter	2 inches	

				Yes/No		Yes/No
Depth to Water	6.18	ft TOC	2-inch pump ?	N	Duplicate?	N
Total Depth	24.28	ft TOC	Whale Pump ?	N	MS/MSD?	N
Depth to Pump	20	ft TOC	Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.46	L/min	Comments:	PERISTALTIC		
adjusted to:		L/min at	minutes			
adjusted to:		L/min at	minutes			

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	7:45	6.18						
10	7:55	6.35	6.37	10.3	19.92	1.053	1.86	39.4
15	8:00	6.50	6.39	-18.9	19.58	1.047	0.85	68.5
20	8:05	6.37	6.45	-29	19.50	1.042	0.68	602.6
25	8:10	6.40	6.48	-30.3	19.46	1.044	0.59	566.1
30	8:15	6.41	6.50	-33.3	19.49	1.044	0.53	250.1
35	8:20	6.42	6.51	-36	19.57	4.045	0.48	617.2
40	8:25	6.44	6.52	-40.4	19.54	1.043	0.45	890.2
45	8:30	6.45	6.53	-42.8	19.59	1.044	0.43	957.2
0								
0								
0								
0								

Analyses		
VOC, TOC		X
ALK, CHL		X
TOT FE		X
DIS GASSES		X
SO4, NO3		X
MN II, TOT MN		X

	clear	cloudy	turbid
Water Quality	X		

Comments

75 PARTLY CLOUDY

PID: 0.0 ppm

Duplicate ID		Shipped	SDG	

APRIL 2005 SAMPLING LOGS

Well MW-97-1S

Groundwater Sampling Log; Remediation Management Company (BP) - Freeport, NY

Well ID	MW-97-1S	Start	7:17	Team	BD, AK	
Date	4/26/2005	Finish	7:45	Diameter	2 inches	
					Yes/No	Yes/No
Depth to Water	5.82	ft TOC		2-inch pump ?	N	Duplicate? N
Total Depth	24.11	ft TOC		Whale Pump ?	N	MS/MSD? N
Depth to Pump	19	ft TOC		Peristaltic Pump?	Y	Split-Sample? N
Pump Rate	0.54	L/min		Comments:	PERISTALTIC	
adjusted to:		L/min	at	minutes		
adjusted to:		L/min	at	minutes		

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	7:17	5.81						
3	7:20	5.82	6.44	-91	16.51	0.92	0.77	22.9
8	7:25	5.81	6.45	-97	16.46	0.94	0.00	37.7
13	7:30	5.81	6.46	-102	16.81	0.91	0.00	48.5
18	7:35	5.81	6.47	-105	16.98	0.91	0.00	65.8
23	7:40	5.81	6.48	-108	17.14	0.89	0.00	89.1

Analyses			
VOCs			☒
			☐
			☐
			☐

	clear	cloudy	turbid
Water Quality	☒	☐	☐

Comments

60 PARTLY CLOUDY

PID: 0.0ppm

Duplicate ID			
Shipped		SDG	

Well MW-98-9D

Groundwater Sampling Log; Remediation Management Company (BP) - Freeport, NY

Well ID	MW-98-9D	Start	6:21	Team	BD, AK
Date	4/26/2005	Finish	6:50	Diameter	2 inches

					Yes/No		Yes/No
Depth to Water	5.85	ft TOC		2-inch pump ?	N	Duplicate?	N
Total Depth	36.34	ft TOC		Whale Pump ?	N	MS/MSD?	N
Depth to Pump	31	ft TOC		Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.91	L/min		Comments:	PERISTALTIC		
adjusted to:		L/min	at	minutes			
adjusted to:		L/min	at	minutes			

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	6:21	5.88						
4	6:25	5.90	6.31	-109	17.77	0.92	0.00	25.0
9	6:30	5.90	6.37	-114	17.92	1.41	0.00	280.0
14	6:35	5.90	6.38	-116	17.94	0.90	0.00	220.0
19	6:40	5.90	6.38	-117	17.95	0.90	0.00	224.0
24	6:45	5.90	6.39	-117	17.94	0.90	0.00	225.0

Analyses			
VOCs			[X]
			[ ]
			[ ]
			[ ]

	clear	cloudy	turbid
Water Quality	[X]	[ ]	[ ]

Comments

60 PARTLY CLOUDY

PID: 0.5ppm

Duplicate ID			
Shipped		SDG	

Well MW-03-13S

Groundwater Sampling Log; Remediation Management Company (BP) - Freeport, NY

Well ID	MW-03-13S	Start	8:47	Team	BD, AK
Date	4/26/2005	Finish	9:15	Diameter	2 inches

				Yes/No		Yes/No
Depth to Water	6.05	ft TOC	2-inch pump ?	N	Duplicate?	N
Total Depth	24.30	ft TOC	Whale Pump ?	N	MS/MSD?	N
Depth to Pump	19	ft TOC	Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.61	L/min	Comments:	PERISTALTIC		
adjusted to:		L/min	at		minutes	
adjusted to:		L/min	at		minutes	

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	8:47	5.99						
3	8:50	6.10	6.82	-130	15.63	0.91	0.44	77.3
8	8:55	6.00	6.81	-133	15.65	0.93	0.00	50.6
13	9:00	6.00	6.79	-135	15.65	0.90	0.00	37.5
18	9:05	6.00	6.74	-136	15.65	0.90	0.00	32.2
23	9:10	6.00	6.80	-135	15.66	0.90	0.00	32.8

Analyses			
VOCs			[X]
			[ ]
			[ ]
			[ ]

	clear	cloudy	turbid
Water Quality	[X]	[ ]	[ ]

Comments

60 PARTLY CLOUDY

PID: 0.0ppm

Duplicate ID			
Shipped		SDG	

Well MW-05-14S

Groundwater Sampling Log; Remediation Management Company (BP) - Freeport, NY

Well ID	MW-05-14S	Start	10:23	Team	BD, AK	
Date	4/26/2005	Finish	10:55	Diameter	2 inches	

				Yes/No		Yes/No
Depth to Water	5.04	ft TOC	2-inch pump ?	N	Duplicate?	N
Total Depth	25.00	ft TOC	Whale Pump ?	N	MS/MSD?	N
Depth to Pump	20	ft TOC	Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.71	L/min	Comments:	PERISTALTIC		
adjusted to:		L/min	at	minutes		
adjusted to:		L/min	at	minutes		

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	10:23	5.00						
2	10:25	5.45	6.34	-68	16.27	13.20	0.46	377.0
7	10:30		6.34	-75	16.20	13.30	0.00	375.0
12	10:35	5.30	6.34	-82	16.55	13.10	0.00	371.0
17	10:40	5.30	6.34	-84	16.72	15.20	0.00	188.0
22	10:45		6.34	-85	16.63	15.10	0.00	102.0
27	10:50		6.34	-86	16.63	14.30	0.00	61.0

Analyses			
VOCs			☒
			☐
			☐
			☐

	clear	cloudy	turbid
Water Quality	☒	☐	☐

Comments	
60 PARTLY CLOUDY PID: 0.0ppm	

Duplicate ID	

Shipped		SDG	

Well MW-05-15D

Groundwater Sampling Log; Remediation Management Company (BP) - Freeport, NY

Well ID		MW-05-15D	Start	9:42	Team	BD, AK	
Date			Finish	10:10	Diameter	2 inches	

					Yes/No		Yes/No
Depth to Water	4.95	ft TOC		2-inch pump ?	N	Duplicate?	N
Total Depth	38.30	ft TOC		Whale Pump ?	N	MS/MSD?	N
Depth to Pump	33	ft TOC		Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	1.01	L/min		Comments:	PERISTALTIC		
adjusted to:		L/min	at	minutes			
adjusted to:		L/min	at	minutes			

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	9:42	4.92						
3	9:45	5.13	6.73	-61	17.67	0.28	0.00	242.0
8	9:50	5.12	6.65	-54	17.80	0.28	0.00	88.2
13	9:55		6.63	-73	17.78	0.27	0.00	49.8
18	10:00	5.12	6.63	-75	17.79	0.30	0.00	40.9
23	10:05	5.12	6.62	-71	17.79	0.30	0.00	39.2

Analyses			
VOCs			[X]
			[ ]
			[ ]
			[ ]

	clear	cloudy	turbid
Water Quality	[X]	[ ]	[ ]

Comments

60 PARTLY CLOUDY

PID: 2.8ppm

Duplicate ID	MW0616

Shipped		SDG	

JUNE 2006 SAMPLING LOGS

Well MW-1S

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID		MW-1S	Start	9:37	Team	LG, TT	
Date		6/7/2006	Finish	10:37	Diameter	4 inches	
						Yes/No	Yes/No
Depth to Water		5.62	ft TOC		2-inch pump ?	N	Duplicate? N
Total Depth		20.02	ft TOC		Whale Pump ?	N	MS/MSD? N
Depth to Pump		15	ft TOC		Peristaltic Pump?	Y	Split-Sample? N
Pump Rate		0.45	L/min		Comments:	PERISTALTIC	
adjusted to:		0.35	L/min	6	minutes		
adjusted to:		0.3	L/min	9	minutes		

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	9:37	5.62						
3	9:40	5.62	6.71	-141	15.76	1.33	0.92	412.0
6	9:43		6.96	-169	15.48	1.30	0.60	171.0
9	9:46		7.06	-181	15.49	1.28	0.21	13.0
12	9:49	6.96	7.12	-190	15.49	1.28	0.10	70.9
15	9:52		7.25	-195	15.52	1.28	0.00	77.6
18	9:55	7.68	7.36	-197	15.54	1.28	0.00	71.7
21	9:58		7.36	-197	15.55	1.28	0.00	77.3
24	10:01	8.16	7.37	-196	15.59	1.28	0.00	80.6
27	10:04		7.37	-196	15.55	1.28	0.00	81.2
30	10:07	8.71	7.37	-195	15.59	1.28	0.00	83.6
33	10:10	8.71	Collect Sample					
60	10:37	10.24	7.34	-195	15.12	1.29	0.41	50.1

Analyses			
VOC, TOC			X
ALK, CHL			X
TOT FE			X
DIS GASSES			X
SO4, NO3			X

	clear	cloudy	turbid
Water Quality	X		

Comments	
Rainy, 70 PID: 0 ppm	

Duplicate ID	

Shipped		SDG	

Well MW-97-1D

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID		MW-97-1D	Start	10:58	Team	LG, TT	
Date		6/7/2006	Finish	11:46	Diameter	2 inches	

		Yes/No		Yes/No	
Depth to Water	5.85 ft TOC	2-inch pump ?	N	Duplicate?	N
Total Depth	33.65 ft TOC	Whale Pump ?	N	MS/MSD?	N
Depth to Pump	30 ft TOC	Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.50 L/min	Comments:	PERISTALTIC		
adjusted to:	0.4 L/min	at 6	minutes		
adjusted to:	0.3 L/min	at 9	minutes		

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	10:58	5.85						
3	11:01	5.85	6.88	31.0	14.94	1.06	0.0	0.0
6	11:04		6.68	39.0	155.03	1.06	0.0	0.0
9	11:07		6.71	40.0	15.21	1.06	0.0	0.0
12	11:10	5.82	6.77	42.0	15.17	1.06	0.0	0.0
15	11:13		6.81	42.0	15.17	1.06	0.0	2.7
18	11:16	5.83	6.81	43.0	15.13	1.06	0.0	1.9
21	11:19		6.83	49.0	15.28	1.34	0.0	0.0
24	11:22	5.84	6.90	52.0	15.31	1.37	0.0	0.9
27	11:25		6.91	56.0	15.35	1.39	0.0	0.6
30	11:28	5.84	6.93	57.0	15.37	1.40	0.0	0.9
37	11:35	5.84	Collect Sample					
48	11:46	5.91	6.99	-17.0	15.37	1.910	0.03	0.0

Analyses			
VOC, TOC			X
ALK, CHL			X
TOT FE			X
DIS GASSES			X
SO4, NO3			X

	clear	cloudy	turbid
Water Quality	X		

Comments
Rainy, 70
PID: 0 ppm

Duplicate ID			
Shipped		SDG	

Well MW-97-1S

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID		MW-97-1S	Start	16:39	Team	LG, TT	
Date		6/7/2006	Finish	17:47	Diameter	2 inches	
						Yes/No	Yes/No
Depth to Water		5.33	ft TOC		2-inch pump ?	N	Duplicate? N
Total Depth		24.08	ft TOC		Whale Pump ?	N	MS/MSD? N
Depth to Pump		19	ft TOC		Peristaltic Pump?	Y	Split-Sample? N
Pump Rate		0.30	L/min		Comments:	PERISTALTIC	
adjusted to:			L/min	at	minutes		
adjusted to:			L/min	at	minutes		

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	16:39	5.33						
3	16:42	5.33	6.54	-62	15.97	1.38	0.51	15.4
6	16:45		6.49	-73	16.03	1.37	0.33	11.3
9	16:48		6.51	-78	16.01	1.36	0.14	6.3
12	16:51		6.50	-81	15.95	1.36	0.07	3.6
15	16:54	5.32	6.51	-84	15.96	1.36	0.00	1.4
18	16:57		6.51	-86	16.00	1.36	0.00	8.2
21	17:00		6.51	-87	15.98	1.35	0.00	6.7
24	17:03		6.52	-89	16.01	1.35	0.00	7.2
27	17:06	5.32	6.52	-90	15.98	1.34	0.00	7.4
36	17:15	5.32	Collect sample					
68	17:47	5.24	6.55	-73	15.96	1.37	0.12	2.1

Analyses			
VOC, TOC			X
ALK, CHL			X
TOT FE			X
DIS GASSES			X
SO4, NO3			X

	clear	cloudy	turbid
Water Quality	X		

Comments	
Rainy, 70 PID: 0 ppm	

Duplicate ID	DUP-060706

Shipped		SDG	

Well MW-97-2S

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID		MW-97-2S	Start	13:48	Team	TT, KH	
Date		6/9/2006	Finish	14:35	Diameter	2 inches	

					Yes/No		Yes/No
Depth to Water	6.52	ft TOC		2-inch pump ?	N	Duplicate?	N
Total Depth	23.89	ft TOC		Whale Pump ?	N	MS/MSD?	N
Depth to Pump	19	ft TOC		Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.30	L/min		Comments:	PERISTALTIC		
adjusted to:		L/min	at	minutes			
adjusted to:		L/min	at	minutes			

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	13:48	6.52						
3	13:51	6.52	6.43	-62	17.71	1.24	0.62	1.4
6	13:54		6.26	-59	17.55	1.22	0.0	6.5
9	13:57		6.24	-62	17.44	1.22	0.0	8.0
12	14:00	6.54	6.22	-63	17.42	1.23	0.0	3.0
15	14:03		6.24	-65	17.44	1.23	0.0	4.0
18	14:06		6.29	-69	17.56	1.23	0.0	3.8
21	14:09	6.54	6.39	-74	17.56	1.23	0.0	3.9
24	14:12		6.40	-79	17.52	1.22	0.0	77.5
27	14:15		6.41	-79	17.51	1.22	0.0	78.5
30	14:18		6.43	-80	17.43	1.22	0.0	77.6
32	14:20	Collect Sample						
47	14:35	6.50	6.46	-53	17.48	1.31	0.77	18.4

Analyses			
VOC, TOC			X
ALK, CHL			X
TOT FE			X
DIS GASSES			X
SO4, NO3			X

	clear	cloudy	turbid
Water Quality	X		

Comments	
Partly Cloudt 75 PID: 0 ppm	

Duplicate ID	

Shipped		SDG	

Well MW-97-3S

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID	MW-97-3S	Start	10:02	Team	TT, KH	
Date	6/9/2004	Finish	10:53	Diameter	2 inches	

					Yes/No		Yes/No
Depth to Water	6.10	ft TOC		2-inch pump ?	N	Duplicate?	N
Total Depth	24.76	ft TOC		Whale Pump ?	N	MS/MSD?	N
Depth to Pump	20	ft TOC		Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.20	L/min		Comments:	PERISTALTIC		
adjusted to:	0.3	L/min	at 6	minutes			
adjusted to:		L/min	at	minutes			

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	10:02	6.10						
3	10:05	6.10	6.49	-40	17.01	2.01	0.15	5.3
6	10:08		6.50	-47	16.83	1.97	0.00	7.9
9	10:11		6.57	-53	16.60	1.96	0.00	10.8
12	10:14	6.12	6.58	-56	16.65	1.96	0.00	13.0
15	10:17		6.61	-59	16.64	1.95	0.00	17.1
18	10:20		6.62	-61	16.66	1.95	0.00	22.0
21	10:23		6.64	-65	16.66	1.95	0.00	28.0
24	10:26	6.17	6.65	-66	16.72	1.94	0.00	27.8
27	10:29		6.68	-69	16.66	1.94	0.00	29.8
33	10:35							
51	10:53	6.18	6.72	-63	17.02	1.95	0.00	
0								

Analyses			
VOC, TOC			X
ALK, CHL			X
TOT FE			X
DIS GASSES			X
SO4, NO3			X

	clear	cloudy	turbid
Water Quality	X		

Comments	
Partly Cloudt 75 PID: 0 ppm	

Duplicate ID	

Shipped		SDG	

Well MW-97-4S

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID		MW-97-4S	Start	13:14	Team	LG, TT
Date		6/8/2006	Finish	14:03	Diameter	2 inches

Depth to Water		6.64	ft TOC
Total Depth		24.95	ft TOC
Depth to Pump		20	ft TOC
Pump Rate		0.35	L/min
adjusted to:		0.25	L/min at 6 minutes
adjusted to:		0.3	L/min at 9 minutes

	Yes/No		Yes/No
2-inch pump ?	N	Duplicate?	N
Whale Pump ?	N	MS/MSD?	N
Peristaltic Pump?	Y	Split-Sample?	N

Comments: PERISTALTIC

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	13:14	6.64						
3	13:17	6.64	6.99	-43.0	16.15	1.51	0.95	139.0
6	13:20		6.82	-58.0	16.17	1.53	0.28	93.0
9	13:23		6.85	-66.0	16.10	1.55	0.02	62.0
12	13:26		6.93	-77.0	16.07	1.57	0.00	14.2
15	13:29	6.66	6.96	-82.0	16.05	1.57	0.00	8.3
18	13:32		6.97	-86.0	16.08	1.58	0.00	16.1
21	13:35		6.97	-91.0	16.07	1.58	0.00	12.2
24	13:38		6.97	-94.0	16.06	1.58	0.00	10.5
27	13:41	6.66	6.97	-97.0	16.06	1.58	0.00	7.9
30	13:44		6.97	-99.0	16.02	1.58	0.00	8.5
33	13:47	6.66	6.97	-102.0	15.99	1.58	0.00	7.6
41	13:55	Collect Sample						
49	14:03	6.67	6.96	-89.0	16.05	1.60	0.32	6.9

Analyses			
VOC, TOC			X
ALK, CHL			X
TOT FE			X
DIS GASSES			X
SO4, NO3			X

	clear	cloudy	turbid
Water Quality	X		

Comments
Sunny, 70
PID: 0.0 ppm

Duplicate ID

Shipped | SDG

Well MW-97-5S

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID		MW-97-5S	Start	11:23	Team	TT, KH	
Date		6/9/2006	Finish	12:15	Diameter	2 inches	
						Yes/No	Yes/No
Depth to Water		5.47	ft TOC		2-inch pump ?	N	Duplicate? N
Total Depth		25.80	ft TOC		Whale Pump ?	N	MS/MSD? N
Depth to Pump		20	ft TOC		Peristaltic Pump?	Y	Split-Sample? N
Pump Rate		0.30	L/min		Comments:	PERISTALTIC	
adjusted to:			L/min	at	minutes		
adjusted to:			L/min	at	minutes		

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	11:23	5.47						
3	11:26		6.97	-115.0	18.72	0.871	5.57	69.3
6	11:29		6.99	-135.0	17.22	0.858	0.00	89.7
9	11:32		6.96	-137.0	16.95	0.895	0.00	526.0
12	11:35	5.82	6.92	-136.0	16.91	0.906	0.00	603.0
15	11:38		6.88	-136.0	16.74	0.914	0.00	304.0
18	11:41		6.86	-136.0	16.63	0.921	0.00	226.0
21	11:44	5.87	6.87	-137.0	16.69	0.922	0.00	233.0
24	11:47		6.90	-139.0	16.64	0.932	0.00	357.0
27	11:50		6.98	-144.0	16.71	0.939	0.00	284.0
30	11:53		7.00	-146.0	16.83	0.936	0.00	273.0
33	11:56		7.03	-147.0	16.83	0.942	0.00	266.0
37	12:00	5.88	Collect Sample					
49	12:12	5.57	7.05	-114.0	17.64	0.973	0.00	143.0

Analyses			
VOC, TOC			X
ALK, CHL			X
TOT FE			X
DIS GASSES			X
SO4, NO3			X

	clear	cloudy	turbid
Water Quality	X		

Comments
73 PARTLY CLOUDY
PID: 0.0 ppm

Duplicate ID	N/A

Shipped		SDG	

Well MW-97-6S

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID	MW-97-6S	Start	15:32	Team	LG, TT	
Date	6/8/2006	Finish	16:20	Diameter	2 inches	

					Yes/No		Yes/No
Depth to Water	6.42	ft TOC		2-inch pump ?	N	Duplicate?	N
Total Depth	25.66	ft TOC		Whale Pump ?	N	MS/MSD?	N
Depth to Pump	20	ft TOC		Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.25	L/min		Comments:	PERISTALTIC		
adjusted to:	0.3	L/min	at 6	minutes			
adjusted to:		L/min	at	minutes			

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	15:32	6.42						
3	15:35	6.42	6.57	-62	16.88	1.68	1.92	59.3
6	15:38		6.40	-63	16.56	1.69	1.01	75.2
9	15:41		6.38	-66	16.53	1.68	0.80	29.3
12	15:44	6.43	6.41	-70	16.57	1.69	0.15	9.7
15	15:47		6.43	-72	16.58	1.69	0.00	4.9
18	15:50		6.44	-74	16.52	1.70	0.00	8.6
21	15:53		6.44	-76	16.53	1.70	0.00	6.9
24	15:56		6.45	-78	16.56	1.70	0.00	5.5
27	15:59	6.44	6.46	-79	16.57	1.69	0.00	4.7
30	16:02		6.47	-80	16.58	1.69	0.00	5.8
38	16:10							
48	16:20	6.45	6.47	-58	16.68	1.70	0.28	13.7

Analyses			
VOC, TOC			X
ALK, CHL			X
TOT FE			X
DIS GASSES			X
SO4, NO3			X

	clear	cloudy	turbid
Water Quality	X		

Comments

75-80 PARTLY CLOUDY

PID: 6.6 ppm

Duplicate ID			
Shipped		SDG	

Well MW-97-7S

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID		MW-97-7S	Start	14:50	Team	LG, TT	
Date		6/6/2006	Finish	15:50	Diameter	2 inches	
						Yes/No	Yes/No
Depth to Water		6.73	ft TOC		2-inch pump ?	N	Duplicate? N
Total Depth		31.35	ft TOC		Whale Pump ?	N	MS/MSD? N
Depth to Pump		26	ft TOC		Peristaltic Pump?	Y	Split-Sample? N
Pump Rate		0.40	L/min		Comments:	PERISTALTIC	
adjusted to:		3	L/min	at 8	minutes		
adjusted to:			L/min	at	minutes		

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	14:50	6.73						
5	14:55		6.33	-50	17.33	0.632	1.26	19.8
8	14:58	6.74	6.26	-47	17.02	0.630	0.73	12.5
11	15:01		6.23	-52	16.55	0.621	0.13	10.1
14	15:04		6.40	-68	16.89	0.725	0.00	9.1
17	15:07	6.72	6.50	-81	16.98	0.815	0.00	2.2
20	15:10		6.61	-101	16.96	0.988	0.00	1.8
23	15:13		6.67	-106	17.01	0.97	0.00	1.3
26	15:16		6.69	-107	16.99	1.01	0.00	1.6
29	15:19		6.67	-108	17.01	1.04	0.00	0.3
32	15:22		6.67	-109	17.20	1.06	0.00	0.6
35	15:25	6.71	6.66	-108	17.18	1.08	0.00	0.5
38	15:28		6.66	-108	17.13	1.09	0.00	0.7
50	15:40	6.71	Collect Sample					
60	15:50		6.61	-90	16.70	1.090	0.00	17.7

Analyses			
VOC, TOC			X
ALK, CHL			X
TOT FE			X
DIS GASSES			X
SO4, NO3			X

	clear	cloudy	turbid
Water Quality	X		

Comments	
75-80 PARTLY CLOUDY	
PID: 6.6 ppm	

Duplicate ID	

Shipped		SDG	

Well MW-98-8S

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID	MW-98-8S	Start	13:49	Team	LG, TT
Date	6/7/2006	Finish	14:30	Diameter	2 inches

				Yes/No		Yes/No
Depth to Water	6.90	ft TOC	2-inch pump ?	N	Duplicate?	N
Total Depth	20.82	ft TOC	Whale Pump ?	N	MS/MSD?	N
Depth to Pump	15	ft TOC	Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.30	L/min	Comments:	PERISTALTIC		
adjusted to:		L/min	at	minutes		
adjusted to:		L/min	at	minutes		

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	13:49	6.90						
3	13:52	6.90	6.63	-114	15.84	2.71	0.31	717.0
6	13:55		6.66	-117	15.73	2.51	0.22	126.0
9	13:58		6.65	-119	15.76	2.49	0.00	49.5
12	14:01	6.97	6.70	-128	15.34	2.52	0.00	24.0
15	14:04		6.81	-131	15.72	2.55	0.08	15.8
18	14:07	6.97	6.81	-133	15.75	2.56	0.02	14.2
21	14:10		6.83	-135	15.75	2.56	0.00	14.7
24	14:13		6.84	-137	15.74	2.57	0.00	13.9
31	14:20	6.97	Collect Sample					
41	14:30	6.98	6.85	-115	15.74	2.52	0.13	14.2
0								
0								

Analyses			
VOC, TOC			X
ALK, CHL			X
TOT FE			X
DIS GASSES			X
SO4, NO3			X

	clear	cloudy	turbid
Water Quality	X	☐	☐

Comments	
Rainy, 70 PID: 0 ppm	

Duplicate ID	

Shipped		SDG	

Well MW-98-8D

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID		MW-98-8D	Start	15:00	Team	LG, TT	
Date		6/7/2006	Finish	15:42	Diameter	2 inches	

					Yes/No		Yes/No
Depth to Water	6.57	ft TOC		2-inch pump ?	N	Duplicate?	N
Total Depth	34.76	ft TOC		Whale Pump ?	N	MS/MSD?	N
Depth to Pump	30	ft TOC		Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.30	L/min		Comments:	PERISTALTIC		
adjusted to:		L/min	at	minutes			
adjusted to:		L/min	at	minutes			

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	15:00	6.57						
3	15:03	6.57	7.25	12	16.12	0.349	4.41	111.4
6	15:06		7.01	-94	16.08	1.51	2.01	17.3
9	15:09		6.76	-114	16.13	2.16	0.29	11.1
12	15:12		6.85	-120	16.14	2.18	0.10	2.2
15	15:15	6.59	6.87	-121	16.14	2.21	0.00	4.3
18	15:18		6.87	-124	16.15	2.24	0.00	3.9
21	15:21	6.58	6.87	-125	16.14	2.25	0.00	3.1
24	15:24	6.59	6.87	-125	16.14	2.25	0.00	2.7
30	15:30	6.59	Collect Sample					
42	15:42	6.58	6.85	-103	16.13	2.27	0.31	1.1
0								
0								

Analyses			
VOC, TOC			X
ALK, CHL			X
TOT FE			X
DIS GASSES			X
SO4, NO3			X

	clear	cloudy	turbid
Water Quality	X	☐	☐

Comments	
Rainy, 70 PID: 0 ppm	

Duplicate ID	

Shipped		SDG	

Well MW-98-9D

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID	MW-98-9D	Start	11:18	Team	LG, TT		
Date	6/8/2006	Finish	12:05	Diameter	2 inches		
					Yes/No		Yes/No
Depth to Water	5.42	ft TOC		2-inch pump ?	N	Duplicate?	N
Total Depth	36.52	ft TOC		Whale Pump ?	N	MS/MSD?	N
Depth to Pump	32	ft TOC		Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.35	L/min		Comments:	PERISTALTIC		
adjusted to:	0.3	L/min	at 6	minutes			
adjusted to:		L/min	at	minutes			

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	11:18	5.42						
3	11:21	5.42	6.37	-60	16.44	1.48	2.36	71.1
6	11:24		6.40	-68	15.45	1.42	1.13	60.1
9	11:27		6.45	-75	16.48	1.39	0.73	11.3
12	11:30		6.46	-77	16.48	1.38	0.00	8.3
15	11:33	5.43	6.46	-79	16.46	1.38	0.00	16.3
18	11:36		6.46	-80	16.47	1.38	0.00	31.4
21	11:39		6.46	-82	16.45	1.37	0.00	33.7
24	11:42		6.46	-83	16.43	1.37	0.00	36.9
27	11:45		6.46	-84	16.44	1.36	0.00	38.2
30	11:48	5.45	6.46	-85	16.47	1.35	0.00	35.1
37	11:55							
47	12:05	5.46	6.56	-55	16.48	1.38	0.31	11.2

Analyses			
VOC, TOC			X
ALK, CHL			X
TOT FE			X
DIS GASSES			X
SO4, NO3			X

	clear	cloudy	turbid
Water Quality	X		

Comments	
Sunny, 70 PID: 0 ppm	

Duplicate ID	

Shipped		SDG	

Well MW-98-10D

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID	MW-98-10D	Start	12:46	Team	TT, KH	
Date	6/9/2006	Finish	13:33	Diameter	2 inches	

					Yes/No		Yes/No
Depth to Water	6.69	ft TOC		2-inch pump ?	N	Duplicate?	N
Total Depth	34.85	ft TOC		Whale Pump ?	N	MS/MSD?	N
Depth to Pump	30	ft TOC		Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.50	L/min		Comments:	PERISTALTIC		
adjusted to:	0.35	L/min	at 9	minutes			
adjusted to:		L/min	at	minutes			

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	12:46	6.69						
3	12:49	6.69	6.56	-64	18.26	1.21	0.64	16.6
6	12:52		6.35	-64	17.75	1.21	0.0	24.7
9	12:55		6.27	-63	17.70	1.20	0.0	46.3
12	12:58	6.71	6.26	-65	17.95	1.20	0.0	86.5
15	13:01		6.40	-74	17.91	1.19	0.0	199.0
18	13:04		6.47	-79	17.89	1.19	0.0	235.0
21	13:07	6.71	6.49	-81	7.83	1.19	0.0	253.0
24	13:10		6.51	-83	17.84	1.19	0.0	258.0
27	13:13		6.51	-84.0	17.79	1.20	0.0	247.0
34	13:20							
47	13:33	6.72	6.52	-64	17.83	1.24	0.0	10.8

Analyses			
VOC, TOC			X
ALK, CHL			X
TOT FE			X
DIS GASSES			X
SO4, NO3			X

	clear	cloudy	turbid
Water Quality	X		

Comments	
Partly Cloudy, 75 PID: 0 ppm	

Duplicate ID	

Shipped		SDG	

Well MW-00-11A

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID		MW-00-11A	Start	12:10	Team	LG, TT	
Date		6/7/2006	Finish	12:55	Diameter	2 inches	

				Yes/No		Yes/No
Depth to Water	3.10	ft TOC	2-inch pump ?	N	Duplicate?	N
Total Depth	60.26	ft TOC	Whale Pump ?	N	MS/MSD?	N
Depth to Pump	55	ft TOC	Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.30	L/min	Comments:	PERISTALTIC		
adjusted to:		L/min	at	minutes		
adjusted to:		L/min	at	minutes		

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	12:10	3.10						
5	12:15		7.19	92	15.73	0.054	2.84	82.1
8	12:18		7.03	109	15.78	0.049	2.67	77.9
11	12:21	3.11	6.63	149	15.74	0.043	2.63	50.3
14	12:24		5.90	197	15.73	0.042	2.60	20.2
17	12:27		5.36	202	15.74	0.041	2.53	1.1
20	12:30		5.35	204	15.75	0.041	2.51	1.3
23	12:33	3.11	5.36	206	15.73	0.040	2.51	1.7
30	12:40	3.11	Collect Sample					
45	12:55	3.06	5.59	122	15.72	0.039	1.24	8.1

Analyses			
VOC, TOC			X
ALK, CHL			X
TOT FE			X
DIS GASSES			X
SO4, NO3			X

	clear	cloudy	turbid
Water Quality	X	☐	☐

Comments	
Rainy, 60 PID: 0.0 ppm	

Duplicate ID	

Shipped		SDG	

Well MW-00-12D

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID		MW-00-12D	Start	14:20	Team	LG, TT
Date		6/8/2006	Finish	15:04	Diameter	2 inches

					Yes/No		Yes/No	
Depth to Water	6.36	ft TOC		2-inch pump ?	N	Duplicate?	N	
Total Depth	34.57	ft TOC		Whale Pump ?	N	MS/MSD?	N	
Depth to Pump	30	ft TOC		Peristaltic Pump?	Y	Split-Sample?	N	
Pump Rate	0.35	L/min		Comments:	PERISTALTIC			
adjusted to:	0.3	L/min	at 9	minutes				
adjusted to:		L/min		minutes				

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	14:20	6.36						
3	14:23	6.36	7.29	49	15.91	0.097	3.61	22.3
6	14:26		6.25	110	16.00	0.113	2.87	15.2
9	14:29		6.06	57	16.02	0.163	2.16	14.0
12	14:32		6.73	-24	16.17	0.921	1.12	9.7
15	14:35	6.36	6.83	-77	16.17	1.71	0.21	11.5
18	14:38		6.87	-95	16.15	1.85	0.00	9.1
21	14:41		6.89	-97	16.14	1.86	0.00	7.8
24	14:44	6.36	6.91	-99	16.12	0.87	0.00	8.2
27	14:47		6.92	-101	16.16	1.88	0.00	8.9
35	14:55							
44	15:04	6.34	6.97	-93	16.11	1.94	0.20	6.9
0								

Analyses			
VOC, TOC			X
ALK, CHL			X
TOT FE			X
DIS GASSES			X
SO4, NO3			X

	clear	cloudy	turbid
Water Quality	X		

Comments	
Sunny, 70	
PID: 0 ppm	

Duplicate ID	

Shipped		SDG	

Well MW-03-13S

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID		MW-03-13S	Start	12:30	Team	LG, TT	
Date		6/6/2006	Finish	13:45	Diameter	2 inches	

				Yes/No		Yes/No
Depth to Water	6.43	ft TOC	2-inch pump ?	N	Duplicate?	N
Total Depth	24.30	ft TOC	Whale Pump ?	N	MS/MSD?	N
Depth to Pump	20	ft TOC	Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.45	L/min	Comments:	PERISTALTIC		
adjusted to:	0.3	L/min at 8 minutes				
adjusted to:		L/min at minutes				

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	12:30	6.43						
5	12:35	6.43	6.75	-155	20.05	1.36	0.36	0.0
8	12:38		6.70	-152	20.09	1.33	0.15	0.0
11	12:41	6.41	6.62	-151	19.81	1.33	0.11	0.0
14	12:44		6.64	-1556	19.75	1.32	0.02	0.0
17	12:47		6.71	-161	19.66	1.32	0.01	0.0
20	12:50	6.40	6.80	-164	19.59	1.31	0.01	139.0
23	12:53		6.84	-165	19.56	1.31	0.00	196.0
26	12:56		6.85	-166	19.65	1.31	0.00	212.0
29	12:59	6.38	6.85	-164	19.68	1.30	0.00	218.0
32	13:02		6.83	-162	19.55	1.30	0.00	215.0
35	13:05	6.35	6.83	-163	19.51	1.30	0.00	216.0
45	13:15		Collect sample					
60	13:30	6.30	6.83	-137	19.99	1.33	0.23	111.0

Analyses			
VOC, TOC			X
ALK, CHL			X
TOT FE			X
DIS GASSES			X
SO4, NO3			X

	clear	cloudy	turbid
Water Quality	X		

Comments
75-80 PARTLY CLOUDY
PID: 6.6 ppm

Duplicate ID		Shipped	SDG	

Well MW-05-14S

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID	MW-05-14S	Start	9:59	Team	LG, TT	
Date	6/8/2006	Finish	10:53	Diameter	2 inches	

				Yes/No		Yes/No
Depth to Water	4.69	ft TOC	2-inch pump ?	N	Duplicate?	N
Total Depth	24.93	ft TOC	Whale Pump ?	N	MS/MSD?	N
Depth to Pump	20	ft TOC	Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate	0.40	L/min	Comments:	PERISTALTIC		
adjusted to:	0.3	L/min	at 10	minutes		
adjusted to:		L/min	at	minutes		

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	9:59	4.69						
3	10:02	4.69	6.43	-63	16.28	9.65	2.69	73.0
11	10:10		6.50	-74	16.31	9.65	0.00	33.0
14	10:13		6.51	-78	16.38	9.69	0.00	0.0
17	10:16	4.87	6.53	-84	16.37	9.67	0.00	0.1
20	10:19		6.54	-89	16.33	9.68	0.00	0.1
23	10:22		6.56	-92	16.26	9.66	0.00	0.7
26	10:25		6.56	-95	16.23	9.64	0.00	3.7
29	10:28		6.56	-97	16.20	9.64	0.00	3.5
32	10:31	4.86	6.56	-99	16.17	9.65	0.00	3.9
41	10:40		Collect Sample					
54	10:53	4.89	6.51	-77	16.10	9.80	0.00	0.0

Analyses			
VOC, TOC			X
ALK, CHL			X
TOT FE			X
DIS GASSES			X
SO4, NO3			X

	clear	cloudy	turbid
Water Quality	X		

Comments
Sunny, 70
PID: 0 ppm

Duplicate ID	

Shipped		SDG	

Well MW-05-15D

Groundwater Sampling Log; Former Columbia Cement Company Site
Atlantic Richfield Company (BP) - Freeport, NY

Well ID		MW-05-15D	Start	8:56	Team	LG, TT
Date		6/8/2006	Finish	9:50	Diameter	2 inches

						Yes/No		Yes/No
Depth to Water		4.59	ft TOC		2-inch pump ?	N	Duplicate?	N
Total Depth		38.23	ft TOC		Whale Pump ?	N	MS/MSD?	N
Depth to Pump		33	ft TOC		Peristaltic Pump?	Y	Split-Sample?	N
Pump Rate		0.20	L/min		Comments:	PERISTALTIC		
adjusted to:		0.35	L/min	at 6	minutes			
adjusted to:			L/min	at	minutes			

Time (minutes)	Time	Depth to Water (ft TOC)	pH (std units)	ORP (mV)	Temperature (deg C)	Spec. Cond. (mS/cm)	Diss. Oxygen (mg/L)	Turbidity (NTU)
0	8:56	4.59						
3	8:59	4.59	6.14	1	16.73	0.382	0.93	19.3
6	9:02		6.15	-12	16.84	0.343	0.71	15.9
9	9:05		6.09	-23	16.71	0.323	0.21	7.9
12	9:08		6.15	-33	16.74	0.285	2.06	14.2
15	9:11	4.70	6.16	-37	16.74	0.290	0.00	8.7
18	9:14		6.18	-40	16.72	0.291	0.00	9.6
21	9:17							
24	9:20	4.71	6.21	-43	16.74	0.299	0.00	8.3
27	9:23		6.23	-45	16.72	0.301	0.00	10.2
30	9:26		6.25	-48	16.74	0.302	0.00	7.9
33	9:29		6.28	-50	16.75	0.310	0.00	7.7
36	9:32	4.73	6.29	-52	16.77	0.311	0.00	8.2
44	9:40	4.73	Collect Sample					
54	9:50	4.75	6.61	-47	16.69	0.358	0.31	3.2

Analyses			
VOC, TOC			X
ALK, CHL			X
TOT FE			X
DIS GASSES			X
SO4, NO3			X

	clear	cloudy	turbid
Water Quality	X		

Comments	
Sunny, 70 PID: 0 ppm	

Duplicate ID	MW0616

Shipped		SDG	

APPENDIX D

MONITORING WELL BORING LOGS AND WELL CONSTRUCTION DIAGAMS

URS CORPORATION
Soil Boring Log

Location of Boring	Job No.: 38546433	Client: BP/BELCI ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY
	Logged By: ANDREW KOHLBECKER		Boring No.: MW-05-15D
	Driller: AQUIFER DRILLING & TESTING		
	Drilling Method: 4.5" HOLLOW STEM AUGER		Sheet: 1 of 2
	Sampling Method: SPLIT SPOONS		Drilling — Start Time: 11:30; Finish Time: 13:40
	Water Level: ~6 FEET BELOW GRADE		
	Depth of Screen:		
	Depth of Gravel:		Date: 4/19/2005; Date: 4/19/2005
	Depth of Bentonite:		

Sampler Type	Sample No. / Depth	Inches Driv. / Recov	Blow Count / 6"	PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Surface Conditions
								3" Asphalt
								Compressed gravel fill
						1		Air-knife to 5 feet.
						2		
						3		
						4		
						5		
						6 ▼		
		24 / 10	2 2 / 1 1			7	FILL	
				0.0 / 0.0		8		Brown fine to coarse SAND, trace fine rounded gravel, trace silt, wet
		24 / 10	2 2 / 1 1			9		
				0.0 / 0.0		10		
		24 / 12	4 4 / 3 2			11		
				0.0 / 0.1		12		
		24 / 14	4 5 / 7 3			13		
				0.0 / 0.1		14		
		24 / 8	2 2 / 2 2			15		
				0.1		16		Tan coarse SAND to medium rounded gravel, medium dense, wet
		24 / 14	4 5 / 6 17			17		
				0.0 / 0.0		18	FILL	Brown medium to fine SAND and silt, includes debris (newspaper, glass, etc.), dense (Fill)
		24 / 8	4 3 / 4 9			19		
				0.6 / 0.8		20		

URS CORPORATION

Soil Boring Log

Location of Boring	Job No.: 38546433	Client: BP/BELCI ATLANTIC RICHFIELD	Location: COLUMBIA CEMENT FREEPORT, NY
	Logged By: ANDREW KOHLBECKER		Boring No.: MW-05-15D
	Driller: AQUIFER DRILLING & TESTING		Sheet: 2 of 2
	Drilling Method: 4.5" HOLLOW STEM AUGER		Drilling
	Sampling Method: SPLIT SPOONS		Start Time: 11:30 / Finish Time: 13:40
	Water Level: ~6 FEET BELOW GRADE		
	Depth of Screen:		Date: 4/19/2005 / Date: 4/19/2005
	Depth of Gravel:		
	Depth of Bentonite:		

Sampler Type	Sample No. / Depth	Inches Driv. / Recov.	Blow Count / 6"		PID (ppm)	Analytical Sample	Depth (ft.)	Soil Graph	Surface Conditions
		24 / 14	4	3					Brown medium to fine SAND and silt, includes debris (newspaper,
			4	4			21	FILL	glass, etc.), dense
					0.1				
					0.1		22		Brown medium SAND, well sorted, dense, wet
		24 / 8	9	13					
			15	8			23		
					0.0				Brown medium SAND, well sorted, trace medium rounded gravel and
					0.1		24		plant leaves
		24 / 16	21	15					
			11	11	0.0		25		
					0.0				Light tan medium SAND to medium rounded gravel
					0.0		26		
		24 / 24	7	12	0.0				Gray medium SAND to medium rounded gravel
			10	7	0.0		27		
					0.0				Grading into a light gray medium SAND to medium rounded gravel
					0.0		28		
		24 / 12	7	22					
			18	26			29		
					0.6				Fine to medium SAND, very well sorted, dense
					0.8		30		
		24 / 24	11	10	0.0			FILL	
			22	17	0.0		31		
					0.2				Pieces of fabric
					0.0		32		
		24 / 24	13	17	0.0				
			14	14	0.0		33		
					0.0				Fine to medium SAND, very well sorted, trace gravel, dense
					0.0		34		
		24 / 24	11	13	0.0				
			13	15	0.0		35		
					0.0				
					0.0		36	ML	Gray SILT, very well sorted, very dense
		24 / 24	11	11	0.0			SM	Gray medium SAND, well sorted, trace medium gravel
			12	17	0.0		37		
					0.0			ML	Gray SILT, very well sorted, very dense
					0.0		38		
								EOB	NOTES:
							39		
							40		

URS CORPORATION

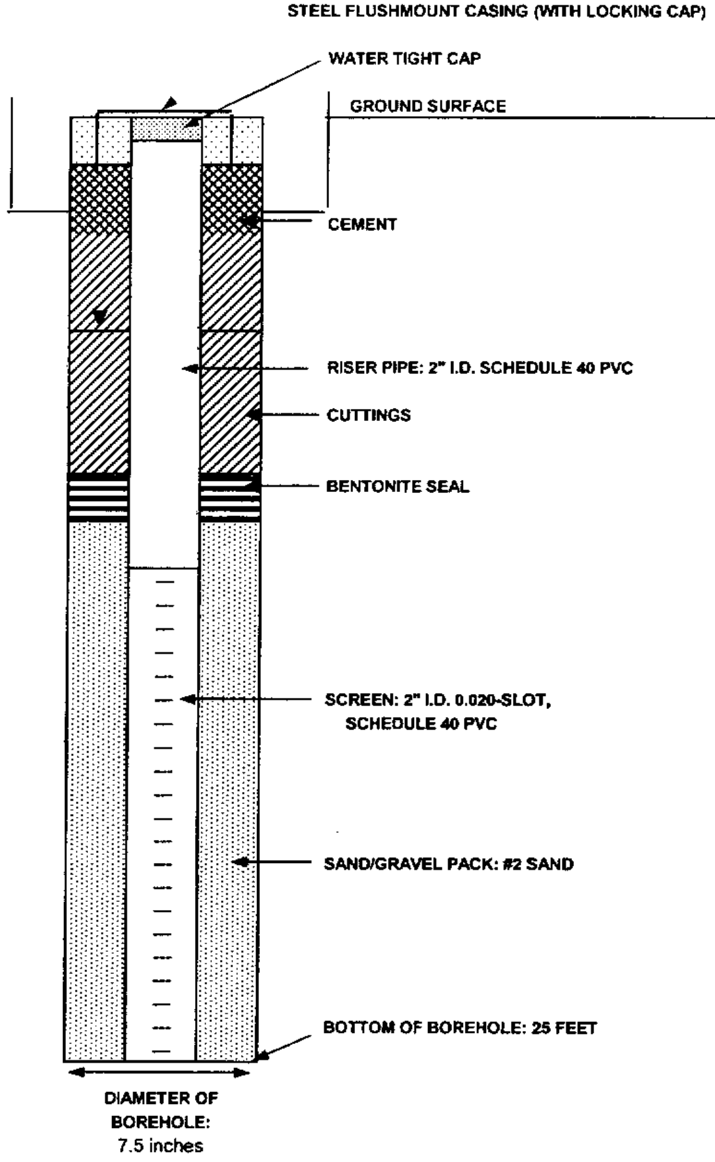
MONITORING WELL CONSTRUCTION DIAGRAM

MW-05-14S

Project name & location	Project No.	NYDEC well permit No.	Elevation datum
COLUMBIA CEMENT - FREEPORT, NY	38546433		
Drilling company	*Development date/duration*	*Surveyor*	*Ground elevation*
AQUIFER DRILLING AND TESTING, INC.	APRIL 20, 2005/33 MINUTES	GEOD CORPORATION	6.14
Date of Completion	*Development method*	*NY State Plane Coordinates*	*Top of protective steel cap elevation*
APRIL 19, 2005	PUMP AND PURGE	*(NAD 1983):*	6.08
Observed by	*Development pumping rate*	NORTH 175145.326	*Top of riser pipe elevation*
A. KOHLBECKER, M. BECKER	LESS THAN 0.2 GPM	EAST 1102953.022	5.74

	ELEVATIONS (feet above Mean Sea Level)	DEPTHS (feet below ground, not to scale)
GROUND SURFACE	5.99	0.00
TOP OF PVC RISER	5.76	0.23
BOTTOM OF BENTONITE SEAL	3.76	2.00
TOP OF GRAVEL PACK	1.76	4.00
WATER TABLE	-0.24	6.00
TOP OF SCREEN	-9.27	15.03
BOTTOM OF SCREEN	-19.27	25.03

CONSTRUCTION DETAILS



URS CORPORATION

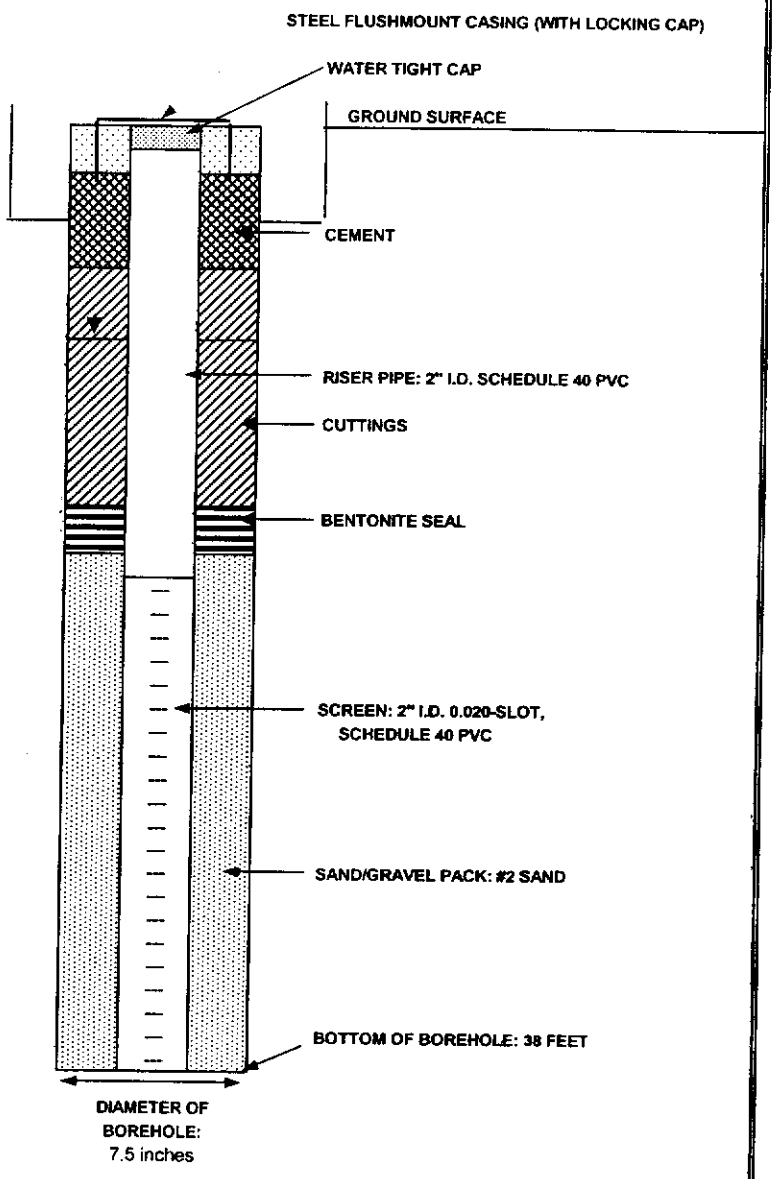
MONITORING WELL CONSTRUCTION DIAGRAM

MW-05-15D

Project name & location COLUMBIA CEMENT - FREEPORT, NY	*Project No.* 38546433	*NYDEC well permit No.*	*Elevation datum*
Drilling company AQUIFER DRILLING AND TESTING, INC.	*Development date/duration* APRIL 20, 2005/43 MINUTES	*Surveyor* GEOD CORPORATION	*Ground elevation* 5.96
Date of Completion APRIL 19, 2005	*Development method* PUMP AND PURGE	*NY State Plane Coordinates* *(NAD 1983):* NORTH 175143.492 EAST 1102953.113	*Top of protective steel cap elevation* 5.99
Observed by A. KOHLBECKER, M. BECKER	*Development pumping rate* LESS THAN 0.2 GPM		*Top of riser pipe elevation* 5.76

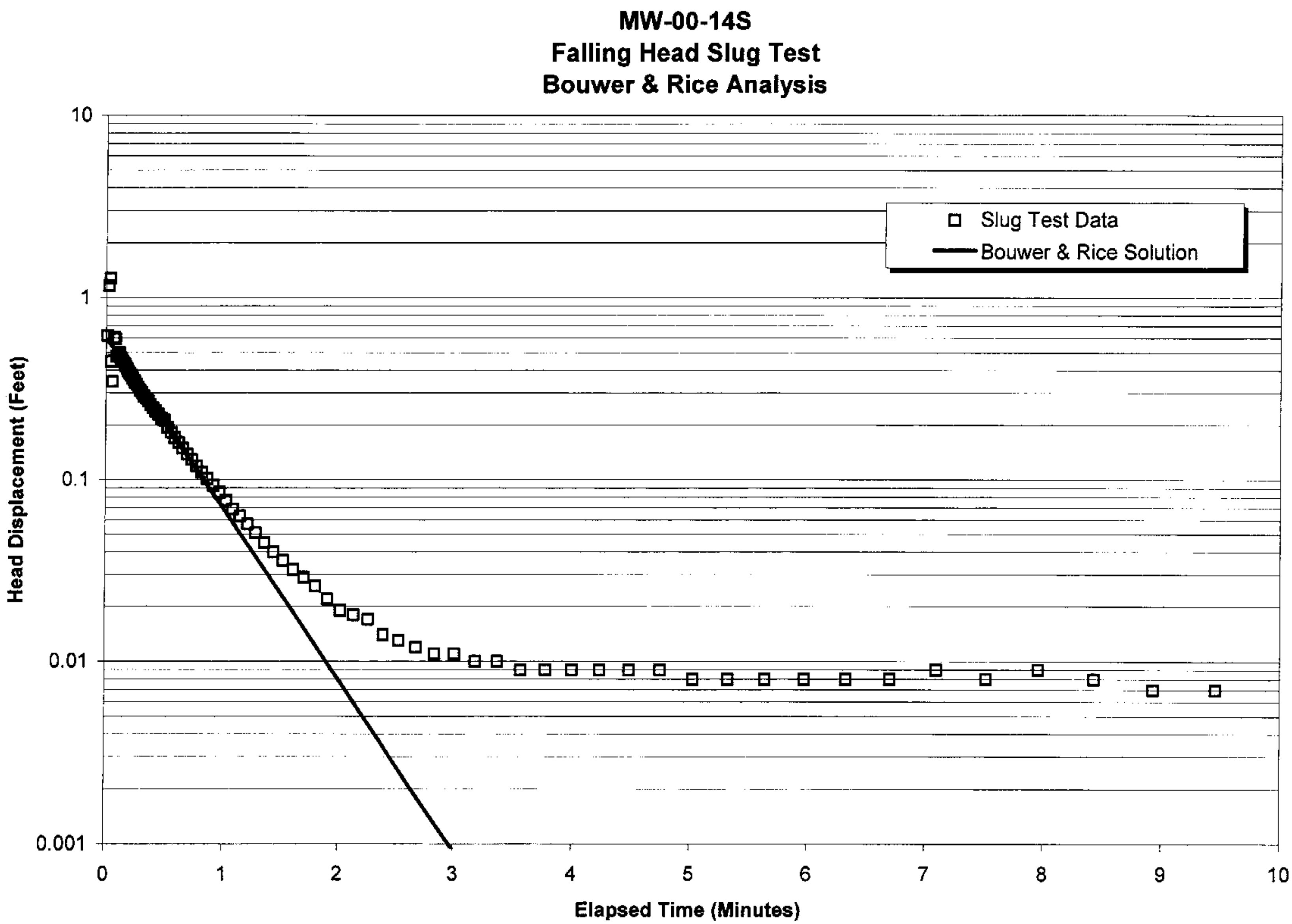
	ELEVATIONS (feet above Mean Sea Level)	DEPTHS (feet below ground, not to scale)
GROUND SURFACE	6.08	0.00
TOP OF PVC RISER	5.74	0.34
BOTTOM OF BENTONITE SEAL	3.74	2.00
WATER TABLE	-0.26	6.00
TOP OF GRAVEL PACK	-17.26	23.00
TOP OF SCREEN	-22.59	28.33
BOTTOM OF SCREEN	-32.59	38.33

CONSTRUCTION DETAILS

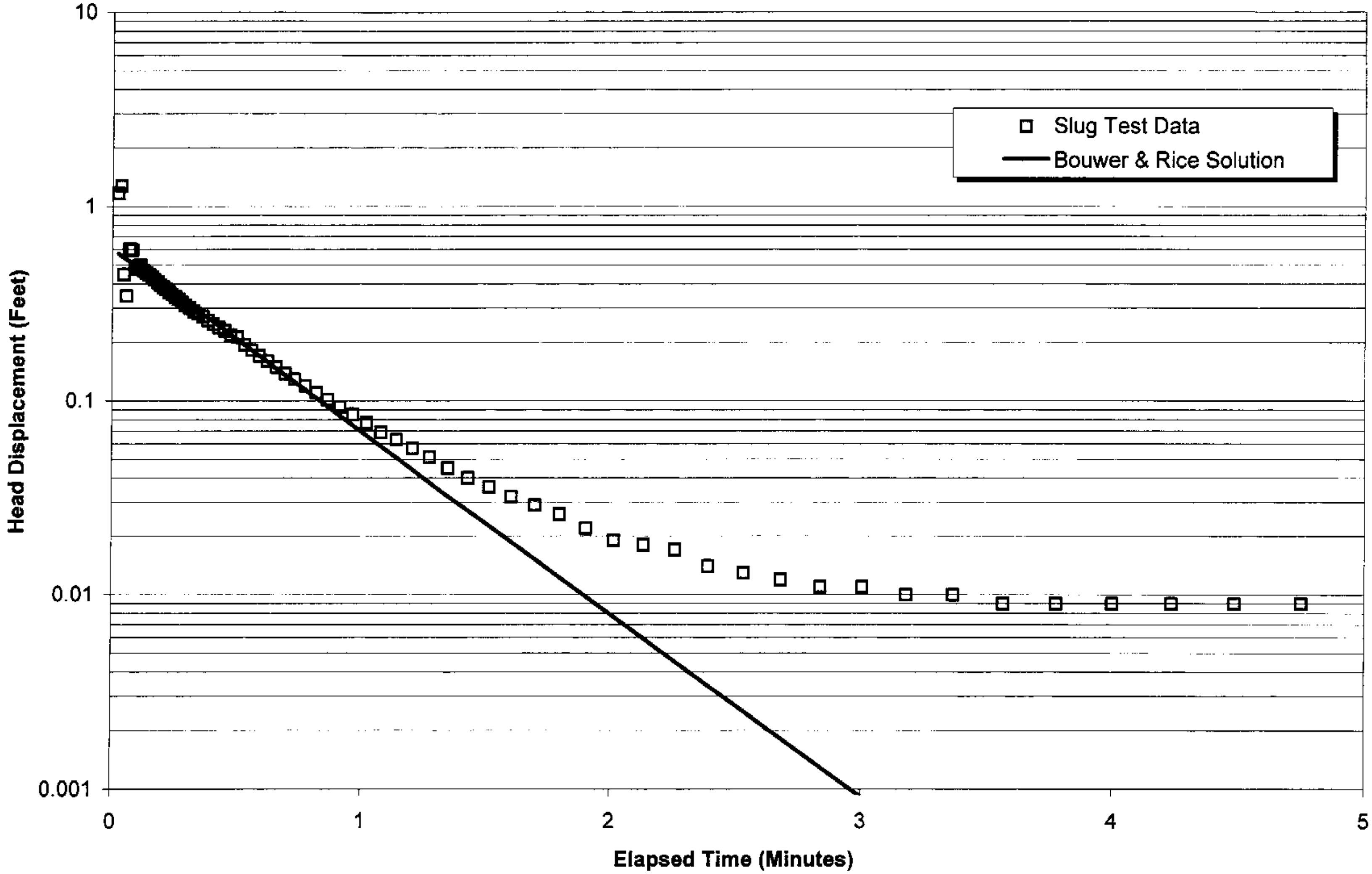


APPENDIX E

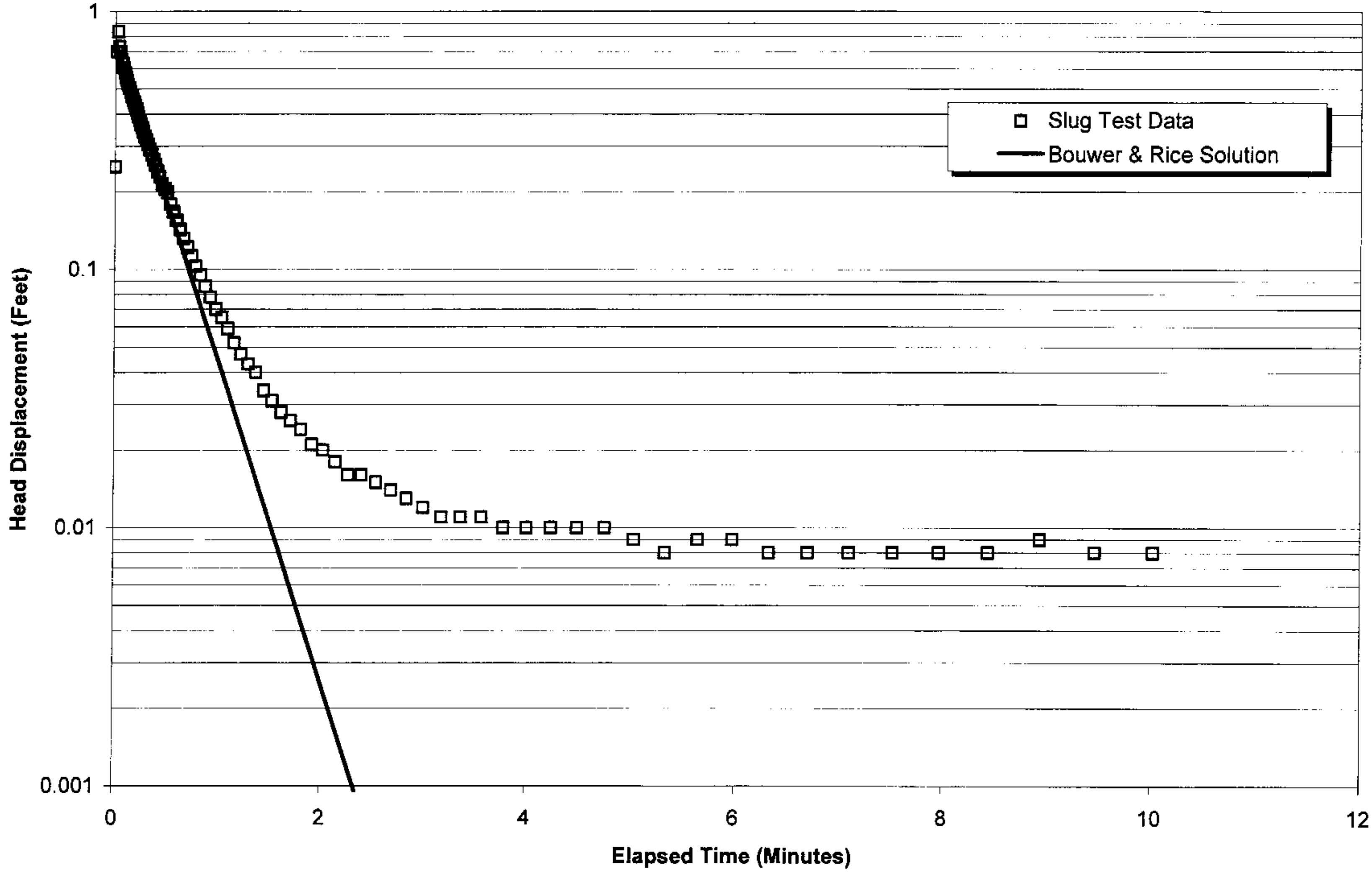
SLUG TEST DRAWDOWN CURVES

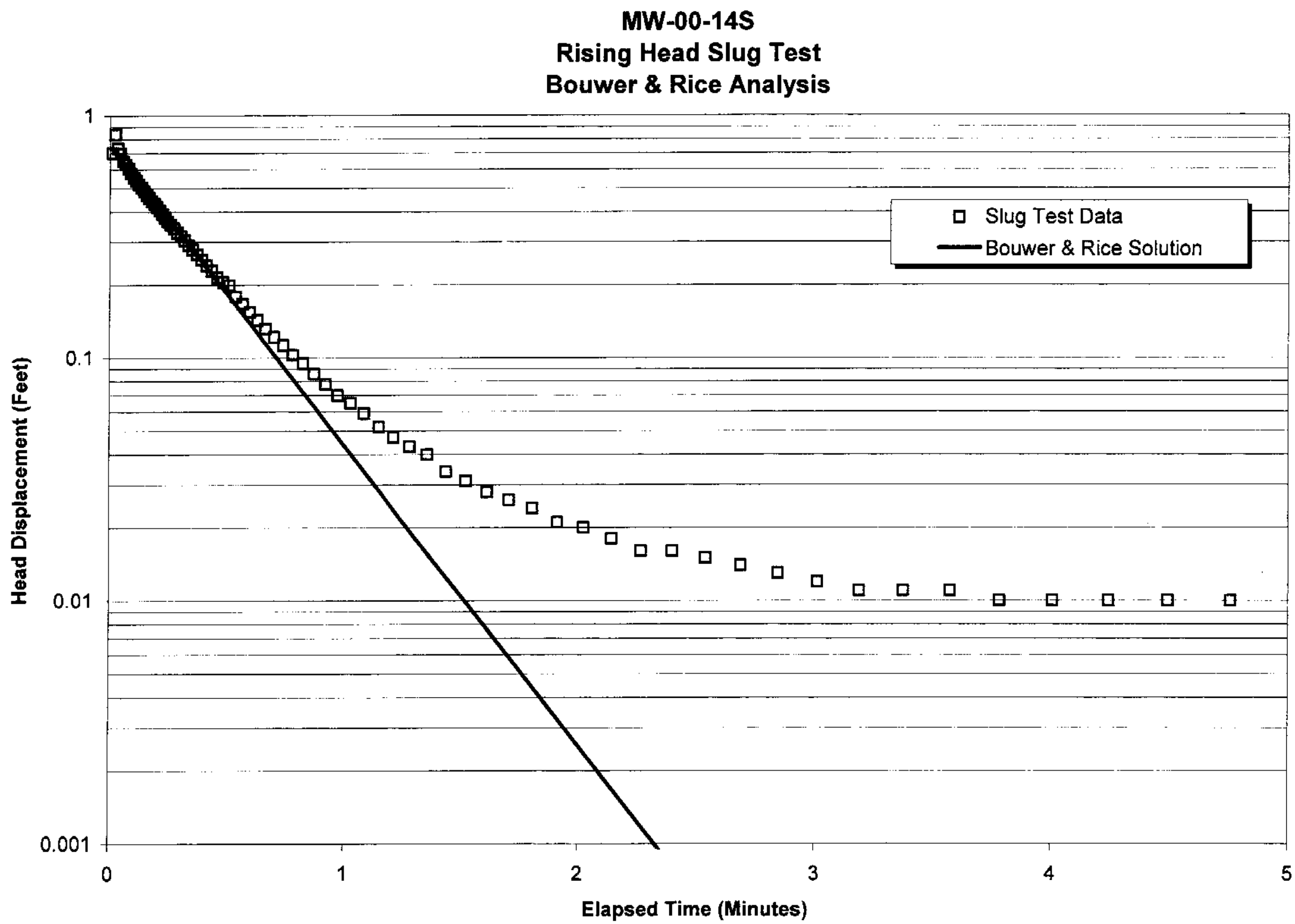

MW-00-14S
Falling Head Slug Test
Bouwer & Rice Analysis
Slug Test Data
Bouwer & Rice Solution
Head Displacement (Feet)
10
1
0.1
0.01
0.001
0
1
2
3
4
5
6
7
8
9
10
Elapsed Time (Minutes)

MW-00-14S
Falling Head Slug Test
Bouwer & Rice Analysis

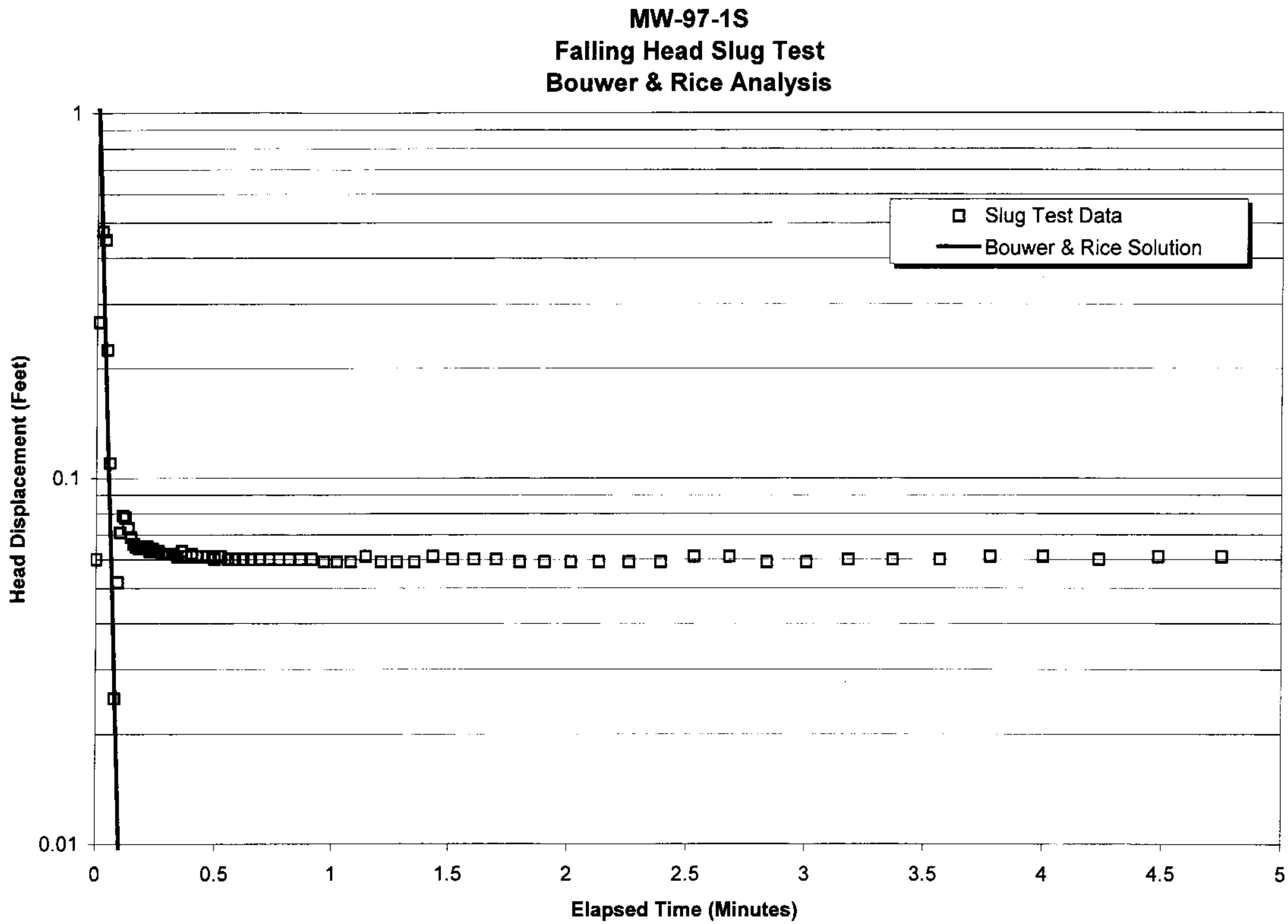


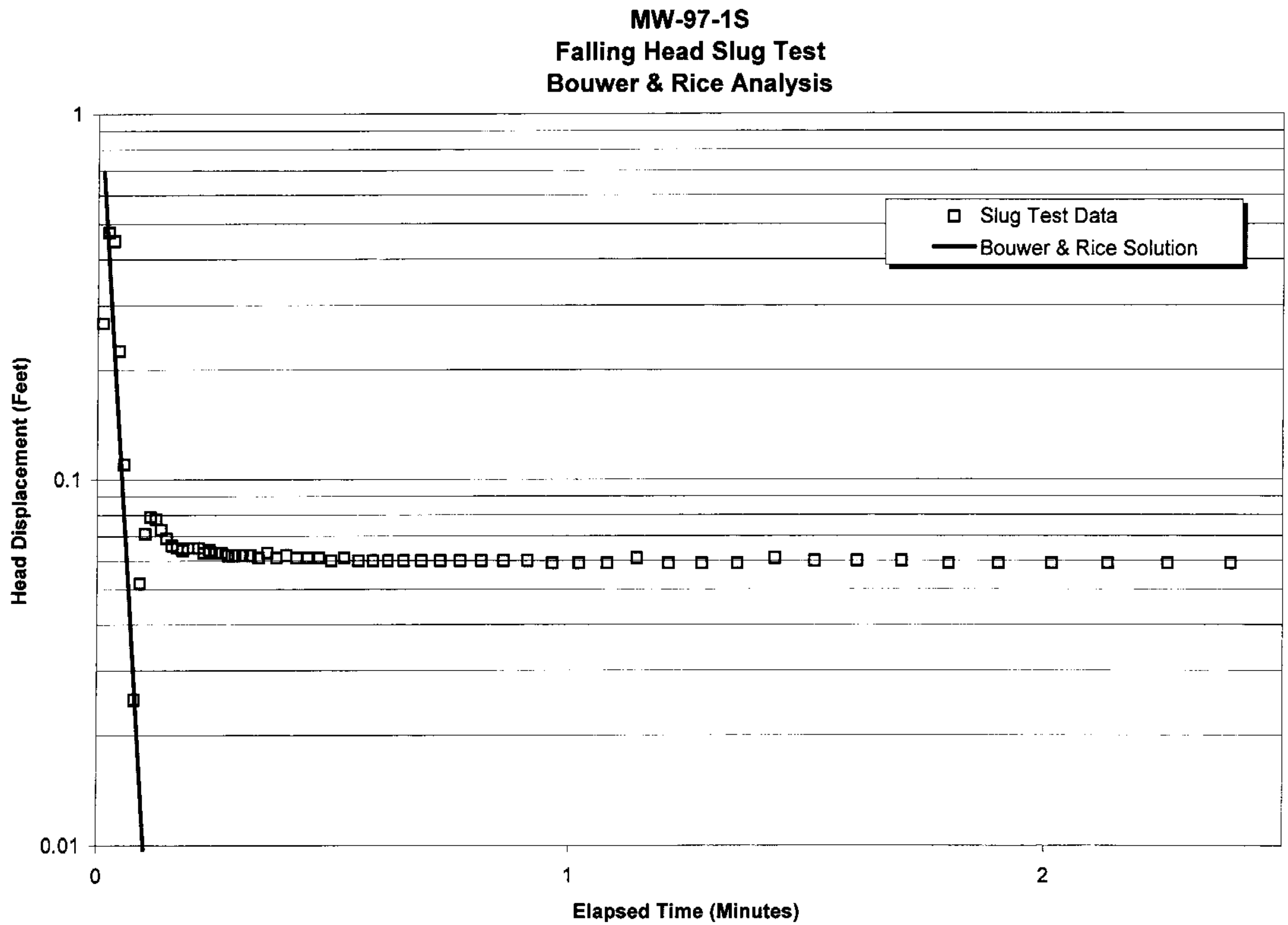
MW-00-14S
Rising Head Slug Test
Bouwer & Rice Analysis





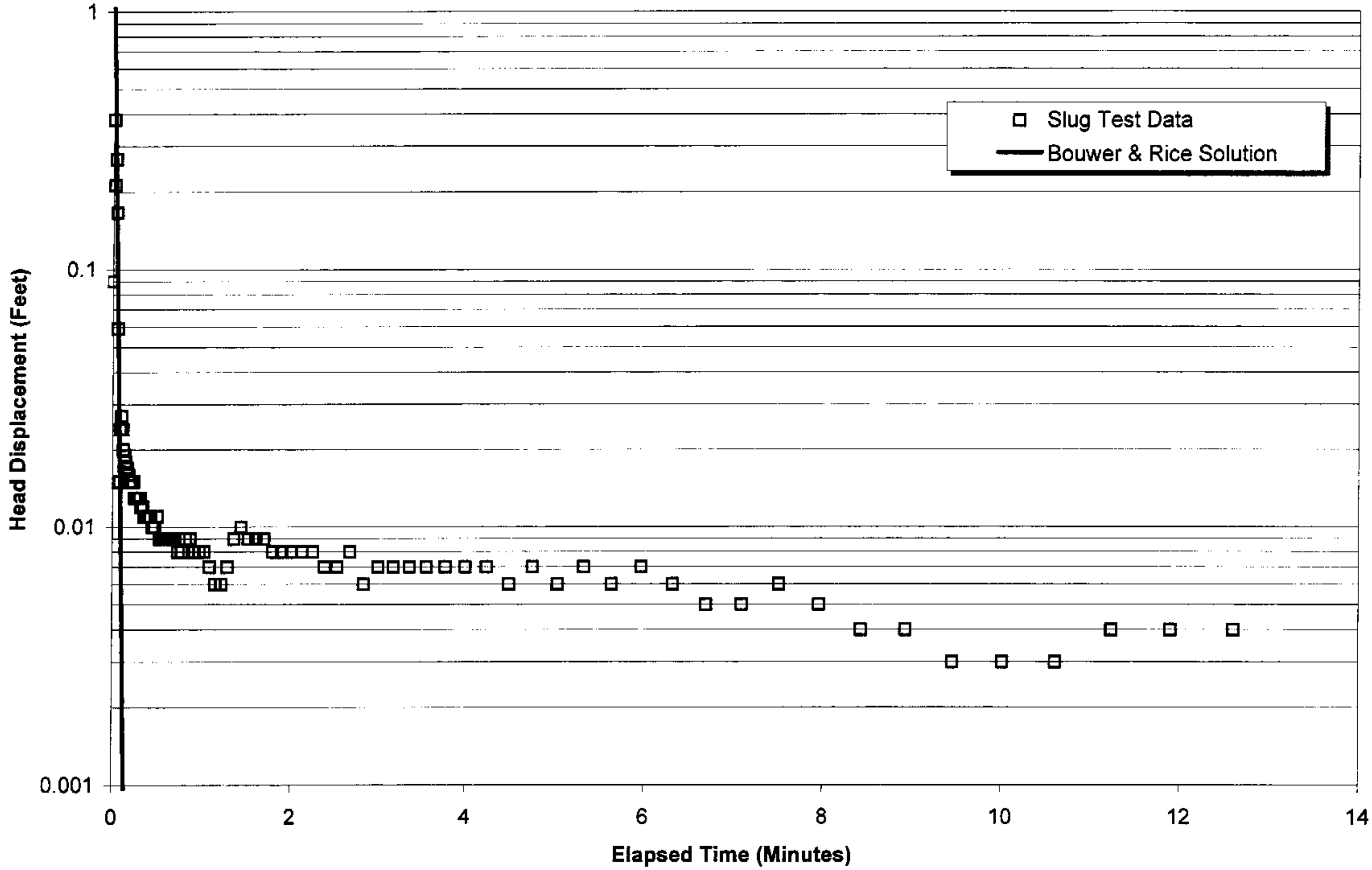
MW-00-14S
Rising Head Slug Test
Bouwer & Rice Analysis
Slug Test Data
Bouwer & Rice Solution
Head Displacement (Feet)
1
0.1
0.01
0.001
0
1
2
3
4
5
Elapsed Time (Minutes)

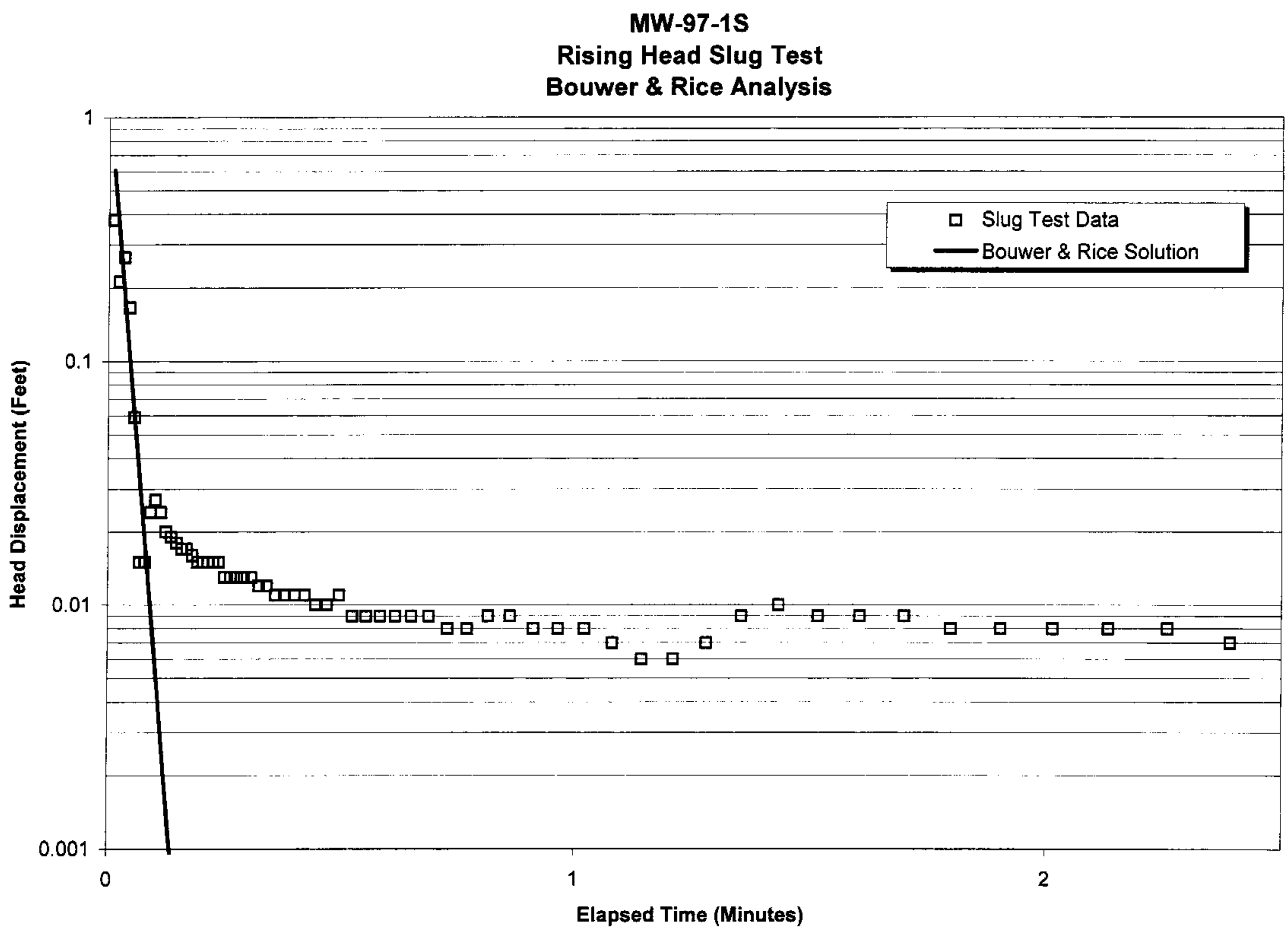

MW-97-1S
Falling Head Slug Test
Bouwer & Rice Analysis
Slug Test Data
Bouwer & Rice Solution
Head Displacement (Feet)
1
0.1
0.01
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
Elapsed Time (Minutes)

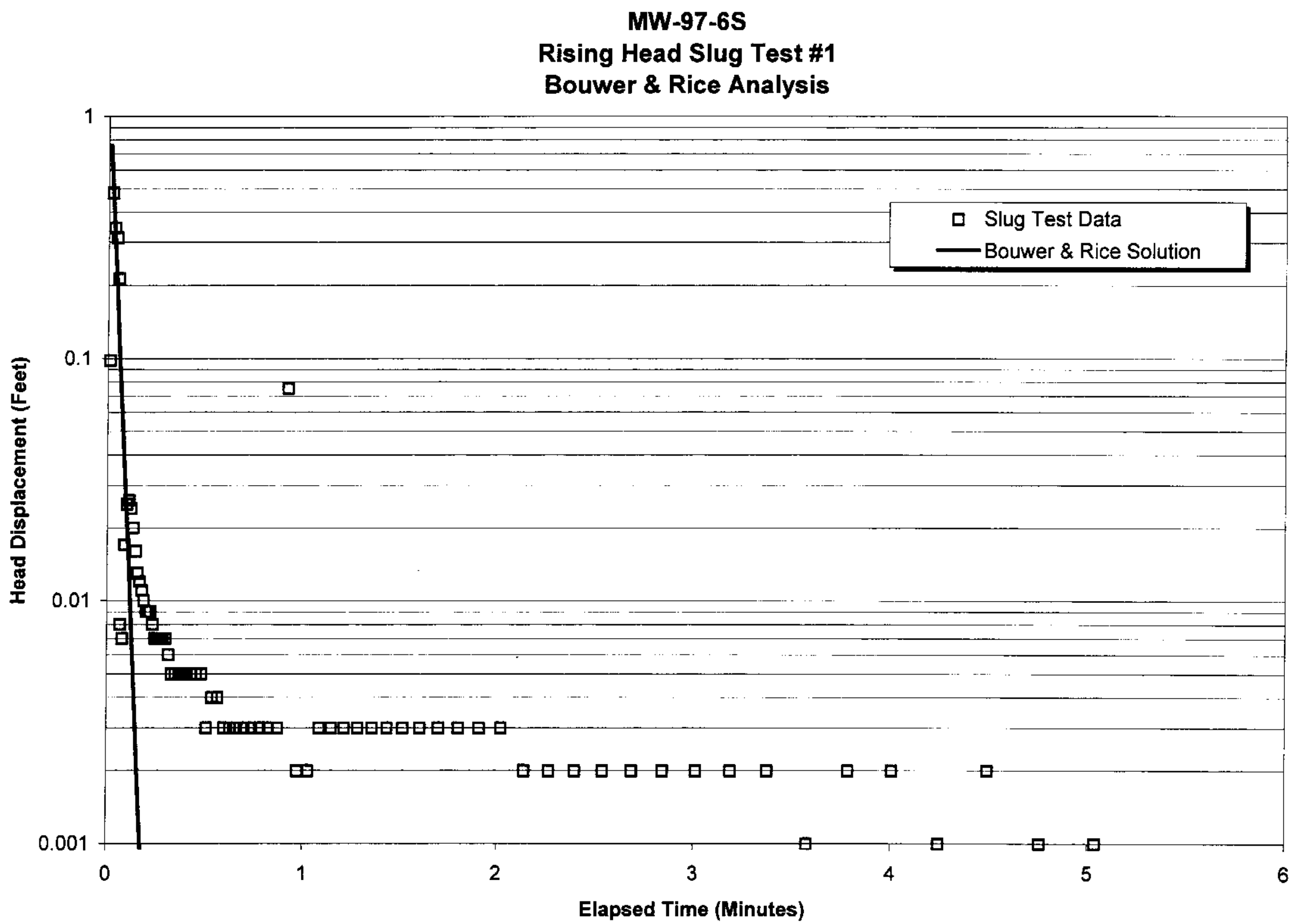


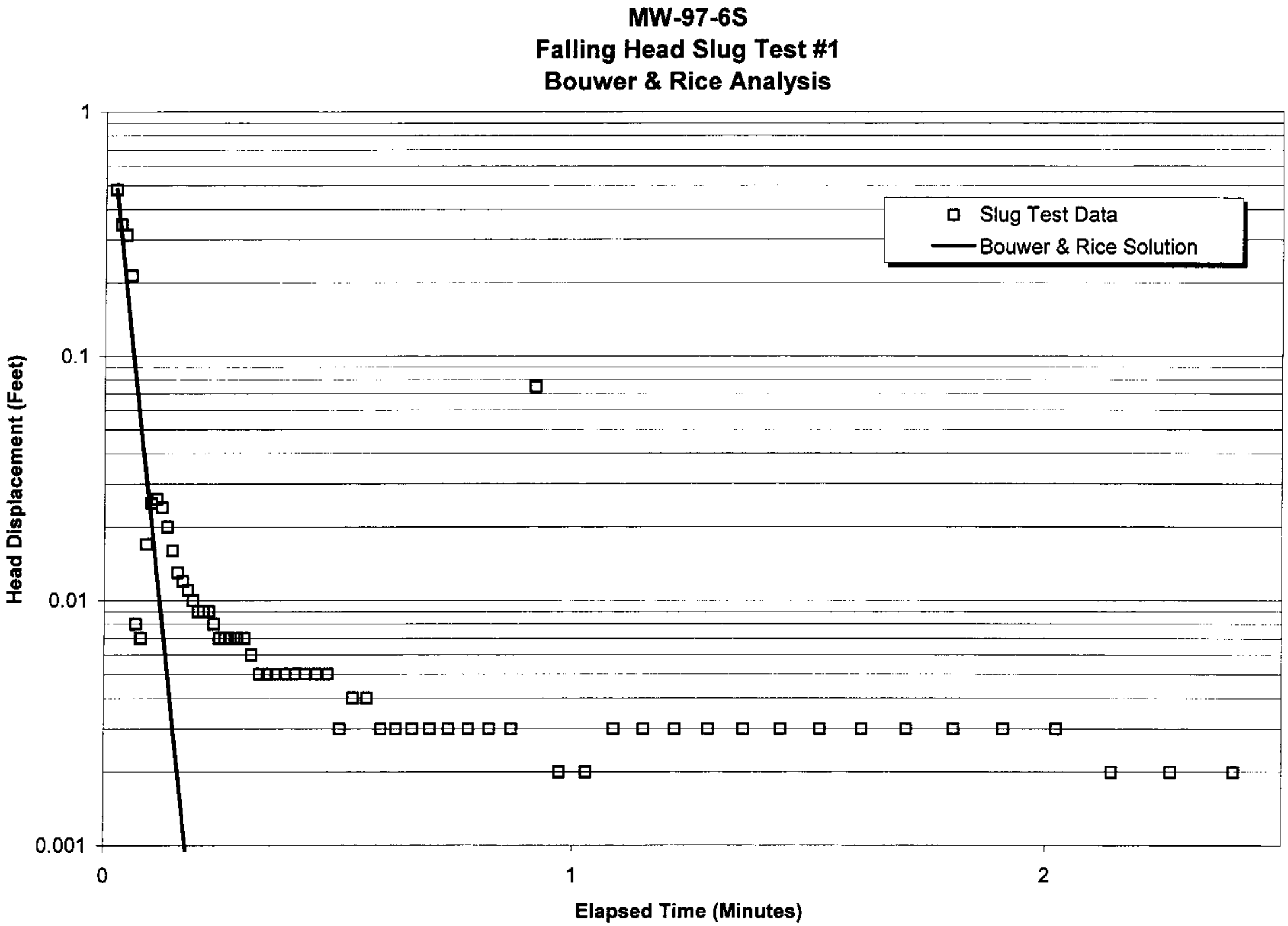
MW-97-1S
Falling Head Slug Test
Bouwer & Rice Analysis
Slug Test Data
Bouwer & Rice Solution
Head Displacement (Feet)
1
0.1
0.01
0
1
2
Elapsed Time (Minutes)

MW-97-1S
Rising Head Slug Test
Bouwer & Rice Analysis



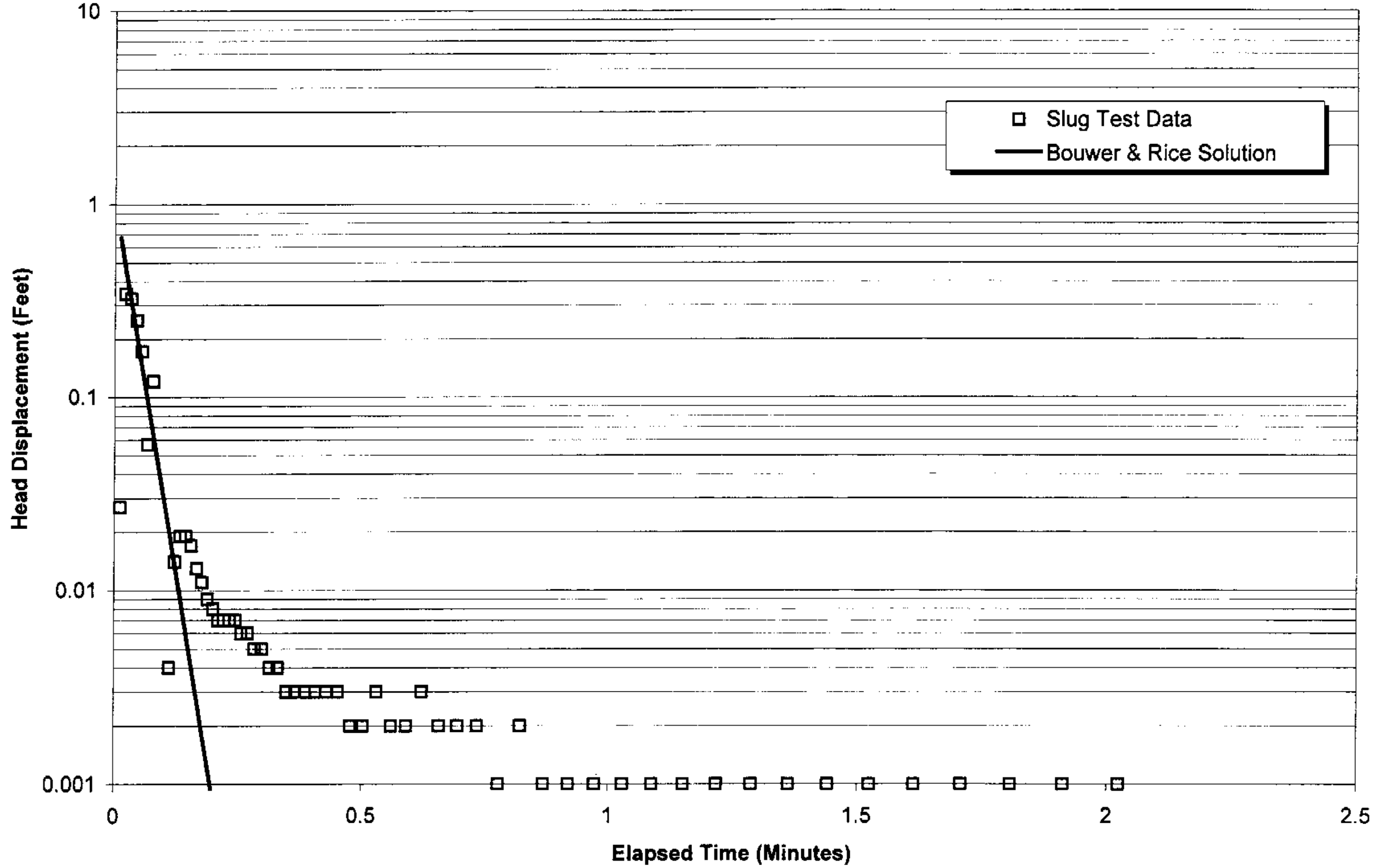

MW-97-1S
Rising Head Slug Test
Bouwer & Rice Analysis
Slug Test Data
Bouwer & Rice Solution
1
0.1
0.01
0.001
Head Displacement (Feet)
0
1
2
Elapsed Time (Minutes)

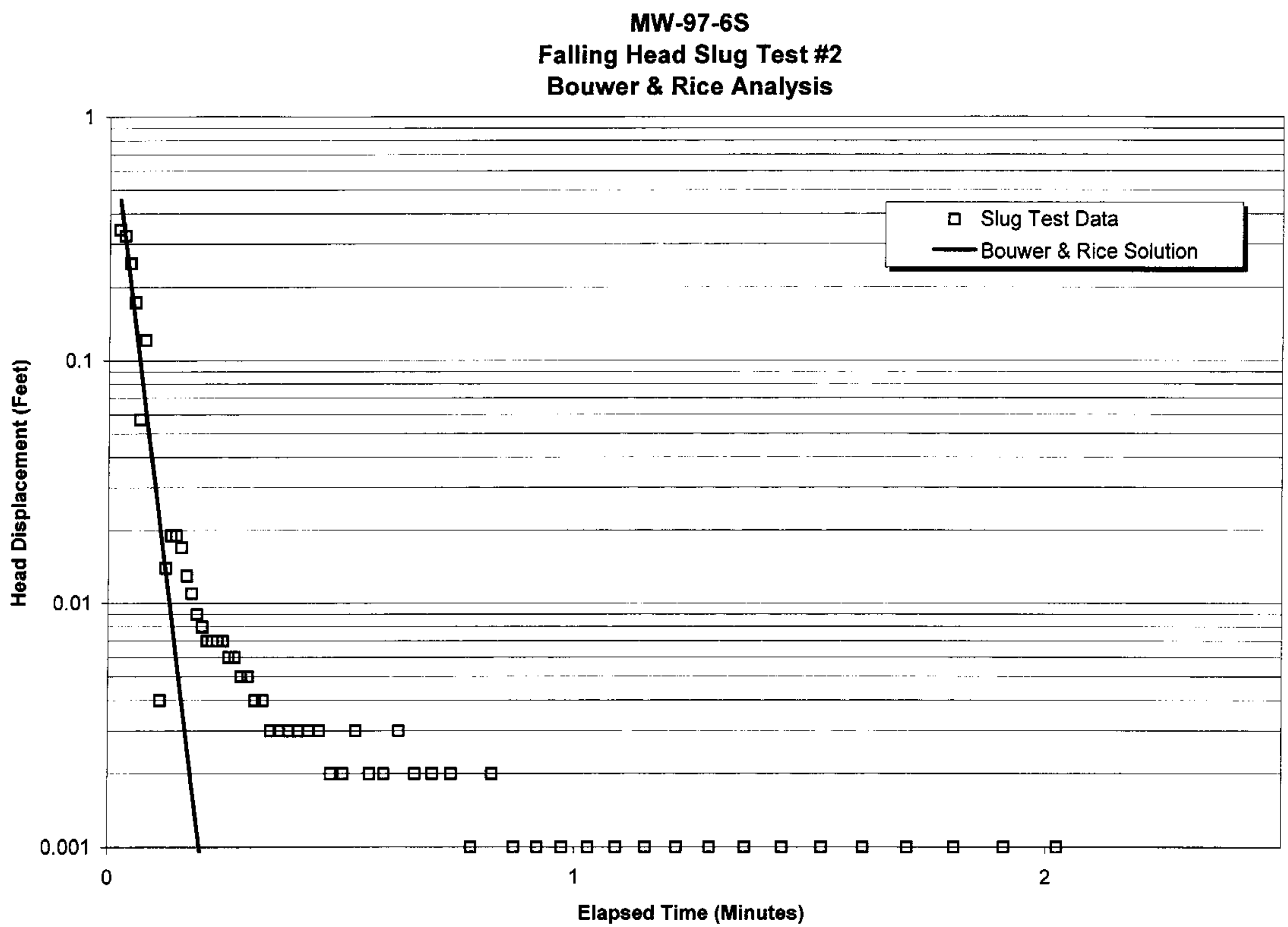

MW-97-6S
Rising Head Slug Test #1
Bouwer & Rice Analysis
Slug Test Data
Bouwer & Rice Solution
1
0.1
0.01
0.001
Head Displacement (Feet)
0
1
2
3
4
5
6
Elapsed Time (Minutes)



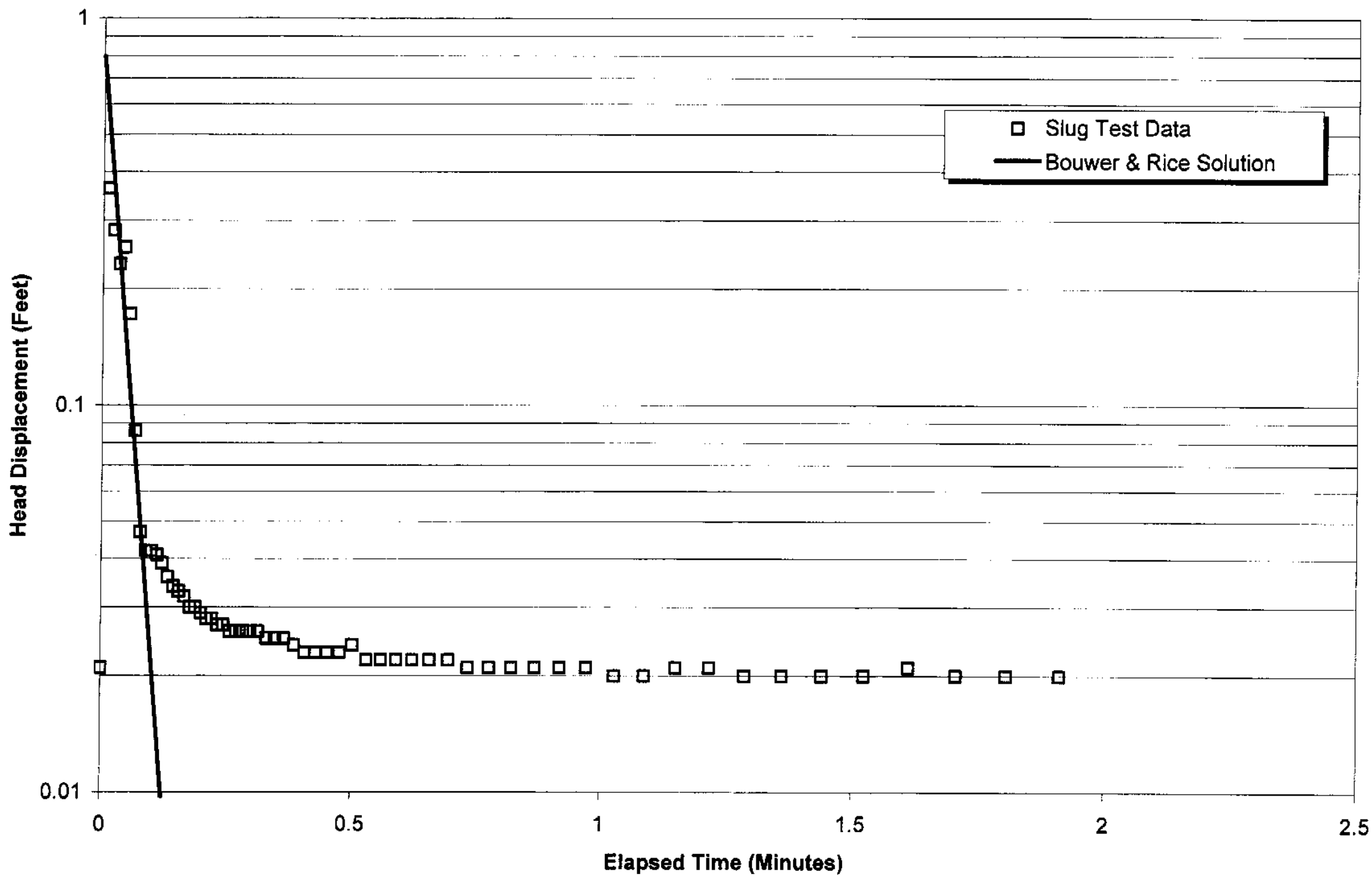
MW-97-6S
Falling Head Slug Test #1
Bouwer & Rice Analysis
Slug Test Data
Bouwer & Rice Solution
Head Displacement (Feet)
Elapsed Time (Minutes)
1
0.1
0.01
0.001
0
1
2

MW-97-6S
Falling Head Slug Test #2
Bouwer & Rice Analysis

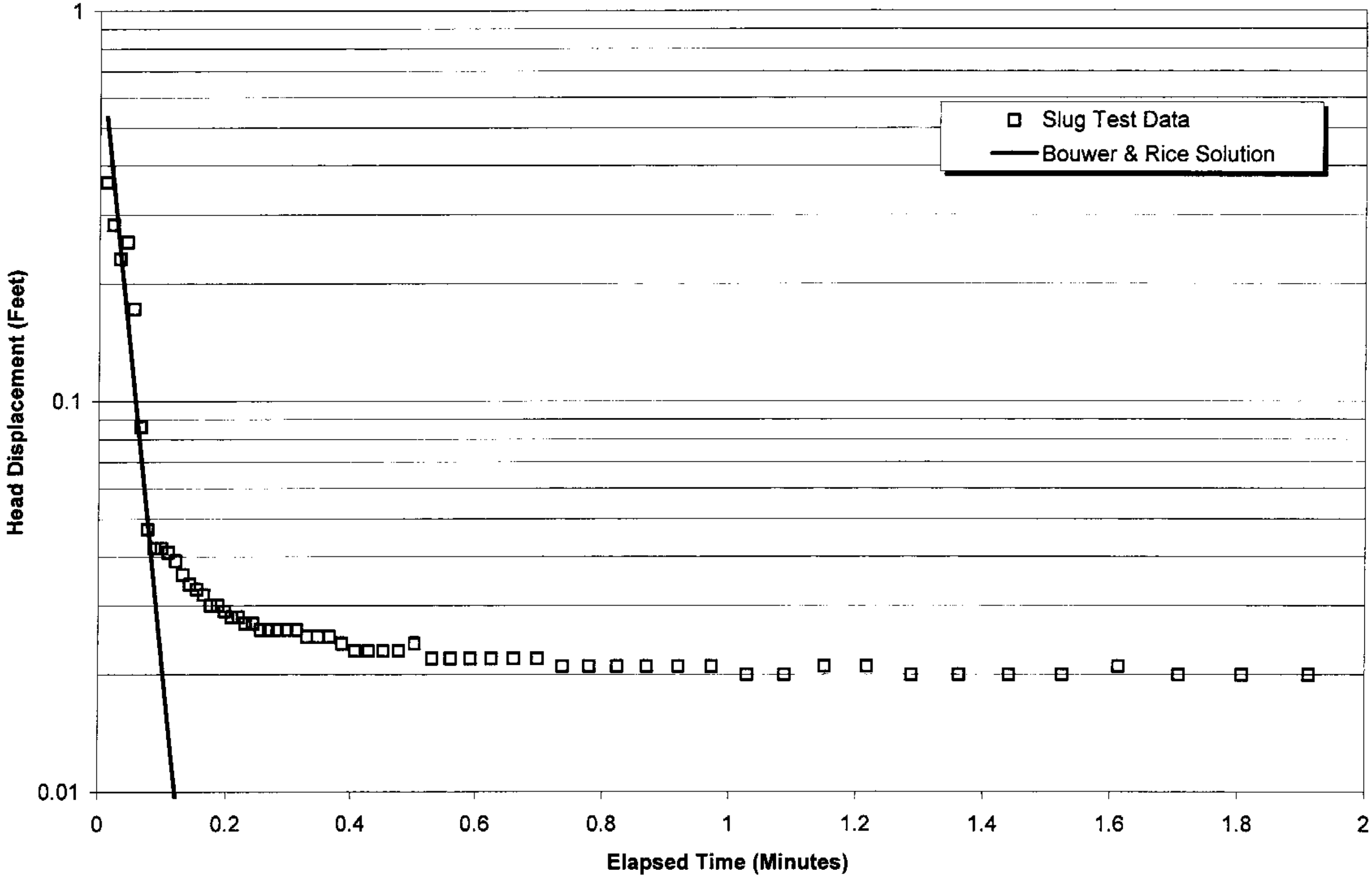



MW-97-6S
Falling Head Slug Test #2
Bouwer & Rice Analysis
Head Displacement (Feet)
1
0.1
0.01
0.001
0
1
2
Elapsed Time (Minutes)
Slug Test Data
Bouwer & Rice Solution

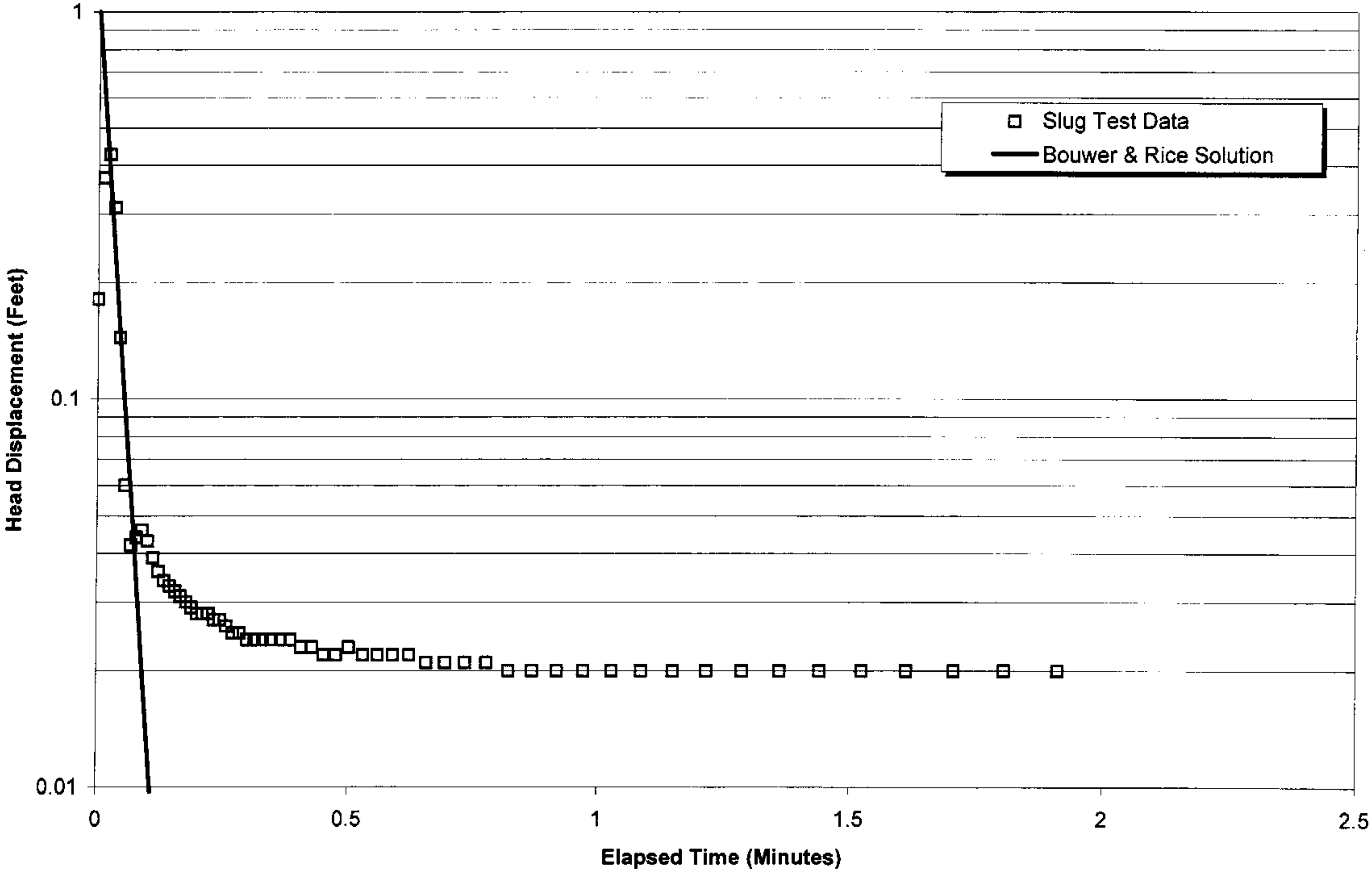
MW-97-6S
Rising Head Slug Test #1
Bouwer & Rice Analysis



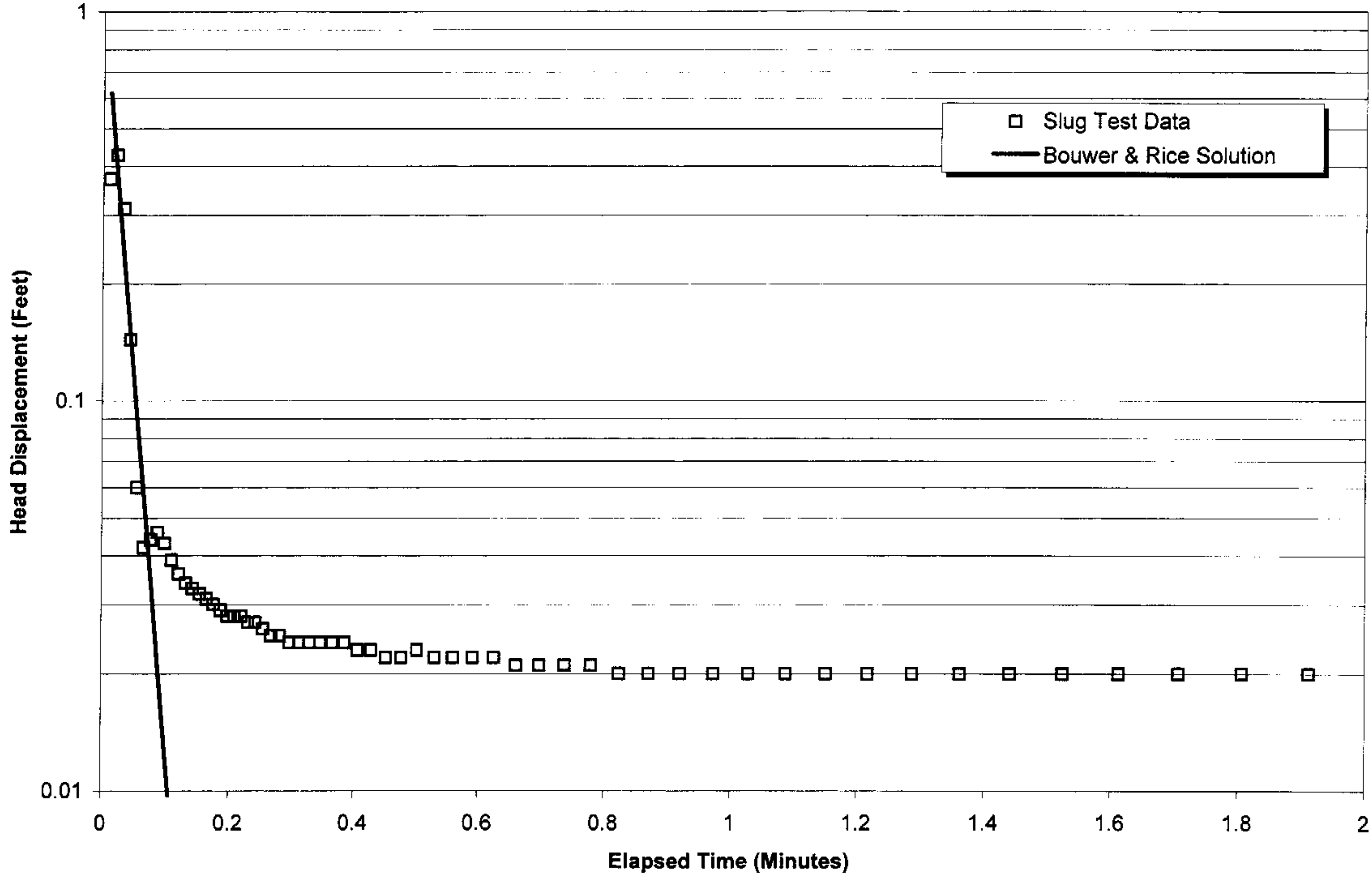
MW-97-6S
Rising Head Slug Test #1
Bouwer & Rice Analysis



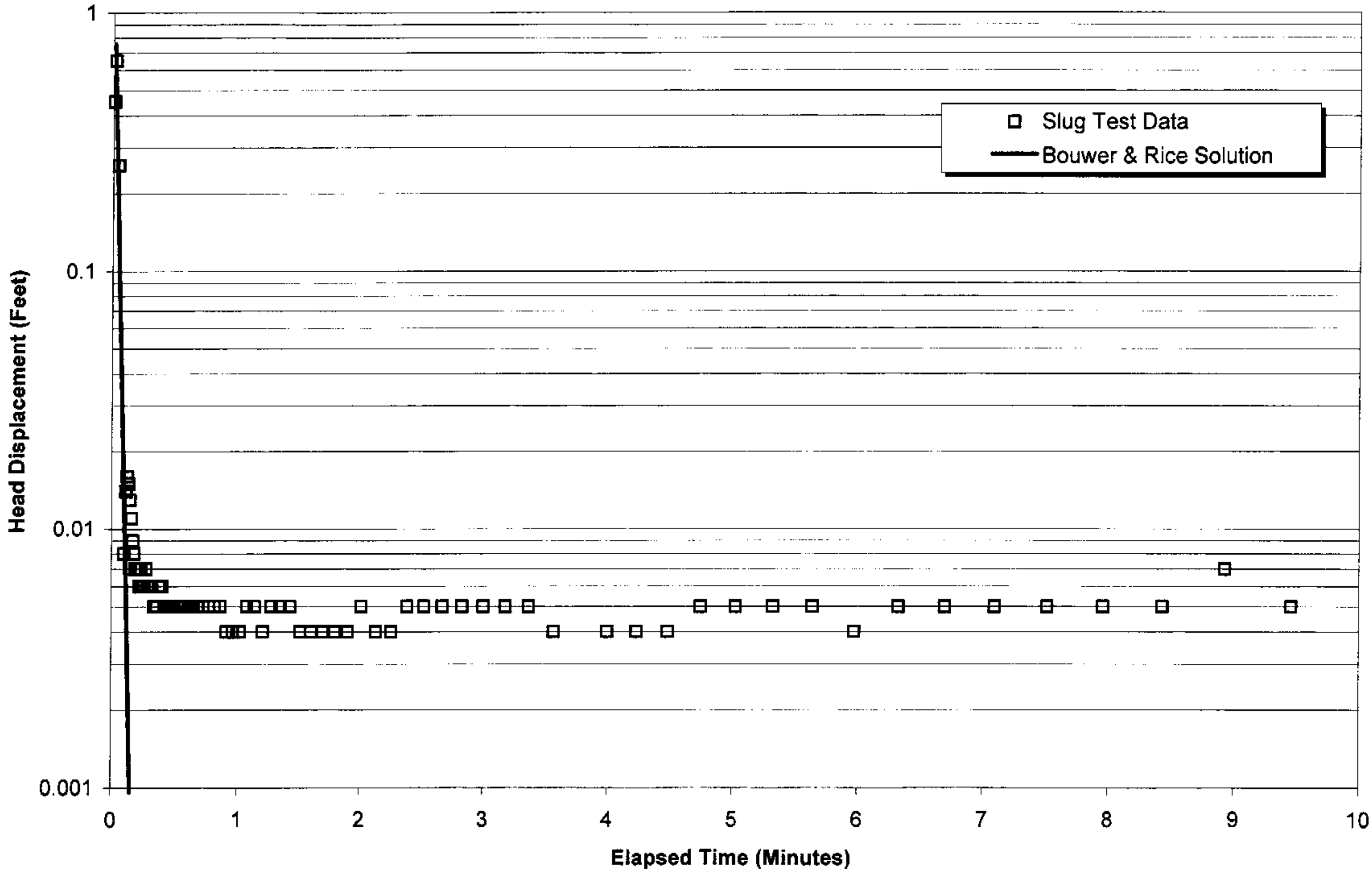
MW-97-6S
Rising Head Slug Test #2
Bouwer & Rice Analysis

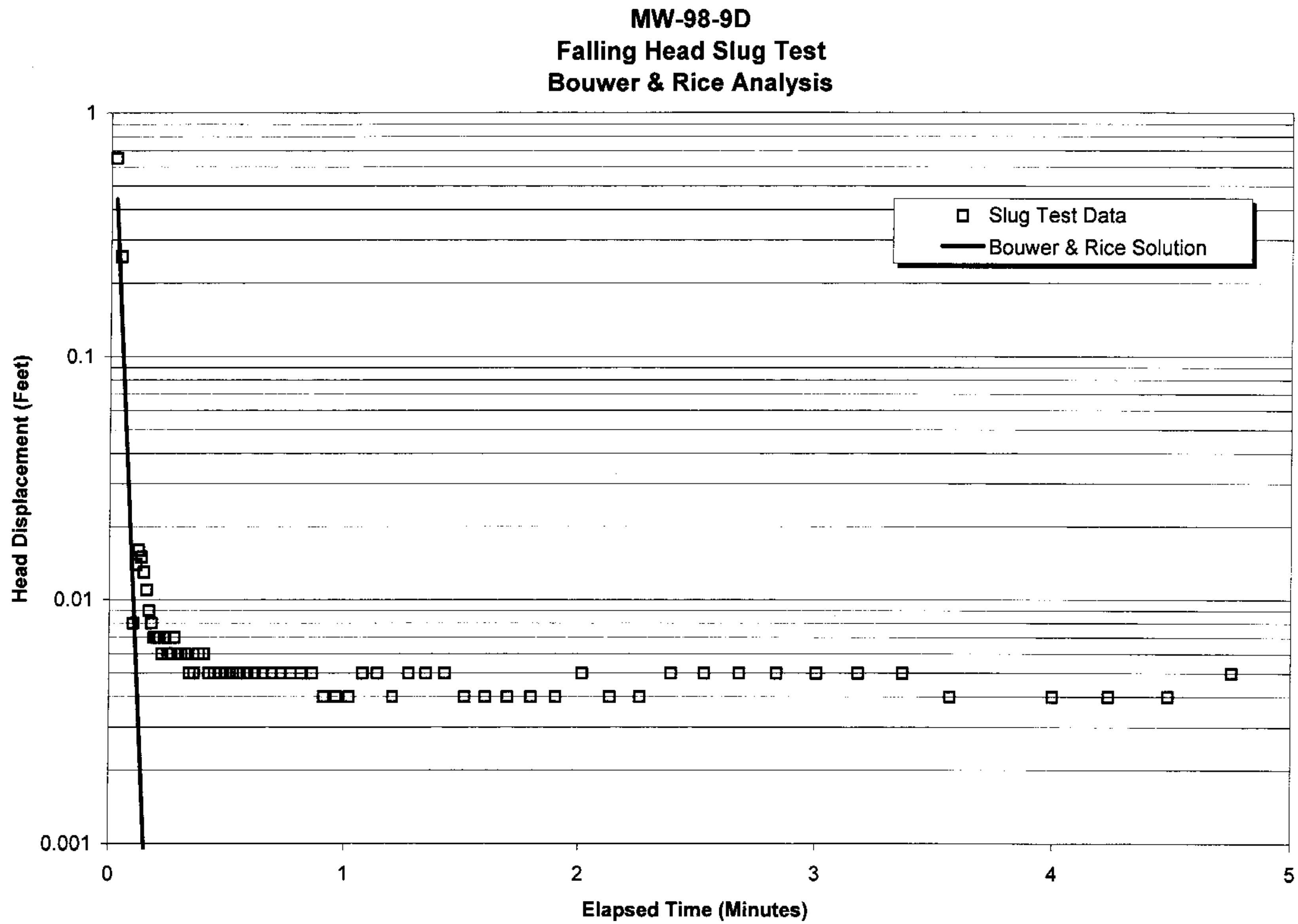


MW-97-6S
Rising Head Slug Test #2
Bouwer & Rice Analysis



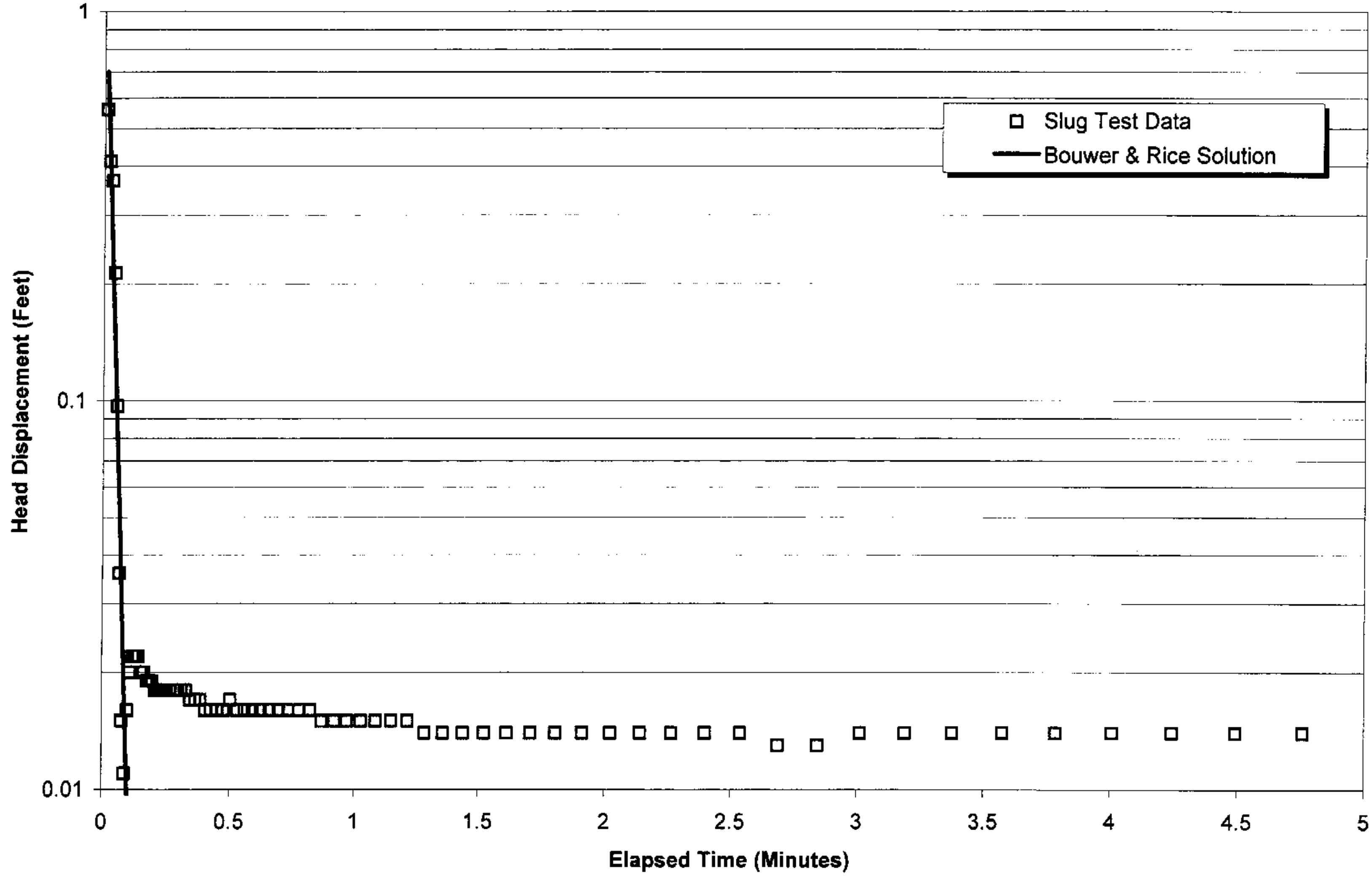
MW-98-9D
Falling Head Slug Test
Bouwer & Rice Analysis



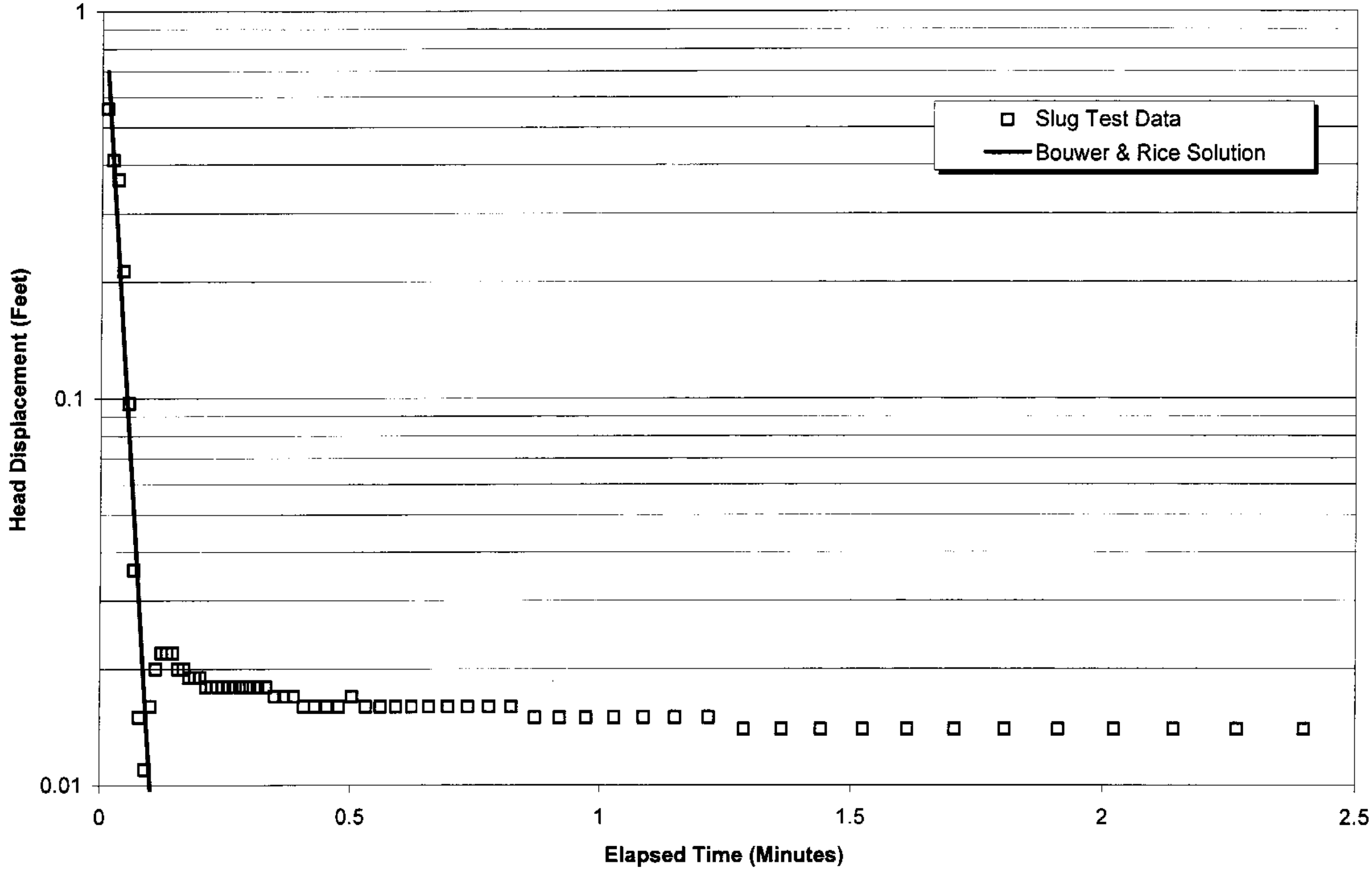


MW-98-9D
Falling Head Slug Test
Bouwer & Rice Analysis
Slug Test Data
Bouwer & Rice Solution
Head Displacement (Feet)
1
0.1
0.01
0.001
0
1
2
3
4
5
Elapsed Time (Minutes)

MW-98-9D
Rising Head Slug Test
Bouwer & Rice Analysis



MW-98-9D
Rising Head Slug Test
Bouwer & Rice Analysis



APPENDIX F

SOIL GAS SAMPLING LOGS

2005 SOIL GAS SAMPLING LOGS

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SG-05-01
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 09/21/05

SHIPPING DATE: 09/22/05
CANISTER S/N: A-306
SAMPLER ID: Peter Reynolds
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: N/A

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	N/A	20.0	20.0	20.0	-30.0	N/A
STOP	N/A	20.0	N/A	N/A	-4.0	N/A

SAMPLING TIMES

START	STOP
0830	0902

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
0.0	N/A	92.0	0.03	0820
0.0	N/A	88.0	0.01	0830
0.0	N/A	75.0	0.0	0902

COMMENTS

Sampled 5 feet below grade (soil gas point, grouted at grade).
Flow Controller FC-58

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SG-05-02
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 09/20/05

SHIPPING DATE: 09/22/05
CANISTER S/N: A-374
SAMPLER ID: Peter Reynolds
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: N/A

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	N/A	27.8	27.8	27.8	-30.0	N/A
STOP	N/A	27.8	N/A	N/A	-4.8	N/A

SAMPLING TIMES

START	STOP
1400	1435

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
0.0	N/A	94.0	0.04	1400
0.0	N/A	90.0	0.0	1414
0.0	N/A	82.0	0.0	1425
0.0	N/A	89.0	0.04	1440

COMMENTS

Sampled 5 feet below grade (soil gas point, grouted at grade).
Flow Controller FC-139
Helium recharged at 1440 as a final check.

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SG-05-03
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 09/21/05

SHIPPING DATE: 09/22/05
CANISTER S/N: A-138
SAMPLER ID: Peter Reynolds
CANISTER LEAK CHECK DATE: N/A

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	N/A	25.6	25.6	25.6	-30.0	N/A
STOP	N/A	25.6	N/A	N/A	-4.9	N/A

SAMPLING TIMES

START	STOP
1000	1037

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
0.0	N/A	95.0	3.0	1000
0.0	N/A	87.0	0.20	1013
0.0	N/A	91.0	0.06	1024
0.0	N/A	76.0	0.17	1047

COMMENTS

Sampled 5 feet below grade (soil gas point, grouted at grade).
Flow Controller FC-99

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SG-05-04
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 09/21/05

SHIPPING DATE: 09/22/05
CANISTER S/N: A-293
SAMPLER ID: Peter Reynolds
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: N/A

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	N/A	25.6	25.6	25.6	-28.8	N/A
STOP	N/A	25.6	N/A	N/A	-4.0	N/A

SAMPLING TIMES

START	STOP
0855	0929

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
0.0	N/A	94.0	0.09	0845
0.0	N/A	81.0	0.0	0916
0.0	N/A	79.0	0.0	0929

COMMENTS

Sampled 5 feet below grade (soil gas point, grouted at grade).
Flow Controller FC-70

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SG-05-05
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 09/21/05

SHIPPING DATE: 09/22/05
CANISTER S/N: A-164
SAMPLER ID: Peter Reynolds
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: N/A

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	N/A	26.7	26.7	26.7	-24.0	N/A
STOP	N/A	26.7	N/A	N/A	-4.0	N/A

SAMPLING TIMES

START	STOP
1117	1152

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
0.0	N/A	91.0	0.10	1116
0.0	N/A	82.0	0.10	1142
0.0	N/A	79.0	0.0	1152

COMMENTS

Sampled 5 feet below grade (soil gas point, grouted at grade).
Flow Controller FC-112

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SG-05-06
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 09/21/05

SHIPPING DATE: 09/22/05
CANISTER S/N: A-316
SAMPLER ID: Peter Reynolds
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: N/A

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	N/A	29.4	29.4	29.4	-30.0	N/A
STOP	N/A	29.4	N/A	N/A	-3.5	N/A

SAMPLING TIMES

START	STOP
1227	1305

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
0.0	N/A	90.0	0.12	1226
0.0	N/A	83.0	0.05	1253
0.0	N/A	77.0	0.04	1312

COMMENTS

Sampled 5 feet below grade (soil gas point, grouted at grade).
Flow Controller FC-61

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SG-05-07
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 09/20/05

SHIPPING DATE: 09/22/05
CANISTER S/N: A-362
SAMPLER ID: Peter Reynolds
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: N/A

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	N/A	22.2	22.2	22.2	-27.8	N/A
STOP	N/A	22.2	N/A	N/A	-3.8	N/A

SAMPLING TIMES

START	STOP
0849	0917

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
2.0	N/A	94.0	0.22	0842
1.5	N/A	92.0	0.20	0849
0.8	N/A	87.0	0.29	0859
0.9	N/A	82.0	0.24	0921

COMMENTS

Sampled 5feet below grade (soil gas point, grouted at grade).
Flow Controller FC-93

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SG-05-08
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 09/20/05

SHIPPING DATE: 09/22/05
CANISTER S/N: A-471
SAMPLER ID: Peter Reynolds
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: N/A

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	N/A	22.2	22.2	22.2	-26.0	N/A
STOP	N/A	22.2	N/A	N/A	-5.0	N/A

SAMPLING TIMES

START	STOP
0958	1033

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
0.0	N/A	85.0	0.36	0957
0.0	N/A	83.0	0.42	1019
0.0	N/A	63.0	0.26	1039

COMMENTS

Sampled 5feet below grade (soil gas point, grouted at grade).
Flow Controller FC-073

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SG-05-09
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 09/20/05

SHIPPING DATE: 09/22/05
CANISTER S/N: A-171
SAMPLER ID: Peter Reynolds
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: N/A

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	N/A	22.2	22.2	22.2	-26.8	N/A
STOP	N/A	22.2	N/A	N/A	-5.0	N/A

SAMPLING TIMES

START	STOP
1106	1140

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
0.0	N/A	93.0	0.10	1105
0.0	N/A	57.0	0.0	1115
0.0	N/A	83.0	0.16	1124
0.0	N/A	78.0	0.0	1141

COMMENTS

Sampled 5 feet below grade (soil gas point, grouted at grade).
Flow Controller FC-89
Helium recharged at 1124.

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SG-05-10
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 09/20/05

SHIPPING DATE: 09/22/05
CANISTER S/N: A-335
SAMPLER ID: Peter Reynolds
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: N/A

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	N/A	26.7	26.7	26.7	-30.0	N/A
STOP	N/A	26.7	N/A	N/A	-4.8	N/A

SAMPLING TIMES

START	STOP
1303	1341

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
0.4	N/A	90.0	0.76	1257
0.4	N/A	87.0	0.0	1305
0.0	N/A	79.0	0.10	1322
0.0	N/A	65.0	0.0	1344

COMMENTS

Sampled 5 feet below grade (soil gas point, grouted at grade).
Flow Controller FC-107

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SG-05-11
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 09/21/05

SHIPPING DATE: 09/22/05
CANISTER S/N: A-369
SAMPLER ID: Peter Reynolds
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: N/A

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	N/A	25.6	25.6	25.6	N/A	N/A
STOP	N/A	25.6	N/A	N/A	N/A	N/A

SAMPLING TIMES

START	STOP
0936	1009

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
0.0	N/A	94.0	0.15	0929
0.0	N/A	88.0	0.03	0935
0.0	N/A	82.0	0.0	0945
0.0	N/A	79.0	0.0	1007

COMMENTS

Sampled 5 feet below grade (soil gas point, grouted at grade).

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SG-05-AMB-E
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 09/20/05

SHIPPING DATE: 09/22/05
CANISTER S/N: A441
SAMPLER ID: Peter Reynolds
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: N/A

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	N/A	27.8	27.8	27.8	-30.0	N/A
STOP	N/A	27.8	N/A	N/A	-4.8	N/A

SAMPLING TIMES

START	STOP
1318	1356

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
0.0	N/A	N/A	N/A	1318
0.0	N/A	N/A	N/A	1333
0.0	N/A	N/A	N/A	1356

COMMENTS

Sampled along the eastern side of the site building.
Flow Controller FC-178

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SG-05-AMB-W
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 09/20/05

SHIPPING DATE: 09/22/05
CANISTER S/N: A-217
SAMPLER ID: Peter Reynolds
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: N/A

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	N/A	23.9	23.9	23.9	-28.5	N/A
STOP	N/A	23.9	N/A	N/A	-5.0	N/A

SAMPLING TIMES

START	STOP
0939	1012

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
0.0	N/A	N/A	N/A	0941
0.0	N/A	N/A	N/A	0959
0.0	N/A	N/A	N/A	1005
0.0	N/A	N/A	N/A	1012

COMMENTS

Sampled west of the site building.
Flow Controller FC-90

2006 SOIL GAS SAMPLING LOGS

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SG-05-01
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 8/15/06

SHIPPING DATE: 8/17/06
CANISTER S/N: A670/6521
SAMPLE ID: SG-05-01
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: 8/15/06
-28 in Hg

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	N/A	24	N/A	N/A	-28	N/A
STOP	N/A	24	N/A	N/A	-5	N/A

SAMPLING TIMES

START	STOP
1254	1324

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
0.0	N/A	81.2	< 1%	1252
0.0	N/A	65.4	< 1%	1312
0.0	N/A	94.5	10.2%	1328

COMMENTS

Sampled 5 feet below grade (soil gas point, grouted at grade).
Flow Controller FC-247

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SG-05-04
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 08/15/06

SHIPPING DATE: 08/17/06
CANISTER S/N: A-21/4240
SAMPLE ID: SG-05-04
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: 08/15/06
-30 in Hg

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	N/A	26.7	N/A	N/A	-30	N/A
STOP	N/A	26.7	N/A	N/A	-5	N/A

SAMPLING TIMES

START	STOP
1358	1436

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
0.0	N/A	89.8	3.8%	1344
0.0	N/A	73.9	< 1%	1414
0.0	N/A	60.1	< 1%	1438

COMMENTS

Sampled 5 feet below grade (soil gas point, grouted at grade).
Flow Controller FC-246

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SG-05-05
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 89/15/06

SHIPPING DATE: 08/17/06
CANISTER S/N: A-457/24152/1428
SAMPLE ID: SG-05-05
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: 8/15/06
-27 in Hg

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	N/A	29.4	N/A	N/A	-27	N/A
STOP	N/A	29.4	N/A	N/A	-5	N/A

SAMPLING TIMES

START	STOP
1519	1546

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
0.0	N/A	88.7	< 1%	1502
0.0	N/A	55.8	< 1%	1549

COMMENTS

Sampled 5 feet below grade (soil gas point, grouted at grade).
Flow Controller FC-255

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SG-05-08
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 08/15/06

SHIPPING DATE: 08/17/06
CANISTER S/N: A-166/6905
SAMPLE ID: SG-05-08
OPERATOR: Peter Reynolds
CANISTER LEAK
CHECK DATE: 08/15/06
-29 in Hg

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	N/A	24	N/A	N/A	-28	N/A
STOP	N/A	24	N/A	N/A	-4	N/A

SAMPLING TIMES

START	STOP
1033	1104

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
0.0	N/A	77.3	4	1025
0.0	N/A	66.8	3.8	1030
0.0	N/A	84.1	4.9	1110

COMMENTS

Sampled 5feet below grade (soil gas point, grouted at grade).
Flow Controller FC-070
Heavy traffic in area: diesel trucks in the area.
County Carting next door.

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SG-05-10
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 08/15/06

SHIPPING DATE: 08/17/06
CANISTER S/N: A-364/5685
SAMPLE ID: SG-05-10
OPERATOR: Peter Reynolds
CANISTER LEAK
CHECK DATE: 08/15/06
-29 in Hg

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	N/A	29.4	N/A	N/A	-29.5	N/A
STOP	N/A	29.4	N/A	N/A	-4.0	N/A

SAMPLING TIMES

START	STOP
1453	1528

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
0.0	N/A	82.04	< 1%	1450
0.0	N/A	73.2	< 1%	1520
0.0	N/A	49.5	< 1%	1528

COMMENTS

Sampled 5 feet below grade (soil gas point, grouted at grade).
Flow Controller FC-285

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SG-05-11
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 08/15/06

SHIPPING DATE: 08/8/17/06/05
CANISTER S/N: A-441/24182/1418
SAMPLE ID: SG-05-11
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: 08/15/06
-29 in Hg

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	N/A	23.9	N/A	N/A	-28	N/A
STOP	N/A	23.9	N/A	N/A	-5	N/A

SAMPLING TIMES

START	STOP
1151	1224

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
0.0	N/A	78.7	< 1%	1146
0.0	N/A	62.5	< 1%	1205
0.0	N/A	80.9	< 1%	1226

COMMENTS

Sampled 5 feet below grade (soil gas point, grouted at grade).
Flow Controller # FC-070

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SS-06-01
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 08/16/06

SHIPPING DATE: 08/17/06
CANISTER S/N: A479/1403
SAMPLE ID: SS-06-01
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: 08/16/06
-30 in Hg

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	26.7	29.4	N/A	N/A	-28.0	N/A
STOP	26.7	29.4	N/A	N/A	-5.0	N/A

SAMPLING TIMES

START	STOP
1634	1706

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
		94.7%	6.1%	1630
		64.5%	1.5%	1708

COMMENTS

Sampled ~ 1 foot below grade inside Site building. Expendable point.
Point removed and grouted after sampling.
Flow Controller FC-281.

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SS-06-02
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 08/16/06

SHIPPING DATE: 08/17/06
CANISTER S/N: A341/5222
SAMPLE ID: SS-06-02
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: 08/16/06
-30 in Hg

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	26.7	29.4	N/A	N/A	-30.0	N/A
STOP	26.7	29.4	N/A	N/A	-4.0	N/A

SAMPLING TIMES

START	STOP
1443	1518

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
		92.6%	11.0%	1440
		90.7%	7.1%	1520

COMMENTS

Sampled ~ 1 foot below grade inside Site building. Expendable point.
Point removed and grouted after sampling.
Flow Controller FC-253.

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SS-06-03
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 08/16/06

SHIPPING DATE: 08/17/06
CANISTER S/N: A376/5699
SAMPLE ID: SS-06-03
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: 08/16/06
-30 in Hg

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	26.7	29.4	N/A	N/A	-30.0	N/A
STOP	26.7	29.4	N/A	N/A	-4.0	N/A

SAMPLING TIMES

START	STOP
1305	1337

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
		92.6%	9.1%	1250
		92.1%	4.1%	1339

COMMENTS

Sampled ~ 1 foot below grade inside Site building. Expendable point.
Point removed and grouted after sampling.
Flow Controller FC-263.

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SS-06-04
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 08/16/06

SHIPPING DATE: 08/17/06
CANISTER S/N: A133/4234
SAMPLE ID: SS-06-04
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: 08/16/06
-30 in Hg

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	26.7	29.4	N/A	N/A	-30.0	N/A
STOP	26.7	29.4	N/A	N/A	-4.0	N/A

SAMPLING TIMES

START	STOP
1543	1616

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
		89.3%	< 1%	1540
		72.7%	< 1%	1618

COMMENTS

Sampled ~ 1 foot below grade inside Knickerbock Site building. Expendable point.
Point removed and grouted after sampling.
Flow Controller FC-266.

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: IA-06-01
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 08/16/06

SHIPPING DATE: 08/17/06
CANISTER S/N: A370/5706
SAMPLE ID: IA-06-01
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: 08/16/06
-30 in Hg

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	26.7	29.4	N/A	N/A	-30.0	N/A
STOP	26.7	29.4	N/A	N/A	-4.0	N/A

SAMPLING TIMES

START	STOP
1305	1339

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time

COMMENTS

Sampled ~ 4 feet above grade in the Site building.
Flow Controller FC-087

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: IA-06-02
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 08/16/06

SHIPPING DATE: 08/17/06
CANISTER S/N: A370/5706
SAMPLE ID: IA-06-02
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: 08/16/06
-27 in Hg

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	26.7	29.4	N/A	N/A	-27	N/A
STOP	26.7	29.4	N/A	N/A	-4.0	N/A

SAMPLING TIMES

START	STOP
1450	1521

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time

COMMENTS

Sampled ~ 4 feet above grade in the Site building.
Flow Controller FC-050.

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: IA-06-03
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 08/16/06

SHIPPING DATE: 08/17/06
CANISTER S/N: A313/5201
SAMPLE ID: IA-06-03
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: 08/16/06
-29 in Hg

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	26.7	29.4	N/A	N/A	-30.0	N/A
STOP	26.7	29.4	N/A	N/A	-4.0	N/A

SAMPLING TIMES

START	STOP
1621	1650

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time

COMMENTS

Sampled ~ 4 feet above grade in the Knickerbocker Building.
Flow Controller FC-181.

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: AA-06-01
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 08/16/06

SHIPPING DATE: 08/17/06
CANISTER S/N: A313/5201
SAMPLE ID: AA-06-01
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: 08/16/06
-29 in Hg

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	26.7	29.4	N/A	N/A	-29.0	N/A
STOP	26.7	29.4	N/A	N/A	-4.0	N/A

SAMPLING TIMES

START	STOP
1337	1411

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time

COMMENTS

Sampled ~ 4 feet above grade outside Site building near former tank farm..
Flow Controller FC-310.

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SS-06-05 (1)
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 10/05/06

SHIPPING DATE: 10/06/06
CANISTER S/N: A564/24180/1269
SAMPLE ID: SS-06-05 (1)
OPERATOR: Nicole Reese
CANISTER LEAK CHECK DATE: 10/05/05
-29 in Hg

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	26.7	29.4	N/A	N/A	-29.0	N/A
STOP	26.7	29.4	N/A	N/A	-4.0	N/A

SAMPLING TIMES

START	STOP
1021	1026

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
N/A	N/A	N/A	N/A	N/A

COMMENTS

Sampled ~ 1 foot below grade outside Site building near R&H property line.
Expendable point. Point removed and grouted after sampling.
Flow Controller FC-233.

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: SS-06-05 (6)
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 10/05/06

SHIPPING DATE: 10/06/06
CANISTER S/N: A3254/555656/5323
SAMPLE ID: SS-06-05 (6)
OPERATOR: Peter Reynolds
CANISTER LEAK CHECK DATE: 10/06/05 (6)
-30 in Hg

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	26.7	29.4	N/A	N/A	-30.0	N/A
STOP	26.7	29.4	N/A	N/A	-4.0	N/A

SAMPLING TIMES

START	STOP
1214	1254

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
		90.0%	< 1%	1212
		85.2%	< 1%	1226
		88.9	< 1%	1257

COMMENTS

Sampled ~ 1 foot below grade outside Site building near R&H property line.
Expendable point. Point removed and grouted after sampling.
Flow Controller FC-105.

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: AA-06-05 (1)
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 10/05/06

SHIPPING DATE: 10/06/06
CANISTER S/N: A564/24180/1269
SAMPLE ID: SS-06-05 (1)
OPERATOR: Peter Reynolds
CANISTER LEAK
CHECK DATE: 10/05/05
-30 in Hg

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	26.7	29.4	N/A	N/A	-29.0	N/A
STOP	26.7	29.4	N/A	N/A	-4.0	N/A

SAMPLING TIMES

START	STOP
1021	1026

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
N/A	N/A	N/A	N/A	N/A

COMMENTS

Sampled ~ 4 feet above grade outside Site building near R&H property line.

Flow Controller FC-233.

URS Corporation

EPA Method TO-15

SAMPLING DATA SHEET

GENERAL INFORMATION

SITE LOCATION: AA-06-05 (6)
SITE ADDRESS: Former Columbia Cement Facility, Freeport, NY
SAMPLING DATE: 10/05/06

SHIPPING DATE: 10/06/06
CANISTER S/N: A2900/555656/5534
SAMPLE ID: AA-06-05 (6)
OPERATOR: Nicole Reese
CANISTER LEAK CHECK DATE: 10/05/05
-30 in Hg

SAMPLING INFORMATION

	INTERIOR °C	AMBIENT °C	MINIMUM °C	MAXIMUM °C	VACUUM in/Hg	VACUUM in/Hg
START	26.7	29.4	N/A	N/A	-30.0	N/A
STOP	26.7	29.4	N/A	N/A	-4.0	N/A

SAMPLING TIMES

START	STOP
1206	1241

INSTRUMENT READINGS

PID(ppm)	FID (ppm)	% He Enclosure	% He Sample	Time
N/A	N/A	N/A	N/A	N/A

COMMENTS

Ambient air sample ~ 4 feet above grade outside Site building near R&H property line.

Flow Controller T28.

APPENDIX G

BENCH SCALE TREATABILITY STUDY TESTING REPORTS

ADVENTUS

AMERICAS

EHC AND HRC FEASIBILITY STUDY FOR THE TREATMENT OF CHLORINATED SOLVENTS IN GROUNDWATER FROM THE FORMER COLUMBIA CEMENT INC. FACILITY, FREEPORT, NY (THE SITE): BENCH SCALE TREATABILITY INVESTIGATION

FINAL REPORT

Prepared for:

URS Corp.
12 Commerce Drive
Cranford, NJ 07016

Submitted by:
ADVENTUS AMERICAS
ADVENTUS Project No.: AAI5-032

October 21, 2005

1435 Morris Avenue, 2nd Floor . Union, NJ 07083 . Tel 908.688.8543 . Fax 908.688.8563
www.adventus.us

EXECUTIVE SUMMARY

A bench-scale treatability was completed at Adventus Remediation Technologies' facility in Mississauga, Ontario, for the treatment of groundwater impacted with chlorinated volatile organic compounds from the former Columbia Cement, Inc. facility in Freeport, NY (the Site). The purpose of the project was to determine the capability of EHC and HRC to treat chloroethane (1,500 ug/L), the primary contaminant in groundwater.

A review of the scientific literature indicated that degradation of chloroethane could occur both via biotic as well as abiotic pathways under reducing conditions. HRC supports biological degradation while EHC supports both biological and chemical reduction.

A set of six flow-through column systems was set up, which included two control columns, two EHC columns and two HRC columns. Two application rates (0.1% and 0.5%) of EHC and HRC were tested. The effectiveness of these treatment systems was assessed using data collected in six sampling events over a period of 107 days.

Overall the treatment systems have demonstrated some reduction in chloroethane over time. However, during the initial three sampling events, it was difficult to assess the effectiveness of the treatments due to the decrease in chloroethane concentrations in the feed and control systems. Both systems showed a significant lag time of between 42 and 71 days, before degradation of chloroethane was truly observed.

Only one of the six sampling events indicated that there was an added benefit of using enhancements such as EHC and HRC to degrade chloroethane. Significant removal was observed in the non-sterile and sterile control columns indicating that the added enhancements did not significantly improve the biotic removal of chloroethane. Removal of chloroethane was primarily from combined abiotic methods and biotic methods without the enhancements. This indicates that chloroethane has a potential to attenuate naturally.

The experiments were conducted at a pore volume flush rate three times the rate observed in the field. Within the limited enhancement that was observed, the data shows that in the short term, HRC performed better than EHC. However, it is likely that the slow release feature of EHC coupled with zero valent iron would perform better in the long run. The study concludes that it is not feasible to enhance the reductive dechlorination of chloroethane in groundwater at the Site.

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1. Project Background

This report was prepared for URS Corp. to determine the ability of EHC and HRC to treat the COI present in groundwater at the former Columbia Cement Inc. facility in Freeport, New York (Site). This report presents the results and interpretation of data collected from a bench-scale feasibility study completed between April 2005 and September 2005 at Adventus Remediation Technologies' facility in Mississauga, Ontario.

1.2. EHC and HRC Technology Background

EHC is a patented combination of controlled-release solid carbon and zero-valent iron (ZVI) to stimulate reductive dechlorination of persistent organic solvents in groundwater and source zones. The organic component of EHC (fibrous organic material) is nutrient rich, hydrophilic, and has high surface area; thus, it is an ideal support for growth of bacteria in the groundwater environment. As they grow on EHC particle surfaces, indigenous heterotrophic bacteria consume dissolved oxygen and thereby reduce the redox potential in groundwater. In addition, as the bacteria grow on the organic particles they ferment the carbon and release volatile fatty acids (VFAs) such as acetic, propionic, butyric, and lactic acids, which diffuse from the site of fermentation into the groundwater plume and serve as electron donors for other bacteria including dehalogenators and halorespiring species. Finally, the small ZVI particles provide substantial reactive surface area that stimulates direct chemical dechlorination and an additional drop in the redox potential of the groundwater. These physical, chemical, and biological processes combine to create an environment that stimulates chemical and microbiological dechlorination of solvents.

On the other hand, HRC is an ester of polylactic acid, which slowly releases lactic acid and other VFAs in groundwater. The VFAs serve as electron donor and promote the reductive dechlorination of chlorinated solvents.

Groundwater at the Site is predominantly contaminated with CA (CA), which is a degradation product of 1,1,1-TCA, a compound that was released at the Site. A review of the scientific literature indicated that degradation of CA could occur both via biotic as well as abiotic pathways. HRC supports biological degradation while EHC supports both biological and chemical reduction.

2.0 PROJECT OBJECTIVES AND METHODS

1.3. Project Objectives

The aim of this bench-scale feasibility study was to determine the ability of EHC and HRC to treat chlorinated volatile organic compounds in impacted groundwater collected at the Site. Specific objectives included:

- chemical characterization of the groundwater and soil samples;
- evaluation of the performance of EHC and HRC applied at two application rates;
- identification of the most effective product and determination of its optimal application rate for full-scale treatment;
- providing a comprehensive final report, including recommendations for potential full-scale implementation.

1.4. Initial Groundwater and Soil Characterization

On April 27, 2005 Adventus received one five-gallon pail of groundwater (MW-05-15D) and one five-gallon pail of soil (MW-98-9D) from the Site. Both pails were placed into cold room storage upon receipt.

On April 28, 2005 a sample of the groundwater was submitted for volatile organic compounds (VOC), total organic carbon (TOC), chloride, alkalinity, pH, nitrate, sulfate, total iron, and dissolved iron analyses. The soil was homogenized by hand and samples were collected for VOC, TOC, chloride, alkalinity, pH, nitrate, sulfate, and total iron analyses. All samples were shipped via overnight courier to Severn Trent Laboratories (STL) – Chicago for analysis.

The initial groundwater and soil characterization results are presented in **Tables 1 and 2.** The main VOC present in the groundwater was CA (730 ug/L) and a trace amount of chlorobenzene (CB) was also detected at 4 ug/L. Analysis of the Site soil revealed a low concentration of m&p-Xylene (12 ug/kg). All other VOCs were below the analytical detection limit (i.e., non-detect). This indicates that the soil itself is not from a highly contaminated area or that losses have occurred during the collection and/or shipment of the samples.

The TOC concentration was much greater in the soil (9,300 mg/kg) than in the groundwater sample (8 mg/L).

Table 1: Initial VOC and TOC results in the Site soil and groundwater samples

Parameter	Soil	Units	Water	Units
Chloroethane	ND (6.1)	ug/kg	730	ug/L
Chlorobenzene	ND (6.1)	ug/kg	4	ug/L
m&p-Xylene	12	ug/kg	ND (2)	ug/L
Total VOCs	**12**	**ug/kg**	**734**	**ug/L**
TOC	9,300	mg/kg	8	mg/L

ND = non detect (detection limit)

The inorganic constituents are summarized in **Table 2**. The Site soil and groundwater were both neutral and had pH values of 6.9 and 6.3, respectively. The inorganic chemistry of the groundwater was dominated by chloride (75 mg/L) and trace amounts of sulfate (0.29 mg/L), total iron (8 mg/L) and dissolved iron (0.065 mg/L) were detected. The carbonate alkalinity was 380 mg/L in the groundwater and was below the detection limit in the soil. The inorganic chemistry of the soil was dominated by total iron (9,700 mg/kg) and lower concentrations of chloride (3.3 mg/kg) and sulfate (3 mg/kg) were also detected.

Table 2: Inorganic constituents in the Site soil and groundwater samples

Parameter	Soil	Units	Water	Units
Chloride	3.3	mg/kg	75	mg/L
Total Alkalinity (as $CaCO_3$)	ND (500)	mg/kg	380	mg/L
pH	6.9	pH units	6.3	pH units
Nitrate-N	ND (1.2)	mg/kg	ND (0.1)	mg/L
Sulfate	3	mg/kg	0.29	mg/L
Total Iron	9,700	mg/kg	8	mg/L
Total Dissolved Iron	NA	---	0.065	mg/L

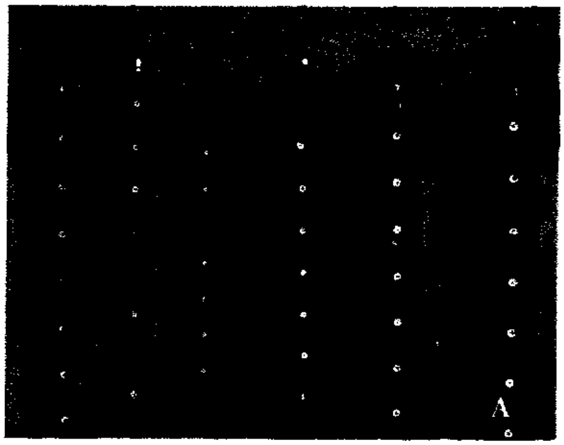
ND = non detect (detection limit)
NA = not applicable

2.3 Column Test Set Up

On June 21, 2005, six column systems were set up with Plexiglas columns (Table 3, Photographs 1A and 1B). Two of the columns were amended with EHC, two columns received HRC and the remaining two were control columns. The EHC columns were filled with a 0.1% and 0.5% (by mass) mixtures of EHC with Site soil. The same application rates were tested for the HRC columns. The first control column was filled with Site soil "as received" and the second control column was filled with Site soil that was autoclaved at 250°F for 20 minutes. One gram of mercuric chloride, a microbial inhibitor, was also added to the autoclaved soil.

Table 3: Summary of the Column Testing

System #	Description	Application Rate (%)
1	EHC2007Fe50	0.1
2	EHC2007Fe50	0.5
3	HRC	0.1
4	HRC	0.5
5	Control	0
6	Sterile Control	0



Photograph 1A and 1B. Laboratory set up of the EHC columns. Each system consists of a column (A) followed by Tedlar bag to collect the effluent (B). Columns 1 – 6 (Left to Right).

The concentrations of CA and CB in the Site groundwater sample were below the typical Site concentrations and thus the feed water was spiked with these two constituents of interest. A separate feed was prepared for the sterile control column as described above except mercuric chloride was also added to the feed bag. Spiked groundwater was continuously being pumped into the bottom of each column. The effluent line from each column was connected to a separate Tedlar bag, which collected the effluent from the column over time. Initially, the feed flow rate was set at 150 mL/day to fill the columns and then was reduced to 70 mL/day. This corresponded to a pore volume flush rate that was three times that calculated from field observations/measurements. This was the slowest flow rate that could be tested to collect sufficient water for analysis at each sampling event.

Oxidation-reduction potential (ORP) and pH were initially monitored daily and then weekly. On July 11th (Day 14), July 26th (Day 29), August 8th (Day 42) September 6th (Day 71), 2005 influent and effluent samples were collected from each system. The influents were sampled for VOC and the column effluents were sampled for VOC, ethane, alkalinity, chloride, and TOC analyses. All samples from the first four sampling events were submitted to Severn Trent Laboratories.

Two additional sampling events were completed on September 29th (Day 94) and October 12th (Day 107). During the final two sampling events, effluent samples were collected directly from the column and were analyzed by Adventus using the solid phase microextraction (SPME) method (**Appendix A**).

3.0 COLUMN RESULTS

3.1 pH and ORP Data

The pH and ORP data is presented in **Appendix B**. The Site groundwater pH ranged between 6.5 and 7.3. The pH values of the control column effluents were similar to the feed and ranged between 6.5 and 7.0. The effluents from both the EHC and HRC treatment columns initially showed a decrease in the pH and then the pH increased into the neutral range with time. The pH of the EHC columns ranged between 5.8 and 7.1, while the pH of the HRC columns ranged between 5.0 and 6.9.

During the initial 30 days of the study the EHC columns produced the best reductive conditions. After day 30, the EHC, HRC, and control columns all showed slightly positive ORP values. The last reading showed that the treatment columns, control columns, and feeds all had negative ORP values. Neither, EHC or HRC were not able to sustain low ORP levels (-150 mV or less) considered optimum to support reductive dechlorination until Day 107.

3.2 First Sampling Event (Day 14)

Appendix C shows all the analytical data collected during this study. **Table 4** shows the data for Day 14 sampling event. On Day 14, the CA concentrations in the two feeds were found to be below the targeted concentrations of 1,500 ug/L and 20 ug/L for CA and CB, respectively.

Table 4: Influence of EHC and HRC on VOC concentrations after 14 days

Parameter	Concentration (ug/L)							
	0.1% EHC	0.5% EHC	0.1% HRC	0.5% HRC	Control	Sterile Control	Feed	Sterile Feed
CA	490	500	510	430	540	480	800	720
CB	2.3	3.7	2.3	9.5	7.4	16	7	10

ND = non detect (detection limit)

Both controls showed reductions in the CA concentration when compared to their respective feeds. The sterile control system showed 33% reduction in CA while the non-sterile control showed 32.5% reduction in CA. This indicates that some abiotic removal as well as removal by indigenous microorganisms was occurring in both columns.

Removal of CA was 39% in the 0.1% EHC column, and was 38% in the 0.5% EHC column. Consequently, the enhanced biotic removal of CA in the EHC columns was only 5.5 to 6.5% more than that in the non-sterile control.

Removal of CA in the 0.1% HRC column was 36%, indicating that the biotic removal in this column was 3.5% more than that in the non-sterile column. Removal of CA in the 0.5% HRC column was 46%, indicating that the biotic removal in this column was 13.5% more than that in the non-sterile column.

The results indicate that significant enhancement in biotic removal from addition of EHC or HRC was not achieved on Day 14. This is probably due to a lag time associated with establishing the microbial colonies. The native anaerobic bacteria were most likely exposed to oxygen during sample collection and mixing of the soils in the laboratory for baseline testing. Consequently, the microorganisms responsible for reductive dechlorination were most likely inhibited during the early periods of the test.

The TOC results were higher in the columns amended with EHC and HRC than the controls (**Table 5**). As expected, the TOC concentration was greater in the EHC column with the higher application rate. The 0.5% HRC column was not sampled for TOC since there was not enough volume on Day 14.

Table 5: Influence of EHC and HRC on TOC and Ethane concentrations after 14 days

Parameter	Concentration					
	0.1% EHC	0.5% EHC	0.1% HRC	0.5% HRC	Control	Sterile Control
TOC (mg/L)	70	630	220	NA	13	53
Ethane (ug/L)	ND (4)	ND (4)	ND (4)	ND (4)	ND (4)	ND (4)

ND = non detect (detection limit)
NA = Not analyzed; due to insufficient volume of effluent

Please note that alkalinity and chloride results are not available for the Day 14 sampling event since the wrong preservative was added to these sample jars.

3.3 Second Sampling Event (Day 29)

Table 6 shows data from Day 29 sampling event. The VOC concentrations in the sterile feed were similar to the Day 14 results while the non-sterile feed showed an additional reduction in the CA concentration. Both feeds were below the targeted CA concentration of 1,500 ug/L. Losses in the headspace of the feed bag were most likely the reason for the drop in feed concentration.

Table 6: Influence of EHC and HRC on VOC concentrations after 29 days

Parameter	Concentration (ug/L)							
	0.1% EHC	0.5% EHC	0.1% HRC	0.5% HRC	Control	Sterile Control	Feed	Sterile Feed
CA	700	430	530	590	640	600	210	750
CB	ND (1)	5.1	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)

ND = non detect (detection limit)

The sterile control system showed 20% reduction in CA which indicates that significant abiotic removal was occurring in the columns.

Since the non-sterile feed concentration dropped significantly (210 ppb), the results are compared to the sterile feed. Removal of CA was 7% in the 0.1% EHC column, and was 43% in the 0.5% EHC column. At best, the biotic removal of CA in the EHC columns was only 23% more than that in the sterile control.

Removal of CA in the 0.1% HRC column was 29%, indicating that the biotic removal in this column was 9% more than that in the sterile column. Removal of CA in the 0.5% HRC column was 21%, indicating that the biotic removal in this column was 1% more than that in the sterile column.

The results indicate that significant enhancement in biotic removal from addition of EHC or HRC was not achieved after 29 days.

The alkalinity of site groundwater did not change as a result of either treatment. The chloride concentrations of the effluents were between 5 and 25 mg/L greater than the background chloride concentration (75 mg/L). The sterile control had the highest chloride concentration since mercuric chloride was used as the microbial inhibitor. TOC concentrations in the EHC and HRC treatment columns decreased since Day 14 (**Table 7**). Ethane was not detected in any column effluent on Day 29.

Table 7: Influence of EHC and HRC on Alkalinity, Chloride, TOC and Ethane concentrations after 29 days

Parameter	Concentration					
	0.1% EHC	0.05% EHC	0.1% HRC	0.05% HRC	Control	Sterile Control
Alkalinity (mg/L)	370	380	420	330	420	370
Chloride (mg/L)	80	80	80	84	86	100
TOC (mg/L)	14	100	16	120	13	16
Ethane (ug/L)	ND (8)	ND (40)	ND (4)	ND (4)	ND (4)	ND (4)

ND = non detect (detection limit)

3.4 Third Sampling Event (Day 42)

Table 8 shows data for Day 42 sampling event. The total VOC concentration in both feeds continued to decrease from the previous sampling events and the CA concentrations were significantly lower than the targeted concentration of 1,500 ug/L. Possible explanation for the decrease in the feed concentration is that CA stock standard (50 mg CA per mL methanol) that was used to spike the Site groundwater showed a decreased in the CA concentration over time and thus the feed was being spiked to a concentration lower than the targeted (1,500 ug/L) value.

Table 8: Influence of EHC and HRC on VOC concentrations after 42 days

Parameter	Concentration (ug/L)							
	0.1% EHC	0.5% EHC	0.1% HRC	0.5% HRC	Control	Sterile Control	Feed	Sterile Feed
CA	230	200	350	290	400	510	310	280
CB	ND (1)	2.7	ND (1)	ND (1)	ND (1)	ND (1)	1.4	1.5

ND = non detect (detection limit)

Effluent CA concentrations from both controls were higher than the feed indicating 100% removal in both control columns.

Removal of CA was 26% in the 0.1% EHC column, and was 35% in the 0.5% EHC column. There was no removal of CA in the 0.1% HRC column and only 6.5% removal in the 0.5% HRC column. Due to a low CA feed concentration, it was difficult to determine to what extent EHC or HRC were able to enhance the biotic removal. At best the enhancement may have been 35% for EHC and 6.5% for HRC. The results indicate that significant enhancement in biotic removal from addition of EHC or HRC was not achieved.

Table 9 shows supporting analytical data for Day 42. The alkalinity of Site groundwater did not change as a result of either treatment. The chloride concentrations of the effluents were between 9 and 17 mg/L greater than the background chloride concentration (75 mg/L). Once again the sterile control column had the highest chloride concentration since mercuric chloride was used as a microbial inhibitor. TOC concentrations in the treatment (EHC and HRC) and control columns were very similar and, the TOC concentrations in the treatment columns decreased greatly from the values on Day 29. After 42 days of column operation, ethane was not detected in any column effluent.

Table 9: Influence of EHC and HRC on Alkalinity, Chloride, TOC and Ethane concentrations after 42 days

Parameter	Concentration					
	0.1% EHC	0.05% EHC	0.1% HRC	0.05% HRC	Control	Sterile Control
Alkalinity (mg/L)	330	300	370	330	380	350
Chloride (mg/L)	90	84	84	91	84	92
TOC (mg/L)	9.6	12	9.9	11	9.5	11
Ethane (ug/L)	ND (4)	ND (4)	ND (4)	ND (4)	ND (4)	ND (4)

ND = non detect (detection limit)

3.5 Fourth Sampling Event (Day 71)

Table 10 shows the data for Day 71 sampling event. On Day 71, the CA concentrations in the two feeds were greater than those reported during the first three sampling events since a new CA stock standard was used for spiking the feeds.

Both controls showed reductions in the CA concentration when compared to their respective feeds. The sterile control system showed 82% reduction in CA while the non-sterile control showed 89% reduction in CA. This indicates that significant abiotic removal was occurring in both columns.

Removal of CA was 92% in the 0.1% EHC column, and was 91% in the 0.5% EHC column. Consequently, the biotic removal of CA in the EHC columns was only 2 to 4% more than that in the non-sterile control.

Removal of CA in the 0.1% HRC column was 98.5%, indicating that the biotic removal in this column was 10% more than that in the non-sterile column. Removal of CA in the 0.5% HRC column was 100%, indicating that the biotic removal in this column was 11% more than that in the non-sterile column.

The results indicate that the addition of EHC or HRC did not achieve significant enhancement in the biotic removal of VOCs.

Table 10: Influence of EHC and HRC on VOC concentrations after 71 days

Parameter	Concentration (ug/L)							
	0.1% EHC	0.5% EHC	0.1% HRC	0.5% HRC	Control	Sterile Control	Feed	Sterile Feed
CA	180	190	33	4.8	230	390	2,200	2,200
CB	ND (1)	0.9	ND (1)	0.56	ND (1)	ND (1)	ND (5)	ND (5)

ND = non detect (detection limit)

The alkalinity of the Site groundwater increased in both the treatment and control columns (**Table 11**). The initial Site groundwater characterization revealed an alkalinity concentration of 380 mg/L and the column effluents had alkalinity values between 410 and 490 mg/L on Day 71.

The chloride concentrations of the column effluents also showed an increase between 15 and 24 mg/L greater than the background chloride concentration (75 mg/L). The sterile control continued to have the highest chloride concentration and as previously noted this was due to the addition of mercuric chloride.

The TOC concentrations in the treatment and control columns were similar to those from the third sampling event. The values were less than optimal to support reductive dechlorination. The steep drop in TOC from Day 29 was surprising as sufficient quantities of HRC and EHC were injected in the systems.

Ethane was not detected in any column effluent on Day 71.

Table 11: Influence of EHC and HRC on Alkalinity, Chloride, TOC and Ethane concentrations after 71 days

Parameter	Concentration					
	0.1% EHC	0.05% EHC	0.1% HRC	0.05% HRC	Control	Sterile Control
Alkalinity (mg/L)	440	410	420	450	470	490
Chloride (mg/L)	90	90	97	92	95	99
TOC (mg/L)	10	11	11	11	10	16
Ethane (ug/L)	ND (4)	ND (4)	ND (4)	ND (4)	ND (4)	ND (4)

ND = non detect (detection limit)

3.6 Additional Sampling Event #1 (Day 94)

Table 12 shows data from Day 94 sampling. The CA concentrations in the two feeds were slightly below the targeted concentration on Day 94. The slightly lower CA concentration in the non-sterile feed is likely due to the activity of indigenous microbes in the Site groundwater. Both controls showed reductions in the CA concentration when compared to their respective feeds. The sterile control system showed 5% reduction in CA while the non-sterile control showed 20% reduction in CA.

Removal of CA was 52% in the 0.1% EHC column, and was 50% in the 0.5% EHC column. Consequently, the biotic removal of CA in the EHC columns was about 30 to 30% more than that in the non-sterile control.

Removal of CA in the 0.1% HRC column was 62%, indicating that the biotic removal in this column was 42% more than that in the non-sterile column. Removal of CA in the 0.5% HRC column was 99%, indicating that the biotic removal in this column was 79% more than that in the non-sterile column. This was the only case where appreciable enhancements in biotic removal of CA were seen from among all the data sets.

Table 12: Influence of EHC and HRC on VOC concentrations after 94 days

Parameter	Concentration (ug/L)							
	0.1% EHC	0.5% EHC	0.1% HRC	0.5% HRC	Control	Sterile Control	Feed	Sterile Feed
CA	485	500	380	ND (10)	810	1,280	1,005	1,345
DCM	230	260	185	ND (10)	415	345	ND (10)	ND (10)
TCE	20	20	20	15	20	ND (10)	25	18
PCE	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	20	135	68

ND = non detect (detection limit)

The original feed water from the site was exhausted so the experiments were continued with a second batch of groundwater collected from the site. Lower concentrations of other VOCs (methylene chloride (DCM), tetrachloroethylene (PCE), trichloroethylene (TCE)) were also detected in the feed bags and/or column effluents (**Table 12**). This may be related to the use of a second batch of groundwater from the Site. DCM was not detected in the feed bags but was detected in the effluent of both controls. Trace concentrations of trichloroethylene (TCE) and tetrachloroethylene (PCE) were detected in the feeds and in some of the column effluents.

3.7 Additional Sampling Event #2 (Day 107)

The results from Day 107 sampling are shown in **Table 13.** Both controls showed reductions in the CA concentration when compared to their respective feeds. The sterile control system showed 51% reduction in CA while the non-sterile control showed 88% reduction in CA.

There was no enhancement in the biotic removal of CA in both EHC columns as the non-sterile effluent concentration of CA was essentially the same as the effluent from the treatment columns.

There was 96% removal of CA in the 0.1% HRC column and 99.5% removal of CA in the 0.5% HRC column. Consequently, the biotic removal of CA in HRC columns was only 8% to 12% more than that in the non-sterile column.

As observed in the previous sampling, DCM was produced in all the column effluents. Trace concentrations of TCE and PCE were also detected in the effluent columns.

Table 13: Influence of EHC and HRC on VOC concentrations after 107 days

Parameter	Concentration (ug/L)							
	0.1% EHC	0.5% EHC	0.1% HRC	0.5% HRC	Control	Sterile Control	Feed	Sterile Feed
CA	305	250	80	ND (10)	270	960	2,245	1,448
DCM	145	120	100	185	220	185	ND (10)	ND (10)
TCE	10	10	15	ND (10)	10	ND (10)	40	20
PCE	ND (10)	45	ND (10)	ND (10)	15	65	45	18

ND = non detect (detection limit)

4.0 CONCLUSIONS

The purpose of this bench-scale feasibility study was to determine the ability of EHC and HRC to treat chlorinated volatile organic compounds in impacted groundwater collected from the Site. The following conclusions are provided based on the results of the testing:

- The initial characterization of the Site groundwater revealed that it had lower than expected concentrations of the COI (CA and CB), thus the Site groundwater was spiked with these COI to better represent the Site conditions.
- Due to VOC reductions in the feed during the first three sampling event, it was difficult to assess the effectiveness of the treatments. Both the EHC and HRC treatments showed reductions in the total VOC concentrations, but the control systems also showed reductions in total VOCs.
- A lag time of approximately 70 days was observed in both systems for the microorganisms to get established. The ORP in both systems stayed in the positive range until after Day 94
- The fifth sampling (Day 94) showed that both EHC and HRC treatments were capable of treating CA. This was the only time the data indicated that biotic removal of CA was significantly enhanced by HRC and EHC.
- A consistently high biotic removal of CA was not seen with either EHC or HRC.
- The data shows that significant amounts of CA were being removed by abiotic means as well as biotic means without enhancements in the control columns. Consequently, there was no added value from using enhancements like HRC and EHC.
- The lack of enhanced biotic removal may have been from the lack of appropriate microorgansims capable of degrading CA in the soil from the downgradient area.

APPENDICIES

FINAL REPORT: EHC AND HRC FEASIBILITY STUDY FOR THE TREATMENT OF CHLORINATED SOLVENTS IN GROUNDWATER FROM THE FORMER COLUMBIA CEMENT INC., FREEPORT, NY (THE SITE)

Appendix A: Methodology for Headspace SPME GC/ECD determination of VOCs in water samples

In-house method of VOC analysis for Adventus Remediation Technologies
Method developed by Michael Gibson, PhD.

Introduction:
Solid phase microextraction (SPME) followed by GC desorption and analysis has been demonstrated to be an effective and reliable method of monitoring volatile contaminants in water samples. SPME fibers can be desorbed in the manual injection ports of most gas chromatographs (GC), not requiring the specialized hardware necessary for purge and trap or headspace systems typically used for VOC analysis (Santos F.J. *et al.*, 1996).

The SPME fiber is a fused-silica fiber coated with a stationary phase, housed in a specialized syringe-type holder for protection and for inserting through septa. The fiber can either be immersed in an aqueous sample or be exposed to the headspace above an aqueous sample. The absorption of analytes is based on equilibrium partitioning between the coating and the sample. Where samples are contaminated with oils or other components, which may damage or reduce the life of the fibers headspace analysis may be preferable. James and Stack (1997) compared headspace and immersion SPME for VOC analysis of wastewaters and found headspace SPME to be preferable.

The in-house method of analysis of VOCs in water samples was developed on the basis of headspace SPME followed by direct GC analysis.

Method:
The fibers used were Carboxen™/Polydimethylsiloxane with a 75µm thick stationary phase (Supelco No. 57318). Two (2) ml aqueous samples were placed in 4ml amber glass headspace vials with Teflon lined septa (Supelco No. 27006) with a 4 mm Teflon coated magnetic stir bar. Samples were stirred for 10 minutes prior to insertion of the fiber, the fiber was inserted (ensuring that it did not come in contact with the aqueous phase) for and additional 10 minutes. Fibers were removed from the samples and immediately (within 30 seconds) placed into the injection port of the GC for desorption and analysis.

Chromatographic analysis was performed using a SRI 8610C Gas Chromatograph coupled with a flame ionization detector (FID) and dry electrolytic conductivity detector (DELCD). The injection port was lined with a small bore, 0.75 mm ID, glass liner (Supelco No. 26375-05). Both the injector and detector were maintained at 200 °C. The analytical column was a VOCOL capillary column (30 m x 0.25 mm, 1.5 µm film thickness, Supelco No. 24205-U). Helium was used as the carrier gas; column flow rate was 10 ml/min. The column oven temperature program started at 40 °C for 2 min, increased at 10 °C/min to 150 °C for 2 min, then increased at 30 °C to 200 °C for a final 1 min.

References.
James K J, Stack M A (1997) Fresenius J Anal Chem 358: 833-837.
Santos F J, Galceran M T, Fraisse D (1996) J. Chromatogr. A, 742: 181-189.

Appendix B – Summary of pH and Oxidation Reduction Potential Readings

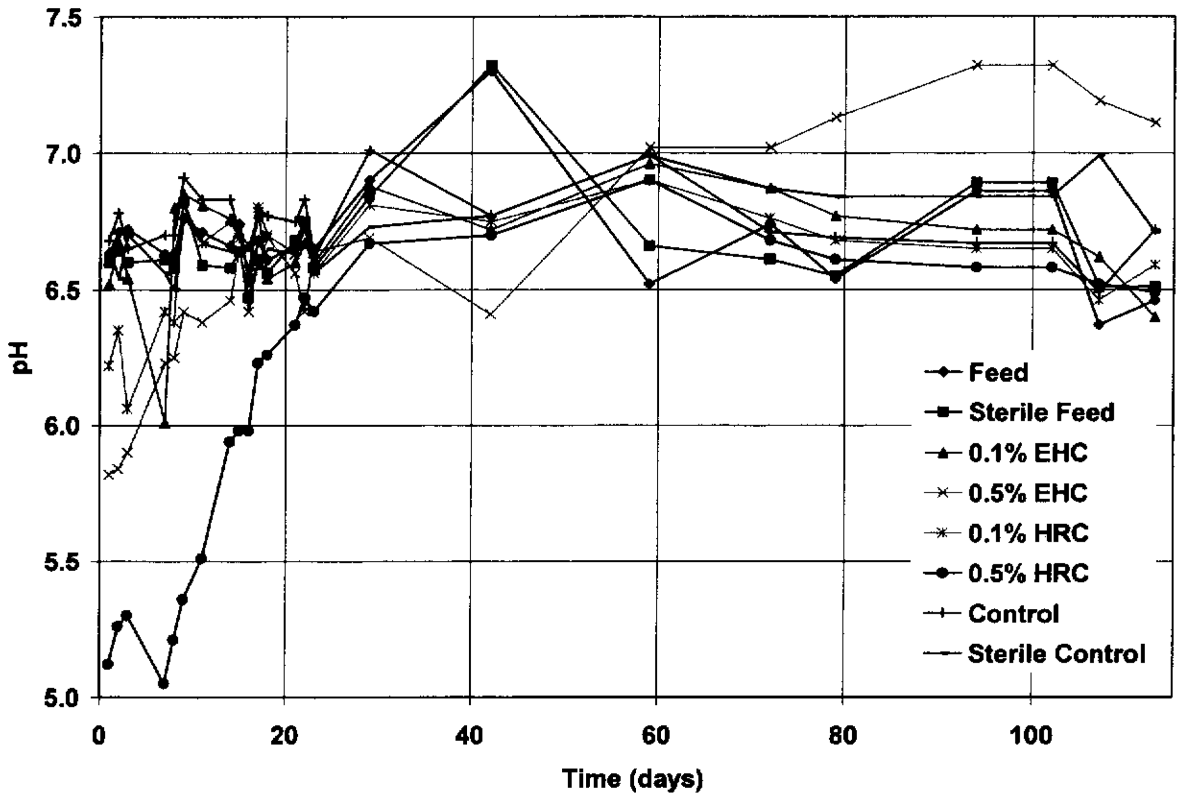


Figure A: pH readings of feeds and column effluents over time

Appendix B – Summary of pH and Oxidation Reduction Potential Readings

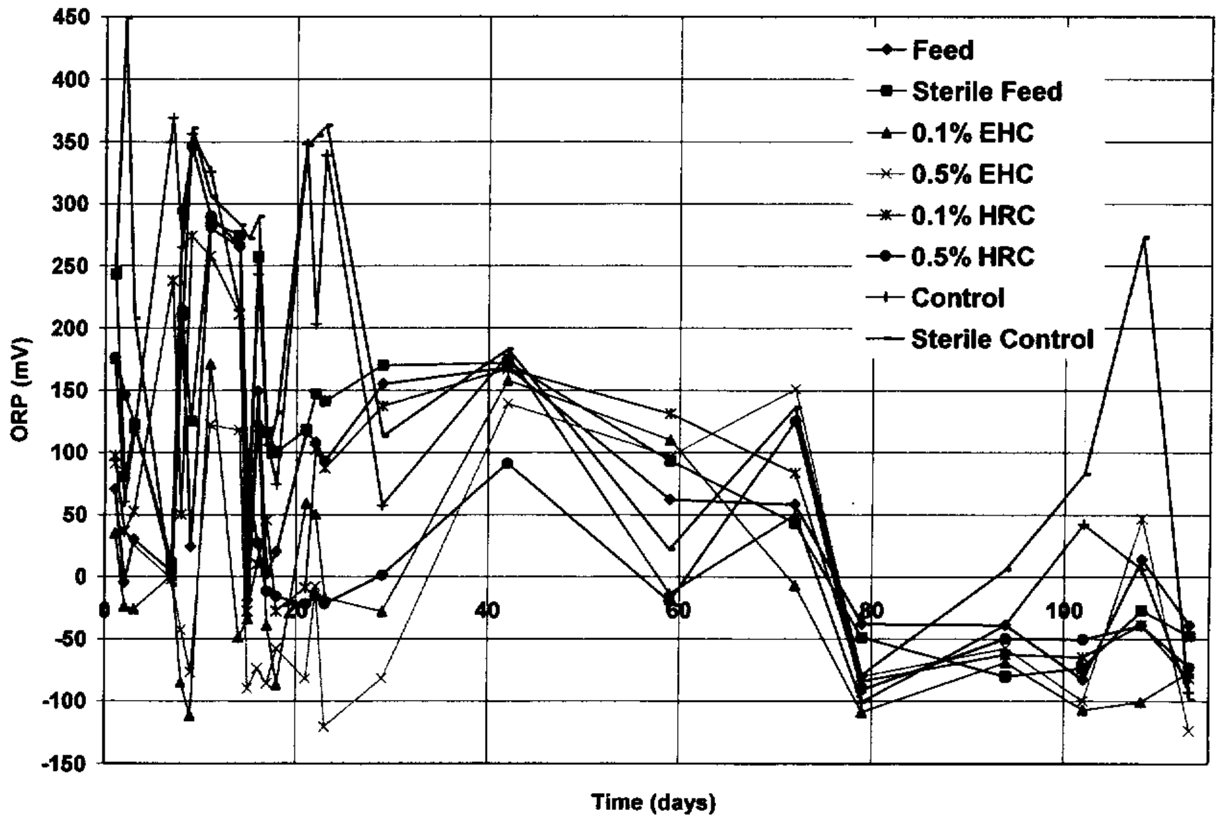


Figure B: ORP readings of feeds and column effluents over time

Appendix C – Analytical Data

AAI5-032 Initial Results

Baseline Sampling **28-Apr**

	Soil Initial 39285	UNITS	Water Initial 39286	UNITS
Dichlorodifluoromethane	ND (6.1)	ug/kg	ND (1)	ug/L
Chloromethane	ND (6.1)	ug/kg	ND (1)	ug/L
Vinyl chloride	ND (6.1)	ug/kg	ND (1)	ug/L
Bromomethane	ND (6.1)	ug/kg	ND (1)	ug/L
Chloroethane	ND (6.1)	ug/kg	730	ug/L
Trichlorofluoromethane	ND (6.1)	ug/kg	ND (1)	ug/L
1,1-Dichloroethene	ND (6.1)	ug/kg	ND (1)	ug/L
Carbon disulfide	ND (6.1)	ug/kg	ND (5)	ug/L
Acetone	ND (6.1)	ug/kg	ND (5)	ug/L
Methylene chloride	ND (6.1)	ug/kg	ND (1)	ug/L
trans-1,2-Dichloroethene	ND (6.1)	ug/kg	ND (1)	ug/L
Methyl-tert-butyl-ether (MTBE)	ND (6.1)	ug/kg	ND (1)	ug/L
1,1-Dichloroethane	ND (6.1)	ug/kg	ND (1)	ug/L
2,2-Dichloropropane	ND (6.1)	ug/kg	ND (1)	ug/L
cis-1,2-Dichloroethene	ND (6.1)	ug/kg	ND (1)	ug/L
2-Butanone (MEK)	ND (6.1)	ug/kg	ND (5)	ug/L
Bromochloromethane	ND (6.1)	ug/kg	ND (1)	ug/L
Chloroform	ND (6.1)	ug/kg	ND (1)	ug/L
1,1,1-Trichloroethane	ND (6.1)	ug/kg	ND (1)	ug/L
1,1-Dichloropropene	ND (6.1)	ug/kg	ND (1)	ug/L
Carbon tetrachloride	ND (6.1)	ug/kg	ND (1)	ug/L
Benzene	ND (6.1)	ug/kg	ND (1)	ug/L
1,2-Dichloroethane	ND (6.1)	ug/kg	ND (1)	ug/L
Trichloroethene	ND (6.1)	ug/kg	ND (1)	ug/L
1,2-Dichloropropane	ND (6.1)	ug/kg	ND (1)	ug/L
Dibromomethane	ND (6.1)	ug/kg	ND (1)	ug/L
Bromodichloromethane	ND (6.1)	ug/kg	ND (1)	ug/L
cis-1,3-Dichloropropene	ND (6.1)	ug/kg	ND (1)	ug/L
4-Methyl-2-pentanone (MIBK)	ND (6.1)	ug/kg	ND (5)	ug/L
Toluene	ND (6.1)	ug/kg	ND (1)	ug/L
trans-1,3-Dichloropropene	ND (6.1)	ug/kg	ND (1)	ug/L
1,1,2-Trichloroethane	ND (6.1)	ug/kg	ND (1)	ug/L
Tetrachloroethene	ND (6.1)	ug/kg	ND (1)	ug/L
1,3-Dichloropropane	ND (6.1)	ug/kg	ND (1)	ug/L
2-Hexanone	ND (6.1)	ug/kg	ND (5)	ug/L
Dibromochloromethane	ND (6.1)	ug/kg	ND (1)	ug/L
1,2-Dibromoethane (EDB)	ND (6.1)	ug/kg	ND (1)	ug/L
Chlorobenzene	ND (6.1)	ug/kg	4	ug/L
1,1,1,2-Tetrachloroethane	ND (6.1)	ug/kg	ND (1)	ug/L
Ethylbenzene	ND (6.1)	ug/kg	ND (1)	ug/L
m&p-Xylenes	12	ug/kg	ND (2)	ug/L
o-Xylene	ND (6.1)	ug/kg	ND (1)	ug/L
Styrene	ND (6.1)	ug/kg	ND (1)	ug/L
Bromoform	ND (6.1)	ug/kg	ND (1)	ug/L
Isopropylbenzene	ND (6.1)	ug/kg	ND (1)	ug/L
Bromobenzene	ND (6.1)	ug/kg	ND (1)	ug/L
1,1,2,2-Tetrachloroethane	ND (6.1)	ug/kg	ND (1)	ug/L
1,2,3-Trichloropropane	ND (6.1)	ug/kg	ND (1)	ug/L
n-Propylbenzene	ND (6.1)	ug/kg	ND (1)	ug/L
2-Chlorotoluene	ND (6.1)	ug/kg	ND (1)	ug/L
1,3,5-Trimethylbenzene	ND (6.1)	ug/kg	ND (1)	ug/L
4-Chlorotoluene	ND (6.1)	ug/kg	ND (1)	ug/L
tert-Butylbenzene	ND (6.1)	ug/kg	ND (1)	ug/L
1,2,4-Trimethylbenzene	ND (6.1)	ug/kg	ND (1)	ug/L
sec-Butylbenzene	ND (6.1)	ug/kg	ND (1)	ug/L
1,3-Dichlorobenzene	ND (6.1)	ug/kg	ND (1)	ug/L
p-Isopropyltoluene	ND (6.1)	ug/kg	ND (1)	ug/L
1,4-Dichlorobenzene	ND (6.1)	ug/kg	ND (1)	ug/L
n-Butylbenzene	ND (6.1)	ug/kg	ND (1)	ug/L
1,2-Dichlorobenzene	ND (6.1)	ug/kg	ND (1)	ug/L
1,2-Dibromo-3-chloropropane	ND (6.1)	ug/kg	ND (1)	ug/L
1,2,4-Trichlorobenzene	ND (6.1)	ug/kg	ND (1)	ug/L
Hexachlorobutadiene	ND (6.1)	ug/kg	ND (1)	ug/L
Naphthalene	ND (6.1)	ug/kg	ND (1)	ug/L
1,2,3-Trichlorobenzene	ND (6.1)	ug/kg	ND (1)	ug/L
1,3,5-Trichlorobenzene	ND (6.1)	ug/kg	ND (1)	ug/L
% Solids, solid	82.6	%	n/a	
% Moisture, Solids	17.4	%	n/a	
Alkalinity, Total as CaCO3	ND (500)	mg/kg	380	mg/L
Chloride	3.3	mg/kg	75	mg/L
Nitrate as N	ND (1.2)	mg/kg	ND (0.1)	mg/L
Sulfate	3	mg/kg	0.29	mg/L
TOC	9,300	mg/kg	8	mg/L
pH	6.9	pH units	6.3	pH units
Total Iron	9,700	mg/kg	8	mg/L
Dissolved Iron	n/a		0.065	mg/L

the dissolved Fe result was below the RL but above the MDL

AAI5-032 Sampling #1 t=14 days

Analyte	Column 1 Effluent 38927	Qualifier	DL	Column 2 Effluent 38928	Qualifier	DL	Units
TOC Average Duplicates	70		10	630		40	mg/L
Dichlorodifluoromethane	1	U	1	1	U	1	ug/L
Chloromethane	1	U	1	1	U	1	ug/L
Vinyl chloride	1	U	1	1	U	1	ug/L
Bromomethane	1	U*	1	1	U*	1	ug/L
Chloroethane	490		10	500		10	ug/L
Trichlorofluoromethane	1	U	1	1	U	1	ug/L
1,1-Dichloroethene	1	U	1	1	U	1	ug/L
Carbon disulfide	5	U	5	2.4	J	5	ug/L
Acetone	52		5	96		5	ug/L
Methylene chloride	58		1	69		1	ug/L
trans-1,2-Dichloroethene	1	U	1	1	U	1	ug/L
Methyl-tert-butyl-ether (MTBE)	1	U	1	1	U	1	ug/L
1,1-Dichloroethane	1	U	1	1	U	1	ug/L
2,2-Dichloropropane	1	U	1	1	U	1	ug/L
cis-1,2-Dichloroethene	1	U	1	1	U	1	ug/L
2-Butanone (MEK)	5	U	5	47		5	ug/L
Bromochloromethane	1	U	1	1	U	1	ug/L
Chloroform	1	U	1	1	U	1	ug/L
1,1,1-Trichloroethane	1	U	1	1	U	1	ug/L
1,1-Dichloropropene	1	U	1	1	U	1	ug/L
Carbon tetrachloride	1	U	1	1	U	1	ug/L
Benzene	1	U	1	1	U	1	ug/L
1,2-Dichloroethane	1	U	1	1.3		1	ug/L
Trichloroethene	1	U	1	6		1	ug/L
1,2-Dichloropropane	1	U	1	1	U	1	ug/L
Dibromomethane	1	U	1	1	U	1	ug/L
Bromodichloromethane	1	U*	1	1	U*	1	ug/L
cis-1,3-Dichloropropene	1	U	1	1	U	1	ug/L
4-Methyl-2-pentanone (MIBK)	5	U	5	5	U	5	ug/L
Toluene	1	U	1	1	U	1	ug/L
trans-1,3-Dichloropropene	1	U	1	1	U	1	ug/L
1,1,2-Trichloroethane	1	U	1	1	U	1	ug/L
Tetrachloroethene	1	U	1	1	U	1	ug/L
1,3-Dichloropropane	1	U	1	1	U	1	ug/L
2-Hexanone	5	U	5	5	U	5	ug/L
Dibromochloromethane	1	U*	1	1	U*	1	ug/L
1,2-Dibromoethane (EDB)	1	U	1	1	U	1	ug/L
Chlorobenzene	2.3		1	3.7		1	ug/L
1,1,1,2-Tetrachloroethane	1	U	1	1	U	1	ug/L
Ethylbenzene	1	U	1	2.6		1	ug/L
m&p-Xylenes	2	U	2	2	U	2	ug/L
o-Xylene	1	U	1	1	U	1	ug/L
Styrene	1	U	1	1	U	1	ug/L
Bromoform	1	U*	1	1	U*	1	ug/L

AAI5-032 Sampling #1 t=14 days

	Column 1 Effluent			Column 2 Effluent			
Analyte	38927	Qualifier	DL	38928	Qualifier	DL	Units
Isopropylbenzene	1	U	1	1	U	1	ug/L
Bromobenzene	1	U	1	1	U	1	ug/L
1,1,2,2-Tetrachloroethane	1	U	1	1	U	1	ug/L
1,2,3-Trichloropropane	1	U	1	1	U	1	ug/L
n-Propylbenzene	1	U	1	1	U	1	ug/L
2-Chlorotoluene	1	U	1	1	U	1	ug/L
1,3,5-Trimethylbenzene	1	U	1	1	U	1	ug/L
4-Chlorotoluene	1	U	1	1	U	1	ug/L
tert-Butylbenzene	1	U	1	1	U	1	ug/L
1,2,4-Trimethylbenzene	1	U	1	1	U	1	ug/L
sec-Butylbenzene	1	U	1	1	U	1	ug/L
1,3-Dichlorobenzene	1	U	1	1	U	1	ug/L
p-Isopropyltoluene	1	U	1	1	U	1	ug/L
1,4-Dichlorobenzene	1	U	1	1	U	1	ug/L
n-Butylbenzene	1	U	1	1	U	1	ug/L
1,2-Dichlorobenzene	1	U	1	1	U	1	ug/L
1,2-Dibromo-3-chloropropane	1	U	1	1	U	1	ug/L
1,3,5-Trichlorobenzene	1	U	1	1	U	1	ug/L
1,2,4-Trichlorobenzene	1	U	1	1	U	1	ug/L
Hexachlorobutadiene	1	U	1	1	U	1	ug/L
Naphthalene	1	U	1	1	U	1	ug/L
1,2,3-Trichlorobenzene	1	U	1	1	U	1	ug/L

Analyte	38927	Qualifier	DL	38928	Qualifier	DL	Units
Ethane	4	U	4	4	U	4	ug/L

U = compound analyzed but not detected at a concentration above the reporting limit.

AAI5-032 Sampling #1 t=14 days

Analyte	Column 3 Effluent 38929	Qualifier	DL	Column 4 Effluent 38930	Qualifier	DL	Units
TOC Average Duplicates	220		40	---	---	---	---
Dichlorodifluoromethane	1	U	1	1	U	1	ug/L
Chloromethane	1	U	1	1	U	1	ug/L
Vinyl chloride	1	U	1	1	U	1	ug/L
Bromomethane	1	U*	1	1	U*	1	ug/L
Chloroethane	510		10	430		10	ug/L
Trichlorofluoromethane	1	U	1	1	U	1	ug/L
1,1-Dichloroethene	1	U	1	1	U	1	ug/L
Carbon disulfide	1.3	J	5	1.9	J	5	ug/L
Acetone	49		5	220		50	ug/L
Methylene chloride	56		1	62		1	ug/L
trans-1,2-Dichloroethene	1	U	1	1	U	1	ug/L
Methyl-tert-butyl-ether (MTBE)	1	U	1	1	U	1	ug/L
1,1-Dichloroethane	1	U	1	1	U	1	ug/L
2,2-Dichloropropane	1	U	1	1	U	1	ug/L
cis-1,2-Dichloroethene	1	U	1	1	U	1	ug/L
2-Butanone (MEK)	84		5	160		50	ug/L
Bromochloromethane	1	U	1	1	U	1	ug/L
Chloroform	1	U	1	1	U	1	ug/L
1,1,1-Trichloroethane	1	U	1	1	U	1	ug/L
1,1-Dichloropropene	1	U	1	1	U	1	ug/L
Carbon tetrachloride	1	U	1	1	U	1	ug/L
Benzene	1	U	1	1	U	1	ug/L
1,2-Dichloroethane	1	U	1	2.3		1	ug/L
Trichloroethene	1	U	1	1	U	1	ug/L
1,2-Dichloropropane	1	U	1	1	U	1	ug/L
Dibromomethane	1	U	1	1	U	1	ug/L
Bromodichloromethane	1	U*	1	1	U*	1	ug/L
cis-1,3-Dichloropropene	1	U	1	1	U	1	ug/L
4-Methyl-2-pentanone (MIBK)	5	U	5	5	U	5	ug/L
Toluene	1	U	1	1	U	1	ug/L
trans-1,3-Dichloropropene	1	U	1	1	U	1	ug/L
1,1,2-Trichloroethane	1	U	1	1	U	1	ug/L
Tetrachloroethene	1	U	1	1	U	1	ug/L
1,3-Dichloropropane	1	U	1	1	U	1	ug/L
2-Hexanone	5	U	5	5	U	5	ug/L
Dibromochloromethane	1	U*	1	1	U*	1	ug/L
1,2-Dibromoethane (EDB)	1	U	1	1	U	1	ug/L
Chlorobenzene	2.3		1	9.5		1	ug/L
1,1,1,2-Tetrachloroethane	1	U	1	1	U	1	ug/L
Ethylbenzene	1	U	1	1	U	1	ug/L
m&p-Xylenes	2	U	2	2	U	2	ug/L
o-Xylene	1	U	1	1	U	1	ug/L
Styrene	1	U	1	1	U	1	ug/L
Bromoform	1	U*	1	1	U*	1	ug/L

AAI5-032 Sampling #1 t=14 days

Analyte	Column 3 Effluent 38929	Qualifier	DL	Column 4 Effluent 38930	Qualifier	DL	Units
Isopropylbenzene	1	U	1	1	U	1	ug/L
Bromobenzene	1	U	1	1	U	1	ug/L
1,1,2,2-Tetrachloroethane	1	U	1	1	U	1	ug/L
1,2,3-Trichloropropane	1	U	1	1	U	1	ug/L
n-Propylbenzene	1	U	1	1	U	1	ug/L
2-Chlorotoluene	1	U	1	1	U	1	ug/L
1,3,5-Trimethylbenzene	1	U	1	1	U	1	ug/L
4-Chlorotoluene	1	U	1	1	U	1	ug/L
tert-Butylbenzene	1	U	1	1	U	1	ug/L
1,2,4-Trimethylbenzene	1	U	1	1	U	1	ug/L
sec-Butylbenzene	1	U	1	1	U	1	ug/L
1,3-Dichlorobenzene	1	U	1	1	U	1	ug/L
p-Isopropyltoluene	1	U	1	1	U	1	ug/L
1,4-Dichlorobenzene	1	U	1	1	U	1	ug/L
n-Butylbenzene	1	U	1	1	U	1	ug/L
1,2-Dichlorobenzene	1	U	1	1	U	1	ug/L
1,2-Dibromo-3-chloropropane	1	U	1	1	U	1	ug/L
1,3,5-Trichlorobenzene	1	U	1	1	U	1	ug/L
1,2,4-Trichlorobenzene	1	U	1	1	U	1	ug/L
Hexachlorobutadiene	1	U	1	1	U	1	ug/L
Naphthalene	1	U	1	1	U	1	ug/L
1,2,3-Trichlorobenzene	1	U	1	1	U	1	ug/L

Analyte	38929	Qualifier	DL	38930	Qualifier	DL	Units
Ethane	4	U	4	4	U	4	ug/L

U = compound analyzed but not detected at a concentration above the reporting limit.

AAI5-032 Sampling #1 t=14 days

	Column 5 Effluent			Column 6 Effluent			
Analyte	**38931**	**Qualifier**	**DL**	**38932**	**Qualifier**	**DL**	**Units**
TOC Average Duplicates	13		2	53		10	mg/L
Dichlorodifluoromethane	1	U	1	1	U	1	ug/L
Chloromethane	1	U	1	1	U	1	ug/L
Vinyl chloride	1	U	1	1	U	1	ug/L
Bromomethane	1	U*	1	1	U*	1	ug/L
Chloroethane	540		10	480		10	ug/L
Trichlorofluoromethane	1	U	1	1	U	1	ug/L
1,1-Dichloroethene	1	U	1	1	U	1	ug/L
Carbon disulfide	5	U	5	5	U	5	ug/L
Acetone	5	U	5	58		5	ug/L
Methylene chloride	90		1	51		1	ug/L
trans-1,2-Dichloroethene	1	U	1	1	U	1	ug/L
Methyl-tert-butyl-ether (MTBE)	1	U	1	1	U	1	ug/L
1,1-Dichloroethane	1	U	1	1	U	1	ug/L
2,2-Dichloropropane	1	U	1	1	U	1	ug/L
cis-1,2-Dichloroethene	1	U	1	1	U	1	ug/L
2-Butanone (MEK)	5	U	5	12		5	ug/L
Bromochloromethane	1	U	1	1	U	1	ug/L
Chloroform	1	U	1	1	U	1	ug/L
1,1,1-Trichloroethane	1	U	1	1	U	1	ug/L
1,1-Dichloropropene	1	U	1	1	U	1	ug/L
Carbon tetrachloride	1	U	1	1	U	1	ug/L
Benzene	1	U	1	1	U	1	ug/L
1,2-Dichloroethane	1	U	1	1	U	1	ug/L
Trichloroethene	1	U	1	1	U	1	ug/L
1,2-Dichloropropane	1	U	1	1	U	1	ug/L
Dibromomethane	1	U	1	1	U	1	ug/L
Bromodichloromethane	1	U*	1	1	U*	1	ug/L
cis-1,3-Dichloropropene	1	U	1	1	U	1	ug/L
4-Methyl-2-pentanone (MIBK)	5	U	5	5	U	5	ug/L
Toluene	1	U	1	1	U	1	ug/L
trans-1,3-Dichloropropene	1	U	1	1	U	1	ug/L
1,1,2-Trichloroethane	1	U	1	1	U	1	ug/L
Tetrachloroethene	1	U	1	1	U	1	ug/L
1,3-Dichloropropane	1	U	1	1	U	1	ug/L
2-Hexanone	5	U	5	5	U	5	ug/L
Dibromochloromethane	1	U*	1	1	U*	1	ug/L
1,2-Dibromoethane (EDB)	1	U	1	1	U	1	ug/L
Chlorobenzene	7.4		1	16		1	ug/L
1,1,1,2-Tetrachloroethane	1	U	1	1	U	1	ug/L
Ethylbenzene	1	U	1	1	U	1	ug/L
m&p-Xylenes	2	U	2	2	U	2	ug/L
o-Xylene	1	U	1	1	U	1	ug/L
Styrene	1	U	1	1	U	1	ug/L
Bromoform	1	U*	1	1	U*	1	ug/L

AAI5-032 Sampling #1   t=14 days

Analyte	Column 5 Effluent 38931	Qualifier	DL	Column 6 Effluent 38932	Qualifier	DL	Units
Isopropylbenzene	1	U	1	1	U	1	ug/L
Bromobenzene	1	U	1	1	U	1	ug/L
1,1,2,2-Tetrachloroethane	1	U	1	1	U	1	ug/L
1,2,3-Trichloropropane	1	U	1	1	U	1	ug/L
n-Propylbenzene	1	U	1	1	U	1	ug/L
2-Chlorotoluene	1	U	1	1	U	1	ug/L
1,3,5-Trimethylbenzene	1	U	1	1	U	1	ug/L
4-Chlorotoluene	1	U	1	1	U	1	ug/L
tert-Butylbenzene	1	U	1	1	U	1	ug/L
1,2,4-Trimethylbenzene	1	U	1	1	U	1	ug/L
sec-Butylbenzene	1	U	1	1	U	1	ug/L
1,3-Dichlorobenzene	1	U	1	1	U	1	ug/L
p-Isopropyltoluene	1	U	1	1	U	1	ug/L
1,4-Dichlorobenzene	5		1	1	U	1	ug/L
n-Butylbenzene	1	U	1	1	U	1	ug/L
1,2-Dichlorobenzene	1	U	1	1	U	1	ug/L
1,2-Dibromo-3-chloropropane	1	U	1	1	U	1	ug/L
1,3,5-Trichlorobenzene	1	U	1	1	U	1	ug/L
1,2,4-Trichlorobenzene	1	U	1	1	U	1	ug/L
Hexachlorobutadiene	1	U	1	1	U	1	ug/L
Naphthalene	1	U	1	1	U	1	ug/L
1,2,3-Trichlorobenzene	1	U	1	1	U	1	ug/L

Analyte	38931	Qualifier	DL	38932	Qualifier	DL	Units
Ethane	4	U	4	4	U	4	ug/L

U = compound analyzed but not detected at a concentration above the reporting limit.

AAI5-032 Sampling #1 t=14 days

	Feed #1			Feed #2			
Analyte	38933	Qualifier	DL	38934	Qualifier	DL	Units
TOC Average Duplicates	---	---	---	---	---	---	---
Dichlorodifluoromethane	1	U	1	1	U	1	ug/L
Chloromethane	1	U	1	1	U	1	ug/L
Vinyl chloride	1	U	1	1	U	1	ug/L
Bromomethane	1	U*	1	1	U*	1	ug/L
Chloroethane	800		10	720		10	ug/L
Trichlorofluoromethane	1	U	1	1	U	1	ug/L
1,1-Dichloroethene	1	U	1	1	U	1	ug/L
Carbon disulfide	5	U	5	5	U	5	ug/L
Acetone	5	U	5	5	U	5	ug/L
Methylene chloride	1	U	1	1	U	1	ug/L
trans-1,2-Dichloroethene	1	U	1	1	U	1	ug/L
Methyl-tert-butyl-ether (MTBE)	1	U	1	1	U	1	ug/L
1,1-Dichloroethane	1	U	1	1	U	1	ug/L
2,2-Dichloropropane	1	U	1	1	U	1	ug/L
cis-1,2-Dichloroethene	1	U	1	1	U	1	ug/L
2-Butanone (MEK)	5	U	5	5	U	5	ug/L
Bromochloromethane	1	U	1	1	U	1	ug/L
Chloroform	1	U	1	1	U	1	ug/L
1,1,1-Trichloroethane	1	U	1	1	U	1	ug/L
1,1-Dichloropropene	1	U	1	1	U	1	ug/L
Carbon tetrachloride	1	U	1	1	U	1	ug/L
Benzene	1	U	1	1	U	1	ug/L
1,2-Dichloroethane	1	U	1	1	U	1	ug/L
Trichloroethene	1	U	1	1	U	1	ug/L
1,2-Dichloropropane	1	U	1	1	U	1	ug/L
Dibromomethane	1	U	1	1	U	1	ug/L
Bromodichloromethane	1	U*	1	1	U*	1	ug/L
cis-1,3-Dichloropropene	1	U	1	1	U	1	ug/L
4-Methyl-2-pentanone (MIBK)	5	U	5	5	U	5	ug/L
Toluene	1	U	1	1	U	1	ug/L
trans-1,3-Dichloropropene	1	U	1	1	U	1	ug/L
1,1,2-Trichloroethane	1	U	1	1	U	1	ug/L
Tetrachloroethene	1	U	1	1	U	1	ug/L
1,3-Dichloropropane	1	U	1	1	U	1	ug/L
2-Hexanone	5	U	5	5	U	5	ug/L
Dibromochloromethane	1	U*	1	1	U*	1	ug/L
1,2-Dibromoethane (EDB)	1	U	1	1	U	1	ug/L
Chlorobenzene	7		1	10		1	ug/L
1,1,1,2-Tetrachloroethane	1	U	1	1	U	1	ug/L
Ethylbenzene	1	U	1	1	U	1	ug/L
m&p-Xylenes	2	U	2	2	U	2	ug/L
o-Xylene	1	U	1	1	U	1	ug/L
Styrene	1	U	1	1	U	1	ug/L
Bromoform	1	U*	1	1	U*	1	ug/L

AAI5-032 Sampling #1 t=14 days

	Feed #1			Feed #2			
Analyte	38933	Qualifier	DL	38934	Qualifier	DL	Units
Isopropylbenzene	1	U	1	1	U	1	ug/L
Bromobenzene	1	U	1	1	U	1	ug/L
1,1,2,2-Tetrachloroethane	1	U	1	1	U	1	ug/L
1,2,3-Trichloropropane	1	U	1	1	U	1	ug/L
n-Propylbenzene	1	U	1	1	U	1	ug/L
2-Chlorotoluene	1	U	1	1	U	1	ug/L
1,3,5-Trimethylbenzene	1	U	1	1	U	1	ug/L
4-Chlorotoluene	1	U	1	1	U	1	ug/L
tert-Butylbenzene	1	U	1	1	U	1	ug/L
1,2,4-Trimethylbenzene	1	U	1	1	U	1	ug/L
sec-Butylbenzene	1	U	1	1	U	1	ug/L
1,3-Dichlorobenzene	1	U	1	1	U	1	ug/L
p-Isopropyltoluene	1	U	1	1	U	1	ug/L
1,4-Dichlorobenzene	1	U	1	1	U	1	ug/L
n-Butylbenzene	1	U	1	1	U	1	ug/L
1,2-Dichlorobenzene	1	U	1	1	U	1	ug/L
1,2-Dibromo-3-chloropropane	1	U	1	1	U	1	ug/L
1,3,5-Trichlorobenzene	1	U	1	1	U	1	ug/L
1,2,4-Trichlorobenzene	1	U	1	1	U	1	ug/L
Hexachlorobutadiene	1	U	1	1	U	1	ug/L
Naphthalene	1	U	1	1	U	1	ug/L
1,2,3-Trichlorobenzene	1	U	1	1	U	1	ug/L

Analyte
Ethane

U = compound analyzed but not detected at a concentration above the reporting limit.

AAI5-032 Sampling #2 t=29 days

Analyte	Column 1 Effluent 40030	Qualifie	Column 2 Effluent 40031	Qualifie	Column 3 Effluent 40032	Qualifie	Units
Alkalinity, Total as CaCO3	370		380		420		mg/L
Chloride	80		80		80		mg/L
TOC Average Duplicates	14		100		16		mg/L
Dichlorodifluoromethane	1.0	U	1.0	U	1.0	U	ug/L
Chloromethane	1.0	U	1.0	U	1.0	U	ug/L
Vinyl chloride	1.0	U	1.0	U	1.0	U	ug/L
Bromomethane	1.0	U	1.0	U	1.0	U	ug/L
Chloroethane	700		430		530		ug/L
Trichlorofluoromethane	1.0	U	1.0	U	1.0	U	ug/L
1,1-Dichloroethene	1.0	U	1.0	U	1.0	U	ug/L
Carbon disulfide	5.0	U	5.0	U	5.0	U	ug/L
Acetone	5.0	U	20		5.0	U	ug/L
Methylene chloride	45		39		53		ug/L
trans-1,2-Dichloroethene	1.0	U	1.0	U	1.0	U	ug/L
Methyl-tert-butyl-ether (MTBE)	1.0	U	1.0	U	1.0	U	ug/L
1,1-Dichloroethane	1.0	U	1.0	U	1.0	U	ug/L
2,2-Dichloropropane	1.0	U	1.0	U	1.0	U	ug/L
cis-1,2-Dichloroethene	1.0	U	1.1		1.0	U	ug/L
2-Butanone (MEK)	5.0	U	6.1		5.0	U	ug/L
Bromochloromethane	1.0	U	1.0	U	1.0	U	ug/L
Chloroform	1.0	U	1.0	U	1.0	U	ug/L
1,1,1-Trichloroethane	1.0	U	1.0	U	1.0	U	ug/L
1,1-Dichloropropene	1.0	U*	1.0	U*	1.0	U*	ug/L
Carbon tetrachloride	1.0	U	1.0	U	1.0	U	ug/L
Benzene	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dichloroethane	1.0	U	1.2		1.0	U	ug/L
Trichloroethene	1.0	U	5.1		1.0	U	ug/L
1,2-Dichloropropane	1.0	U	1.0	U	1.0	U	ug/L
Dibromomethane	1.0	U	1.0	U	1.0	U	ug/L
Bromodichloromethane	1.0	U	1.0	U	1.0	U	ug/L
cis-1,3-Dichloropropene	1.0	U	1.0	U	1.0	U	ug/L
4-Methyl-2-pentanone (MIBK)	5.0	U	5.0	U	5.0	U	ug/L
Toluene	1.0	U	1.0	U	1.0	U	ug/L
trans-1,3-Dichloropropene	1.0	U	1.0	U	1.0	U	ug/L
1,1,2-Trichloroethane	1.0	U	1.0	U	1.0	U	ug/L
Tetrachloroethene	1.0	U	1.0	U	1.0	U	ug/L
1,3-Dichloropropane	1.0	U	1.0	U	1.0	U	ug/L
2-Hexanone	5.0	U	5.0	U	5.0	U	ug/L
Dibromochloromethane	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dibromoethane (EDB)	1.0	U	1.0	U	1.0	U	ug/L
Chlorobenzene	1.0	U	4.1		1.0	U	ug/L
1,1,1,2-Tetrachloroethane	1.0	U	1.0	U	1.0	U	ug/L
Ethylbenzene	1.0	U	1.0	U	1.0	U	ug/L
m&p-Xylenes	2.0	U	2.0	U	2.0	U	ug/L

AAI5-032 Sampling #2 t=29 days

Analyte	Column 1 Effluent 40030	Qualifier	Column 2 Effluent 40031	Qualifier	Column 3 Effluent 40032	Qualifier	Units
o-Xylene	1.0	U	1.0	U	1.0	U	ug/L
Styrene	1.0	U	1.0	U	1.0	U	ug/L
Bromoform	1.0	U	1.0	U	1.0	U	ug/L
Isopropylbenzene	1.0	U	1.0	U	1.0	U	ug/L
Bromobenzene	1.0	U	1.0	U	1.0	U	ug/L
1,1,2,2-Tetrachloroethane	1.0	U	1.0	U	1.0	U	ug/L
1,2,3-Trichloropropane	1.0	U	1.0	U	1.0	U	ug/L
n-Propylbenzene	1.0	U	1.0	U	1.0	U	ug/L
2-Chlorotoluene	1.0	U	1.0	U	1.0	U	ug/L
1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	ug/L
4-Chlorotoluene	1.0	U	1.0	U	1.0	U	ug/L
tert-Butylbenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	ug/L
sec-Butylbenzene	1.0	U	1.0	U	1.0	U	ug/L
1,3-Dichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
p-Isopropyltoluene	1.0	U	1.0	U	1.0	U	ug/L
1,4-Dichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
n-Butylbenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dibromo-3-chloropropane	1.0	U	1.0	U	1.0	U	ug/L
1,3,5-Trichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2,4-Trichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
Hexachlorobutadiene	1.0	U	1.0	U	1.0	U	ug/L
Naphthalene	1.0	U	1.0	U	1.0	U	ug/L
1,2,3-Trichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L

AAI5-032 Sampling #2 t=29 days

Analyte	Column 4 Effluent 40033	Qualifie	Column 5 Effluent 40034	Qualifie	Column 6 Effluent 40035	Qualifie	Units
Alkalinity, Total as CaCO3	330		420		370		mg/L
Chloride	84		86		100		mg/L
TOC Average Duplicates	120		13		16		mg/L
Dichlorodifluoromethane	1.0	U	1.0	U	1.0	U	ug/L
Chloromethane	1.0	U	1.0	U	1.0	U	ug/L
Vinyl chloride	1.0	U	1.0	U	1.0	U	ug/L
Bromomethane	1.0	U	1.0	U	1.0	U	ug/L
Chloroethane	590		640		600		ug/L
Trichlorofluoromethane	1.0	U	1.0	U	1.0	U	ug/L
1,1-Dichloroethene	1.0	U	1.0	U	1.0	U	ug/L
Carbon disulfide	5.0	U	5.0	U	5.0	U	ug/L
Acetone	17		5.0	U	11		ug/L
Methylene chloride	140		88		47		ug/L
trans-1,2-Dichloroethene	1.0	U	1.0	U	1.0	U	ug/L
Methyl-tert-butyl-ether (MTBE)	1.0	U	1.0	U	1.0	U	ug/L
1,1-Dichloroethane	1.0	U	1.0	U	1.0	U	ug/L
2,2-Dichloropropane	1.0	U	1.0	U	1.0	U	ug/L
cis-1,2-Dichloroethene	1.0	U	1.0	U	1.0	U	ug/L
2-Butanone (MEK)	23		5.0	U	5.0	U	ug/L
Bromochloromethane	1.0	U	1.0	U	1.0	U	ug/L
Chloroform	1.0	U	1.0	U	1.0	U	ug/L
1,1,1-Trichloroethane	1.0	U	1.0	U	1.0	U	ug/L
1,1-Dichloropropene	1.0	U*	1.0	U*	1.0	U*	ug/L
Carbon tetrachloride	1.0	U	1.0	U	1.0	U	ug/L
Benzene	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dichloroethane	3.1		1.0	U	1.0	U	ug/L
Trichloroethene	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dichloropropane	1.0	U	1.0	U	1.0	U	ug/L
Dibromomethane	1.0	U	1.0	U	1.0	U	ug/L
Bromodichloromethane	1.0	U	1.0	U	1.0	U	ug/L
cis-1,3-Dichloropropene	1.0	U	1.0	U	1.0	U	ug/L
4-Methyl-2-pentanone (MIBK)	5.0	U	5.0	U	5.0	U	ug/L
Toluene	1.0	U	1.0	U	1.0	U	ug/L
trans-1,3-Dichloropropene	1.0	U	1.0	U	1.0	U	ug/L
1,1,2-Trichloroethane	1.0	U	1.0	U	1.0	U	ug/L
Tetrachloroethene	1.0	U	1.0	U	1.0	U	ug/L
1,3-Dichloropropane	1.0	U	1.0	U	1.0	U	ug/L
2-Hexanone	5.0	U	5.0	U	5.0	U	ug/L
Dibromochloromethane	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dibromoethane (EDB)	1.0	U	1.0	U	1.0	U	ug/L
Chlorobenzene	10		2.1		21		ug/L
1,1,1,2-Tetrachloroethane	1.0	U	1.0	U	1.0	U	ug/L
Ethylbenzene	1.0	U	1.0	U	1.0	U	ug/L
m&p-Xylenes	2.0	U	2.0	U	2.0	U	ug/L

AAI5-032 Sampling #2 t=29 days

Analyte	Column 4 Effluent 40033	Qualifier	Column 5 Effluent 40034	Qualifier	Column 6 Effluent 40035	Qualifier	Units
o-Xylene	1.0	U	1.0	U	1.0	U	ug/L
Styrene	1.0	U	1.0	U	1.0	U	ug/L
Bromoform	1.0	U	1.0	U	1.0	U	ug/L
Isopropylbenzene	1.0	U	1.0	U	1.0	U	ug/L
Bromobenzene	1.0	U	1.0	U	1.0	U	ug/L
1,1,2,2-Tetrachloroethane	1.0	U	1.0	U	1.0	U	ug/L
1,2,3-Trichloropropane	1.0	U	1.0	U	1.0	U	ug/L
n-Propylbenzene	1.0	U	1.0	U	1.0	U	ug/L
2-Chlorotoluene	1.0	U	1.0	U	1.0	U	ug/L
1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	ug/L
4-Chlorotoluene	1.0	U	1.0	U	1.0	U	ug/L
tert-Butylbenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	ug/L
sec-Butylbenzene	1.0	U	1.0	U	1.0	U	ug/L
1,3-Dichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
p-Isopropyltoluene	1.0	U	1.0	U	1.0	U	ug/L
1,4-Dichlorobenzene	1.3		3.1		1.0	U	ug/L
n-Butylbenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dibromo-3-chloropropane	1.0	U	1.0	U	1.0	U	ug/L
1,3,5-Trichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2,4-Trichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
Hexachlorobutadiene	1.0	U	1.0	U	1.0	U	ug/L
Naphthalene	1.0	U	1.0	U	1.0	U	ug/L
1,2,3-Trichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L

AAI5-032 Sampling #2 t=29 days

	Feed #1		Feed #2		
Analyte	40036	Qualifie	40037	Qualifie	Units
Alkalinity, Total as CaCO3					
Chloride					
TOC Average Duplicates					
Dichlorodifluoromethane	1.0	U	1.0	U	ug/L
Chloromethane	1.0	U	1.0	U	ug/L
Vinyl chloride	1.0	U	1.0	U	ug/L
Bromomethane	1.0	U	1.0	U	ug/L
Chloroethane	210		750		ug/L
Trichlorofluoromethane	1.0	U	1.0	U	ug/L
1,1-Dichloroethene	1.0	U	1.0	U	ug/L
Carbon disulfide	5.0	U	5.0	U	ug/L
Acetone	5.0	U	5.0	U	ug/L
Methylene chloride	6.1		1.0	U	ug/L
trans-1,2-Dichloroethene	1.0	U	1.0	U	ug/L
Methyl-tert-butyl-ether (MTBE)	1.0	U	1.0	U	ug/L
1,1-Dichloroethane	1.0	U	1.0	U	ug/L
2,2-Dichloropropane	1.0	U	1.0	U	ug/L
cis-1,2-Dichloroethene	1.0	U	1.0	U	ug/L
2-Butanone (MEK)	5.0	U	5.0	U	ug/L
Bromochloromethane	1.0	U	1.0	U	ug/L
Chloroform	1.0	U	1.0	U	ug/L
1,1,1-Trichloroethane	1.0	U	1.0	U	ug/L
1,1-Dichloropropene	1.0	U*	1.0	U*	ug/L
Carbon tetrachloride	1.0	U	1.0	U	ug/L
Benzene	1.0	U	1.0	U	ug/L
1,2-Dichloroethane	1.0	U	1.0	U	ug/L
Trichloroethene	1.0	U	1.0	U	ug/L
1,2-Dichloropropane	1.0	U	1.0	U	ug/L
Dibromomethane	1.0	U	1.0	U	ug/L
Bromodichloromethane	1.0	U	1.0	U	ug/L
cis-1,3-Dichloropropene	1.0	U	1.0	U	ug/L
4-Methyl-2-pentanone (MIBK)	5.0	U	5.0	U	ug/L
Toluene	1.0	U	1.0	U	ug/L
trans-1,3-Dichloropropene	1.0	U	1.0	U	ug/L
1,1,2-Trichloroethane	1.0	U	1.0	U	ug/L
Tetrachloroethene	1.0	U	1.0	U	ug/L
1,3-Dichloropropane	1.0	U	1.0	U	ug/L
2-Hexanone	5.0	U	5.0	U	ug/L
Dibromochloromethane	1.0	U	1.0	U	ug/L
1,2-Dibromoethane (EDB)	1.0	U	1.0	U	ug/L
Chlorobenzene	160		4.8		ug/L
1,1,1,2-Tetrachloroethane	1.0	U	1.0	U	ug/L
Ethylbenzene	1.0	U	1.0	U	ug/L
m&p-Xylenes	2.0	U	2.0	U	ug/L

AAI5-032 Sampling #2 t=29 days

	Feed #1		Feed #2		
Analyte	40036	Qualifiei	40037	Qualifiei	Units
o-Xylene	1.0	U	1.0	U	ug/L
Styrene	1.0	U	1.0	U	ug/L
Bromoform	1.0	U	1.0	U	ug/L
Isopropylbenzene	1.0	U	1.0	U	ug/L
Bromobenzene	1.0	U	1.0	U	ug/L
1,1,2,2-Tetrachloroethane	1.0	U	1.0	U	ug/L
1,2,3-Trichloropropane	1.0	U	1.0	U	ug/L
n-Propylbenzene	1.0	U	1.0	U	ug/L
2-Chlorotoluene	1.0	U	1.0	U	ug/L
1,3,5-Trimethylbenzene	1.0	U	1.0	U	ug/L
4-Chlorotoluene	1.0	U	1.0	U	ug/L
tert-Butylbenzene	1.0	U	1.0	U	ug/L
1,2,4-Trimethylbenzene	1.0	U	1.0	U	ug/L
sec-Butylbenzene	1.0	U	1.0	U	ug/L
1,3-Dichlorobenzene	1.0	U	1.0	U	ug/L
p-Isopropyltoluene	1.0	U	1.0	U	ug/L
1,4-Dichlorobenzene	1.0	U	1.0	U	ug/L
n-Butylbenzene	1.0	U	1.0	U	ug/L
1,2-Dichlorobenzene	1.0	U	1.0	U	ug/L
1,2-Dibromo-3-chloropropane	1.0	U	1.0	U	ug/L
1,3,5-Trichlorobenzene	1.0	U	1.0	U	ug/L
1,2,4-Trichlorobenzene	1.0	U	1.0	U	ug/L
Hexachlorobutadiene	1.0	U	1.0	U	ug/L
Naphthalene	1.0	U	1.0	U	ug/L
1,2,3-Trichlorobenzene	1.0	U	1.0	U	ug/L

AAI5-032 Sampling #2 t=29 days

Analyte	Column 1 Effluent 40030	Qualifie	Column 2 Effluent 40031	Qualifie	Column 3 Effluent 40032	Qualifie	Units
Alkalinity, Total as CaCO3	370		380		420		mg/L
Chloride	80		80		80		mg/L
TOC Average Duplicates	14		100		16		mg/L
Dichlorodifluoromethane	1.0	U	1.0	U	1.0	U	ug/L
Chloromethane	1.0	U	1.0	U	1.0	U	ug/L
Vinyl chloride	1.0	U	1.0	U	1.0	U	ug/L
Bromomethane	1.0	U	1.0	U	1.0	U	ug/L
Chloroethane	700		430		530		ug/L
Trichlorofluoromethane	1.0	U	1.0	U	1.0	U	ug/L
1,1-Dichloroethene	1.0	U	1.0	U	1.0	U	ug/L
Carbon disulfide	5.0	U	5.0	U	5.0	U	ug/L
Acetone	5.0	U	20		5.0	U	ug/L
Methylene chloride	45		39		53		ug/L
trans-1,2-Dichloroethene	1.0	U	1.0	U	1.0	U	ug/L
Methyl-tert-butyl-ether (MTBE)	1.0	U	1.0	U	1.0	U	ug/L
1,1-Dichloroethane	1.0	U	1.0	U	1.0	U	ug/L
2,2-Dichloropropane	1.0	U	1.0	U	1.0	U	ug/L
cis-1,2-Dichloroethene	1.0	U	1.1		1.0	U	ug/L
2-Butanone (MEK)	5.0	U	6.1		5.0	U	ug/L
Bromochloromethane	1.0	U	1.0	U	1.0	U	ug/L
Chloroform	1.0	U	1.0	U	1.0	U	ug/L
1,1,1-Trichloroethane	1.0	U	1.0	U	1.0	U	ug/L
1,1-Dichloropropene	1.0	U*	1.0	U*	1.0	U*	ug/L
Carbon tetrachloride	1.0	U	1.0	U	1.0	U	ug/L
Benzene	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dichloroethane	1.0	U	1.2		1.0	U	ug/L
Trichloroethene	1.0	U	5.1		1.0	U	ug/L
1,2-Dichloropropane	1.0	U	1.0	U	1.0	U	ug/L
Dibromomethane	1.0	U	1.0	U	1.0	U	ug/L
Bromodichloromethane	1.0	U	1.0	U	1.0	U	ug/L
cis-1,3-Dichloropropene	1.0	U	1.0	U	1.0	U	ug/L
4-Methyl-2-pentanone (MIBK)	5.0	U	5.0	U	5.0	U	ug/L
Toluene	1.0	U	1.0	U	1.0	U	ug/L
trans-1,3-Dichloropropene	1.0	U	1.0	U	1.0	U	ug/L
1,1,2-Trichloroethane	1.0	U	1.0	U	1.0	U	ug/L
Tetrachloroethene	1.0	U	1.0	U	1.0	U	ug/L
1,3-Dichloropropane	1.0	U	1.0	U	1.0	U	ug/L
2-Hexanone	5.0	U	5.0	U	5.0	U	ug/L
Dibromochloromethane	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dibromoethane (EDB)	1.0	U	1.0	U	1.0	U	ug/L
Chlorobenzene	1.0	U	4.1		1.0	U	ug/L
1,1,1,2-Tetrachloroethane	1.0	U	1.0	U	1.0	U	ug/L
Ethylbenzene	1.0	U	1.0	U	1.0	U	ug/L
m&p-Xylenes	2.0	U	2.0	U	2.0	U	ug/L

AAI5-032 Sampling #2   t=29 days

Analyte	Column 1 Effluent 40030	Qualifier	Column 2 Effluent 40031	Qualifier	Column 3 Effluent 40032	Qualifier	Units
o-Xylene	1.0	U	1.0	U	1.0	U	ug/L
Styrene	1.0	U	1.0	U	1.0	U	ug/L
Bromoform	1.0	U	1.0	U	1.0	U	ug/L
Isopropylbenzene	1.0	U	1.0	U	1.0	U	ug/L
Bromobenzene	1.0	U	1.0	U	1.0	U	ug/L
1,1,2,2-Tetrachloroethane	1.0	U	1.0	U	1.0	U	ug/L
1,2,3-Trichloropropane	1.0	U	1.0	U	1.0	U	ug/L
n-Propylbenzene	1.0	U	1.0	U	1.0	U	ug/L
2-Chlorotoluene	1.0	U	1.0	U	1.0	U	ug/L
1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	ug/L
4-Chlorotoluene	1.0	U	1.0	U	1.0	U	ug/L
tert-Butylbenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	ug/L
sec-Butylbenzene	1.0	U	1.0	U	1.0	U	ug/L
1,3-Dichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
p-Isopropyltoluene	1.0	U	1.0	U	1.0	U	ug/L
1,4-Dichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
n-Butylbenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dibromo-3-chloropropane	1.0	U	1.0	U	1.0	U	ug/L
1,3,5-Trichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2,4-Trichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
Hexachlorobutadiene	1.0	U	1.0	U	1.0	U	ug/L
Naphthalene	1.0	U	1.0	U	1.0	U	ug/L
1,2,3-Trichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L

AAI5-032 Sampling #2 t=29 days

Analyte	Column 4 Effluent 40033	Qualifie	Column 5 Effluent 40034	Qualifie	Column 6 Effluent 40035	Qualifie	Units
Alkalinity, Total as CaCO3	330		420		370		mg/L
Chloride	84		86		100		mg/L
TOC Average Duplicates	120		13		16		mg/L
Dichlorodifluoromethane	1.0	U	1.0	U	1.0	U	ug/L
Chloromethane	1.0	U	1.0	U	1.0	U	ug/L
Vinyl chloride	1.0	U	1.0	U	1.0	U	ug/L
Bromomethane	1.0	U	1.0	U	1.0	U	ug/L
Chloroethane	590		640		600		ug/L
Trichlorofluoromethane	1.0	U	1.0	U	1.0	U	ug/L
1,1-Dichloroethene	1.0	U	1.0	U	1.0	U	ug/L
Carbon disulfide	5.0	U	5.0	U	5.0	U	ug/L
Acetone	17		5.0	U	11		ug/L
Methylene chloride	140		88		47		ug/L
trans-1,2-Dichloroethene	1.0	U	1.0	U	1.0	U	ug/L
Methyl-tert-butyl-ether (MTBE)	1.0	U	1.0	U	1.0	U	ug/L
1,1-Dichloroethane	1.0	U	1.0	U	1.0	U	ug/L
2,2-Dichloropropane	1.0	U	1.0	U	1.0	U	ug/L
cis-1,2-Dichloroethene	1.0	U	1.0	U	1.0	U	ug/L
2-Butanone (MEK)	23		5.0	U	5.0	U	ug/L
Bromochloromethane	1.0	U	1.0	U	1.0	U	ug/L
Chloroform	1.0	U	1.0	U	1.0	U	ug/L
1,1,1-Trichloroethane	1.0	U	1.0	U	1.0	U	ug/L
1,1-Dichloropropene	1.0	U*	1.0	U*	1.0	U*	ug/L
Carbon tetrachloride	1.0	U	1.0	U	1.0	U	ug/L
Benzene	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dichloroethane	3.1		1.0	U	1.0	U	ug/L
Trichloroethene	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dichloropropane	1.0	U	1.0	U	1.0	U	ug/L
Dibromomethane	1.0	U	1.0	U	1.0	U	ug/L
Bromodichloromethane	1.0	U	1.0	U	1.0	U	ug/L
cis-1,3-Dichloropropene	1.0	U	1.0	U	1.0	U	ug/L
4-Methyl-2-pentanone (MIBK)	5.0	U	5.0	U	5.0	U	ug/L
Toluene	1.0	U	1.0	U	1.0	U	ug/L
trans-1,3-Dichloropropene	1.0	U	1.0	U	1.0	U	ug/L
1,1,2-Trichloroethane	1.0	U	1.0	U	1.0	U	ug/L
Tetrachloroethene	1.0	U	1.0	U	1.0	U	ug/L
1,3-Dichloropropane	1.0	U	1.0	U	1.0	U	ug/L
2-Hexanone	5.0	U	5.0	U	5.0	U	ug/L
Dibromochloromethane	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dibromoethane (EDB)	1.0	U	1.0	U	1.0	U	ug/L
Chlorobenzene	10		2.1		21		ug/L
1,1,1,2-Tetrachloroethane	1.0	U	1.0	U	1.0	U	ug/L
Ethylbenzene	1.0	U	1.0	U	1.0	U	ug/L
m&p-Xylenes	2.0	U	2.0	U	2.0	U	ug/L

AAI5-032 Sampling #2   t=29 days

Analyte	Column 4 Effluent 40033	Qualifier	Column 5 Effluent 40034	Qualifier	Column 6 Effluent 40035	Qualifier	Units
o-Xylene	1.0	U	1.0	U	1.0	U	ug/L
Styrene	1.0	U	1.0	U	1.0	U	ug/L
Bromoform	1.0	U	1.0	U	1.0	U	ug/L
Isopropylbenzene	1.0	U	1.0	U	1.0	U	ug/L
Bromobenzene	1.0	U	1.0	U	1.0	U	ug/L
1,1,2,2-Tetrachloroethane	1.0	U	1.0	U	1.0	U	ug/L
1,2,3-Trichloropropane	1.0	U	1.0	U	1.0	U	ug/L
n-Propylbenzene	1.0	U	1.0	U	1.0	U	ug/L
2-Chlorotoluene	1.0	U	1.0	U	1.0	U	ug/L
1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	ug/L
4-Chlorotoluene	1.0	U	1.0	U	1.0	U	ug/L
tert-Butylbenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	ug/L
sec-Butylbenzene	1.0	U	1.0	U	1.0	U	ug/L
1,3-Dichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
p-Isopropyltoluene	1.0	U	1.0	U	1.0	U	ug/L
1,4-Dichlorobenzene	1.3		3.1		1.0	U	ug/L
n-Butylbenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dibromo-3-chloropropane	1.0	U	1.0	U	1.0	U	ug/L
1,3,5-Trichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2,4-Trichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
Hexachlorobutadiene	1.0	U	1.0	U	1.0	U	ug/L
Naphthalene	1.0	U	1.0	U	1.0	U	ug/L
1,2,3-Trichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L

AAI5-032 Sampling #2 t=29 days

Analyte	Feed #1 40036	Qualifie	Feed #2 40037	Qualifie	Units
Alkalinity, Total as CaCO3					
Chloride					
TOC Average Duplicates					
Dichlorodifluoromethane	1.0	U	1.0	U	ug/L
Chloromethane	1.0	U	1.0	U	ug/L
Vinyl chloride	1.0	U	1.0	U	ug/L
Bromomethane	1.0	U	1.0	U	ug/L
Chloroethane	210		750		ug/L
Trichlorofluoromethane	1.0	U	1.0	U	ug/L
1,1-Dichloroethene	1.0	U	1.0	U	ug/L
Carbon disulfide	5.0	U	5.0	U	ug/L
Acetone	5.0	U	5.0	U	ug/L
Methylene chloride	6.1		1.0	U	ug/L
trans-1,2-Dichloroethene	1.0	U	1.0	U	ug/L
Methyl-tert-butyl-ether (MTBE)	1.0	U	1.0	U	ug/L
1,1-Dichloroethane	1.0	U	1.0	U	ug/L
2,2-Dichloropropane	1.0	U	1.0	U	ug/L
cis-1,2-Dichloroethene	1.0	U	1.0	U	ug/L
2-Butanone (MEK)	5.0	U	5.0	U	ug/L
Bromochloromethane	1.0	U	1.0	U	ug/L
Chloroform	1.0	U	1.0	U	ug/L
1,1,1-Trichloroethane	1.0	U	1.0	U	ug/L
1,1-Dichloropropene	1.0	U*	1.0	U*	ug/L
Carbon tetrachloride	1.0	U	1.0	U	ug/L
Benzene	1.0	U	1.0	U	ug/L
1,2-Dichloroethane	1.0	U	1.0	U	ug/L
Trichloroethene	1.0	U	1.0	U	ug/L
1,2-Dichloropropane	1.0	U	1.0	U	ug/L
Dibromomethane	1.0	U	1.0	U	ug/L
Bromodichloromethane	1.0	U	1.0	U	ug/L
cis-1,3-Dichloropropene	1.0	U	1.0	U	ug/L
4-Methyl-2-pentanone (MIBK)	5.0	U	5.0	U	ug/L
Toluene	1.0	U	1.0	U	ug/L
trans-1,3-Dichloropropene	1.0	U	1.0	U	ug/L
1,1,2-Trichloroethane	1.0	U	1.0	U	ug/L
Tetrachloroethene	1.0	U	1.0	U	ug/L
1,3-Dichloropropane	1.0	U	1.0	U	ug/L
2-Hexanone	5.0	U	5.0	U	ug/L
Dibromochloromethane	1.0	U	1.0	U	ug/L
1,2-Dibromoethane (EDB)	1.0	U	1.0	U	ug/L
Chlorobenzene	160		4.8		ug/L
1,1,1,2-Tetrachloroethane	1.0	U	1.0	U	ug/L
Ethylbenzene	1.0	U	1.0	U	ug/L
m&p-Xylenes	2.0	U	2.0	U	ug/L

AAI5-032 Sampling #2 t=29 days

Analyte	Feed #1 40036	Qualifier	Feed #2 40037	Qualifier	Units
o-Xylene	1.0	U	1.0	U	ug/L
Styrene	1.0	U	1.0	U	ug/L
Bromoform	1.0	U	1.0	U	ug/L
Isopropylbenzene	1.0	U	1.0	U	ug/L
Bromobenzene	1.0	U	1.0	U	ug/L
1,1,2,2-Tetrachloroethane	1.0	U	1.0	U	ug/L
1,2,3-Trichloropropane	1.0	U	1.0	U	ug/L
n-Propylbenzene	1.0	U	1.0	U	ug/L
2-Chlorotoluene	1.0	U	1.0	U	ug/L
1,3,5-Trimethylbenzene	1.0	U	1.0	U	ug/L
4-Chlorotoluene	1.0	U	1.0	U	ug/L
tert-Butylbenzene	1.0	U	1.0	U	ug/L
1,2,4-Trimethylbenzene	1.0	U	1.0	U	ug/L
sec-Butylbenzene	1.0	U	1.0	U	ug/L
1,3-Dichlorobenzene	1.0	U	1.0	U	ug/L
p-Isopropyltoluene	1.0	U	1.0	U	ug/L
1,4-Dichlorobenzene	1.0	U	1.0	U	ug/L
n-Butylbenzene	1.0	U	1.0	U	ug/L
1,2-Dichlorobenzene	1.0	U	1.0	U	ug/L
1,2-Dibromo-3-chloropropane	1.0	U	1.0	U	ug/L
1,3,5-Trichlorobenzene	1.0	U	1.0	U	ug/L
1,2,4-Trichlorobenzene	1.0	U	1.0	U	ug/L
Hexachlorobutadiene	1.0	U	1.0	U	ug/L
Naphthalene	1.0	U	1.0	U	ug/L
1,2,3-Trichlorobenzene	1.0	U	1.0	U	ug/L

AAI5-032 Sampling #3 t= 42 days

Analyte	Column 1 Effluent 40168	Qualifie	Column 2 Effluent 40169	Qualifie	Column 3 Effluent 40170	Qualifie	Units
Alkalinity, Total as CaCO3	330		300		370		mg/L
Chloride	90		84		84		mg/L
TOC Average Duplicates	9.6		12		9.9		mg/L
Dichlorodifluoromethane	1.0	U*	1.0	U*	1.0	U*	ug/L
Chloromethane	1.0	U*	1.0	U*	1.0	U*	ug/L
Vinyl chloride	1.0	U*	1.0	U*	1.0	U*	ug/L
Bromomethane	1.0	U*	1.0	U*	1.0	U*	ug/L
Chloroethane	230		200		350	H	ug/L
Trichlorofluoromethane	1.0	U*	1.0	U*	1.0	U*	ug/L
1,1-Dichloroethene	1.0	U	1.0	U	1.0	U	ug/L
Carbon disulfide	5.0	U	5.0	U	5.0	U	ug/L
Acetone	5.0	U*	5.0	U*	5.0	U*	ug/L
Methylene chloride	16		25		44		ug/L
trans-1,2-Dichloroethene	1.0	U	1.0	U	1.0	U	ug/L
Methyl-tert-butyl-ether (MTBE)	1.0	U	1.0	U	1.0	U	ug/L
1,1-Dichloroethane	1.0	U	1.0	U	1.0	U	ug/L
2,2-Dichloropropane	1.0	U	1.0	U	1.0	U	ug/L
cis-1,2-Dichloroethene	1.0	U	1.3		1.0	U	ug/L
2-Butanone (MEK)	5.0	U	5.0	U	5.0	U	ug/L
Bromochloromethane	1.0	U	1.0	U	1.0	U	ug/L
Chloroform	1.0	U	1.0	U	1.0	U	ug/L
1,1,1-Trichloroethane	1.0	U	1.0	U	1.0	U	ug/L
1,1-Dichloropropene	1.0	U	1.0	U	1.0	U	ug/L
Carbon tetrachloride	1.0	U	1.0	U	1.0	U	ug/L
Benzene	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dichloroethane	1.0	U	1.0	U	1.0	U	ug/L
Trichloroethene	1.0	U	2.7		1.0	U	ug/L
1,2-Dichloropropane	1.0	U	1.0	U	1.0	U	ug/L
Dibromomethane	1.0	U	1.0	U	1.0	U	ug/L
Bromodichloromethane	1.0	U	1.0	U	1.0	U	ug/L
cis-1,3-Dichloropropene	1.0	U	1.0	U	1.0	U	ug/L
4-Methyl-2-pentanone (MIBK)	5.0	U	5.0	U	5.0	U	ug/L
Toluene	1.0	U	1.0	U	1.0	U	ug/L
trans-1,3-Dichloropropene	1.0	U	1.0	U	1.0	U	ug/L
1,1,2-Trichloroethane	1.0	U	1.0	U	1.0	U	ug/L
Tetrachloroethene	1.0	U	1.0	U	1.0	U	ug/L
1,3-Dichloropropane	1.0	U	1.0	U	1.0	U	ug/L
2-Hexanone	5.0	U	5.0	U	5.0	U	ug/L
Dibromochloromethane	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dibromoethane (EDB)	1.0	U	1.0	U	1.0	U	ug/L
Chlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
1,1,1,2-Tetrachloroethane	1.0	U	1.0	U	1.0	U	ug/L
Ethylbenzene	1.0	U	1.0	U	1.0	U	ug/L
m&p-Xylenes	2.0	U	2.0	U	2.0	U	ug/L

AAI5-032 Sampling #3 t= 42 days

Analyte	Column 1 Effluent 40168	Qualifie	Column 2 Effluent 40169	Qualifie	Column 3 Effluent 40170	Qualifie	Units
o-Xylene	1.0	U	1.0	U	1.0	U	ug/L
Styrene	1.0	U	1.0	U	1.0	U	ug/L
Bromoform	1.0	U	1.0	U	1.0	U	ug/L
Isopropylbenzene	1.0	U	1.0	U	1.0	U	ug/L
Bromobenzene	1.0	U	1.0	U	1.0	U	ug/L
1,1,2,2-Tetrachloroethane	1.0	U	1.0	U	1.0	U	ug/L
1,2,3-Trichloropropane	1.0	U	1.0	U	1.0	U	ug/L
n-Propylbenzene	1.0	U	1.0	U	1.0	U	ug/L
2-Chlorotoluene	1.0	U	1.0	U	1.0	U	ug/L
1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	ug/L
4-Chlorotoluene	1.0	U	1.0	U	1.0	U	ug/L
tert-Butylbenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	ug/L
sec-Butylbenzene	1.0	U	1.0	U	1.0	U	ug/L
1,3-Dichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
p-Isopropyltoluene	1.0	U	1.0	U	1.0	U	ug/L
1,4-Dichlorobenzene	1.0	U	1.1		1.0	U	ug/L
n-Butylbenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dibromo-3-chloropropane	1.0	U	1.0	U	1.0	U	ug/L
1,3,5-Trichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2,4-Trichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
Hexachlorobutadiene	1.0	U	1.0	U	1.0	U	ug/L
Naphthalene	1.0	U	1.0	U	1.0	U	ug/L
1,2,3-Trichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L

AAI5-032 Sampling #3 t= 42 days

Analyte	Column 4 Effluent 40171	Qualifie	Column 5 Effluent 40172	Qualifie	Column 6 Effluent 40173	Qualifie	Units
Alkalinity, Total as CaCO3	330		380		350		mg/L
Chloride	91		84		92		mg/L
TOC Average Duplicates	11		9.5		11		mg/L
Dichlorodifluoromethane	1.0	U*	1.0	U*	1.0	U*	ug/L
Chloromethane	1.0	U*	1.0	U*	1.0	U*	ug/L
Vinyl chloride	1.0	U*	1.0	U*	1.0	U*	ug/L
Bromomethane	1.0	U*	1.0	U*	1.0	U*	ug/L
Chloroethane	290		400		510		ug/L
Trichlorofluoromethane	1.0	U*	1.0	U*	1.0	U*	ug/L
1,1-Dichloroethene	1.0	U	1.0	U	1.0	U	ug/L
Carbon disulfide	5.0	U	5.0	U	5.0	U	ug/L
Acetone	5.0	U*	5.0	U*	5.0	U*	ug/L
Methylene chloride	60		73		41		ug/L
trans-1,2-Dichloroethene	1.0	U	1.0	U	1.0	U	ug/L
Methyl-tert-butyl-ether (MTBE)	1.0	U	1.0	U	1.0	U	ug/L
1,1-Dichloroethane	1.0	U	1.0	U	1.0	U	ug/L
2,2-Dichloropropane	1.0	U	1.0	U	1.0	U	ug/L
cis-1,2-Dichloroethene	1.0	U	1.0	U	1.0	U	ug/L
2-Butanone (MEK)	5.0	U	5.0	U	5.0	U	ug/L
Bromochloromethane	1.0	U	1.0	U	1.0	U	ug/L
Chloroform	1.0	U	1.0	U	1.0	U	ug/L
1,1,1-Trichloroethane	1.0	U	1.0	U	1.0	U	ug/L
1,1-Dichloropropene	1.0	U	1.0	U	1.0	U	ug/L
Carbon tetrachloride	1.0	U	1.0	U	1.0	U	ug/L
Benzene	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dichloroethane	1.5	H	1.0	U	1.0	U	ug/L
Trichloroethene	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dichloropropane	1.0	U	1.0	U	1.0	U	ug/L
Dibromomethane	1.0	U	1.0	U	1.0	U	ug/L
Bromodichloromethane	1.0	U	1.0	U	1.0	U	ug/L
cis-1,3-Dichloropropene	1.0	U	1.0	U	1.0	U	ug/L
4-Methyl-2-pentanone (MIBK)	5.0	U	5.0	U	5.0	U	ug/L
Toluene	1.0	U	1.0	U	1.0	U	ug/L
trans-1,3-Dichloropropene	1.0	U	1.0	U	1.0	U	ug/L
1,1,2-Trichloroethane	1.0	U	1.0	U	1.0	U	ug/L
Tetrachloroethene	1.0	U	1.0	U	1.0	U	ug/L
1,3-Dichloropropane	1.0	U	1.0	U	1.0	U	ug/L
2-Hexanone	5.0	U	5.0	U	5.0	U	ug/L
Dibromochloromethane	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dibromoethane (EDB)	1.0	U	1.0	U	1.0	U	ug/L
Chlorobenzene	1.0	U	1.0	U	26	H	ug/L
1,1,1,2-Tetrachloroethane	1.0	U	1.0	U	1.0	U	ug/L
Ethylbenzene	1.0	U	1.0	U	1.0	U	ug/L
m&p-Xylenes	2.0	U	2.0	U	2.0	U	ug/L

AAI5-032 Sampling #3 t= 42 days

Analyte	Column 4 Effluent 40171	Qualifie	Column 5 Effluent 40172	Qualifie	Column 6 Effluent 40173	Qualifie	Units
o-Xylene	1.0	U	1.0	U	1.0	U	ug/L
Styrene	1.0	U	1.0	U	1.0	U	ug/L
Bromoform	1.0	U	1.0	U	1.0	U	ug/L
Isopropylbenzene	1.0	U	1.0	U	1.0	U	ug/L
Bromobenzene	1.0	U	1.0	U	1.0	U	ug/L
1,1,2,2-Tetrachloroethane	1.0	U	1.0	U	1.0	U	ug/L
1,2,3-Trichloropropane	1.0	U	1.0	U	1.0	U	ug/L
n-Propylbenzene	1.0	U	1.0	U	1.0	U	ug/L
2-Chlorotoluene	1.0	U	1.0	U	1.0	U	ug/L
1,3,5-Trimethylbenzene	1.0	U	1.0	U	1.0	U	ug/L
4-Chlorotoluene	1.0	U	1.0	U	1.0	U	ug/L
tert-Butylbenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2,4-Trimethylbenzene	1.0	U	1.0	U	1.0	U	ug/L
sec-Butylbenzene	1.0	U	1.0	U	1.0	U	ug/L
1,3-Dichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
p-Isopropyltoluene	1.0	U	1.0	U	1.0	U	ug/L
1,4-Dichlorobenzene	1.8		1.0	U	1.0	U	ug/L
n-Butylbenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2-Dibromo-3-chloropropane	1.0	U	1.0	U	1.0	U	ug/L
1,3,5-Trichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
1,2,4-Trichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L
Hexachlorobutadiene	1.0	U	1.0	U	1.0	U	ug/L
Naphthalene	1.0	U	1.0	U	1.0	U	ug/L
1,2,3-Trichlorobenzene	1.0	U	1.0	U	1.0	U	ug/L

AAI5-032 Sampling #3   t= 42 days

Analyte	Feed #1 40174	Qualifie	Feed #2 40175	Qualifie	Units
Alkalinity, Total as CaCO3					
Chloride					
TOC Average Duplicates					
Dichlorodifluoromethane	1.0	U*	1.0	U*	ug/L
Chloromethane	1.0	U*	1.0	U*	ug/L
Vinyl chloride	1.0	U*	1.0	U*	ug/L
Bromomethane	1.0	U*	1.0	U*	ug/L
Chloroethane	310		280		ug/L
Trichlorofluoromethane	1.0	U*	1.0	U*	ug/L
1,1-Dichloroethene	1.0	U	1.0	U	ug/L
Carbon disulfide	5.0	U	5.0	U	ug/L
Acetone	5.0	U*	5.0	U*	ug/L
Methylene chloride	1.0	U	1.0	U	ug/L
trans-1,2-Dichloroethene	1.0	U	1.0	U	ug/L
Methyl-tert-butyl-ether (MTBE)	1.0	U	1.0	U	ug/L
1,1-Dichloroethane	1.0	U	1.0	U	ug/L
2,2-Dichloropropane	1.0	U	1.0	U	ug/L
cis-1,2-Dichloroethene	1.0	U	1.0	U	ug/L
2-Butanone (MEK)	5.0	U	5.0	U	ug/L
Bromochloromethane	1.0	U	1.0	U	ug/L
Chloroform	1.0	U	1.0	U	ug/L
1,1,1-Trichloroethane	1.0	U	1.0	U	ug/L
1,1-Dichloropropene	1.0	U	1.0	U	ug/L
Carbon tetrachloride	1.0	U	1.0	U	ug/L
Benzene	1.0	U	1.0	U	ug/L
1,2-Dichloroethane	1.0	U	1.0	U	ug/L
Trichloroethene	1.4		1.5		ug/L
1,2-Dichloropropane	1.0	U	1.0	U	ug/L
Dibromomethane	1.0	U	1.0	U	ug/L
Bromodichloromethane	1.0	U	1.0	U	ug/L
cis-1,3-Dichloropropene	1.0	U	1.0	U	ug/L
4-Methyl-2-pentanone (MIBK)	5.0	U	5.0	U	ug/L
Toluene	1.0	U	1.0	U	ug/L
trans-1,3-Dichloropropene	1.0	U	1.0	U	ug/L
1,1,2-Trichloroethane	1.0	U	1.0	U	ug/L
Tetrachloroethene	1.0	U	1.0	U	ug/L
1,3-Dichloropropane	1.0	U	1.0	U	ug/L
2-Hexanone	5.0	U	5.0	U	ug/L
Dibromochloromethane	1.0	U	1.0	U	ug/L
1,2-Dibromoethane (EDB)	1.0	U	1.0	U	ug/L
Chlorobenzene	11	H	8.7		ug/L
1,1,1,2-Tetrachloroethane	1.0	U	1.0	U	ug/L
Ethylbenzene	1.0	U	1.0	U	ug/L
m&p-Xylenes	2.0	U	2.0	U	ug/L

AAI5-032 Sampling #3 t= 42 days

	Feed #1		Feed #2		
Analyte	40174	Qualifie	40175	Qualifie	Units
o-Xylene	1.0	U	1.0	U	ug/L
Styrene	1.0	U	1.0	U	ug/L
Bromoform	1.0	U	1.0	U	ug/L
Isopropylbenzene	1.0	U	1.0	U	ug/L
Bromobenzene	1.0	U	1.0	U	ug/L
1,1,2,2-Tetrachloroethane	1.0	U	1.0	U	ug/L
1,2,3-Trichloropropane	1.0	U	1.0	U	ug/L
n-Propylbenzene	1.0	U	1.0	U	ug/L
2-Chlorotoluene	1.0	U	1.0	U	ug/L
1,3,5-Trimethylbenzene	1.0	U	1.0	U	ug/L
4-Chlorotoluene	1.0	U	1.0	U	ug/L
tert-Butylbenzene	1.0	U	1.0	U	ug/L
1,2,4-Trimethylbenzene	1.0	U	1.0	U	ug/L
sec-Butylbenzene	1.0	U	1.0	U	ug/L
1,3-Dichlorobenzene	1.0	U	1.0	U	ug/L
p-Isopropyltoluene	1.0	U	1.0	U	ug/L
1,4-Dichlorobenzene	1.0	U	1.0	U	ug/L
n-Butylbenzene	1.0	U	1.0	U	ug/L
1,2-Dichlorobenzene	1.0	U	1.0	U	ug/L
1,2-Dibromo-3-chloropropane	1.0	U	1.0	U	ug/L
1,3,5-Trichlorobenzene	1.0	U	1.0	U	ug/L
1,2,4-Trichlorobenzene	1.0	U	1.0	U	ug/L
Hexachlorobutadiene	1.0	U	1.0	U	ug/L
Naphthalene	1.0	U	1.0	U	ug/L
1,2,3-Trichlorobenzene	1.0	U	1.0	U	ug/L

AAI5-032 Sampling #5 t = 94 days

Analyte		DL	0.1% EHC2007Fe50 40838	0.5% EHC2007Fe50 40839	0.1% HRC 40840	0.5% HRC 40841	Control 40842	Sterile Control 40843	Feed #1 40844	Feed #2 - Sterile 40845	Feed #2 - Sterile 40845 D	Feed #2 - Sterile 40845 Avg
Vinyl Chloride	VC	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichloromathane	DCM	10.0	230	260	185	ND	415	345	ND	ND	ND	ND
Cis-1,2-Dichloroethene	cis-DCE	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	CF	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	CT	14.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	1,2DCA	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	TCE	10.0	20	20	20	15	20	ND	25	15	20	17.5
Tetrachloroethene	PCE	20.0	ND	ND	ND	ND	ND	20	135	135	0	67.5
Chloroethane	CA	10.0	485	500	380	0	810	1280	1005	1330	1360	1345
Total VOCs			735	780	585	15	1,245	1,645	1,165	1,480	1,360	1,430

AAI5-032 Sampling #6 t = 107 days

Analyte		DL	0.1% EHC2007Fe50 41015	0.5% EHC2007Fe50 41016	0.1% HRC 41017	0.5% HRC 41018	Control 41019	Sterile Control 41020	Feed #1 41021	Feed #2 - Sterile 41022	Feed #2 - Sterile 41022D	Feed #2 - Sterile 41022Avg
Vinyl Chloride	VC	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichloromathane	DCM	10.0	145	120	100	185	220	185	ND	0	0	0
Cis-1,2-Dichloroethene	cis-DCE	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	CF	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	CT	14.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	1,2DCA	10.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	TCE	10.0	10	10	15	ND	10	ND	40	20	20	20
Tetrachloroethene	PCE	20.0	0	45	0	0	15	65	45	15	20	18
Chloroethane	CA	10.0	305	250	80	5	270	960	2245	1540	1355	1448
Total VOCs			460	425	195	190	515	1,210	2,330	1,575	1,395	1,485

ADVENTUS
AMERICAS

VIA E-MAIL: mark_becker@urscorp.com

August 03, 2005

Mr. Mark Becker
Project Manager
URS Corp.
12 Commerce Drive
Cranford, NJ 07016

SUBJECT: Final Report – Bench Scale Test For Chemical Oxidation Treatment of Chlorinated Solvent Impacted Soils
Adventus Project No. AAI5-031

Dear Mr. Becker,

This document constitutes the final report for the chemical oxidation treatment of chlorinated solvent impacted soils from the Former Columbia Cement, Inc., Freeport, NY (the Site). This report presents the results of the initial characterization of the Site soil and water, and the results of the activated persulfate testing.

Sample Reception

On April 27, 2005 Adventus received one (five gallon) pail of soil (SB-042005) and one (five-gallon) pail of water (MW-ID-97) from the Site. Both pails were placed into cold room storage upon receipt.

On April 28, 2005 the soil was homogenized by hand and duplicate samples were collected for volatile organic compounds (VOC), total organic carbon (TOC), and chemical oxygen demand (COD) analyses. A composite sample of water was also collected and submitted for VOC, TOC, and COD analyses. All samples were shipped via overnight courier to Severn Trent Laboratories (STL) – Chicago for analysis.

A natural oxidant demand (NOD) test was also conducted on a sample of the Site soil using a standard NOD protocol (**Appendix A**).

1435 Morris Avenue, 2nd Floor . Union, NJ 07083 . Tel 908.688.8543 . Fax 908.688.8563
www.adventus.us

Initial Soil and Groundwater Characterization Results

The initial VOC, TOC, and COD concentrations in the Site soil and water samples are presented in **Table 1**. The main VOC present in the Site soil was 1,1,1-trichloroethane (TCA) (135,500 μg/kg). Nine other VOCs were detected in the soil at much lower concentrations (**Table 1**). The TOC and COD concentrations were 5,250 mg/kg and 18,000 mg/kg, respectively.

The Site water contained trace concentrations of chloroethane (4.8 μg/L) and 1,1-dichloroethane (1 μg/L). TOC and COD concentrations were 11μg/L and 33μg/L, respectively.

The calculated soil Natural Oxidant Demand (NOD) was 42 mg $KMnO_4$ per gram of soil.

Table 1: Initial VOC and COD concentrations in the Site soil and water samples

Parameter	Soil[1]	Units	Water	Units
Chloroethane	ND (120)	μg/kg	4.8	μg/L
1,1-Dichloroethane	525	μg/kg	1.0	μg/L
1,1,1-Trichloroethane	135,500	μg/kg	ND (1)	μg/L
Trichloroethene	60	μg/kg	ND (1)	μg/L
Toluene	825	μg/kg	ND (1)	μg/L
Tetrachloroethene	80	μg/kg	ND (1)	μg/L
Ethylbenzene	60	μg/kg	ND (1)	μg/L
m&p-Xylene	265	μg/kg	ND (2)	μg/L
o-Xylene	114	μg/kg	ND (1)	μg/L
p-Isopropyltoluene	80	μg/kg	ND (1)	μg/L
Naphthalene	60	μg/kg	ND (1)	μg/L
Total VOCs	**137,569**	**μg/g**	**5.8**	**μg/L**
TOC	5,250	mg/kg	11	mg/L
COD	18,000	mg/kg	33	mg/L

[1]Average of duplicate samples
ND = non detect (detection limit)

Experimental Procedure

Based on the mix of target compounds, activated persulfate was selected as the oxidant of choice. Two activation methods (hydrogen peroxide and chelated iron) were tested. Treatment was conducted on combined soil and groundwater samples from the site.

Approximately 300 g of the homogenized site soil was weighed out into 12 – 1L glass jars with Teflon lined lids. The initial characterization revealed that the VOCs concentrations in the Site water were much lower than the concentrations present at the site, thus the Site water was spiked with seven constituents of interest (COI) as outlined in **Table 2**.

Table 2: Initial and Target COI concentrations in the Site water

Parameter	Site Water Received April 27th	Target Concentration	Units
Vinyl Chloride	ND (1)	15	μg/L
Chloroethane	4.8	10,000	μg/L
Methylene Chloride	ND (1)	10	μg/L
1,1-Dichloroethane	1.0	660	μg/L
1,1,1-Trichloroethane	ND (1)	150	μg/L
Benzene	ND (1)	15	μg/L
Toluene	ND (1)	4	μg/L

Table 3 summarizes the persulfate treatments and sampling schedule for each jar. Jars 1, 4, 7, and 10 were controls and thus were filled with spiked Site water. Jars 2, 3, 5, and 6 were filled with a solution of spiked Site water containing 6.3 g/L persulfate ($Na_2S_2O_8$) and 30 g/L 30% hydrogen peroxide (H_2O_2). Jars 8, 9, 11 and 12 were filled with a solution of spiked Site water containing 6.3 g/L sodium persulfate ($Na_2S_2O_8$) and 0.5 g/L ethylenediaminetetraacetic acid iron (III) sodium salt (NaFe(III)EDTA). The jars were inverted several times to mix the soil and water and were placed into an insulated box.

On day 2 (48 hrs after the first application of sodium persulfate), the water and soil in jars 1, 2, 3, 7, 8 and 9 were sampled for VOC, and COD at STL-Chicago. The water was also sampled for persulfate and analyzed by Adventus.

Jars 5, 6, 11, and 12 were re-amended with persulfate and the appropriate activator on day 2. For jars 5 and 6 the 6.3 g of persulfate was dissolved in 30 g of 30% H_2O_2 and then added to the treatment jar. For jars 11 and 12 approximately 40 mL of water was removed from the treatment jar and the 6.3 g of persulfate and 0.5 g of NaFe(III)EDTA were dissolved in this solution and then returned to the treatment jar.

On day 6 (96 hours after the second application of sodium persulfate) the water and soil for the remaining jars were sampled as outlined above for day 2.

Table 3: Summary of Treatments

Jars	Persulfate Addition	Persulfate Activator	Sampling
1,4,7,10	None	None	Jars 1 and7 sampled on Day 2 Jars 4 and 10 sampled on Day 4
2,3	6.3 g on Day 0	H_2O_2	Sampled on Day 2
5,6	6.3 g on Days 0 & 6	H_2O_2	Sampled on Day 6
8,9	6.3 g on Day 0	NaFe(III)EDTA	Sampled on Day 2
11,12	6.3 g on Days 0 & 6	NaFe(III)EDTA	Sampled on Day 6

Results

This section presents the total VOC, COD, and persulfate results of the sodium persulfate batch tests. With the exception of the controls, all other results reported in this section are the average of duplicate treatment jars. The complete analytical data set is included in Appendices B, C, D, and E.

The soil VOC concentrations in all four-control jars were much lower than the initial characterization result. The lower concentrations in the controls may be attributed to partitioning of COIs into the aqueous phase or a hot spot may have been sampled during the initial characterization.

Hydrogen Peroxide Activated Persulfate Treatment

The soil and water results from the persulfate treatment jars activated with hydrogen peroxide are presented in **Tables 4** and **5**. On day 2 the soil VOC concentrations decreased from 2,779 μg/kg in the control to 1,439 μg/kg in response to 6.3 g/L persulfate and 30 g/L of H_2O_2. After an additional 6.3 g/L of persulfate, 30 g/L of 30% H_2O_2 (equivalent to 9 g of H_2O_2) and a four day incubation period, the soil VOC concentrations decreased from 2,275 μg/kg in the control to 502 μg/kg. This corresponded to 48% and 78% removals of total VOC after 2 and 6 days of hydrogen peroxide activated persulfate treatment, respectively.

The COD concentrations were reduced by 57% and 47%, on days 2 and 6 respectively, in response to the persulfate treatment.

Table 4: VOC and COD concentrations in soil following H_2O_2 activated persulfate treatment

Parameter	Day 2			Day 6		
	Control	6.3 g $Na_2S_2O_8$	% Removal After 2 Days	Control	12.6 g $Na_2S_2O_8$	% Removal After 6 Days
Total VOC (μg/kg)	2,779	1,439	48%	2,275	502	78%
COD (mg/kg)	20,000	8,550	57%	9,100	4,850	47%

The water persulfate concentrations revealed that persulfate was fully consumed on day 2 and day 6.

On day 2 the water VOC concentrations decreased from 14,806 μg/L in the control to 1,430 μg/L in response to 6.3 g/L persulfate and 30 g/L of 30% H_2O_2. After the second application of persulfate and H_2O_2 and four additional days of incubation, the water VOC concentrations decreased from 13,952 μg/L in the control to 782 μg/L. This corresponded to 90% and 94% removals of total VOC after 2 and 6 days of hydrogen peroxide activated persulfate treatment, respectively.

Despite the substantial removal of VOCs, only a small decrease in the COD concentration was observed on day 2 and no reduction in the COD concentration was observed on day 6. This is consistent with other studies (Brown et.al), which have shown that sodium persulfate works well on organics and is not consumed in satisfying the general oxidant demand of a soil (i.e. reduced metals etc.).

Table 5: VOC, COD, and persulfate concentrations in water following H_2O_2 activated persulfate treatment

Parameter	Day 2			Day 6		
	Control	6.3 g $Na_2S_2O_8$	% Removal After 2 Days	Control	12.6 g $Na_2S_2O_8$	% Removal After 6 Days
Total VOC (μg/L)	14,806	1,430	90%	13,952	782	94%
COD (mg/L)	310	305	2%	300	360	0%
Persulfate (g/L)	0	0	---	0	0	---

NaFe(III)EDTA Activated Persulfate Treatment

The soil and water analytical results from the persulfate treatment jars activated with NaFe(III)EDTA are presented in **Tables 6** and **7**.

On day 2 the soil VOC concentrations decreased from 2,590 μg/kg in the control to 2,516 μg/kg in response to 6.3 g/L persulfate and 0.5 g/L of NaFe(III)EDTA. After an additional 6.3 g/L of persulfate, 0.5 g/L of NaFe(III)EDTA and a four day incubation period, the soil VOC concentrations decreased from 2,530 μg/kg in the control to 2,321 μg/kg. This corresponded to 3% and 8% removals of total VOC after 2 and 6 days of NaFe(III)EDTA activated persulfate treatment, respectively.

On day 2 the soil COD concentration was reduced by 57%. The COD concentration on day 6 was greater than the control. The COD concentrations in the persulfate treated jars on days 2 and 6 were similar, but the concentration in the control was much lower than the initial COD concentration and the value on day 2, thus is appears that control value may have been incorrect.

Table 6: VOC and COD concentrations in soil following NaFe(III)EDTA activated persulfate treatment

Parameter	Day 2			Day 6		
	Control	6.3 g $Na_2S_2O_8$	% Removal After 2 Days	Control	12.6 g $Na_2S_2O_8$	% Removal After 6 Days
Total VOC (µg/kg)	2,590	2,516	3%	2,530	2,321	8%
COD (mg/kg)	26,000	11,100	57%	6,500	11,000	0

The persulfate concentrations in the water were 5.1 g/L and 10.4 g/L on days 2 and 6, respectively. This corresponded to a consumption of 1.2 g and 2.2 g of persulfate on days 2 and 6, respectively. This shows that persulfate radicals were not generated using chelated iron as an activator.

The water VOC concentrations on days 2 and 6 were 11,758 µg/L and 7,843 µg/L, respectively. The COD concentrations were greater in the jars amended with sodium persulfate and NaFe(III)EDTA than in the controls.

Table 7: VOC, COD, and persulfate concentrations in water following NaFe(III)EDTA activated persulfate treatment

Parameter	Day 2			Day 6		
	Control	6.3 g $Na_2S_2O_8$	% Removal After 2 Days	Control	12.6 g $Na_2S_2O_8$	% Removal After 6 Days
Total VOC (µg/L)	14,890	11,758	21%	9,879	7,843	21%
COD (mg/L)	270	715	0	290	1,050	0
Persulfate (g/L)	0	5.1	---	0	10.4	---

When accounting for the total mass of VOCs in the soil (300 g) and water (approximately 835 mL), the oxidation results (**Table 8**) show that persulfate activated with hydrogen peroxide was more effective in oxidizing the VOCs than persulfate activated with NaFe(III)EDTA.

Table 8: Mass balance of VOCs in water and soil following H_2O_2 and NaFe(III)EDTA activated persulfate treatments

Parameter	Treatment	Media	Control	After Day 2	% Removal after Day 2	Control	After Day 6	% Removal after Day 6
Total VOCs (μg)	H_2O_2	Soil	834	432	48%	683	151	78%
	H_2O_2	Water	13,234	1,577	88%	12,348	803	94%
	NaFe(III) EDTA	Soil	777	755	3%	759	696	8%
	NaFe(III) EDTA	Water	13,199	10,565	20%	9,021	7,262	19%

Removal of TCA and CA

Table 9 below summarizes the concentrations of key COI in groundwater and soil after Day 2 and Day 6, for each control and treatment jar. The TCA and CA concentrations indicate that there is some variability in the results for the duplicate control and treatment jars.

Table 9: Concentrations of target COI in water and soil following H_2O_2 and NaFe(III)EDTA activated persulfate treatments

Parameter	Media	Treatment	Day 2		Day 6		Units
			1st Jar	Duplicate Jar	1st Jar	Duplicate Jar	
TCA	Soil	Control	1,300	1,600	1,000	1,300	μg/kg
	Water	Control	440	510	700	680	μg/L
	Soil	H_2O_2	120	1,500	13	680	μg/kg
	Water	H_2O_2	300	770	430	140	μg/L
	Soil	NaFe(III)EDTA	1,700	1,900	390	3,300	μg/kg
	Water	NaFe(III)EDTA	400	410	850	1100	μg/L
CA	Soil	Control	1,400	880	1,200	1,000	μg/kg
	Water	Control	14,000	14,000	13,000	8,800	μg/L
	Soil	H_2O_2	55	170	ND (5.9)	ND (6.1)	μg/kg
	Water	H_2O_2	89	87	7.8	7.2	μg/L
	Soil	NaFe(III)EDTA	980	150	210	500	μg/kg
	Water	NaFe(III)EDTA	11,000	11,000	5,700	7,500	μg/L

ND = non detect (detection limit)

Table 10 below summarizes the percent removal of key COI for both tests in groundwater and soil after Day 2 and Day 6. High and low percent removals for TCA and CA are shown for each case.

Table 10: Percent removal of target COI in water and soil following H_2O_2 and NaFe(III)EDTA activated persulfate treatments

Parameter	Media	Treatment	% Removal after Day 2		% Removal after Day 6	
			High	Low	High	Low
TCA	Soil	H_2O_2	90.77	-15.38	98.70	32.00
	Water	H_2O_2	31.82	-75.00	80.00	38.57
	Soil	NaFe(III)EDTA	-6.25	-11.76	70	-746.15
	Water	NaFe(III)EDTA	21.57	19.61	1.16	-27.91
CA	Soil	H_2O_2	96.07	87.86	99.51	99.49
	Water	H_2O_2	99.38	99.36	99.94	99.94
	Soil	NaFe(III)EDTA	82.95	-11.36	79.00	50.00
	Water	NaFe(III)EDTA	21.43	21.43	35.23	14.77

The highest removal efficiency was seen with hydrogen peroxide activated persulfate. The results show that with two applications (after 6 days) of hydrogen peroxide activated persulfate, the highest removal efficiency for TCA ranged from 80% to 98.70%, and that for CA it ranged from 99.51 to 99.94%. On the other hand, the lowest removal efficiency for TCA ranged from 32.00% to 38.57%, and that for CA it ranged from 99.49 to 99.94%. This indicates that the hydrogen peroxide activated persulfate was very effective in treating the target COI in both groundwater and soil after two applications of the oxidant. This shows that oxidant demand is close to 42g sodium persulfate per Kg of soil and 60 g hydrogen peroxide per Kg of soil.

Conclusions

The following conclusions can be drawn from these tests:

1. The site-specific COI can be oxidized by sodium persulfate activated with hydrogen peroxide.
2. Iron activated sodium persulfate was not efficient in treating the site-specific COI.
3. The estimated oxidant demand for the soil is 42 g sodium persulfate per Kg of soil and 60 g hydrogen peroxide per Kg of soil.

Please feel free to call the undersigned if there are any questions or if we can be of any further assistance.

Yours truly,

Adventus Americas, Inc.

Fayaz Lakhwala, Ph.D.
Director, Remedial Design and Engineering Services

Adventus Remediation Technologies, Inc.

Eva Dmitrovic
Project Manager

cc: Dr. J. Mueller – (Adventus, Chicago)
Dr. Alan Seech – (Adventus, Mississauga)

EHC™ is a trademark of Adventus Intellectual Property Inc.

Appendix A

Natural Oxidant Demand (NOD)Test Procedure (Modified from REMLAB-01 VER 1.3)

Purpose: To determine the amount of potassium permanganate required to meet the NOD of the soil

Procedure:

1) Homogenize soil sample using a stainless steel spoon. Minimize handling time to minimize volatile losses.
2) Prepare a 1N potassium permanganate solution (=0.2M, 31.61 g $KmnO_4$ in 1L).
3) Label seven 125-mL glass jars with the date, project number, amount and concentration of potassium permanganate and sequence number. Place a 100-mL graduated cylinder in front of each jar.

Summary of NOD jars

Jar Number	Volume 1N $KMnO_4$ (mL)	Volume Water (mL)	Dosage (mg $KMnO_4$/g soil)	Concentration (mg/L)
1	0.0	75.0	0.00	0
2	0.5	74.5	0.32	211
3	1.5	73.5	0.95	632
4	5.0	70.0	3.16	2,107
5	15.0	60.0	9.50	6,323
6	50.0	25.0	31.61	21,073
7	75.0	0.0	47.42	31,610

4) Weigh out 50 g of soil into each of the seven jars. Record weight of soil in each jar.
5) Pipette the appropriate volume of 1N potassium permanganate solution into each of six graduated cylinders. Note that the first cylinder is for the control and thus does not receive any potassium permanganate. Top up each graduated cylinder, except for number seven, with de-ionized water to a final volume of 75-mL.
6) Add the contents of each graduated cylinder to the corresponding jar. Seal each jar and invert several times to mix the soil and liquid. Record date and time the experiment was started.
7) Invert the jars daily several times to mix the soil and liquid for the duration of the experiment (48 hours or 7 days). Prior to inverting the jars, record any changes in colour of the samples.
8) After 7 days, record the colour in the jars.

9) Sample the supernatant from the control, the jar that has the lowest potassium permanganate concentration (lightest purple colour) and the jar with the next lowest concentration

10) Measure the absorbance of the samples with a spectrophotometer (wavelength set at 525 nm).

11) Prepare a calibration curve in the concentration range of the samples and quantify the permanganate concentrations in the samples.

Appendix B - Initial Characterization Results

Parameter	Soil Initial		Soil Initial Dup		Water Initial	
	39287	units	39288	units	39289	units
Dichlorodifluoromethane	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
Chloromethane	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
Vinyl chloride	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
Bromomethane	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
Chloroethane	ND (120)	ug/kg	ND (120)	ug/kg	4.8	ug/L
Trichlorofluoromethane	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
1,1-Dichloroethene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
Carbon disulfide	ND (120)	ug/kg	ND (120)	ug/kg	ND (5)	ug/L
Acetone	ND (230)	ug/kg	ND (240)	ug/kg	ND (5)	ug/L
Methylene chloride	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
trans-1,2-Dichloroethene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
Methyl-tert-butyl-ether (MTBE)	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
1,1-Dichloroethane	170	ug/kg	880	ug/kg	1.0	ug/L
2,2-Dichloropropane	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
cis-1,2-Dichloroethene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
2-Butanone (MEK)	ND (120)	ug/kg	ND (120)	ug/kg	ND (2)	ug/L
Bromochloromethane	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
Chloroform	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
1,1,1-Trichloroethane	41,000	ug/kg	230,000	ug/kg	ND (1)	ug/L
1,1-Dichloropropene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
Carbon tetrachloride	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
Benzene	ND (29)	ug/kg	ND (29)	ug/kg	ND (1)	ug/L
1,2-Dichloroethane	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
Trichloroethene	ND (29)	ug/kg	120	ug/kg	ND (1)	ug/L
1,2-Dichloropropane	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
Dibromomethane	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
Bromodichloromethane	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
cis-1,3-Dichloropropene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
4-Methyl-2-pentanone (MIBK)	ND (120)	ug/kg	ND (120)	ug/kg	ND (5)	ug/L
Toluene	550	ug/kg	1,100	ug/kg	ND (1)	ug/L
trans-1,3-Dichloropropene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
1,1,2-Trichloroethane	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
Tetrachloroethene	ND (120)	ug/kg	160	ug/kg	ND (1)	ug/L
1,3-Dichloropropane	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
2-Hexanone	ND (120)	ug/kg	ND (120)	ug/kg	ND (5)	ug/L
Dibromochloromethane	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
1,2-Dibromoethane (EDB)	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
Chlorobenzene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
1,1,1,2-Tetrachloroethane	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
Ethylbenzene	49	ug/kg	71	ug/kg	ND (1)	ug/L
m&p-Xylenes	220	ug/kg	310	ug/kg	ND (2)	ug/L
o-Xylene	97	ug/kg	130	ug/kg	ND (1)	ug/L
Styrene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
Bromoform	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
Isopropylbenzene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
Bromobenzene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
1,1,2,2-Tetrachloroethane	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
1,2,3-Trichloropropane	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
n-Propylbenzene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
2-Chlorotoluene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
1,3,5-Trimethylbenzene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
4-Chlorotoluene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
tert-Butylbenzene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
1,2,4-Trimethylbenzene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
sec-Butylbenzene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
1,3-Dichlorobenzene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
p-Isopropyltoluene	ND (120)	ug/kg	160	ug/kg	ND (1)	ug/L
1,4-Dichlorobenzene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
n-Butylbenzene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
1,2-Dichlorobenzene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
1,2-Dibromo-3-chloropropane	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
1,2,4-Trichlorobenzene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
Hexachlorobutadiene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
Naphthalene	120	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
1,2,3-Trichlorobenzene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
1,3,5-Trichlorobenzene	ND (120)	ug/kg	ND (120)	ug/kg	ND (1)	ug/L
% Solids, solid	86.2	%	84.8	%	n/a	
% Moisture, Solids	13.8	%	15.2	%	n/a	
COD	19,000	mg/kg	17,000	mg/kg	33	mg/L
TOC	4,500	mg/kg	6,000	mg/kg	11	mg/L

Appendix C - Day 2 Analytical Data (Water)

		Jar 1			Jar 2			Jar 3			Jar 7			Jar 8			Jar 9		
		Control			6.3 g Na2S2O8 + H2O2 (Day 2)			6.3 g Na2S2O8 + H2O2 (Day 2)			Control			6.3 g Na2S2O8 + NaFe(III)EDTA (Day 2)			6.3 g Na2S2O8 + NaFe(III)EDTA (Day 2)		
Analyte	Units	39713	Qualifier	DL	39714	Qualifier	DL	39715	Qualifier	DL	39716	Qualifier	DL	39717	Qualifier	DL	39718	Qualifier	DL
Chemical Oxygen Demand (COD)	mg/L	310		50	350		50	260		50	270		50	710		50	720		50
Dichlorodifluoromethane	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
Chloromethane	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
Vinyl chloride	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
Bromomethane	ug/L	20	U*	20	1.0	U*	1.0	1.0	U*	1.0	20	U*	20	20	U*	20	20	U*	20
Chloroethane	ug/L	14000		200	89		1.0	87		1.0	14000		200	11000		200	11000		200
Trichlorofluoromethane	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
1,1-Dichloroethene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
Carbon disulfide	ug/L	100	U	100	1.8	J	5.0	2.0	JH	5.0	100	U	100	100	U	100	100	U	100
Acetone	ug/L	100	U	100	770	A	50	750		500	100	U	100	100	U	100	100	U	100
Methylene chloride	ug/L	30		20	7.7		1.0	10	H	1.0	30	H	20	27		20	28		20
trans-1,2-Dichloroethene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
Methyl-tert-butyl-ether (MTBE)	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
1,1-Dichloroethane	ug/L	180		20	21		1.0	27	H	1.0	190		20	170		20	160		20
2,2-Dichloropropane	ug/L	20	U*	20	1.0	U*	1.0	1.0	U*	1.0	20	U*	20	20	U*	20	20	U*	20
cis-1,2-Dichloroethene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
2-Butanone (MEK)	ug/L	100	U	100	5.0	U	5.0	8.9	H	5.0	100	U	100	100	U	100	100	U	100
Bromochloromethane	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
Chloroform	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
1,1,1-Trichloroethane	ug/L	440		20	300		10	770		100	510		20	400		20	410		20
1,1-Dichloropropene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
Carbon tetrachloride	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
Benzene	ug/L	16	J	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
1,2-Dichloroethane	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
Trichloroethene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
1,2-Dichloropropane	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
Dibromomethane	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
Bromodichloromethane	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
cis-1,3-Dichloropropene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
4-Methyl-2-pentanone (MIBK)	ug/L	100	U*	100	5.0	U*	5.0	5.0	U*	5.0	100	U*	100	100	U*	100	100	U*	100
Toluene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
trans-1,3-Dichloropropene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
1,1,2-Trichloroethane	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
Tetrachloroethene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
1,3-Dichloropropane	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
2-Hexanone	ug/L	100	U	100	5.0	U	5.0	5.0	U	5.0	100	U	100	100	U	100	100	U	100
Dibromochloromethane	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
1,2-Dibromoethane (EDB)	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
Chlorobenzene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
1,1,1,2-Tetrachloroethane	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20

Appendix C - Day 2 Analytical Data (Water)

		Jar 1			Jar 2			Jar 3			Jar 7			Jar 8			Jar 9		
		Control			6.3 g $Na_2S_2O_8$ + H_2O_2 (Day 2)			6.3 g $Na_2S_2O_8$ + H_2O_2 (Day 2)			Control			6.3 g $Na_2S_2O_8$ + NaFe(III)EDTA (Day 2)			6.3 g $Na_2S_2O_8$ + NaFe(III)EDTA (Day 2)		
Analyte	Units	39713	Qualifier	DL	39714	Qualifier	DL	39715	Qualifier	DL	39716	Qualifier	DL	39717	Qualifier	DL	39718	Qualifier	DL
Ethylbenzene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
m&p-Xylenes	ug/L	40	U	40	2.0	U	2.0	2.0	U	2.0	40	U	40	40	U	40	40	U	40
o-Xylene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
Styrene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
Bromoform	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
Isopropylbenzene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
Bromobenzene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
1,1,2,2-Tetrachloroethane	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
1,2,3-Trichloropropane	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
n-Propylbenzene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
2-Chlorotoluene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
1,3,5-Trimethylbenzene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
4-Chlorotoluene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
tert-Butylbenzene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
1,2,4-Trimethylbenzene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
sec-Butylbenzene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
1,3-Dichlorobenzene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
p-Isopropyltoluene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
1,4-Dichlorobenzene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
n-Butylbenzene	ug/L	*20*	U*	20	*1.0*	U*	1.0	*1.0*	U*	1.0	*20*	U*	20	*20*	U*	20	*20*	U*	20
1,2-Dichlorobenzene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
1,2-Dibromo-3-chloropropane	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
1,3,5-Trichlorobenzene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
1,2,4-Trichlorobenzene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
Hexachlorobutadiene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
Naphthalene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20
1,2,3-Trichlorobenzene	ug/L	20	U	20	1.0	U	1.0	1.0	U	1.0	20	U	20	20	U	20	20	U	20

Appendix C - Day 2 Analytical Data (Soil)

		Jar 1			Jar 2			Jar 3			Jar 7			Jar 8			Jar 9		
		Control			6.3 g Na2S2O8 + H2O2 (Day 2)			6.3 g Na2S2O8 + H2O2 (Day 2)			Control			6.3 g Na2S2O8 + NaFe(III)EDTA (Day 2)			6.3 g Na2S2O8 + NaFe(III)EDTA (Day 2)		
Analyte	Units	39719	Qualifier	DL	39720	Qualifier	DL	39721	Qualifier	DL	39722	Qualifier	DL	39723	Qualifier	DL	39724	Qualifier	DL
Chemical Oxygen Demand (COD)	mg/Kg	20000		690	7500		370	9600		390	26000		810	14000		610	8200		260
% Solids	%	75.7		0.10	78.7		0.10	77.5		0.10	77.2		0.10	78.0		0.10	82.8		0.10
Dichlorodifluoromethane	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Chloromethane	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Vinyl chloride	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Bromomethane	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Chloroethane	ug/Kg	1400		130	55		6.4	170		6.5	880	H	130	980		130	150		6.0
Trichlorofluoromethane	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
1,1-Dichloroethene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Carbon disulfide	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	5.8	Ja	6.4	6.0	U	6.0
Acetone	ug/Kg	21	*	6.6	440		250	390		260	79	*	6.5	79	*	6.4	120	*	6.0
Methylene chloride	ug/Kg	6.6	U	6.6	9.9		6.4	16		6.5	12	M	6.5	6.4	U	6.4	17		6.0
trans-1,2-Dichloroethene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Methyl-tert-butyl-ether (MTBE)	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
1,1-Dichloroethane	ug/Kg	48		6.6	3.9	Ja	6.4	15		6.5	19		6.5	34		6.4	8.6		6.0
2,2-Dichloropropane	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
cis-1,2-Dichloroethene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
2-Butanone (MEK)	ug/Kg	6.6	U	6.6	24		6.4	51		6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Bromochloromethane	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Chloroform	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
1,1,1-Trichloroethane	ug/Kg	1300		66	120		6.4	1500		65	1600		65	1700		64	1900		60
1,1-Dichloropropene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Carbon tetrachloride	ug/Kg	6.6	U	6.6	6.4	U	6.4	84		6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Benzene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
1,2-Dichloroethane	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Trichloroethene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
1,2-Dichloropropane	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Dibromomethane	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Bromodichloromethane	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
cis-1,3-Dichloropropene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
4-Methyl-2-pentanone (MIBK)	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Toluene	ug/Kg	6.1	Ja	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	4.0	Ja	6.4	5.9	Ja	6.0
trans-1,3-Dichloropropene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
1,1,2-Trichloroethane	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Tetrachloroethene	ug/Kg	3.5	Ja	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	3.2	Ja	6.0
1,3-Dichloropropane	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
2-Hexanone	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Dibromochloromethane	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
1,2-Dibromoethane (EDB)	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Chlorobenzene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0

Appendix C - Day 2 Analytical Data (Soil)

		Jar 1			Jar 2			Jar 3			Jar 7			Jar 8			Jar 9		
		Control			6.3 g Na2S2O8 + H2O2 (Day 2)			6.3 g Na2S2O8 + H2O2 (Day 2)			Control			6.3 g Na2S2O8 + NaFe(III)EDTA (Day 2)			6.3 g Na2S2O8 + NaFe(III)EDTA (Day 2)		
Analyte	Units	39719	Qualifier	DL	39720	Qualifier	DL	39721	Qualifier	DL	39722	Qualifier	DL	39723	Qualifier	DL	39724	Qualifier	DL
1,1,1,2-Tetrachloroethane	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Ethylbenzene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
m&p-Xylenes	ug/Kg	13	U	13	13	U	13	13	U	13	13	U	13	13	U	13	12	U	12
o-Xylene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	*3.5*	Ja	6.4	*3.7*	Ja	6.0
Styrene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Bromoform	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Isopropylbenzene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Bromobenzene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
1,1,2,2-Tetrachloroethane	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
1,2,3-Trichloropropane	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
n-Propylbenzene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
2-Chlorotoluene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
1,3,5-Trimethylbenzene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
4-Chlorotoluene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
tert-Butylbenzene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
1,2,4-Trimethylbenzene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
sec-Butylbenzene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
1,3-Dichlorobenzene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
-Isopropyltoluene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	*6.9*		6.4	*4.3*	Ja	6.0
4-Dichlorobenzene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
n-Butylbenzene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
1,2-Dichlorobenzene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
1,2-Dibromo-3-chloropropane	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
1,3,5-Trichlorobenzene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
1,2,4-Trichlorobenzene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Hexachlorobutadiene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
Naphthalene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0
1,2,3-Trichlorobenzene	ug/Kg	6.6	U	6.6	6.4	U	6.4	6.5	U	6.5	6.5	U	6.5	6.4	U	6.4	6.0	U	6.0

U	analyte was not detected at or above the stated limit
H	Alternate peak selection upon analytical review
M	manually integrated compound
J	result is an estimated value below the reporting limit or a tentatively identified compound (TIC)
*	Batch QC is greater than reporting limit

Appendix D - Day 6 Analytical Data (Water)

		Jar 4			Jar 5			Jar 6			Jar 10			Jar 11			Jar 12		
		Control			12.6 g Na2S2O8 + H2O2 (Day 6)			12.6 g Na2S2O8 + H2O2 (Day 6)			Control			12.6 g Na2S2O8 + NaFe(III)EDTA (Day 6)			12.6 g Na2S2O8 + NaFe(III)EDTA (Day 6)		
Analyte	Units	39725	Qualifier	DL	39726	Qualifier	DL	39727	Qualifier	DL	39728	Qualifier	DL	39729	Qualifier	DL	39730	Qualifier	DL
Chemical Oxygen Demand (COD)	mg/L	300		50	350		50	370		50	290		50	1100		50	1000		50
Dichlorodifluoromethane	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
Chloromethane	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	2.7	H	1.0	4.5	H	1.0
Vinyl chloride	ug/L	10		10	1.0	U	1.0	1.0	U	1.0	9.3	J	10	1.0	U	1.0	1.0	H	1.0
Bromomethane	ug/L	10	U	10	1.0	U	1.0	2.5		1.0	10	U	10	1.0	U	1.0	3.0	H	1.0
Chloroethane	ug/L	13000	H	200	7.8		1.0	7.2		1.0	8800		500	5700		100	7500		200
Trichlorofluoromethane	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
1,1-Dichloroethene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
Carbon disulfide	ug/L	50	U	50	7.9		5.0	8.6		5.0	50	U	50	13	H	5.0	14	H	5.0
Acetone	ug/L	50	U	50	390	M	50	520	M	100	50	U	50	40	H*	5.0	43	H*	5.0
Methylene chloride	ug/L	20		10	6.1		1.0	6.9		1.0	20		10	25	H	1.0	27	H	1.0
trans-1,2-Dichloroethene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
Methyl-tert-butyl-ether (MTBE)	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
1,1-Dichloroethane	ug/L	170		10	4.2		1.0	3.9		1.0	170		10	140		100	150		100
2,2-Dichloropropane	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
cis-1,2-Dichloroethene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
2-Butanone (MEK)	ug/L	50	U	50	15		5.0	17		5.0	50	U	50	27	H	5.0	30	H	5.0
Bromochloromethane	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
Chloroform	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
1,1,1-Trichloroethane	ug/L	700		10	430		10	140	H	20	860		10	850		100	1100		100
1,1-Dichloropropene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
Carbon tetrachloride	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
Benzene	ug/L	12		10	1.0	U	1.0	1.0	U	1.0	11		10	3.8		1.0	3.8		1.0
1,2-Dichloroethane	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
Trichloroethene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0		1.0	1.2		1.0
1,2-Dichloropropane	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
Dibromomethane	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
Bromodichloromethane	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
cis-1,3-Dichloropropene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
4-Methyl-2-pentanone (MIBK)	ug/L	50	U	50	5.0	U	5.0	5.0	U	5.0	50	U	50	5.0	U	5.0	5.0	U	5.0
Toluene	ug/L	8.1	Ja	10	0.98	Ja	1.0	0.93	Ja	1.0	8.6	Ja	10	1.3		1.0	1.2		1.0
trans-1,3-Dichloropropene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
1,1,2-Trichloroethane	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
Tetrachloroethene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.6		1.0	1.9		1.0
1,3-Dichloropropane	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
2-Hexanone	ug/L	50	U	50	5.0	U	5.0	5.0	U	5.0	50	U	50	5.0	U	5.0	5.0	U	5.0
Dibromochloromethane	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
1,2-Dibromoethane (EDB)	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
Chlorobenzene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
1,1,1,2-Tetrachloroethane	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0

Appendix D - Day 6 Analytical Data (Water)

		Jar 4			Jar 5			Jar 6			Jar 10			Jar 11			Jar 12		
		Control			12.6 g $Na_2S_2O_8$ + H_2O_2 (Day 6)			12.6 g $Na_2S_2O_8$ + H_2O_2 (Day 6)			Control			12.6 g $Na_2S_2O_8$ + NaFe(III)EDTA (Day 6)			12.6 g $Na_2S_2O_8$ + NaFe(III)EDTA (Day 6)		
Ethylbenzene	ug/L	*19*		10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
m&p-Xylenes	ug/L	*9.8*	*J*	20	2.0	U	2.0	2.0	U	2.0	20	U	20	2.0	U	2.0	2.0	U	2.0
o-Xylene	ug/L	*3.0*	*Ja*	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
Styrene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
Bromoform	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
Isopropylbenzene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
Bromobenzene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
1,1,2,2-Tetrachloroethane	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
1,2,3-Trichloropropane	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
n-Propylbenzene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
2-Chlorotoluene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
1,3,5-Trimethylbenzene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
4-Chlorotoluene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
tert-Butylbenzene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
1,2,4-Trimethylbenzene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
sec-Butylbenzene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
1,3-Dichlorobenzene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
p-Isopropyltoluene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
1,4-Dichlorobenzene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
n-Butylbenzene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
1,2-Dichlorobenzene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
1,2-Dibromo-3-chloropropane	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
1,3,5-Trichlorobenzene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
1,2,4-Trichlorobenzene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
Hexachlorobutadiene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
Naphthalene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0
1,2,3-Trichlorobenzene	ug/L	10	U	10	1.0	U	1.0	1.0	U	1.0	10	U	10	1.0	U	1.0	1.0	U	1.0

Appendix D - Day 6 Analytical Data (Soil)

		Jar 4			Jar 5			Jar 6			Jar 10			Jar 11			Jar 12		
		Control			12.6 g Na2S2O8 + H2O2 (Day 6)			12.6 g Na2S2O8 + H2O2 (Day 6)			Control			12.6 g Na2S2O8 + NaFe(III)EDTA (Day 6)			12.6 g Na2S2O8 + NaFe(III)EDTA (Day 6)		
Analyte	Units	39731	Qualifier	DL	39732	Qualifier	DL	39733	Qualifier	DL	39734	Qualifier	DL	39735	Qualifier	DL	39736	Qualifier	DL
Chemical Oxygen Demand (COD)	mg/Kg	***9100***		680	4500		730	5200		450	6500		330	15000		460	7000		300
% Solids	%	***77.8***		0.10	***84.9***		0.10	***82.3***		0.10	***80.2***		0.10	80.3		0.10	***83.0***		0.10
Dichlorodifluoromethane	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Chloromethane	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Vinyl chloride	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Bromomethane	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Chloroethane	ug/Kg	***1200***		64	5.9	U	5.9	6.1	U	6.1	***1000***		62	***210***		6.2	***500***		120
Trichlorofluoromethane	ug/Kg	***6.4***	***U****	6.4	5.9	U*	5.9	***6.1***	***U****	6.1	***6.2***	***U****	6.2	***6.2***	***U****	6.2	6.0	U*	6.0
1,1-Dichloroethene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Carbon disulfide	ug/Kg	6.4	U	6.4	5.9	U	5.9	***7.1***		6.1	6.2	U	6.2	6.2	U	6.2	***9.8***		6.0
Acetone	ug/Kg	6.6		6.4	***150***		5.9	***130***		6.1	***150***		6.2	***91***		6.2	***43***		6.0
Methylene chloride	ug/Kg	***5.5***	***J****	6.4	5.9	U	5.9	***12***		6.1	***19***		6.2	***7.3***		6.2	***6.9***		6.0
trans-1,2-Dichloroethene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Methyl-tert-butyl-ether (MTBE)	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
1,1-Dichloroethane	ug/Kg	***53***		6.4	5.9	U	5.9	6.1	U	6.1	***42***		6.2	***8.1***		6.2	***30***		6.0
2,2-Dichloropropane	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
cis-1,2-Dichloroethene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
2-Butanone (MEK)	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	***12***		6.2	***21***		6.0
Bromochloromethane	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Chloroform	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
1,1,1-Trichloroethane	ug/Kg	***1000***		64	***13***		5.9	***680***		61	***1300***		62	***390***		62	***3300***		60
1,1-Dichloropropene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Carbon tetrachloride	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Benzene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
1,2-Dichloroethane	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Trichloroethene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
1,2-Dichloropropane	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Dibromomethane	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Bromodichloromethane	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
cis-1,3-Dichloropropene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
4-Methyl-2-pentanone (MIBK)	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Toluene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	***8.8***		6.2	6.2	U	6.2	6.0	U	6.0
trans-1,3-Dichloropropene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0

Appendix D - Day 6 Analytical Data (Soil)

		Jar 4			Jar 5			Jar 6			Jar 10			Jar 11			Jar 12		
		Control			12.6 g $Na_2S_2O_8$ + H_2O_2 (Day 6)			12.6 g $Na_2S_2O_8$ + H_2O_2 (Day 6)			Control			12.6 g $Na_2S_2O_8$ + NaFe(III)EDTA (Day 6)			12.6 g $Na_2S_2O_8$ + NaFe(III)EDTA (Day 6)		
Analyte	Units	39731	Qualifier	DL	39732	Qualifier	DL	39733	Qualifier	DL	39734	Qualifier	DL	39735	Qualifier	DL	39736	Qualifier	DL
1,1,2-Trichloroethane	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Tetrachloroethene	ug/Kg	*3.7*	*Ja*	6.4	5.9	U	5.9	6.1	U	6.1	*3.5*	Ja	6.2	6.2	U	6.2	6.0	U	6.0
1,3-Dichloropropane	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
2-Hexanone	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Dibromochloromethane	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
1,2-Dibromoethane (EDB)	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Chlorobenzene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
1,1,1,2-Tetrachloroethane	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Ethylbenzene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
m&p-Xylenes	ug/Kg	13	U	13	12	U	12	12	U	12	12	U	12	12	U	12	12	U	12
o-Xylene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Styrene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Bromoform	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Isopropylbenzene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Bromobenzene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
1,1,2,2-Tetrachloroethane	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
1,2,3-Trichloropropane	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
n-Propylbenzene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
2-Chlorotoluene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
1,3,5-Trimethylbenzene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
4-Chlorotoluene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
tert-Butylbenzene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
1,2,4-Trimethylbenzene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
sec-Butylbenzene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
1,3-Dichlorobenzene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
p-Isopropyltoluene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
1,4-Dichlorobenzene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
n-Butylbenzene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
1,2-Dichlorobenzene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
1,2-Dibromo-3-chloropropane	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
1,3,5-Trichlorobenzene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
1,2,4-Trichlorobenzene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Hexachlorobutadiene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0
Naphthalene	ug/Kg	6.4	U	6.4	5.9	U	5.9	6.1	U	6.1	6.2	U	6.2	6.2	U	6.2	6.0	U	6.0

U	analyte was not detected at or above the stated limit
H	Alternate peak selection upon analytical review
M	manually integrated compound
J	result is an estimated value below the reporting limit or a tentatively identified compound (TIC)
*	Batch QC is greater than reporting limit

Appendix E: Sodium Persulfate Titrations

June 23/05 - Sampling #1 (Day 2)

Sample ID	Burette Start (mL)	Burette End (mL)	mL of KMnO4 used to titrate the blank	mL of KMnO4 used to titrate the sample	Normality of KMnO4 solution used	Volume of sample (mL)	g/L sodium persulfate	g/L sodium persulfate consumed
Blank	**0**	**19.7**	**19.7**					
Control (Jar 1)	0	19.9	19.7	19.9	0.5	20	**-0.6**	control
6.3 g Na2S2O8 + H2O2 (Jar 2)	0	19.9	19.7	19.9	0.5	20	**-0.6**	0
6.3 g Na2S2O8 + H2O2 (Jar 3)	19.9	39.6	19.7	19.7	0.5	20	**0.0**	0
Control (Jar 7)	0	19.9	19.7	19.9	0.5	20	**-0.6**	control
6.3 g Na2S2O8 + NaFe(III)EDTA (Jar 8)	19.9	37.9	19.7	18	0.5	20	**5.1**	1.2
6.3 g Na2S2O8 + NaFe(III)EDTA (Jar 9)	0	18	19.7	18	0.5	20	**5.1**	1.2

June 27/05 - Sampling #2 (Day 6 from start of expt., Day 4 from 2nd persulfate application)

Sample ID	Burette Start (mL)	Burette End (mL)	mL of KMnO4 used to titrate the blank	mL of KMnO4 used to titrate the sample	Normality of KMnO4 solution used	Volume of sample (mL)	g/L sodium persulfate	g/L sodium persulfate
Blank	**0**	**19.5**	**19.5**					
Control (Jar 4)	20	39.5	19.5	19.5	0.5	20	**0.0**	control
12.6 g Na2S2O8 + H2O2 (Jar 5)	0	19.8	19.5	19.8	0.5	20	**-0.9**	0
12.6 g Na2S2O8 + H2O2 (Jar 6)	21	41.4	19.5	20.4	0.5	20	**-2.7**	0
Control (Jar 10)	1	20.5	19.5	19.5	0.5	20	**0.0**	control
12.6 g Na2S2O8 + NaFe(III)EDTA (Jar 11)	20.5	36.2	19.5	15.7	0.5	20	**11.3**	1.3
12.6 g Na2S2O8 + NaFe(III)EDTA (Jar 12)	28.3	44.5	19.5	16.2	0.5	20	**9.8**	2.8
12.6 g Na2S2O8 + NaFe(III)EDTA (Jar 11) Repeated	0	16	19.5	16.0	0.5	20	**10.4**	2.2
12.6 g Na2S2O8 + NaFe(III)EDTA (Jar 12) Repeated	16.1	32.2	19.5	16.1	0.5	20	**10.1**	2.5

APPENDIX H

LABORATORY DATA QA/QC REVIEW

DATA VALIDATION REVIEW
PROJECT: COLUMBIA CEMENT, FREEPORT, LONG ISLAND, NY
DATE SAMPLES COLLECTED: SEPTEMBER 20 AND 21, 2005
JOB NO.: 38546433

LAB REPORT No: J10451

1.0 INTRODUCTION

This Data Validation Review has been performed in accordance with the requirements specified in the USEPA Region II standard operating procedures (SOP) based on the Draft USEPA Contract Laboratory Program Scope of work (CLP SOW): Volatile Organics Analysis of Ambient Air in Canisters, dated December 1991, Revision VCAA01.0, and USEPA TO-15 methodology. The data validation review requirements are applied such that specifications of the methods take precedence over the specifications of the USEPA Region II data review guidelines in those instances where the specifications differ.

The objective of the review was to assess data usability and compliance with the New York State Department of Environmental Conservation (NYSDEC) Analytical Service Protocol (ASP) Category B data deliverable requirements. The Data Validation Review provides an interpretation of data usability based on the reported quality control parameters. Thirteen ambient air summa canister samples were collected by URS Corporation – Cranford, New Jersey, and submitted to Accutest Laboratories of Dayton, New Jersey (NYSDEC Certification No. 10983). Section 2.0 of this report summarizes the samples included in this review and the analyses performed. The samples were analyzed following USEPA TO-15 methodology. The laboratory analytical data set contained herein was prepared in accordance with NYSDEC ASP Category B Data Deliverable Format (Exhibit B).

The organic data quality review is based on the following parameters:

- * Hold Times
- * Blank Contamination
- * GC/MS Performance Check (Tuning) Summaries
- * System Monitoring Compound (Surrogate) Recoveries
- Internal Standard Area Performance
- * Initial and Continuing Calibration Results
- * Blank Spike (BS) and Blank Spike Duplicate (BSD) Summaries
- Matrix Duplicate Summaries
- * Summa Canister Cleaning Certificaion
- * Target Compound Identification and Quantitation

* All criteria were met for this parameter.

This report was prepared to provide a critical review of the laboratory analysis and reported chemical results. Overall, the data quality is acceptable. The results of the Data Validation Review are presented in Section 3.0. Data qualifiers, when applicable, are placed next to the

results so that the data user can assess the qualitative and/or quantitative reliability of the reported result.

2.0 SAMPLES INCLUDED IN REVIEW

Lab Report No. J10451

Sample ID	Lab ID	Date Collected	Test Requested
SG-05-07	J10451-01	9/21/05	TO-15
SG-05-05	J10451-02	9/21/05	TO-15
SG-05-03	J10451-03	9/21/05	TO-15
SG-05-11	J10451-04	9/21/05	TO-15
SG-05-04	J10451-05	9/21/05	TO-15
SG-05-01	J10451-06	9/21/05	TO-15
SG-05-02	J10451-07	9/20/05	TO-15
SG-05-AMB-W	J10451-08	9/20/05	TO-15
SG-05-08	J10451-09	9/20/05	TO-15
SG-05-09	J10451-10	9/20/05	TO-15
SG-05-AMB-E	J10451-11	9/20/05	TO-15
SG-05-10	J10451-12	9/20/05	TO-15
SG-05-06	J10451-13	9/21/05	TO-15

Legend:

TO-15 = Toxic Organic Compounds (Volatile Organic Compounds) following USEPA Method TO-15.

3.0 RESULTS

3.1 GENERAL COMMENTS

With regard to the data package deliverables, most of the NYSDEC ASP Category B Data Deliverable format requirements were met, with the exception of one correctable deficiency. Please note that this deficiency does not impact data usability.

- In the VOA analysis of Data Set J10451, the laboratory did not include the manual integration for the target compounds methyl ethyl ketone and 1,4-dioxane associated with the initial calibration standard 0.5 PPBV dated 9/26/05 at 15:41 (file ID 2W4556). The laboratory was contacted and the missing raw data was forwarded to URS. No further action is required from the laboratory.

3.2 ORGANIC QUALIFIERS

Hold Times: Technical hold times were assessed by comparing the sample dates with that of the preparation dates and/or analysis dates.

- The project samples associated with Data Set J10451 were analyzed within the required hold time for VOA analyses. No qualifier is required.

Blank Contamination: Laboratory method blank is an unused, certified canister that has not left the laboratory. The blank canister is pressurized with humidified, ultra-pure zero air and carried through the same analytical procedure as the investigative sample. Air canister laboratory method blanks are used to identify whether the investigative samples have been contaminated during sample preparation, sample analysis or from a previous sample (instrument carry-over).

- No VOA target compound contaminants were detected in the laboratory method blanks associated with the reviewed data set. No qualifier is required.

GC/MS Performance Check (Tuning) Summary: Gas chromatograph/mass spectrometer (GC/MS) instrument tuning and performance checks are performed to ensure the instrument's ability to provide appropriate mass-resolution, identification and sensitivity.

- The bromofluorobenzene (BFB) tuning compound mass-ion abundance criteria for the volatile organic compound analyses were reported within control limits. No qualifier is required.

System Monitoring Compound (Surrogate) Recoveries: System monitoring compounds (surrogates) are those compounds, which are not expected to be detected in the investigative samples but are chemically similar to the analytes of interest. Surrogate compound percent recoveries are used to assess extraction efficiencies, possible matrix effects and overall analytical accuracy.

- The VOA surrogate recoveries fell within control limits for the reviewed project samples. No qualifier is required.

Internal Standards Area Performance: Internal standards are analytes of interest, which are added to the investigative samples prior to analysis to ensure that GC/MS sensitivity and responses remain stable. Internal standards are reported with the VOA analyses.

- The area count of the VOA internal standard, chlorobenzene-d5 (CBZ), fell outside the upper control limit for sample SG-05-01 (Data Set J10451). Due to the target compound concentrations exceeding the linear calibration range requirements, the sample was re-analyzed at a 1:200 dilution and the CBZ area count fell within control limits. The initial analysis of sample SG-05-01 was reported by the laboratory and deemed usable. The reported positive m/p-xylene and xylenes (total) results in this sample quantitated using the internal standard CBZ are regarded as estimated values and are flagged (J) estimated on the laboratory summary pages and on the summary table. There is no impact on the non-detected VOA results in sample SG-05-01 quantitated using this internal standard and no qualifier is required.

- The VOA internal standard area counts and retention times fell within control limits for the remaining project samples of Data Set J10451. No qualifier is required.

Initial and Continuing Calibration Results: Control limits for initial and continuing instrument calibrations are established to ensure that the instrument is capable of producing accurate quantitative data at the beginning and throughout each of the analyses.

- The VOA target compound initial and continuing calibration response factors, percent relative standard deviations (%RSD) and percent differences (%D) associated with the reviewed project samples fell within acceptable control limits. No qualifier is required.

Blank Spike (BS) and Blank Spike Duplicate (BSD) Summaries: Blank spikes are blank samples fortified (spiked) with known concentrations of analytes of interest. The percent recoveries and/or duplicate results of the blank spike and their duplicates are used to assess extraction efficiencies, and overall analytical accuracy and precision.

- The VOA BS/BSD results (recoveries and relative percent differences or RPD) associated with Data Set J10451 fell within control limits providing a positive indication of the overall accuracy and precision associated with these analyses. No qualifier is required.

Matrix Duplicate Summaries: Duplicate samples are used to demonstrate acceptable laboratory method precision at the time of analysis. Duplicate results are used to assess possible matrix effects, and overall analytical accuracy and precision.

- The VOA SG-05-AMB-E Duplicate (DUP) RPD associated with sample SG-05-AMB-W and SG-05-AMB-E and the dilution analyses of samples SG-05-04, SG-05-10 and SG-05-06 (Data Set J10451) fell outside the control limits for ethanol. The positive ethanol results in samples SG-05-AMB-W and SG-05-AMB-E are regarded as estimated values and are flagged (J) on the laboratory summary pages and on the summary table. There is no impact on the data quality of ethanol in the dilution analyses of samples SG-05-04, SG-05-10 and SG-05-06 since ethanol results are reported from the initial analysis for these samples. No qualifier is required.

- The VOA DUP RPD fell within control limits for the remaining project samples of Data Set J10451. No qualifier is required.

Summa Canister Cleaning Certification: Each canister is evacuated and then pressurized with humidified ultra-pure zero air. This procedure is repeated a total of three times for each canister in the batch. One canister is randomly selected from the batch and then analyzed for clean test. Summa Canister Cleaning Certification verifies that the canister used to certify the canister batch is clean and free of any contaminants before sample collection.

- No VOA target compound contaminants were detected in the batch of canisters associated with the reviewed data set. No qualifier is required.

Target Compound Identification and Quantitation: The laboratory calculations are verified and compound identifications are reviewed and assessed by the data reviewer.

- Samples SG-05-07, SG-05-03, SG-05-08 and SG-05-09 (Data Set J10451) were analyzed at 1:4 and 1:2 dilutions, respectively, for VOA, resulting in elevated detection limits, due to target compound concentrations exceeding linear calibration range requirements. No qualifier is required.

- The following project samples were re-analyzed at elevated dilutions for VOA due to the target compound concentrations exceeding the linear calibration range requirements. The VOA results reported on the summary tables are hybrid of both the initial and dilution analyses. No qualifier is required.

Data Set	Associated Sample and Dilution
J10451	SG-05-05 (1:8 and 1:20)
	SG-05-11 (1:8 and 1:200)
	SG-05-04 (1:8 and 1:200)
	SG-05-01 (1:40 and 1:200)
	SG-05-02 (1:8 and 1:80)
	SG-05-10 (1:8 and 1:20)
	SG-05-06 (1:8 and 1:20)

- The GC/MS raw data (quantitation reports, chromatograms and mass-spectra) were provided for review. No laboratory calculation errors were noted for samples selected for verification during the Data Validation Review. No further action is required from the laboratory.

Additional Comments

- As per the requirements, values calculated below the Reporting Limit (RL) should be considered estimated and are flagged (J) on the summary table.

4.0 CONCLUSIONS

Overall, the data quality is acceptable. The Data Validation Review has identified aspects of the analytical data that require qualification. Data qualifiers, when applicable, are placed next to the results so that the data user can assess the qualitative and/or quantitative reliability of the reported results. The laboratory analytical data contained herein are deemed usable and in compliance with the NYSDEC ASP Category B Data Deliverable format requirements. To confidently use any of the data within the data set, the data user should understand the limitations and qualifications presented.

DATA VALIDATION REVIEW
PROJECT: COLUMBIA CEMENT, FREEPORT, LONG ISLAND, NY
DATE SAMPLES COLLECTED: OCTOBER 6, 7 AND 8, 2004
JOB NO.: 38546433

LAB REPORT No: N80188

1.0 INTRODUCTION

This Data Validation Review has been performed in accordance with the requirements specified in the standard operating procedures for the validation of volatile organic data using USEPA Region II SW-846 Method 8260B, SOP HW-24, Rev. 1, dated June 1999 and SW-846 methodologies. The data validation review requirements are applied such that specifications of the methods take precedence over the specifications of the USEPA Region II data review guidelines in those instances where the specifications differ.

The objective of the review was to assess data usability and compliance with New York State Department of Environmental Conservation (NYSDEC) Analytical Service Protocol (ASP) Category B data deliverable requirements. The Data Validation Review provides an interpretation of data usability based on the reported quality control parameters. Soil samples and field-blank and trip-blank samples were collected by URS Corporation – Cranford, New Jersey, and submitted to Accutest Laboratories of Dayton, New Jersey (NYSDEC Certification No. 10983). Fifty-five soil samples, one field-blank sample and one trip-blank sample from Accutest Data Set N80188 were selected for data validation review to assess the overall data quality. Section 2.0 of this report summarizes the samples included in this review and the analyses performed. The samples were analyzed following USEPA SW-846 methodologies. The laboratory analytical data set contained herein was prepared in accordance with NYSDEC ASP Category B Data Deliverable Format (Exhibit B).

The organic data quality review is based on the following parameters:

  Hold Times
  Blank Contamination
* GC/MS Performance Check (Tuning) Summaries
* System Monitoring Compound (Surrogate) Recoveries
* Internal Standard Area Performance
  Initial and Continuing Calibration Results
* Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Summaries
* Target Compound Identification and Quantitation
  Tentatively Identified Compounds

* All criteria were met for this parameter.

This report was prepared to provide a critical review of the laboratory analysis and reported chemical results. Overall, the data quality is acceptable. The results of the Data Validation Review are presented in Section 3.0. Data qualifiers, when applicable, are placed next to the results so that the data user can assess the qualitative and/or quantitative reliability of the reported result.

2.0 SAMPLES INCLUDED IN REVIEW

Sample ID	Lab ID	Date Collected	Test Requested
		Lab Report No. N80188	
D-07-10-12	N80188-01	10/6/04	TCL VOA+10
D-07-16-18	N80188-02	10/6/04	TCL VOA+10
D-07-20-22	N80188-03	10/6/04	TCL VOA+10
T-01-16-18	N80188-06	10/6/04	TCL VOA+10
T-01-20-22	N80188-07	10/6/04	TCL VOA+10
T-02-16-18	N80188-10	10/6/04	TCL VOA+10
T-02-20-22	N80188-11	10/6/04	TCL VOA+10
T-02-24-26	N80188-12	10/6/04	TCL VOA+10
T-02-28-30	N80188-13	10/6/04	TCL VOA+10
T-03-16-18	N80188-14	10/6/04	TCL VOA+10
T-03-20-22	N80188-15	10/6/04	TCL VOA+10
T-03-24-26	N80188-16	10/6/04	TCL VOA+10
T-03-28-30	N80188-17	10/6/04	TCL VOA+10
T-04-16-18	N80188-18	10/6/04	TCL VOA+10
T-04-20-22	N80188-19	10/6/04	TCL VOA+10
T-05-16-18	N80188-22	10/6/04	TCL VOA+10
T-05-20-22	N80188-23	10/6/04	TCL VOA+10
T-06-16-18	N80188-26	10/6/04	TCL VOA+10
T-06-20-22	N80188-27	10/6/04	TCL VOA+10
T-07-16-18	N80188-30	10/7/04	TCL VOA+10
T-07-20-22	N80188-31	10/7/04	TCL VOA+10
T-07-24-26	N80188-32	10/7/04	TCL VOA+10
T-07-28-30	N80188-33	10/7/04	TCL VOA+10
T-08-16-18	N80188-34	10/7/04	TCL VOA+10
T-08-20-22	N80188-35	10/7/04	TCL VOA+10
T-09-16-18	N80188-38	10/7/04	TCL VOA+10
T-09-20-22	N80188-39	10/7/04	TCL VOA+10
T-08-14-15	N80188-42	10/7/04	TCL VOA+10
T-10-16-18	N80188-43	10/7/04	TCL VOA+10
T-10-20-22	N80188-44	10/7/04	TCL VOA+10
D-01-10-12	N80188-47	10/7/04	TCL VOA+10
D-01-16-18	N80188-48	10/7/04	TCL VOA+10
D-01-20-22	N80188-49	10/7/04	TCL VOA+10
D-02-10-12	N80188-52	10/7/04	TCL VOA+10
D-02-16-18	N80188-53	10/7/04	TCL VOA+10
D-02-20-22	N80188-54	10/7/04	TCL VOA+10
D-03-10-12	N80188-58	10/7/04	TCL VOA+10
D-03-16-18	N80188-59	10/8/04	TCL VOA+10
D-03-20-22	N80188-60	10/8/04	TCL VOA+10
D-04-10-12	N80188-63	10/8/04	TCL VOA+10
D-04-16-18	N80188-64	10/8/04	TCL VOA+10
D-04-20-22	N80188-65	10/8/04	TCL VOA+10
D-05-10-12	N80188-68	10/8/04	TCL VOA+10
D-05-16-18	N80188-69	10/8/04	TCL VOA+10
D-05-20-22	N80188-70	10/8/04	TCL VOA+10
D-06-10-12	N80188-73	10/8/04	TCL VOA+10
D-06-16-18	N80188-74	10/8/04	TCL VOA+10
D-06-20-22	N80188-75	10/8/04	TCL VOA+10
D-08-10-12	N80188-78	10/8/04	TCL VOA+10
D-08-16-18	N80188-79	10/8/04	TCL VOA+10
D-08-20-22	N80188-80	10/8/04	TCL VOA+10
D-08-24-26	N80188-81	10/8/04	TCL VOA+10
D-03-10-12	N80188-83	10/8/04	TCL VOA+10

Sample ID	Lab ID	Date Collected	Test Requested
		Lab Report No. N80188 (continued)	
TRIP BLANK	N80188-84	10/8/04	TCL VOA+10
FIELD BLANK	N80188-85	10/8/04	TCL VOA+10
D-09-12-14	N80188-86	10/8/04	TCL VOA+10
D-09-14-16	N80188-87	10/8/04	TCL VOA+10

Legend:

TCL VOA +10 = Target Compound List Volatile Organic Compounds plus Forward Library Searches following USEPA SW-846 Method 8260B.

3.0 RESULTS

3.1 GENERAL COMMENTS

With regard to the data package deliverables, most of the NYSDEC ASP Category B Data Deliverable format requirements were met, with the exception of the following correctable deficiencies. Please note that these deficiencies do not impact data usability.

- In the TCL VOA analysis of Data Set N80188, the trip-blank sample (Trip Blank) collection date and time were reported incorrectly as 10/8/04 and 14:20, respectively, on the Sample Summary (page 6), Sample Preparation and Analysis Summary (page 209) and Internal Sample Tracking Chronicle (page 242). Based on a review of the associated Chain-of-Custody (page 218), the correct collection date and time are 10/4/04 and 18:00, respectively. This reviewer has corrected and initialed these transcriptional errors on the appropriate pages. No further action is required from the laboratory.

- In the TCL VOA analysis of sample D-08-10-12 (Data Set N80188), the result summary for the second dilution analysis (file ID S68042) was omitted from the result summary section. However, it was reported in the GC/MS sample data section 1-B. This reviewer has copied the associated pages (pages 1376 and 1377) and inserted them in the result summary section as pages 184A and 184B. No further action is required from the laboratory.

3.2 ORGANIC QUALIFIERS

Hold Times: Technical hold times were assessed by comparing the sample dates with that of the preparation dates and/or analysis dates.

- The following samples were analyzed 3 to 5 days outside the 14-day hold time requirement for TCL VOA. The positive and non-detected TCL VOA results in these samples are regarded as estimated values and are flagged (J) and (UJ), respectively, on the laboratory summary pages and on the summary table.

Data Set	Associated Sample
N80188	5 days: T-02-24-26, T-02-28-30, T-03-24-26 and T-03-28-30; 4 days: T-07-24-26 and T-07-28-30 and 3 days: D-08-24-26

- The remaining project samples associated with Data Set N80188 were analyzed within the required hold time for TCL VOA analyses. No qualifier is required.

- The sample cooler temperatures upon laboratory verified time of sample receipt (VTSR) fell within the 4°C (+2°C) requirement. No qualifier is required.

Blank Contamination: Laboratory method blanks are clean liquid and/or solid matrix samples prepared by the analytical laboratory and analyzed in the same manner as the investigative samples. Water laboratory method blanks are used to identify whether investigative samples have been contaminated during sample preparation, sample analysis or from a previous sample (instrument carry-over).

Field-blanks consist of deionized water poured over or through decontaminated sampling equipment and collected into the sample bottles. Field-blanks measure contamination potentially caused by inadequate decontamination of sampling equipment. Trip-blanks are carbon-free deionized water samples that accompany volatile investigative samples during each stage of shipment, storage and analysis. Trip-blanks are used to assess the potential for artificial introduction of volatile compounds into the investigative samples during the transportation and sample handling processes.

- No TCL VOA contaminants were detected in the laboratory method blanks, as well as in the storage blank, field-blank and trip-blank samples associated with the reviewed project samples. No qualifier is required.

- VOA Tentatively Identified Compounds (TICs), consisting of pentafluorobenzene, was tentatively identified in the laboratory method blanks (VBLK23, VBLK24 and VBLK25) associated with Data Set N80188. The positive pentafluorobenzene TICs tentatively identified in the following project samples, eluting at similar retention times, are qualitatively questionable. These TICs are negated on the laboratory summary pages and on the total estimated VOA TICs reported on the summary table.

  Associated samples

  D-07-20-22, T-04-20-22, T-05-20-22, T-06-16-18,
  T-06-20-22, T-07-16-18, T-07-20-22, T-08-20-22,
  T-09-16-18 and T-09-20-22

- VOA TICs consisting of 1,4-dichlorobenzene-d4, was tentatively identified in the laboratory method blank (VBLK26) associated with Data Set N80188. The positive 1,4-dichlorobenzene TICs, eluting at similar retention times and tentatively identified in samples T-03-16-18, D-04-16-18, D-04-20-22 and D-05-10-12, are qualitatively questionable. These TICs are negated on the laboratory summary pages and on the total estimated VOA TICs reported on the summary table.

GC/MS Performance Check (Tuning) Summary: Gas chromatograph/mass spectrometer (GC/MS) instrument tuning and performance checks are performed to ensure the instrument's ability to provide appropriate mass-resolution, identification and sensitivity.

- The bromofluorobenzene (BFB) tuning compound mass-ion abundance criteria for the volatile organic compound analyses were reported within control limits. No qualifier is required.

System Monitoring Compound (Surrogate) Recoveries: System monitoring compounds (surrogates) are those compounds, which are not expected to be detected in the investigative samples but which are chemically similar to the analytes of interest. Surrogate compound percent recoveries are used to assess extraction efficiencies, possible matrix effects and overall analytical accuracy.

- The VOA surrogate recoveries fell within control limits for the reviewed project samples of Data Set N80188. No qualifier is required.

Internal Standards Area Performance: Internal standards are analytes of interest, which are added to the investigative samples prior to analysis to ensure that GC/MS sensitivity and responses remain stable. Internal standards are reported with the volatile analysis.

- The TCL VOA internal standard area counts and retention times fell within control limits for the reviewed project samples associated with Data Set N80188. No qualifier is required.

Initial and Continuing Calibration Results: Control limits for initial and continuing instrument calibrations are established to ensure that the instrument is capable of producing accurate quantitative data at the beginning and throughout each of the analyses.

- The TCL VOA target compound initial and continuing calibration response factors associated with the reviewed project samples fell within acceptable control limits. No qualifier is required.

- High percent relative standard deviation (%RSD >15 but <50) was reported for the initial calibration response factors for the TCL VOA compound, acetone, associated with the reviewed project samples of Data Set N80188 (with the exception of samples D-07-10-12, T-03-20-22, Trip Blank, Field Blank, D-07-10-12 DL, T-03-16-18 DL, T-03-20-22 DL, T-08-16-18 DL, D-01-16-18 DL and D-08-16-18 DL). The positive acetone results in the referenced project samples are regarded as estimated values and are flagged (J) on the laboratory summary pages and on the summary tables. There is no impact on the non-detected acetone results in the associated project samples and no qualifier is required.

- A high percent difference (%D >20 but <90) was reported between the initial and continuing calibration response factors for the following TCL VOA compounds associated with the reviewed project samples. The positive and non-detected TCL VOA results are regarded as estimated values and are flagged (J) and (UJ), respectively, on the laboratory summary pages and on the summary tables.

Data Set	Compounds	Associated Samples
N80188	Acetone, 2-Butanone and 2-Hexanone	T-09-16-18, T-08-14-15, T-10-20-22, D-01-10-12, D-01-20-22, D-02-10-12, D-02-20-22, T-02-20-22 DL, T-07-20-22 DL, T-02-16-18, T-10-16-18, D-02-16-18, D-03-10-12, D-06-10-12, D-08-20-22 and D-03-10-12
	Acetone and 2-Hexanone	T-03-16-18, D-03-16-18, D-03-20-22, D-04-10-12, D-04-16-18, D-04-20-22, D-05-10-12, D-05-16-18, D-05-20-22, D-06-16-18, D-06-20-22, D-08-16-18, D-09-12-14 and D-09-14-16
	2-Hexanone	T-08-16-18, D-01-16-18, D-08-10-12 and T-02-16-18 DL
	Acetone and 4-Methyl-2-Pentanone	T-08-16-18 DL, D-01-16-18 DL and D-08-10-12 DL
	Acetone and 2-Butanone	T-03-20-22 DL

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Summaries: Matrix spikes are samples spiked with known concentrations of analytes of interest. The MS/MSD percent recoveries and duplicate results are used to assess extraction efficiencies, possible matrix effects, and overall analytical accuracy and precision.

Blank spikes (BS) are blank samples fortified (spiked) with known concentrations of compounds of interest. The blank spike percent recoveries are used to assess extraction efficiencies and overall analytical accuracy.

- The TCL VOA MS/MSD/BS results (recoveries and relative percent difference or RPD) associated with Data Set N80188 fell within acceptable control limits providing a positive indication of the overall accuracy and precision associated with these analyses. No qualifier is required.

Target Compound Identification and Quantitation: The laboratory calculations are verified and compound identifications are reviewed and assessed by the data reviewer.

- The following project samples were re-analyzed at elevated dilutions for TCL VOA due to the target compound concentrations exceeding the linear calibration range requirements. Both the TCL VOA initial and dilution analysis results are reported on the laboratory summary pages. No qualifier is required.

Data Set	Associated Sample and Dilution
N80188	T-02-16-18 (undiluted and 1:2) T-02-20-22 (undiluted and 1:5) T-07-20-22 (undiluted and 1:5)

- The following project samples were re-analyzed at elevated dilutions (as a medium level soil) for TCL VOA due to the target compound concentrations exceeding the linear calibration range requirements. Both the TCL VOA initial and dilution analysis results are reported on the laboratory summary pages. No qualifier is required.

Data Set	Associated Sample and Dilution
N80188	D-07-10-12 (1:50 and 1:500) T-03-16-18 (1:10 and 1:100) T-03-20-22 (1:250 and 1:12,500) T-08-16-18 (1:5 and 1:500) D-01-16-18 (1:10, 1:1,000 and 1:2,000) D-08-10-12 (1:10, 1:500 and 1:2,500)

- Although no target compounds exceeded linear calibration range requirements, sample D-04-10-12 was analyzed at a 1:5 dilution for TCL VOA resulting in elevated detection limits. A review of the sample chromatogram indicates high extraneous chromatographic peaks, which requires the dilution. No qualifier is required.

- The GC/MS raw data (quantitation reports, chromatograms and mass-spectra) were provided for review. No laboratory calculation errors were noted for samples selected for verification during the data validation review. No further action is required from the laboratory.

Tentatively Identified Compounds: In addition to the specific target compounds identified, 10 non-target volatile organic compounds of greatest apparent concentration were tentatively identified by a computerized search of the National Bureau of Standards (NBS) mass-spectral library. A mass-spectral interpretation specialist compares the sample mass-spectrum to the library search and assigns a tentative identification. The validity of the TICs was evaluated based upon the identifications made by, the laboratory, and the following comments are offered:

- The majority of the VOA TICs identified in the samples associated with Data Set N80188 are alkyl benzenes, alkylated cycloalkanes, cycloalkanes/alkenes, alkylated alkanes, alkanes, alkenes, substituted alkanes, polynuclear aromatic hydrocarbons (PAH), diethyl sulfide, diethyl disulfide and unknowns.

- Indane, 1,4-dichlorobenzene, naphthalene, 2-methyl naphthalene and/or 1-methyl naphthalene were tentatively identified in samples T-01-16-18, T-02-16-18, T-02-20-22, T-03-16-18, T-04-16-18, D-01-16-18, D-02-10-12 and D-04-10-12. It should be noted that the aforementioned compounds are Base Neutral (BN) target compounds and since BN analysis was not requested for the project samples, these TIC identifications are deemed acceptable and are included in the total estimated VOA TICs reported on the summary table.

Additional Comments

- As per the requirements, values calculated below the Reporting Limit (RL) should be considered estimated and are flagged (J) on the summary table.

4.0 CONCLUSIONS

Overall, the data quality is acceptable. The Data Validation Review has identified aspects of the analytical data that require qualification. Data qualifiers, when applicable, are placed next to the results so that the data user can assess the qualitative and/or quantitative reliability of the reported results. The laboratory analytical data contained herein are deemed usable and in compliance with the NYSDEC ASP Category B Deliverable Format requirements. To confidently use any of the data within the data set, the data user should understand the limitations and qualifications presented.

DATA VALIDATION REVIEW
PROJECT: COLUMBIA CEMENT, FREEPORT, LONG ISLAND, NY
DATE SAMPLES COLLECTED: SEPTEMBER 20 AND 21, 2005
JOB NO.: 38546433

LAB REPORT No: J10451

1.0 INTRODUCTION

This Data Validation Review has been performed in accordance with the requirements specified in the USEPA Region II standard operating procedures (SOP) based on the Draft USEPA Contract Laboratory Program Scope of work (CLP SOW): Volatile Organics Analysis of Ambient Air in Canisters, dated December 1991, Revision VCAA01.0, and USEPA TO-15 methodology. The data validation review requirements are applied such that specifications of the methods take precedence over the specifications of the USEPA Region II data review guidelines in those instances where the specifications differ.

The objective of the review was to assess data usability and compliance with the New York State Department of Environmental Conservation (NYSDEC) Analytical Service Protocol (ASP) Category B data deliverable requirements. The Data Validation Review provides an interpretation of data usability based on the reported quality control parameters. Thirteen ambient air summa canister samples were collected by URS Corporation – Cranford, New Jersey, and submitted to Accutest Laboratories of Dayton, New Jersey (NYSDEC Certification No. 10983). Section 2.0 of this report summarizes the samples included in this review and the analyses performed. The samples were analyzed following USEPA TO-15 methodology. The laboratory analytical data set contained herein was prepared in accordance with NYSDEC ASP Category B Data Deliverable Format (Exhibit B).

The organic data quality review is based on the following parameters:

- * Hold Times
- * Blank Contamination
- * GC/MS Performance Check (Tuning) Summaries
- * System Monitoring Compound (Surrogate) Recoveries
- Internal Standard Area Performance
- * Initial and Continuing Calibration Results
- * Blank Spike (BS) and Blank Spike Duplicate (BSD) Summaries
- Matrix Duplicate Summaries
- * Summa Canister Cleaning Certificaion
- * Target Compound Identification and Quantitation

* All criteria were met for this parameter.

This report was prepared to provide a critical review of the laboratory analysis and reported chemical results. Overall, the data quality is acceptable. The results of the Data Validation Review are presented in Section 3.0. Data qualifiers, when applicable, are placed next to the

results so that the data user can assess the qualitative and/or quantitative reliability of the reported result.

2.0 SAMPLES INCLUDED IN REVIEW

Lab Report No. J10451

Sample ID	Lab ID	Date Collected	Test Requested
SG-05-07	J10451-01	9/21/05	TO-15
SG-05-05	J10451-02	9/21/05	TO-15
SG-05-03	J10451-03	9/21/05	TO-15
SG-05-11	J10451-04	9/21/05	TO-15
SG-05-04	J10451-05	9/21/05	TO-15
SG-05-01	J10451-06	9/21/05	TO-15
SG-05-02	J10451-07	9/20/05	TO-15
SG-05-AMB-W	J10451-08	9/20/05	TO-15
SG-05-08	J10451-09	9/20/05	TO-15
SG-05-09	J10451-10	9/20/05	TO-15
SG-05-AMB-E	J10451-11	9/20/05	TO-15
SG-05-10	J10451-12	9/20/05	TO-15
SG-05-06	J10451-13	9/21/05	TO-15

Legend:

TO-15 = Toxic Organic Compounds (Volatile Organic Compounds) following USEPA Method TO-15.

3.0 RESULTS

3.1 GENERAL COMMENTS

With regard to the data package deliverables, most of the NYSDEC ASP Category B Data Deliverable format requirements were met, with the exception of one correctable deficiency. Please note that this deficiency does not impact data usability.

- In the VOA analysis of Data Set J10451, the laboratory did not include the manual integration for the target compounds methyl ethyl ketone and 1,4-dioxane associated with the initial calibration standard 0.5 PPBV dated 9/26/05 at 15:41 (file ID 2W4556). The laboratory was contacted and the missing raw data was forwarded to URS. No further action is required from the laboratory.

3.2 ORGANIC QUALIFIERS

Hold Times: Technical hold times were assessed by comparing the sample dates with that of the preparation dates and/or analysis dates.

- The project samples associated with Data Set J10451 were analyzed within the required hold time for VOA analyses. No qualifier is required.

Blank Contamination: Laboratory method blank is an unused, certified canister that has not left the laboratory. The blank canister is pressurized with humidified, ultra-pure zero air and carried through the same analytical procedure as the investigative sample. Air canister laboratory method blanks are used to identify whether the investigative samples have been contaminated during sample preparation, sample analysis or from a previous sample (instrument carry-over).

- No VOA target compound contaminants were detected in the laboratory method blanks associated with the reviewed data set. No qualifier is required.

GC/MS Performance Check (Tuning) Summary: Gas chromatograph/mass spectrometer (GC/MS) instrument tuning and performance checks are performed to ensure the instrument's ability to provide appropriate mass-resolution, identification and sensitivity.

- The bromofluorobenzene (BFB) tuning compound mass-ion abundance criteria for the volatile organic compound analyses were reported within control limits. No qualifier is required.

System Monitoring Compound (Surrogate) Recoveries: System monitoring compounds (surrogates) are those compounds, which are not expected to be detected in the investigative samples but are chemically similar to the analytes of interest. Surrogate compound percent recoveries are used to assess extraction efficiencies, possible matrix effects and overall analytical accuracy.

- The VOA surrogate recoveries fell within control limits for the reviewed project samples. No qualifier is required.

Internal Standards Area Performance: Internal standards are analytes of interest, which are added to the investigative samples prior to analysis to ensure that GC/MS sensitivity and responses remain stable. Internal standards are reported with the VOA analyses.

- The area count of the VOA internal standard, chlorobenzene-d5 (CBZ), fell outside the upper control limit for sample SG-05-01 (Data Set J10451). Due to the target compound concentrations exceeding the linear calibration range requirements, the sample was re-analyzed at a 1:200 dilution and the CBZ area count fell within control limits. The initial analysis of sample SG-05-01 was reported by the laboratory and deemed usable. The reported positive m/p-xylene and xylenes (total) results in this sample quantitated using the internal standard CBZ are regarded as estimated values and are flagged (J) estimated on the laboratory summary pages and on the summary table. There is no impact on the non-detected VOA results in sample SG-05-01 quantitated using this internal standard and no qualifier is required.

- The VOA internal standard area counts and retention times fell within control limits for the remaining project samples of Data Set J10451. No qualifier is required.

Initial and Continuing Calibration Results: Control limits for initial and continuing instrument calibrations are established to ensure that the instrument is capable of producing accurate quantitative data at the beginning and throughout each of the analyses.

- The VOA target compound initial and continuing calibration response factors, percent relative standard deviations (%RSD) and percent differences (%D) associated with the reviewed project samples fell within acceptable control limits. No qualifier is required.

Blank Spike (BS) and Blank Spike Duplicate (BSD) Summaries: Blank spikes are blank samples fortified (spiked) with known concentrations of analytes of interest. The percent recoveries and/or duplicate results of the blank spike and their duplicates are used to assess extraction efficiencies, and overall analytical accuracy and precision.

- The VOA BS/BSD results (recoveries and relative percent differences or RPD) associated with Data Set J10451 fell within control limits providing a positive indication of the overall accuracy and precision associated with these analyses. No qualifier is required.

Matrix Duplicate Summaries: Duplicate samples are used to demonstrate acceptable laboratory method precision at the time of analysis. Duplicate results are used to assess possible matrix effects, and overall analytical accuracy and precision.

- The VOA SG-05-AMB-E Duplicate (DUP) RPD associated with sample SG-05-AMB-W and SG-05-AMB-E and the dilution analyses of samples SG-05-04, SG-05-10 and SG-05-06 (Data Set J10451) fell outside the control limits for ethanol. The positive ethanol results in samples SG-05-AMB-W and SG-05-AMB-E are regarded as estimated values and are flagged (J) on the laboratory summary pages and on the summary table. There is no impact on the data quality of ethanol in the dilution analyses of samples SG-05-04, SG-05-10 and SG-05-06 since ethanol results are reported from the initial analysis for these samples. No qualifier is required.

- The VOA DUP RPD fell within control limits for the remaining project samples of Data Set J10451. No qualifier is required.

Summa Canister Cleaning Certification: Each canister is evacuated and then pressurized with humidified ultra-pure zero air. This procedure is repeated a total of three times for each canister in the batch. One canister is randomly selected from the batch and then analyzed for clean test. Summa Canister Cleaning Certification verifies that the canister used to certify the canister batch is clean and free of any contaminants before sample collection.

- No VOA target compound contaminants were detected in the batch of canisters associated with the reviewed data set. No qualifier is required.

Target Compound Identification and Quantitation: The laboratory calculations are verified and compound identifications are reviewed and assessed by the data reviewer.

- Samples SG-05-07, SG-05-03, SG-05-08 and SG-05-09 (Data Set J10451) were analyzed at 1:4 and 1:2 dilutions, respectively, for VOA, resulting in elevated detection limits, due to target compound concentrations exceeding linear calibration range requirements. No qualifier is required.

- The following project samples were re-analyzed at elevated dilutions for VOA due to the target compound concentrations exceeding the linear calibration range requirements. The VOA results reported on the summary tables are hybrid of both the initial and dilution analyses. No qualifier is required.

Data Set	Associated Sample and Dilution
J10451	SG-05-05 (1:8 and 1:20)
	SG-05-11 (1:8 and 1:200)
	SG-05-04 (1:8 and 1:200)
	SG-05-01 (1:40 and 1:200)
	SG-05-02 (1:8 and 1:80)
	SG-05-10 (1:8 and 1:20)
	SG-05-06 (1:8 and 1:20)

- The GC/MS raw data (quantitation reports, chromatograms and mass-spectra) were provided for review. No laboratory calculation errors were noted for samples selected for verification during the Data Validation Review. No further action is required from the laboratory.

Additional Comments

- As per the requirements, values calculated below the Reporting Limit (RL) should be considered estimated and are flagged (J) on the summary table.

4.0 CONCLUSIONS

Overall, the data quality is acceptable. The Data Validation Review has identified aspects of the analytical data that require qualification. Data qualifiers, when applicable, are placed next to the results so that the data user can assess the qualitative and/or quantitative reliability of the reported results. The laboratory analytical data contained herein are deemed usable and in compliance with the NYSDEC ASP Category B Data Deliverable format requirements. To confidently use any of the data within the data set, the data user should understand the limitations and qualifications presented.

DATA VALIDATION REVIEW
PROJECT: COLUMBIA CEMENT, FREEPORT, LONG ISLAND, NY
DATE SAMPLES COLLECTED: JUNE 10, 2004
JOB NO.: 38546433

LAB REPORT No: N69045, N69045A, N69045X, N69150, N69150A, N69150X, N69286, N69286A, N69286AX, N69400, N69400A & N69400AX

1.0 INTRODUCTION

This Data Validation Review has been performed in accordance with the requirements specified in: (1) the standard operating procedures for the validation of volatile organic data using USEPA Region II SW-846 Method 8260B, SOP HW-24, Rev. 1, dated June 1999; (2) CLP Organics Data Review and Preliminary Data Review, SOP HW-6, Revision 12, dated March 1993; Evaluation of Metals Data for the CLP Program, SOP HW-2, Revision 11, dated January 1992; and SW-846, 600 Series and Standard Methods for the Evaluation of Water and Wastewater, 18th Edition (Standard Methods) methodologies. The quality assurance review requirements are applied such that specifications of the methods take precedence over the specifications of the USEPA Region II data review guidelines in those instances where the specifications differ.

The objective of the review was to assess data usability and compliance with New York Department of Environmental Conservation (NYSDEC) ASP Category B deliverable requirements. The Data Validation Review provides an interpretation of data usability based on the reported quality control parameters. Groundwater samples and field-blank samples were collected by URS Corporation – Cranford, New Jersey, and submitted to Accutest Laboratories of Dayton, New Jersey (NYSDEC Certification No. 10983). The Divalent Manganese samples submitted to Accutest were sub-contracted to Microseeps Laboratory of Pittsburgh, Pennsylvania. Seventeen groundwater samples and one field-blank sample from Accutest Data Sets N69045, N69045A, N69045X, N69150, N69150A, N69150X, N69286, N69286A, N69286X, N69400, N69400A and N69400AX were selected for quality assurance review to assess the overall data quality. Section 2.0 of this report summarizes the samples included in this review and the analyses performed. The groundwater samples were analyzed following USEPA SW846, 600 Series and Standard Methodologies. The laboratory analytical data set contained herein was prepared in accordance with NYDEC ASP Category B Data Deliverable Format (Exhibit B).

The organic data quality review is based on the following parameters:

- Hold Times
- Blank Contamination
- GC/MS Performance Check (Tuning) Summaries
- System Monitoring Compound (Surrogate) Recoveries
- Internal Standard Area Performance
- Initial and Continuing Calibration Results
- Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Summaries
- Target Compound Identification and Quantitation
  Tentatively Identified Compounds

The inorganic and conventional parameter data quality review is based on the following parameters:

- * Hold Times
- * Blank Contamination
- * Instrument Calibration and Verifications
- * Inductively Coupled Plasma (ICP) Interference Check Sample (ICS) Results
- * Laboratory Control Sample (LCS) Results
- * Matrix Spike (MS) and Duplicate (DU) Summaries
- * ICP Serial Dilution Results
- * Target Analyte Identification and Quantitation

* All criteria were met for this parameter

This report was prepared to provide a critical review of the laboratory analysis and reported chemical results. Overall, the data quality is acceptable. The results of the Data Validation Review are presented in Section 3.0. Data qualifiers, when applicable, are placed next to the results so that the data user can assess the qualitative and/or quantitative reliability of the reported result.

2.0 SAMPLES INCLUDED IN REVIEW

Sample ID	Lab ID	Date Collected	Test Requested
		Lab Report No. N69045A	
MW-1S	N69045-1	6/07/04	TCL VOA+10
MW-1D-97	N69045-2	6/07/04	TCL VOA+10
		Lab Report No. N69045	
MW-1S	N69045-1A	6/07/04	(total) Iron, Dissolved Gases & Conventional Parameters
MW-1D-97	N69045-2A	6/07/04	(total) Iron, (total) Manganese Dissolved Gases & Conventional Parameters
		Lab Report No. N69045X	
MW-1D-97	N69045-2X	6/07/04	Divalent Manganese
		Lab Report No. N69150A	
MW-97-1S	N69150-1	6/08/04	TCL VOA+10
MW-98-9D	N69150-2	6/08/04	TCL VOA+10
MW-9D-98D	N69150-3	6/08/04	TCL VOA+10
MW-97-2S	N69150-4	6/08/04	TCL VOA+10
MW-98-10D	N69150-5	6/08/04	TCL VOA+10

Lab Report No. N69150

MW-97-1S	N69150-1A	6/08/04	(total) Iron, (total) Manganese Dissolved Gases & Conventional Parameters
MW-98-9D	N69150-2A	6/08/04	(total) Iron, (total) Manganese Dissolved Gases & Conventional Parameters
MW-9D-98D	N69150-3A	6/08/04	(total) Iron, (total) Manganese Dissolved Gases & Conventional Parameters
MW-97-2S	N69150-4A	6/08/04	(total) Iron, (total) Manganese Dissolved Gases & Conventional Parameters
MW-98-10D	N69150-5A	6/08/04	(total) Iron, (total) Manganese Dissolved Gases & Conventional Parameters

Lab Report No. N69150X

MW-97-1S	N69150-1X	6/08/04	Divalent Manganese
MW-98-9D	N69150-2X	6/08/04	Divalent Manganese
MW-9D-98D	N69150-3X	6/08/04	Divalent Manganese
MW-97-2S	N69150-4X	6/08/04	Divalent Manganese

Lab Report No. N69286

FB060904	N69286-1	6/09/04	TCL VOA+10
MW-97-6S	N69286-2	6/09/04	TCL VOA+10
MW-97-7S	N69286-3	6/09/04	TCL VOA+10
MW-97-3S	N69286-4	6/09/04	TCL VOA+10
MW-97-8D	N69286-5	6/09/04	TCL VOA+10
MW-97-8S	N69286-6	6/09/04	TCL VOA+10
MW-00-11A	N69286-7	6/09/04	TCL VOA+10

Lab Report No. N69286A

MW-97-6S	N69286-2A	6/09/04	(total) Iron, (total) Manganese Dissolved Gases & Conventional Parameters
MW-97-3S	N69286-4A	6/09/04	(total) Iron, (total) Manganese Dissolved Gases & Conventional Parameters
MW-98-8D	N69286-5A	6/09/04	(total) Iron, (total) Manganese Dissolved Gases & Conventional Parameters
MW-98-8S	N69286-6A	6/09/04	(total) Iron, (total) Manganese Dissolved Gases & Conventional Parameters

Lab Report No. N69286AX

MW-97-6S	N69286-2X	6/09/04	Divalent Manganese
MW-97-3S	N69286-4X	6/09/04	Divalent Manganese
MW-98-8D	N69286-5X	6/09/04	Divalent Manganese
MW-98-8S	N69286-6X	6/09/04	Divalent Manganese

Lab Report No. N69400

MW-03-3S	N69400-1	6/10/04	TCL VOA+10
MW-00-12D	N69400-2	6/10/04	TCL VOA+10
MW-97-4S	N69400-3	6/10/04	TCL VOA+10
MW-97-5S	N69400-4	6/10/04	TCL VOA+10

Lab Report No. N69400A

MW-03-3S	N69400-1A	6/10/04	(total) Iron, (total) Manganese Dissolved Gases & Conventional Parameters
MW-00-12D	N69400-2A	6/10/04	(total) Iron, Dissolved Gases & Conventional Parameters
MW-97-4S	N69400-3A	6/10/04	(total) Iron, Dissolved Gases & Conventional Parameters
MW-97-5S	N69400-4A	6/10/04	(total) Iron, Manganese, Dissolved Gases & Conventional Parameters

Lab Report No. N69400AX

MW-03-3S	N69400-1X	6/10/04	Divalent Manganese
MW-97-5S	N69400-4X	6/10/04	Divalent Manganese

Legend:

TCL VOA +10	=	Target Compound List Volatile Organic Compounds plus Forward Library Searches following USEPA SW-846 Method 8260B.
Dissolved Gases	=	Consisting of Methane, Ethane & Ethene following SW846 Method 8015.
(total) Iron	=	USEPA Method 200.7 and SW846 Method 6010B.
(total) Manganese	=	USEPA Method 200.7 and SW846 Method 6010B.
Conventional Parameters	=	Alkalinity, Nitrate, Chloride, Sulfate, Ferrous Iron, Divalent Manganese and Total Organic Carbon (TOC) following USEPA 600 Series Methodologies (Alkalinity by USEPA Method 310.1, Nitrate by USEPA Method 353.2 and Standard Methods for the Analysis of Water & Waster 18th Edition, Chloride, sulfate & divalent manganese by USEPA Method 300 and SW846 Method 9056, TOC by USEPA Method 415.1 and Ferrous Iron by Standard Methods for the Analysis of Water & Wastewater 18th Edition).

3.0 RESULTS

3.1 GENERAL COMMENTS

With regard to the data package deliverables, most of the NYSDEC ASP Category B Data Deliverable format requirements were met, with the exception of the following correctable deficiencies. Please note that these deficiencies, for the most part, do not impact data usability. The laboratory was contacted and this report may be amended upon the receipt of the lab corrections.

- A transcription error was identified during review of the ferrous iron analyses for project samples associated with Accutest Data Set N69045. The date of analysis reported (6/4/04) by the laboratory on the results summary pages (pp. 16, 19, 375 &

376) and analysis run log (page 537) is incorrect. Based on review of the raw data, the correct date of analysis is 6/7/04. The laboratory was contacted and the corrected data was submitted to URS. No further action is required from the laboratory.

- In the divalent manganese analysis of Accutest Data Sets N69045X, N69150X, N69286X and N69400AX, the raw data (ion chromatographs) were omitted from the data sets reviewed. The laboratory was contacted and the required data were submitted to URS. No further action is required from the laboratory.

- On the chain-of-custody (COC) for project samples associated with Accutest Data Set N69045X, it is indicated that the analysis of divalent manganese be performed on project sample MW-1D-97 only. Upon sub-contracting the divalent manganese analysis to Microseeps Laboratory, Accutest indicated the analysis of divalent manganese be performed for both projects samples, MW-1D-97 and MW-1S. Results of divalent manganese were reported for both project samples.

- On the COC associated with Accutest Data Set N69286, the sampling time for project sample MW-00-11A was omitted. No qualifier is required since this has minimal impact on the sample analysis hold time.

- On the laboratory's sample login summary sheet (page 29) of the reports associated with Accutest Data Sets N69286, N69286A and N69286X, it is documented that the labels on the sample bottles do not agree with the COC. The laboratory contacted URS regarding the discrepancies and the corrections were forwarded to Accutest. No qualifier is required.

- It should be noted that on the laboratory's sample log-in summary sheet (page 32) of the reports associated with Accutest Data Sets N69150, N69150A and N69150X, it is documented that the sample custody seals were absent upon receipt of the sample coolers. There is no impact on the data quality and no further action is required from the laboratory.

- A transcription error was identified during review of the volatile analyses for project samples associated with Accutest Data Sets N69045A, N69150A, N69286 and N69400. The GC column reported (EB-624) in each of the aforementioned reports is incorrect. Based on review of the results summary sheets (Form 1), the correct column label should be ZB-624. The column name has been corrected and initialed by this reviewer on the associated case narrative pages. No qualifier is required.

- In the nitrate analysis of Accutest Data Set N69045, project sample MW-1S appears to be omitted from the raw data (chromatogram). The laboratory was contacted and the required data was forwarded to URS. No further action is required from the laboratory.

- In the ferrous iron analysis of project samples MW-97-1S, MW-98-9D, MW-9D-98D, MW-97-2S and MW-98-10D associated with Accutest Data Set N69150, a transcription error was made for the dilution factor on the results summary forms. The dilution factor reported on the results summary forms was 50. Based on review of the laboratory worksheets, the correct dilution factor is 5. The laboratory was contacted and the corrected results summary pages were submitted to URS. No further action is required from the laboratory.

- In the ferrous iron analysis associated with Accutest Data Set N69400, the initial and continuing calibration standard (ICV/CCV) results form (pp. 560) was incomplete. The laboratory was contacted and the required data was forwarded to URS. No further action is required from the laboratory.

3.2 ORGANIC QUALIFIERS

Hold Times: Technical hold times were assessed by comparing the sample dates with that of the preparation dates and/or analysis dates.

- The groundwater samples were analyzed within the required hold time for TCL VOA and Dissolved Gases (methane, ethane & ethene) analyses. No qualifier is required.

- The sample cooler temperatures upon verified time of sample receipt (VTSR) in the laboratory fell within the 4°C (+2°C) requirement. No qualifier is required.

Blank Contamination: Laboratory method blanks are clean liquid and/or solid matrix samples prepared by the analytical laboratory and analyzed in the same manner as the investigative samples. Water laboratory method blanks are used to identify whether investigative samples have been contaminated during sample preparation, sample analysis or from a previous sample (instrument carry-over).

Field-blanks consist of deionized water poured over or through decontaminated sampling equipment and collected into the sample bottles. Field-blanks measure contamination potentially caused by improper decontamination of sampling equipment. Trip-blanks are carbon-free deionized water samples that accompany volatile investigative samples during all stages of shipment, storage and analysis. The trip-blanks are used to assess the potential for artificial introduction of volatile compounds into the investigative samples during transportation and sample handling processes.

- No TCL VOA and/or Dissolved Gases contaminants were detected in the laboratory method blanks, as well as the storage and field-blanks associated with the reviewed project field samples. No qualifier is required.

GC/MS Performance Check (Tuning) Summary: Gas chromatograph/mass spectrometer (GC/MS) instrument tuning and performance checks are performed to ensure the instrument's ability to provide appropriate mass-resolution, identification and sensitivity.

- The bromofluorobenzene (BFB) tuning compound mass-ion abundance criteria for the volatile organic compound analyses were reported within control limits. No qualifier is required.

System Monitoring Compound (Surrogate) Recoveries: System monitoring compounds (surrogates) are those compounds, which are not expected to be detected in the investigative samples but which are chemically similar to analytes of interest. Surrogate compound percent recoveries are used to assess extraction efficiencies, possible matrix effects and overall analytical accuracy.

- The volatile surrogate recoveries fell within control limits for the reviewed project samples with the exception of project sample MW-97-4S associated with Accutest Data Set N69400. The initial analysis of sample MW-97-4S, the surrogate recoveries fell within control limits. The sample was reanalyzed at a 1:2 dilution due to chloroethane concentration exceeding the linear calibration range. However, the recovery of volatile surrogate, BFB, fell outside control limits (low). The laboratory performed a reanalysis of the 1:2 dilution and the surrogate recovery of BFB and Toluene-d8 fell outside control limits (low). The positive chloroethane result reported from the 1:2 dilution analysis of sample MW-97-4S is regarded as an estimated value and is flagged (J) on the laboratory summary pages and on the summary table. There is no impact on the data quality for the other TCL VOA results from the undiluted analysis and no qualifier is required.

- There are no surrogates associated with the analysis of dissolved gases (methane, ethane and ethane) by SW846 Method 8015. Therefore, no comments are offered regarding possible matrix effects and overall analytical accuracy. No qualifier is required.

Internal Standards Area Performance: Internal standards are analytes of interest, which are added to the investigative samples prior to analysis to ensure that GC/MS sensitivity and responses remain stable. Internal standards are reported with the volatile analysis.

- The TCL VOA internal standard area counts and retention times fell within control limits for the reviewed project samples associated with Accutest Data Sets N69045A, N69150A, N69286 and N69400. No qualifier is required.

Initial and Continuing Calibration Results: Control limits for initial and continuing instrument calibrations are established to ensure that the instrument is capable of producing accurate quantitative data at the beginning and throughout each of the analyses.

- The TCL VOA target compound initial and continuing calibration response factors, percent relative standard deviations (%RSD) and percent differences (%D) associated with the reviewed project samples fell within acceptable control limits. No qualifier is required.

- The Dissolved Gases target compound initial and continuing calibration response factors, %RSD and %D associated with the reviewed project samples fell within acceptable control limits. No qualifier is required.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Summaries: Matrix spikes are samples spiked with known concentrations of analytes of interest. The MS/MSD percent recoveries and duplicate results are used to assess extraction efficiencies, possible matrix effects, and overall analytical accuracy and precision.

Blank spikes (BS) are blank samples fortified (spiked) with known concentrations of analytes of interest. The percent recoveries and/or duplicate results of the blank spike and their duplicates (BSD) are used to assess extraction efficiencies, and overall analytical accuracy and precision.

- The TCL VOA MS/MSD/BS results (recoveries and relative percent difference or RPD) associated with Accutest Data Sets N69045A, N69150A, N69286 and N69400 fell within acceptable control limits providing a positive indication of the overall accuracy and precision associated with these analyses. No qualifier required.

- The Dissolved Gases BS and duplicate (DU) results (recoveries and RPD) associated with Accutest Data Sets N69045, N69150, N69286A and N69400A fell within acceptable control limits providing a positive indication of the overall accuracy and precision associated with these analyses. No qualifier required.

Target Compound Identification and Quantitation: The laboratory calculations are verified and compound identifications are reviewed and assessed by the data reviewer.

- The following samples were analyzed at elevated dilutions resulting in elevated detection limits, due to target concentrations exceeding the linear calibration range requirements. No qualifier is required.

Data Set	Parameter	Compound	Associated Sample (Dilution Factor)
N69045A	TCL VOA	chloroethane/ methylene chloride	MW-1S (1:100)
N69045	Dis. Gases	methane/ethane	MW-1S (1:10)
N69150A	TCL VOA	chloroethane	MW-97-1S (1:5)
			MW-98-9D (1:5)
			MW-9D-98D (1:5)
N69150	Dis. Gases	methane	MW-97-1S (1:5)
			MW-98-9D (1:5)
			MW-9D-98D (1:5)
			MW-97-2S (1:5)
			MW-98-10D (1:5)
N69286	TCL VOA	chloroethane	MW-97-6S (1:5)
N69286A	Dis. Gases	methane	MW-97-6S (1:5)
			MW-97-3S (1:5)
			MW-98-8D (1:2.5)
			MW-98-8S (1:2.5)
N69400	TCL VOA	chloroethane	MW-97-4S (1:2)
N69400A	Dis. Gases	methane	MW-03-3S (1:5)
			MW-97-5S (1:5)

- Samples MW-1S (Accutest Data Set N69045A); MW-97-1S, MW-98-9D and MW-9D-98D (Accutest Data Set N69150A); MW-97-6S (Accutest Data Set N69286) and MW-97-4S (Accutest Data Set N69400) were re-analyzed at the dilutions specified above due to target compound, chloroethane, concentrations exceeding the linear calibration range requirements. Both TCL VOA initial and dilution analysis results are reported on the laboratory summary pages. No qualifier is required.

- Samples MW-1S (Accutest Data Set N69045); MW-97-1S, MW-98-9D, MW-9D-98D, MW-97-2S and MW-98-10D (Accutest Data Set N69150); MW-97-6S, MW-97-3S, MW-98-8D and MW-98-8S (Accutest Data Set N69286A) MW-03-3S and MW-97-5S (Accutest Data Set N69400A) were re-analyzed at the dilutions specified above due to target compound, methane, concentrations exceeding the linear calibration range requirements. The Dissolved Gaşes results reported on the laboratory summary pages are hybrid of both the initial and dilution analyses. No qualifier is required.

- The GC and GC/MS raw data (quantitation reports, chromatograms and GC/MS mass-spectra) were provided for review. No laboratory calculation errors were noted for samples selected for verification during the quality assurance review. No further action is required from the laboratory.

Tentatively Identified Compounds: In addition to the specific target compounds identified, 10 non-target volatile organic compounds of greatest apparent concentration were tentatively identified by a computerized search of the National Bureau of Standards (NBS) mass-spectral library. A mass-spectral interpretation specialist compares the sample mass-spectrum to the library search and assigns a tentative identification. The validity of the tentatively identified compounds (TICs) was evaluated based upon the identifications made by the laboratory, and the following comments are offered:

- The majority of the VOA TICs identified in samples associated with Accutest Data Sets N69045A, N69150A, N69286 and N69400 are alkanes, cycloalkanes, diethyl sulfide and unknowns.

- The compound, 2-methoxy-2-methylpropane (m/e 73), was tentatively identified in the volatile library search of sample MW-03-3S (pp. 50) associated with Accutest Data Set N69400. Since this compound is not found in the associated blanks and is a suspected artifact, the TIC result of 2-methoxy-2-methylpropane is regarded as unusable and is flagged (R) on the laboratory summary pages and on the summary tables.

Additional Comments

- As per the requirements, all values calculated below the Reporting Limit (RL) should be considered estimated and are flagged (J) on the summary table.

3.3 INORGANIC AND CONVENTIONAL PARAMETER QUALIFIERS

Hold Times: Technical hold times are assessed by comparing the sampling dates with that of the preparation dates and/or analysis dates.

- The reviewed project samples were prepared and/or analyzed within the required hold time for (total) iron, (total) manganese and conventional parameter analyses. No qualifier is required.

Blank Contamination: Laboratory method blanks are clean liquid and/or solid matrix samples prepared by the analytical laboratory and analyzed in the same manner as the investigative samples. Water laboratory method blanks are used to ensure that the investigative samples are not contaminated during the sample preparation, sample analysis or from previous sample (instrument carry-over).

Field-blanks consist of deionized water poured over or through decontaminated sampling equipment and collected into the sample bottles. Field-blanks measure contamination potentially caused by improper decontamination of sampling equipment

- No (total) iron, (total) manganese, and/or conventional parameter contaminants were detected in the laboratory method and/or instrument blanks, and in the field-blank sample associated with the reviewed project samples. No qualifier is required.

Instrument Calibration and Verifications: Control limits for initial and continuing calibration verifications (ICV and (CCV) are established to ensure that the instrument is capable of producing accurate quantitative data at the beginning and throughout each of the analyses.

- The initial and continuing calibration verification (ICV/CCV) standard recoveries for (total) iron and (total) manganese fell within control limits. No qualifier is required.

- The initial and continuing calibration verification (ICV/CCV) standard recoveries for the conventional parameters fell within control limits. No qualifier is required.

Inductively Coupled Plasma (ICP) Interference Check Sample (ICS) Results: The interference check sample (ICS) verifies the laboratory's ICP inter-element and background correction factors.

- The interference check sample (ICS) analysis fell within control limits for (total) iron and (total) manganese associated with Accutest Data Sets N69045, N69150, N69286A and N69400A. No qualifier is required.

Laboratory Control Sample (LCS) Results: The laboratory control sample (LCS) is a blank sample fortified (spiked) with known concentrations of analytes of interest. The percent recoveries are used to assess extraction efficiencies and overall analytical accuracy.

- The laboratory control sample (LCS) recoveries fell within control limits for (total) iron, (total) manganese and/or conventional parameter analyses. No qualifier is required.

Matrix Spike (MS) and Duplicate (DU) Summaries: Matrix spikes are samples spiked with known concentrations of analytes of interest. The spiked sample analysis is designed to provide information about the effect of the sample matrix on the sample preparation procedures and the measurement of the methodology. Duplicate samples are used to demonstrate acceptable method precision from the laboratory at the time of analysis. The percent recoveries and duplicate results are used to assess digestion efficiencies, possible matrix effects, and overall analytical accuracy and precision.

- The MS/MSD and/or DU (recoveries and RPD) fell within control limits for (total) iron and (total) manganese with the exception of (total) iron associated with Accutest Data Sets N69150, N69286A and N69400A. The recovery of (total) iron in the aforementioned Data Sets fell outside control limits. No qualifier is required since the concentration found in the unspiked sample is greater than 4 times the spike concentration added.

- The MS/MSD and/or DU (recoveries and RPD) fell within control limits for conventional parameter analyses with the exception of nitrate (Accutest Data Sets N69045, N69150 and N69400A) and chloride/sulfate (Accutest Data Set N69400A) analysis. The RPD of nitrate and chloride/sulfate analyses associated with the aforementioned Data Sets fell outside control limits due to low sample and duplicate concentrations (<RL). No qualifier is required.

ICP Serial Dilution Results: The ICP Serial dilution of samples demonstrated whether or not significant physical or chemical interference exist due to sample matrix.

- The ICP serial dilution analyses of (total) iron and (total) manganese fell within control limits. No qualifier is required.

Target Analyte Identification and Quantitation: The laboratory calculations are verified and compound identifications are assessed by the data reviewer.

- The metals [(total) iron & (total) manganese] and conventional parameter raw data and/or laboratory worksheets were provided for review (as required under the NYSDEC ASP B Data Deliverable format). No laboratory calculation errors were noted for samples selected for verification during the quality assurance review. No further action is required from the laboratory.

4.0 CONCLUSIONS

Overall, the data quality is acceptable. The Quality Assurance Review has identified aspects of the analytical data that require qualification. Data qualifiers, when applicable, are placed next to the results so that the data user can assess the qualitative and/or quantitative reliability of the reported results. The laboratory analytical data contained herein are deemed usable and in compliance with the New York ASP B Deliverable Format requirements. To confidently use any of the data within the data set, the data user should understand the limitations and qualifications presented.

QUALITY ASSURANCE REVIEW
PROJECT: COLUMBIA CEMENT, FREEPORT, LONG ISLAND, NY
DATE SAMPLES COLLECTED: JUNE 7, 8, 9 &10, 2004
JOB NO.: 38546433

LAB REPORT No: N69045, N69045A, N69045X, N69150, N69150A, N69150X, N69286, N69286A, N69286X, N69400, N69400A & N69400AX

1.0 INTRODUCTION

This Quality Assurance Review has been performed in accordance with: (1) the requirements specified in the New Jersey Department of Environmental Protection (NJDEP) Technical Requirements for Site Remediation N.J.A.C., 7:26E, dated June 7, 1993, and amended July 2, 1999; and (2) NJDEP's Standard Operating Procedures (SOP) for the Quality Assurance Data Validation of Analytical Deliverables, TCL Organics, SOP No. 5.A.13 (October 2001 revision) based on USEPA CLP SOW OLM04.2 (with revisions) and USEPA 600 Series methodologies. The quality assurance requirements are applied such that specifications and/or modifications of the methods take precedence over the specifications of NJDEP Technical Requirement guidelines in those instances where the specifications differ.

The objective of the review was to assess data usability and compliance with New York Department of Environmental Conservation (NYSDEC) ASP Category B deliverable requirements. The Quality Assurance Review provides an interpretation of data usability based on the reported quality control parameters. Groundwater samples and field-blank samples were collected by URS Corporation – Cranford, New Jersey, and submitted to Accutest Laboratories of Dayton, New Jersey (NY Certification No. 10983). The Divalent Manganese samples submitted to Accutest were sub-contracted to Microseeps of (Certification No.). Seventeen groundwater samples and one field-blank sample were selected for quality assurance review to assess the overall data quality. Section 2.0 of this report summarizes the samples included in this review and the analyses performed. The groundwater samples were analyzed following SW-846 Methodologies. The laboratory analytical data set contained herein was prepared in accordance with NYSDEC ASP Category B Data Deliverable Format (Exhibit B).

The organic data quality review is based on the following parameters:

* Hold Times
* Blank Contamination
* GC/MS Performance Check (Tuning) Summaries
* System Monitoring Compound (Surrogate) Recoveries
* Internal Standard Area Performance
* Initial and Continuing Calibration Results
* Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Summaries
* Target Compound Identification and Quantitation
* Tentatively Identified Compounds

The inorganic and conventional parameter data quality review is based on the following parameters:

* Hold Times
* Blank Contamination
* Instrument Calibration and Verifications
* Inductively Coupled Plasma (ICP) Interference Check Sample (ICS) Analysis Results
* Laboratory Control Sample (LCS) Results
* Matrix Spike (MS) and Duplicate (DU) Summaries
* ICP Serial Dilution Results
* Target Analyte Identification and Quantitation

* All criteria were met for this parameter

This report was prepared to provide a critical review of the laboratory analysis and reported chemical results. Overall, the data quality is acceptable. The results of the Quality Assurance Review are presented in Section 3.0. Data qualifiers, when applicable, are placed next to the results so that the data user can assess the qualitative and/or quantitative reliability of the reported result.

2.0 SAMPLES INCLUDED IN REVIEW

Sample ID	Lab ID	Date Collected	Test Requested
		Lab Report No. N69045	
MW-1S	N69045-1	6/07/04	TCL VOA+10
MW-1D-97	N69045-2	6/07/04	TCL VOA+10
		Lab Report No. N69045A	
MW-1S	N69045-1A	6/07/04	TOC, dissolved gases & conventional parameters
MW-1D-97	N69045-2A	6/07/04	TOC, dissolved gases & conventional parameters
		Lab Report No. N69045X	
MW-1D-97	N69045-2X	6/07/04	divalent manganese
		Lab Report No. N69150	
MW-97-1S	N69150-1	6/08/04	TCL VOA+10
MW-98-9D	N69150-2	6/08/04	TCL VOA+10
MW-9D-98D	N69150-3	6/08/04	TCL VOA+10
MW-97-2S	N69150-4	6/08/04	TCL VOA+10

MW-98-10D	N69150-5	6/08/04	TCL VOA+10

Lab Report No. N69150A

MW-97-1S	N69150-1A	6/08/04	TOC, dissolved gases & conventional parameters
MW-98-9D	N69150-2A	6/08/04	TOC, dissolved gases & conventional parameters
MW-9D-98D	N69150-3A	6/08/04	TOC, dissolved gases & conventional parameters
MW-97-2S	N69150-4A	6/08/04	TOC, dissolved gases & conventional parameters
MW-98-10D	N69150-5A	6/08/04	TOC, dissolved gases & conventional parameters

Lab Report No. N69150X

MW-97-1S	N69150-1X	6/08/04	divalent manganese
MW-98-9D	N69150-2X	6/08/04	divalent manganese
MW-9D-98D	N69150-3X	6/08/04	divalent manganese
MW-97-2S	N69150-4X	6/08/04	divalent manganese

Lab Report No. N69286

FB060904	N69286-1	6/09/04	TCL VOA+10
MW-97-6S	N69286-2	6/09/04	TCL VOA+10
MW-97-7S	N69286-3	6/09/04	TCL VOA+10
MW-97-3S	N69286-4	6/09/04	TCL VOA+10
MW-97-8D	N69286-5	6/09/04	TCL VOA+10
MW-97-8S	N69286-6	6/09/04	TCL VOA+10
MW-00-11A	N69286-7	6/09/04	TCL VOA+10

Lab Report No. N69286A

FB060904	N69286-1A	6/09/04	TOC, dissolved gases & conventional parameters
MW-97-6S	N69286-2A	6/09/04	TOC, dissolved gases & conventional parameters
MW-97-7S	N69286-3A	6/09/04	TOC, dissolved gases & conventional parameters
MW-97-3S	N69286-4A	6/09/04	TOC, dissolved gases & conventional parameters
MW-98-8D	N69286-5A	6/09/04	TOC, dissolved gases & conventional parameters
MW-98-8S	N69286-6A	6/09/04	TOC, dissolved gases & conventional parameters
MW-00-11A	N69286-7A	6/09/04	TOC, dissolved gases & conventional parameters

Lab Report No. N69286AX

MW-97-6S	N69286-2X	6/09/04	divalent manganese
MW-97-3S	N69286-4X	6/09/04	divalent manganese
MW-98-8D	N69286-5X	6/09/04	divalent manganese
MW-98-8S	N69286-6X	6/09/04	divalent manganese

Lab Report No. N69400

MW-03-3S	N69400-1	6/10/04	TCL VOA+10
MW-00-12D	N69400-2	6/10/04	TCL VOA+10
MW-97-4S	N69400-3	6/10/04	TCL VOA+10
MW-97-5S	N69400-4	6/10/04	TCL VOA+10

Lab Report No. N69400A

MW-03-3S	N69400-1A	6/10/04	TOC, methane, ethane, ethene, chloride, sulfate, nitrate, iron, alkalinity, total manganese
MW-00-12D	N69400-2A	6/10/04	TOC, methane, ethane, ethene, chloride, sulfate, nitrate, iron, alkalinity, total manganese
MW-97-4S	N69400-3A	6/10/04	TOC, methane, ethane, ethene, chloride, sulfate, nitrate, iron, alkalinity, total manganese
MW-97-5S	N69400-4A	6/10/04	TOC, methane, ethane, ethene, chloride, sulfate, nitrate, iron, alkalinity, total manganese

Lab Report No. N69400AX

MW-03-3S	N69400-1X	6/10/04	divalent manganese
MW-97-5S	N69400-4X	6/10/04	divalent manganese

Legend:

TCL VOA +10	=	Target Compound List Volatile Organic Compounds plus Forward Library Searches following USEPA SW-846 Method 8260B.
Dissolved Gas	=	Methane, ethane & ethene following USEPA SW846 Method 8015.
Iron	=	USEPA Method 200.7 and SW-846 Method 6010B.
Manganese	=	USEPA Method 200.7 and SW-846 Method 6010B.
Conventional Parameters	=	Alkalinity, nitrate, chloride, sulfate, ferrous iron, divalent manganese and TOC following USEPA 600 Series Methodologies (Nitrate by USEPA

Method 353.2 and Standard Methods for the Analysis of Water & Wastewater 18th Edition.

3.0 RESULTS

3.1 GENERAL COMMENTS

With regard to the data package deliverables, most of the NYDEC ASP Category B Data Deliverable format requirements were met, with the exception of the following correctable deficiencies. Please note that these deficiencies, for the most part, do not impact data usability. The laboratory was contacted and this report may be amended upon the receipt of the lab corrections.

3.2 ORGANIC QUALIFIERS

Hold Times: Technical hold times were assessed by comparing the sample dates with that of the preparation dates and/or analysis dates.

- The groundwater samples were analyzed within the required hold time for TCL VOA analysis. No qualifier is required.

- The sample cooler temperature upon verified time of sample receipt (VTSR) in the laboratory fell within the 4°C (+2°C) requirement. No qualifier is required.

Blank Contamination: Laboratory method blanks are clean liquid and/or solid matrix samples prepared by the analytical laboratory and analyzed in the same manner as the investigative samples. Water laboratory method blanks are used to identify whether investigative samples have been contaminated during sample preparation, sample analysis or from a previous sample (instrument carry-over).

Field-blanks consist of deionized water poured over or through decontaminated sampling equipment and collected into the sample bottles. Field-blanks measure contamination potentially caused by improper decontamination of sampling equipment. Trip-blanks are carbon-free deionized water samples that accompany volatile investigative samples during all stages of shipment, storage and analysis. The trip-blanks are used to assess the potential for artificial introduction of volatile compounds into the investigative samples during transportation and sample handling processes.

- No VOA contaminants were detected in the laboratory method blanks, as well as the field and trip-blanks associated with the reviewed project field samples. No qualifier is required.

GC/MS Performance Check (Tuning) Summary: Gas chromatograph/mass spectrometer (GC/MS) instrument tuning and performance checks are performed to ensure the instrument's ability to provide appropriate mass-resolution, identification and sensitivity.

- The bromofluorobenzene (BFB) tuning compound mass-ion abundance criteria for the volatile organic compound analyses were reported within control limits. No qualifier is required.

System Monitoring Compound (Surrogate) Recoveries: System monitoring compounds (surrogates) are those compounds which are not expected to be detected in the investigative samples but which are chemically similar to analytes of interest. Surrogate compound percent recoveries are used to assess extraction efficiencies, possible matrix effects and overall analytical accuracy.

- The volatile surrogate recoveries fell within control limits for the reviewed project samples. No qualifier is required.

Internal Standards Area Performance: Internal standards are analytes of interest, which are added to the investigative samples prior to analysis to ensure that GC/MS sensitivity and responses remain stable. Internal standards are reported with the volatile analysis.

- The VOA internal standard area counts and retention times fell within control limits for the reviewed project samples. No qualifier is required.

Initial and Continuing Calibration Results: Control limits for initial and continuing instrument calibrations are established to ensure that the instrument is capable of producing accurate quantitative data at the beginning and throughout each of the analyses.

- The VOA target compound initial calibration response factors and percent relative standard deviations (%RSD) fell within acceptable control limits. No qualifier is required.

- The VOA target compound continuing calibration response factors and percent differences (%RSD) fell within acceptable control limits with the exception of . No qualifier is required.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Summaries: Matrix spikes are samples spiked with known concentrations of analytes of interest. The MS/MSD percent recoveries and duplicate results are used to assess extraction efficiencies, possible matrix effects, and overall analytical accuracy and precision.

Blank spikes are blank samples fortified (spiked) with known concentrations of analytes of interest. The percent recoveries and/or duplicate results of the blank spike and their duplicates (BSD) are used to assess extraction efficiencies, and overall analytical accuracy and precision.

- In the VOA analysis, the MS/MSD analyses were performed; however, the laboratory reports only the MS recovery results, which fell within control limits

(MSD not required under USEPA Method 624), providing a positive indication of the overall accuracy associated with these analyses. Since the MSD results were not provided, no comments can be offered regarding the precision associated with the VOA analyses. It should be noted that the blank spike recoveries were reported and the benzene, toluene and ethylbenzene compound recoveries fell within control limits.

Target Compound Identification and Quantitation: The laboratory calculations are verified and compound identifications are reviewed and assessed by the data reviewer.

- Samples MW-2A (1:50), MW-7 (1:5), MW-10 (1:50), MW-12 (1:10), MW-13 (1:50), and MW-14 (1:5) (Data Set I352) were analyzed at elevated dilutions for BTEX/MTBE/TBA, resulting in elevated detection limits, due to these target compounds exceeding the linear calibration range requirement. No qualifier is required.

- The GC/MS raw data (quantitation reports, chromatograms and mass-spectra) were provided for review. No laboratory calculation errors were noted for samples selected for verification during the quality assurance review. No further action is required from the laboratory.

Additional Comments

- As per the requirements, all values calculated below the method detection limit should be considered estimated and are flagged (J) on the summary table.

3.3 INORGANIC AND CONVENTIONAL PARAMETER QUALIFIERS

Hold Times: Technical hold times are assessed by comparing the sampling dates with that of the preparation dates and/or analysis dates.

- All samples were prepared and/or analyzed within the required hold time for lead, carbon dioxide (CO2) and alkalinity analyses. No qualifier is required.

Blank Contamination: Laboratory method blanks are clean liquid and/or solid matrix samples prepared by the analytical laboratory and analyzed in the same manner as the investigative samples. Water laboratory method blanks are used to ensure that the investigative samples are not contaminated during the sample preparation, sample analysis or from previous sample (instrument carry-over).

Field-blanks consist of deionized water poured over or through decontaminated sampling equipment and collected into the sample bottles. Field-blanks measure contamination potentially caused by improper decontamination of sampling equipment

- No magnesium, alkalinity and/or CO2 contaminants were detected in the laboratory method and instrument blanks, and in the field-blank samples associated with the reviewed project samples. No qualifier is required.

Instrument Calibration and Verifications: Control limits for initial and continuing calibration verifications (ICV and (CCV) are established to ensure that the instrument is capable of producing accurate quantitative data at the beginning and throughout each of the analyses.

- The initial and continuing calibration verification (ICV/CCV) standard recoveries for lead fell within control limits. No qualifier is required.

Inductively Coupled Plasma (ICP) Interference Check Sample (ICS) Results: The interference check sample (ICS) verifies the laboratory's ICP inter-element and background correction factors.

- The interference check sample (ICS) analysis fell within control limits. No qualifier is required.

Laboratory Control Sample (LCS) Results: The laboratory control sample (LCS) is a blank sample fortified (spiked) with known concentrations of analytes of interest. The percent recoveries are used to assess extraction efficiencies and overall analytical accuracy.

- The laboratory control sample (LCS) analysis fell within control limits. No qualifier is required.

Matrix Spike (MS) and Duplicate (DU) Summaries: Matrix spikes are samples spiked with known concentrations of analytes of interest. The spiked sample analysis is designed to provide information about the effect of the sample matrix on the sample preparation procedures and the measurement of the methodology. Duplicate samples are used to demonstrate acceptable method precision from the laboratory at the time of analysis. The percent recoveries and duplicate results are used to assess digestion efficiencies, possible matrix effects, and overall analytical accuracy and precision.

- The matrix spike recoveries and duplicate relative percent differences (RPD) fell within control limits for lead, alkalinity and CO2, providing a positive indication of the precision and accuracy associated with these analyses. No qualifier is required.

ICP Serial Dilution Results: The ICP Serial dilution of samples demonstrated whether or not significant physical or chemical interference exist due to sample matrix.

- The ICP serial dilution analyses of lead fell within control limits. No qualifier is required.

Target Analyte Identification and Quantitation: The laboratory calculations are verified and compound identifications are assessed by the data reviewer.

- The metals (lead) raw data, alkalinity and CO2 laboratory worksheets were not provided for review (not required under the NJDEP Reduced Data Deliverable format). The quantitative validity of the reported concentrations cannot be calculated and verified. It is assumed that the results are correct as reported and no further action is required from the laboratory.

4.0 CONCLUSIONS

Overall, the data quality is acceptable and no qualifiers are required. Based on the Quality Assurance Review, the New Jersey Data Deliverable Format requirements were met and no further action is required by the laboratory. To confidently use any of the data within the data set, the data user should understand the limitations and qualifications presented.

DATA VALIDATION REVIEW
PROJECT: COLUMBIA CEMENT, FREEPORT, LONG ISLAND, NY
DATE SAMPLES COLLECTED: JUNE 6 THROUGH 9, 2006
JOB NO.: 38546433

LAB REPORT NOs. T011, T020, T124, and T126

1.0 INTRODUCTION

This Data Validation Review has been performed in accordance with the requirements specified in the standard operating procedures for the validation of volatile organic data using USEPA Region II Contract Laboratory Program (CLP) Organics Data Review and Preliminary Data Review, SOP HW-6, Revision 12, dated March 2001; evaluation of Metals data for USEPA Region II Contract Laboratory Program (CLP), SOP HW-2, Rev. 13; dated September 2005 and SW-846, 600 Series and Standard Methods for the Evaluation of Water and Wastewater, 18th Edition (Standard Methods) methodologies. The quality assurance review requirements are applied such that specifications of the methods take precedence over the specifications of the USEPA Region II data review guidelines in those instances where the specifications differ.

The objective of the review was to assess data usability and compliance with New York State Department of Environmental Conservation (NYSDEC) ASP Category B deliverable requirements. The Data Validation Review provides an interpretation of data usability based on the reported quality control parameters. A total of eighteen groundwater samples, one blind field duplicate groundwater sample, one field-blank sample, and three trip-blank samples were collected by URS Corporation, Cranford, New Jersey, office personnel and submitted to Severn Trent Laboratories (STL-Edison) of Edison, New Jersey (NYSDEC Certification No. 11452). Six groundwater samples, one blind field duplicate groundwater sample, and one trip-blank sample from Data Set T020 were selected for data validation review to assess the overall data quality. Section 2.0 of this report summarizes the samples included in this review and the analyses performed. The groundwater samples were analyzed following USEPA SW846, 600 Series, and Standard Methodologies. The laboratory analytical data set contained herein was prepared in accordance with NYSDEC ASP Category B Data Deliverable Format (Exhibit B).

The organic data quality review is based on the following parameters:

* Hold Times
* Blank Contamination
* GC/MS Performance Check (Tuning) Summaries
* System Monitoring Compound (Surrogate) Recoveries
* Internal Standard Area Performance
* Initial and Continuing Calibration Results
* Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Summaries
* Target Compound Identification and Quantitation
* Tentatively Identified Compounds

The inorganic and conventional parameter data quality review is based on the following parameters:

- * Hold Times
- Blank Contamination
- * Instrument Calibration and Verifications
- * Inductively Coupled Plasma (ICP) Interference Check Sample (ICS) Results
- * Laboratory Control Sample (LCS) Results
- * Matrix Spike (MS) and Duplicate (DU) Summaries
- * ICP Serial Dilution Results
- * Target Analyte Identification and Quantitation

*All criteria were met for this parameter

This report was prepared to provide a critical review of the laboratory analysis and reported chemical results. Overall, the data quality is acceptable. The results of the Data Validation Review are presented in Section 3.0. Data qualifiers, when applicable, are placed next to the results so that the data user can assess the qualitative and/or quantitative reliability of the reported result.

2.0 SAMPLES INCLUDED IN REVIEW

Lab Report No. T020

Sample ID	Lab ID	Date Collected	Test Requested
MW-1S	743167	6/7/06	TCL VOA+10, Methane/Ethane/Ethene, (total) Iron, Alkalinity, Sulfate, Chloride and TOC
MW-1D-97	743168	6/7/06	TCL VOA+10, Methane/Ethane/Ethene, (total) Iron, Alkalinity, Sulfate, Chloride and TOC
MW-00-11A	743169	6/7/06	TCL VOA+10, Methane/Ethane/Ethene, (total) Iron, Alkalinity, Sulfate, Chloride and TOC
MW-98-8S	743170	6/7/06	TCL VOA+10, Methane/Ethane/Ethene, (total) Iron, Alkalinity, Sulfate, Chloride and TOC
MW-98-8D	743171	6/7/06	TCL VOA+10, Methane/Ethane/Ethene, (total) Iron, Alkalinity, Sulfate, Chloride and TOC
MW-97-1S	743172	6/7/06	TCL VOA+10, Methane/Ethane/Ethene, (total) Iron, Alkalinity, Sulfate, Chloride and TOC
TB-060706	743173	6/7/06	TCL VOA+10
DUP060706	743174	6/7/06	TCL VOA+10, Methane/Ethane/Ethene, (total) Iron, Alkalinity, Sulfate, Chloride and TOC
MW-1S	743175	6/7/06	(dissolved) Iron
MW-1D-97	743176	6/7/06	(dissolved) Iron
MW-00-11A	743177	6/7/06	(dissolved) Iron
MW-98-8S	743178	6/7/06	(dissolved) Iron

MW-98-8D	743179	6/7/06	(dissolved) Iron
MW-97-1S	743180	6/7/06	(dissolved) Iron
DUP060706	743181	6/7/06	(dissolved) Iron

Legend:

TCL VOA+10	=	Target Compound List Volatile Organic Compounds plus Forward Library Searches following USEPA Method 624.
Methane/Ethane/ Ethene	=	Analyzed following USEPA SW-846 Method 3810.
(total) Iron	=	Analyzed following USEPA Method 200.7.
(dissolved) Iron	=	Analyzed following USEPA Method 200.7.
Alkalinity	=	Analyzed following USEPA Methods 310.1.
Sulfate	=	Analyzed following USEPA Method 375.4.
Chloride	=	Analyzed following Standard Methods for the Examination of Water & Wastewater 18th Edition Method 4500-Cl B.
TOC	=	Total Organic Carbon following USEPA Method 415.1.

3.0 RESULTS

3.1 GENERAL COMMENTS

With regard to the data package deliverables, most of the NYSDEC ASP Category B Data Deliverable format requirements were met, with the exception of the following correctable deficiencies. Please note that these deficiencies, for the most part, do not impact data usability. The laboratory was contacted and the missing information requested. As of this writing, STL-Edison has not provided the required information. This report may be amended upon the receipt of the laboratory corrections.

- The laboratory did not include the Internal chain-of-custody (COC) as required under NYSDEC ASP Category B Data Deliverable format requirements.
- The laboratory did not include the Instrument Detection Limits (IDLs) for TCL VOA, Methane/Ethane/Ethene, Metals, and conventional parameters.
- The laboratory included extra pages 5 through 10 in section-1 sample preparation and analysis summary that are not associated with the reviewed data set. This reviewer has disregarded these pages. No further action is required from the laboratory.
- On the sample identification and analytical requirement summary associated with Data Set T020, the laboratory incorrectly reported that trip-blank sample TB060706 was analyzed for Methane/Ethane/Ethene, Metals, and conventional parameters. Based on a review of the associated COC and supporting data, the trip-blank sample

was only requested and analyzed for TCL VOA. The laboratory was contacted and a revised sample identification and analytical requirement summary was requested.

- On the sample preparation and analysis summary associated with Data Set T020, the laboratory incorrectly reported that trip-blank sample TB060706 was analyzed for Methane/Ethane/Ethene and sulfate analyses. Based on a review of the associated COC and supporting data, the trip-blank sample was only requested and analyzed for TCL VOA. The laboratory was contacted and a revised sample preparation and analysis summary was requested.

- In the alkalinity analysis, the laboratory work sheet associated with the Laboratory Control Sample (LCS) was not included in the data package received for review. Similarly, in the chloride analysis, the laboratory work sheet associated with the Matrix Spike and Matrix Spike Duplicate (MS/MSD) was not included in the data package received for review.

- In the chloride and sulfate analyses, the correlation coefficient (r) was reported as 1.0 on the associated calibration raw data. Based on a calculation, these values are 0.990 (chloride) and 0.996 (sulfate). The laboratory was contacted and the corrected calibration raw data was requested.

3.2 ORGANIC QUALIFIERS

Hold Times: Technical hold times were assessed by comparing the sample dates with that of the preparation dates and/or analysis dates.

- The samples were analyzed within the required 14-day hold time for TCL VOA and Methane/Ethane/Ethene analyses. Additionally, the laboratory cooler receipt temperature associated with the reviewed project samples fell within the 4°C ($\pm$2° C) requirement. No qualifier is required.

Blank Contamination: Laboratory method blanks are clean liquid and/or solid matrix samples prepared by the analytical laboratory and analyzed in the same manner as the investigative samples. Water laboratory method blanks are used to identify whether investigative samples have been contaminated during sample preparation, sample analysis or from a previous sample (instrument carry-over).

Trip-blanks are carbon-free deionized water samples that accompany volatile investigative samples during all stages of shipment, storage and analysis. The trip-blanks are used to assess the potential for artificial introduction of volatile compounds into the investigative samples during transportation and sample handling processes.

- No TCL VOA and Methane/Ethane/Ethene contaminants were identified in the laboratory method blank and/or in the trip-blank sample associated with the groundwater samples received and reviewed. No qualifier is required.

GC/MS Performance Check (Tuning) Summary: Gas chromatograph/mass spectrometer (GC/MS) instrument tuning and performance checks are performed to ensure the instrument's ability to provide appropriate mass-resolution, identification, and sensitivity.

- The bromofluorobenzene (BFB) tuning compound mass-ion abundance criteria for the volatile organic compound analyses were reported within control limits. No qualifier is required.

System Monitoring Compound (Surrogate) Recoveries: System monitoring compounds (surrogates) are those compounds, which are not expected to be detected in the investigative samples but which are chemically similar to the analytes of interest. Surrogate compound percent recoveries are used to assess extraction efficiencies, possible matrix effects, and overall analytical accuracy.

- The TCL VOA surrogate recoveries fell within control limits for the project samples received and reviewed. No qualifier is required.

- Volatile surrogate compounds are not associated with Methane/Ethane/Ethene analyses. Therefore, no comments are offered regarding possible matrix effects and overall analytical accuracy. No qualifier is required.

Internal Standards Area Performance: Internal standards are analytes of interest, which are added to the investigative samples prior to analysis to ensure that GC/MS sensitivity and responses remain stable. Internal standards are reported with the volatile analysis.

- The volatile internal standard area counts and retention times fell within control limits for the project samples received and reviewed for TCL VOA analyses. No qualifier is required.

Initial and Continuing Calibration Results: Control limits for initial and continuing instrument calibrations are established to ensure that the instrument is capable of producing accurate quantitative data at the beginning and throughout each of the analyses.

- The TCL VOA target compound initial and continuing calibration response factors, percent relative standard deviations (%RSD), and percent differences (%D) associated with the reviewed project samples fell within acceptable control limits. No qualifier is required.

- The Methane/Ethane/Ethene target compounds initial and continuing calibration response factors, %RSD, and %D associated with the reviewed project samples fell within acceptable control limits. No qualifier is required.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Summaries: Matrix spikes are samples spiked with known concentrations of analytes of interest. The MS/MSD percent recoveries and duplicate results are used to assess extraction efficiencies, possible matrix effects, and overall analytical accuracy and precision.

Blank spikes (BS) are blank samples fortified (spiked) with known concentrations of analytes of interest. The blank spike percent recoveries results are used to assess extraction efficiencies, and overall analytical accuracy and precision.

Field duplicate samples are taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. Therefore, results may have more variability than laboratory duplicates, which measure only laboratory performance.

- In the TCL VOA analysis, the MS/MSD analyses were performed. However, the laboratory reports only the MS recovery results, which fell within control limits (MSD not required under USEPA Method 624), providing a positive indication of the overall accuracy associated with these analyses. Since the MSD results were not provided, no comments can be offered regarding the precision associated with the TCL VOA analyses. The blank spike recoveries were reported by the laboratory and the reported volatile compound recoveries fell within control limits. No qualifier is required.

- The Methane/Ethane/Ethene MS/MSD results (recoveries and relative percent differences or RPD) and BS recoveries associated with Data Set T020 fell within acceptable control limits providing a positive indication of the overall accuracy and precision associated with these analyses. No qualifier is required.

- Sample DUP060706 (Data Set T020) was collected and submitted as a blind field duplicate of sample MW-97-1S. The reproducibility of the TCL VOA and Methane/ Ethane/Ethene results is good, providing a positive indication of the overall accuracy and precision associated with this analysis. No qualifier is required.

Target Compound Identification and Quantitation: The laboratory calculations are verified and compound identifications are reviewed and assessed by the data reviewer.

- Sample MW-1S was analyzed at a 1:20 dilution for TCL VOA resulting in elevated detection limits, due to the target compound chloroethane concentration exceeding the linear calibration range requirements. No qualifier is required.

- The following samples were analyzed at elevated dilutions for Methane/Ethane/ Ethene resulting in elevated detection limits, due to the target compound methane concentrations exceeding the linear calibration range requirements. No qualifier is required.

Data Set	Associated Sample and Dilution
T020	MW-1S (1:20) MW-1D-97 (1:20) MW-98-8S (1:100) MW-98-8D (1:100) MW-97-1S (1:200) DUP060706 (1:200)

- The GC and GC/MS raw data (quantitation reports, chromatograms and GC/MS mass-spectra) were provided for review. Except where noted in Section 3.1, no other laboratory calculation errors were noted for samples selected for verification during the Data Validation Review. No further action is required from the laboratory.

Tentatively Identified Compounds: In addition to the specific target compounds identified, 10 non-target volatile organic compounds of greatest apparent concentration were tentatively identified by a computerized search of the National Bureau of Standards (NBS) mass-spectral library. A mass-spectral interpretation specialist compares the sample mass-spectrum to the library search and assigns a tentative identification. The validity of the tentatively identified compounds (TICs) was evaluated based upon the identifications made by the laboratory, and the following comments are offered:

- The majority of the VOA TICs identified in samples MW-1S, MW-1D-97, MW-97-1S, and DUP060706 are an alkane, unknown aromatics, diethyl sulfide, indane, and unknowns.

Additional Comments

- As per the requirements, values calculated below the Reporting Limit (RL) should be considered estimated and are flagged (J) on the summary table.

3.3 INORGANIC AND CONVENTIONAL PARAMETER QUALIFIERS

Hold Times: Technical hold times are assessed by comparing the sampling dates with that of the preparation dates and/or analysis dates.

- The reviewed project samples were prepared and/or analyzed within the required hold time for (total and dissolved) iron and conventional parameters (alkalinity, chloride, sulfate, and TOC) analyses. No qualifier is required.

Blank Contamination: Laboratory method blanks are clean liquid and/or solid matrix samples prepared by the analytical laboratory and analyzed in the same manner as the investigative samples. Water laboratory method blanks are used to identify whether investigative samples have been contaminated during sample preparation, sample analysis, or from a previous sample (instrument carry-over).

- A trace iron concentration (above IDL but less than RL) was detected in the laboratory method (prep) blank associated with Data Set T020. The positive (dissolved) iron results (above IDL but less than RL) in samples MW-98-8S, MW-98-8D, MW-97-1S, and DUP060706 are flagged (U) reporting limit on the laboratory summary pages and on the summary table.
- No conventional parameter contaminants were detected in the laboratory method and/or instrument blanks associated with the reviewed project samples. No qualifier is required.

Instrument Calibration and Verifications: Control limits for initial and continuing calibration verifications (ICV and CCV) are established to ensure that the instrument is capable of producing accurate quantitative data at the beginning and throughout each of the analyses.

- The initial and continuing calibration verification (ICV/CCV) standard recoveries for (total and dissolved) iron fell within control limits. No qualifier is required.

- The initial and continuing calibration verification (ICV/CCV) standard recoveries for the conventional parameters fell within control limits. No qualifier is required.

Inductively Coupled Plasma (ICP) Interference Check Sample Results: The interference check sample (ICS) verifies the laboratory's ICP inter-element and background correction factors.

- The ICS analysis fell within control limits for (total and dissolved) iron associated with Data Set T020. No qualifier is required.

Laboratory Control Sample Results: The laboratory control sample (LCS) is a blank sample fortified (spiked) with known concentrations of analytes of interest. The percent recoveries are used to assess extraction efficiencies and overall analytical accuracy.

- LCS recoveries fell within control limits for (total and dissolved) iron and conventional parameter analyses. No qualifier is required.

Matrix Spike (MS) and Duplicate (DU) Summaries: Matrix spikes are samples spiked with known concentrations of analytes of interest. The spiked sample analysis is designed to provide information about the sample matrix effect on the sample preparation procedures and the measurement methodology. Duplicate samples are used to demonstrate acceptable method precision from the laboratory at the time of analysis. The percent recoveries and duplicate results are used to assess digestion efficiencies, possible matrix effects, and overall analytical accuracy and precision.

Field duplicate samples are taken and analyzed as an indication of overall precision. These analyses measure both field and laboratory precision. Therefore, results may have more variability than laboratory duplicates, which measure only laboratory performance.

- The (total and dissolved) iron MS recovery and DU RPD associated with Data Set T020 fell within control limits, providing a positive indication of the overall accuracy and precision associated with this analysis. No qualifier is required.

- The conventional parameters MS/MSD and/or DU (recoveries and RPD) fell within control limits providing a positive indication of the overall accuracy and precision associated with these analyses. No qualifier is required.

- Sample DUP060706 (Data Set T020) was collected and submitted as a blind field duplicate of sample MW-97-1S. The reproducibility of the (total and dissolved) iron and conventional parameters results is good, providing a positive indication of the overall accuracy and precision associated with this analysis. No qualifier is required.

ICP Serial Dilution Results: The ICP Serial dilution of samples demonstrates whether or not significant physical or chemical interference exist due to sample matrix.

- The ICP serial dilution analyses of (total and dissolved) iron fell within control limits. No qualifier is required.

Target Analyte Identification and Quantitation: The laboratory calculations are verified and compound identifications assessed by the data reviewer.

- The metals [(total and dissolved) iron] and conventional parameter raw data and/or laboratory worksheets were provided for review (as required under the NYSDEC ASP B Data Deliverable format). Except where noted in Section 3.1, no other laboratory calculation errors were noted for samples selected for verification during the Data Validation Review. No further action is required from the laboratory.

Additional Comments

- Metals were analyzed by ICP instrument; therefore, the Graphite Furnace Atomic Absorption (GFAA) QC data are not required for the project samples received and reviewed. No further action is required from the laboratory.

4.0 CONCLUSIONS

Overall, the data quality is acceptable. The Data Validation Review has identified aspects of the analytical data that require qualification. Data qualifiers, when applicable, are placed next to the results so that the data user can assess the qualitative and/or quantitative reliability of the reported results. Except where noted, the laboratory analytical data contained herein are deemed usable and in compliance with the NYSDEC ASP B Data Deliverable Format requirements. To confidently use any of the data within the data set, the data user should understand the limitations and qualifications presented.

DATA VALIDATION REVIEW
PROJECT: COLUMBIA CEMENT, FREEPORT, NY
DATE SAMPLES COLLECTED: AUGUST 27 THROUGH SEPTEMBER 15, 2004
JOB NO.: 38546433

LAB REPORT NOS: N76706, N76856, N77152 and N78141

1.0 INTRODUCTION

This Data Validation Review has been performed in accordance with the requirements specified in the standard operating procedures (SOP) for the validation of volatile organic and semi-volatile organic data using USEPA Region II SW-846 Method 8260B, SOP HW-24, Rev. 1, dated June 1999 and Method 8270C, SOP HW-22, Rev. 2, dated June 2001, respectively, and SW-846 methodologies. The data validation review requirements are applied such that specifications of the methods take precedence over the specifications of the USEPA Region II SW-846 Method SOP Organic Data Review guidelines in those instances where the specifications differ.

The objective of the review was to assess data usability and compliance with the modified New York State Department of Environmental Conservation (NYSDEC) Analytical Service Protocol (ASP) Category B data deliverable requirements. The Data Validation Review provides an interpretation of data usability based on the reported quality control parameters. A total of 21 soil samples, one field-blank and 4 trip-blank samples were collected by URS Corporation – Cranford, New Jersey, and submitted to Accutest Laboratories of Dayton, New Jersey (NYSDEC Certification No. 10983). Six soil samples and one trip-blank sample from Accutest Data Set N78141 were selected for data validation review to assess the overall data quality. Section 2.0 of this report summarizes the samples included in this review and the analyses performed. The samples were analyzed following USEPA SW-846 methodologies. The laboratory analytical data set contained herein was prepared in accordance with NYSDEC ASP Category B Data Deliverable Format (Exhibit B).

The organic data quality review is based on the following parameters:

- * Hold Times
- * Blank Contamination
- * GC/MS Performance Check (Tuning) Summaries
- System Monitoring Compound (Surrogate) Recoveries
- * Internal Standard Area Performance
- Initial and Continuing Calibration Results
- Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Summaries
- * Target Compound Identification and Quantitation
- * Tentatively Identified Compounds

*All criteria were met for this parameter

This report was prepared to provide a critical review of the laboratory analysis and reported chemical results. Overall, the data quality is acceptable. The results of the Data Validation Review are presented in Section 3.0. Data qualifiers, when applicable, are placed next to the

results so that the data user can assess the qualitative and/or quantitative reliability of the reported result.

2.0 SAMPLES INCLUDED IN REVIEW

Sample ID	Lab ID	Date Collected	Test Requested
		Lab Report No. N78141	
DRUM-1	N78141-01	9/15/04	TCL VOA+10
PIPE-1	N78141-02	9/15/04	TCL VOA+10
PIPE-2	N78141-03	9/15/04	TCL VOA+10
PIPE-3	N78141-04	9/15/04	TCL VOA+10
PILE-1	N78141-05	9/15/04	TCL VOA+10
DRAIN-1	N78141-06	9/15/04	TCL VOA+10 and TCL BNA+15
TB091504	N78141-07	9/15/04	TCL VOA+10

Legend:

TCL VOA+10 = Target Compound List Volatile Organic Compounds plus Forward Library Searches following USEPA SW-846 Method 8260B.

TCL BNA+15 = Target Compound List Semi-volatile (Base/Neutral and Acid-Extractable) Organic Compounds plus Forward Library Searches following USEPA SW-846 Method 8270C.

3.0 RESULTS

3.1 GENERAL COMMENTS

With regard to the data package deliverables, most of the NYSDEC ASP Category B Data Deliverable format requirements were met, with the exception of the following correctable deficiencies. Please note that these deficiencies do not impact data usability.

- In the TCL VOA analysis of Data Set N78141, the GC column was reported incorrectly as EB-624 on the Case Narrative, page 11. Based on a review of the results summary sheets (Form 1), the correct column label should be ZB-624. This reviewer has corrected and initialed this transcriptional error on the case narrative page. No further action is required from the laboratory.

- In the TCL BNA analysis of Data Set N78141, the extraction log was not included in the data package received for review. The laboratory was contacted and the missing extraction log was forwarded to URS. No further action is required from the laboratory.

3.2 ORGANIC QUALIFIERS

Hold Times: Technical hold times were assessed by comparing the sample dates with that of the preparation dates and/or analysis dates.

- The project samples associated with Data Set N78141 were analyzed within the required hold time for TCL VOA and TCL BNA analyses. No qualifier is required.

- The sample cooler temperatures upon laboratory verified time of sample receipt (VTSR) fell within the 4°C (+2°C) requirement. No qualifier is required.

Blank Contamination: Laboratory method blanks are clean liquid and/or solid matrix samples prepared by the analytical laboratory and analyzed in the same manner as the investigative samples. Water laboratory method blanks are used to identify whether investigative samples have been contaminated during sample preparation, sample analysis or from a previous sample (instrument carry-over).

Trip-blanks are carbon-free deionized water samples that accompany volatile investigative samples during each stage of shipment, storage and analysis. Trip-blanks are used to assess the potential for artificial introduction of volatile compounds into the investigative samples during the transportation and sample handling processes.

- No TCL VOA and TCL BNA contaminants were detected in the laboratory method blanks and/or in the trip-blank sample associated with the reviewed project samples. No qualifier is required.

- BNA tentatively identified compounds (TICs) consisting of system artifacts and/or aldol condensation products or ACP were tentatively identified in the laboratory method blank (OP18078-MB1) associated with Data Set N78141. There is no impact on the data quality of sample DRAIN-1 since TICs were not detected in this sample around the retention time at which these system artifacts and/or ACP TICs eluted. No qualifier is required.

GC/MS Performance Check (Tuning) Summary: Gas chromatograph/mass spectrometer (GC/MS) instrument tuning and performance checks are performed to ensure the instrument's ability to provide appropriate mass-resolution, identification and sensitivity.

- The bromofluorobenzene (BFB) tuning compound mass-ion abundance criteria for the volatile organic compound analyses and the decafluorotriphenylphosphine (DFTPP) tuning compound mass-ion abundance criteria for the semi-volatile (base/neutral and acid-extractable) organic compound analyses were reported within control limits for the reviewed data set. No qualifier is required.

System Monitoring Compound (Surrogate) Recoveries: System monitoring compounds (surrogates) are those compounds, which are not expected to be detected in the investigative samples but which are chemically similar to the analytes of interest. Surrogate compound percent recoveries are used to assess extraction efficiencies, possible matrix effects and overall analytical accuracy.

- The VOA surrogate, toluene-d8 (TOL), fell outside the control limits (high) for the initial analysis (1:50 dilution) of sample PIPE-3 (Data Set N78141). Additionally, TOL was also recovered high for the matrix spike/matrix spike duplicate of sample PIPE-3, which suggests possible matrix effects. Sample PIPE-3 was re-analyzed at a 1:1000 dilution due to the target compound concentrations exceeding the linear calibration range requirements. The positive VOA results of the initial analysis (1:50 dilution) of sample PIPE-3 may be biased high and are flagged (J) estimated on the laboratory summary pages. There is no impact on the data quality of the non-detected VOA results and no qualifier is required.

- With the exception of sample PIPE-3 previously described, the VOA surrogate recoveries fell within control limits for the reviewed project samples of Data Set N78141. No qualifier is required.

- The BNA surrogate recoveries fell within control limits for the reviewed project sample DRAIN-1 associated with Data Set N78141. No qualifier is required.

Internal Standards Area Performance: Internal standards are analytes of interest, which are added to the investigative samples prior to analysis to ensure that GC/MS sensitivity and responses remain stable. Internal standards are reported with VOA and BNA analyses.

- The TCL VOA and TCL BNA internal standard area counts and retention times fell within control limits for the reviewed project samples associated with Data Set N78141. No qualifier is required.

Initial and Continuing Calibration Results: Control limits for initial and continuing instrument calibrations are established to ensure that the instrument is capable of producing accurate quantitative data at the beginning and throughout each of the analyses.

- High percent relative standard deviation (%RSD >15 but <50) was reported for the initial calibration response factors for the TCL VOA compound, acetone, associated with the reviewed project samples of Data Set N78141 (with the exception of trip-blank sample TB091504). There is no impact on the data quality of the acetone results since acetone is non-detected in these samples and no qualifier is required.

- High %RSD (%RSD >15 but <50) was reported for the initial calibration response factors for the TCL VOA compound, 2-hexanone, associated with the reviewed project samples of Data Set N78141 (with the exception of sample PIPE-3 and trip-blank sample TB091504). There is no impact on the data quality of the 2-hexanone results since 2-hexanone is non-detected in the associated project samples and no qualifier is required.

- Due to the high percent difference (%D >20 but <90) between the initial and continuing calibration response factors for the TCL VOA compounds, 2-butanone and 2-hexanone, associated with the trip-blank sample TB091504 (Data Set N78141), the non-detected 2-butanone and 2-hexanone results are regarded as estimated values and are flagged (UJ) on the laboratory summary pages and on the summary table.

- With the exception of acetone, 2-hexanone and 2-butanone noted previously, the TCL VOA and TCL BNA initial and continuing calibration response factors, %RSD and/or correlation coefficient (r) and %D or percent drift fell within acceptable control limits associated with the reviewed project samples. No qualifier is required.

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Summaries: Matrix spikes are samples spiked with known concentrations of analytes of interest. The MS/MSD percent recoveries and duplicate results are used to assess extraction efficiencies, possible matrix effects, and overall analytical accuracy and precision.

Blank spikes (BS) are blank samples fortified (spiked) with known concentrations of compounds of interest. The blank spike percent recoveries are used to assess extraction efficiencies and overall analytical accuracy.

- The recovery of the TCL VOA spiking compound, toluene, fell outside the control limits (low) for the PIPE-3 MSD sample associated with sample PIPE-3 (Data Set N78141). Additionally, the Relative Percent Difference or RPD fell outside the control limits for toluene. There is minimal impact on the data quality of toluene in sample PIPE-3 since the MS recovery of toluene fell within control limits. Additionally, the associated BS recoveries fell within control limits. No qualifier is required.

- The TCL VOA MS/MSD/BS results (recoveries and RPD) associated with the remaining project samples of Data Set N78141 fell within acceptable control limits providing a positive indication of the overall accuracy and precision associated with these analyses. No qualifier is required.

- The TCL BNA spiking compound, 2,4-dinitrophenol, was not recovered for the N77876-25 MS/MSD (non-project) samples associated with Data Set N78141. Additionally, the MS and MSD recovery of di-n-octylphthalate fell outside the control limits (high). There is minimal impact on the BNA data quality of sample DRAIN-1 since the MS/MSD samples are non-project samples. Additionally, the associated BS recoveries fell within control limits. No qualifier is required.

Target Compound Identification and Quantitation: The laboratory calculations are verified and compound identifications are reviewed and assessed by the data reviewer.

- Sample PIPE-3 (Data Set N78141) was initially analyzed at a 1:50 dilution (as a medium level soil) for TCL VOA. Due to the target compound concentrations exceeding the linear calibration range requirements, sample PIPE-3 was re-analyzed at a 1:1000 dilution (as a medium level soil). Both the TCL VOA initial and dilution analysis results are reported on the laboratory summary pages. No qualifier is required.

- The GC/MS raw data (quantitation reports, chromatograms and mass-spectra) were provided for review. No laboratory calculation errors were noted for samples selected for verification during the Data Validation Review. No further action is required from the laboratory.

Tentatively Identified Compounds: In addition to the specific target compounds identified, up to 25 non-target organic compounds of greatest apparent concentration (10 for VOA and 15 for BNA) were tentatively identified by a computerized search of the National Bureau of Standards (NBS) mass-spectral library. A mass-spectral interpretation specialist compares the sample mass-spectrum to the library search and assigns a tentative identification. The validity of the TICs were evaluated based upon the identifications made by the laboratory, and the following comments are offered:

- Volatile TICs were tentatively identified only in samples PIPE-3, PILE-1 and DRAIN-1 (Data Set N78141). VOA TICs associated with sample PIPE-3 consist of alkanes, alkylated cycloalkanes, cycloalkanes/alkenes, an alkylated alkane and an unknown. An unknown was tentatively identified in samples PILE-1 and DRAIN-1.

- BNA TICs were not tentatively identified in sample DRAIN-1 associated with Data Set N78141. No qualifier is required.

Additional Comments

- As per the requirements, values calculated below the Reporting Limit (RL) should be considered estimated and are flagged (J) on the summary table.

4.0 CONCLUSIONS

Overall, the data quality is acceptable. The Data Validation Review has identified aspects of the analytical data that require qualification. Data qualifiers, when applicable, are placed next to the results so that the data user can assess the qualitative and/or quantitative reliability of the reported results. The laboratory analytical data contained herein are deemed usable and in compliance with the NYSDEC ASP Category B Deliverable Format requirements. To confidently use any of the data within the data set, the data user should understand the limitations and qualifications presented.