January 10, 2025

Camden Redevelopment Agency, c/o BRS, Inc
Alicia Flammia
520 Market Street
City Hall-Suite 1300
Camden, New Jersey 08101-5120

Re: Remedial Action Workplan Addendum Letter
Former Borden Chemical Printing Facility
Program Interest # G000003602
1625 Federal Street
Block 1184, Lot 5
City of Camden, Camden County, New Jersey

BL Companies was retained by the Camden Redevelopment Agency (CRA) to prepare an addendum letter to the attached Remedial Investigation Report & Remedial Action Workplan (RIR/RAW) completed in November 2011 (revised September 2012) by Environmental Resolutions, Inc (ERI). The purpose of this addendum is to summarize changes in the New Jersey Department of Environmental Protection (NJDEP) regulatory standards as they pertain to the Former Borden Chemical Printing Facility, since the date of the RIR/RAW. Additionally, this addendum will serve as proposition for deviations from remedial efforts discussed in the attached RIR/RAW, based on these regulatory changes and the lack of submission and associated NJDEP acceptance of the RIR/RAW. The Borden Chemical Printing Facility is identified by the NJDEP Program Interest # G000003602 and Case # 99-07-16-0034-09 and is located at 1625 Federal Street in the City of Camden, County of Camden, State of New Jersey and referred to as Block 1184, Lot 5, hereinafter referenced as the "Site".

Background

A Preliminary Assessment Report was completed for the Site by Remington & Vernick Engineers, Inc. (Remington & Vernick) on June 4, 2001, which identified twenty-three (23) Areas of Concern (AOCs). Remington & Vernick and JM Sorge, Inc. (JMS) conducted Site Investigations (SI) from 2002 to 2009, and No Furter Action (NFA) proposals for Eleven (11) AOCs were included in an NJDEP-approved Site Investigation Report (SIR). No further investigation was proposed by ERI based on the findings of the Remedial Investigation portions of the 2011/2012 RIR/RAW for seven (7) of the remaining twelve (12) AOCs. Remedial Action was proposed by ERI for five (5) areas of concern.

While the RIR & RAW was submitted in 2011 and revised in 2012, NJDEP approval of the report was not made available for review. According to correspondence from the NJDEP and

Camden Redevelopment Agency, the department had not received and formally accepted the RIR & RAW.

Based on these findings, remedial action at the Site should adhere to current regulatory standards.

On September 18, 2017, the New Jersey Department of Environmental Protection updated the soil remediation standards for 19 contaminants, as listed in N.J.A.C. 7:26D, Appendix 1, Tables 1A and 1B.

On May 17, 2021, the Department adopted amended rules at N.J.A.C. 7:26D. Included in the amended rules are soil and soil leachate remediation standards for the migration to ground water exposure pathway and indoor air remediation standards for the vapor intrusion exposure pathway. Also included is the replacement of direct contact soil remediation standards with separate soil remediation standards for the inhalation exposure pathway and the ingestion-dermal exposure pathway. In addition, the rule amendments Expands the existing interim remediation standard process to include soil and soil leachate for the migration to ground water exposure pathway, indoor air for the vapor intrusion exposure pathway, and ground water. Also, the existing process for updating remediation standards has been expanded to include soil and soil leachate for the migration to ground water exposure pathway, indoor air for the vapor intrusion exposure pathway, and ground water. The existing alternative remediation standards process has been expanded to include soil and soil leachate for the migration to ground water exposure pathway and indoor air for the vapor intrusion exposure pathway.

Additionally, The New Jersey Department of Environmental Protection (Department) adopted specific ground water quality standards for 23 contaminants. Pursuant to the Remediation Standards (N.J.A.C. 7:26D), Class II-A specific ground water quality standards are ground water remediation standards for Class II-A ground water.

It is BL Companies' professional opinion that the proposed remedies and/or No Further Action (NFA) status of the AOCs listed below, proposed by Remington & Vernick and JM Sorge, Inc and ERI meet the remediation goals and requirements of the Client and the NJDEP and are therefore acceptable remedies:

- AOC-A1: Former Heating Oil USTs
- AOC-A2 – Existing 550-gallon UST
- AOC-B: Rail Sidings
- AOC-C: Former Pump Station
- AOC-D1: Loading Area
- AOC-D3: Loading Area
- AOC-E: Drum Storage Areas
- AOC-F Roof Leaders
- AOC-G: Soil Pile/Debris Pile
- AOC-H: Transformers
- AOC-I Soil Staining
- AOC-J: Former Boiler Room
- AOC-K4: Stained Concrete Area
- AOC-K5: Drain
- AOC-L2: Concrete Filled Former Trench
- AOC-L3: Debris Filled Pits
- AOC-M: Suspected Former ASTs
- AOC-N: Sumps
- AOC-P: Historic Fill

Proposed remedies associated with areas of concern discussed above are accepted by LSRP # 783617, Michael P. McGowan, however it is Mr. McGowan and BL Companies' professional opinion that additional delineation and/or remediation is necessary for the six areas of concern discussed below.

Deviations from proposed remedies

AOC-D2: SE Loading Area

ERI concluded that no further action was warranted based on the vertical delineation of Trichloroethene (TCE) contaminated soil above the current migration to groundwater (MGW) standard in one sample identified. As reported in the RIR/RAW, JM Sorge, Inc identified TCE at concentrations of 0.088 and 0.055 mg/kg in two samples, both of which exceed current migration to groundwater (MGW) standards for TCE (0.0065 mg/kg). ERI delineated the extent of this exceedance to less than 4' below the ground surface and the detections do not exceed current residential direct contact standards. However, it is BL Companies' professional opinion that the identified contamination from JM Sorge, Inc in samples D2-1 and D2-2A should be addressed in the proposed deed notice, which is discussed in section 8.5 and Site-wide engineering controls discussed in section 8.3 of the RAW. Activities involving source removal do not appear to be a necessary remedial action.

AOC-K1: Former Pit

ERI proposed no further action associated with this area of concern. Remington & Vernick had previously identified TCE at 0.15 mg/kg, exceeding current NJDEP MGW standards in sample K1-1. Chlordane was also detected at 0.031 mg/kg, however, this detection is below the NJDEP MGW and residential direct contact standards. ERI delineated the extent of this exceedance to less than 5' below the ground surface and the detections do not exceed current residential direct contact standards; however, it is BL Companies' professional opinion that the identified contamination from Remington & Vernick in this sample should be addressed in the proposed deed notice, which is discussed in section 8.5 of the RAW.

AOC-K2: Concrete Holding Tank

ERI proposed removal of the concrete vault structure and collection of additional soil samples to evaluate whether a source of identified contaminants in MW-2 is present in areas of this AOC. ERI made this determination based on the delineation of previously identified TCE, Benzene, and 1,1,1-trichloroethane contamination in several samples collected, as well as these detections not exceeding site-specific remediation standards calculated by ERI. It is BL Companies' professional opinion that the proposed remedies associated with this area of concern are acceptable remedies; however, delineated residual Benzene and 1,1,1-trichloroethane contamination in exceedance of current migration to groundwater standards in soil should be addressed in the proposed deed notice, which is summarized in section 8.5 of the RAW.

Additionally, vertical delineation of TCE concentrations exceeding current MGW standards is needed in K2-7 as well as K2-6. See Table 1: AOC-K2: Concrete Holding Tank for the identified samples that exceed current MGW standards for each contaminant of concern and Figure 1 for proposed delineation sampling.

AOC-K3: Concrete Filled Former Structure

Proposed remedies for this area of concern form ERI include the removal of the I-shaped concrete feature and a remedial excavation of soil surrounding this feature of approximately 1,000 square feet to a depth of approximately 7' below ground surface (bgs). The excavation is intended to address benzene, cis-1,2-dichloroethene, and PCBs detected in this area. Confirmation sampling by ERI yielded results that indicate that Benzene, cis-1,2-dichloroethene, and PCBs that exceed current MGW standards are delineated to a depth of less than 7'bgs. The horizontal extent of the excavation was determined through site-specific TCE remedial standard values calculated by ERI. It is BL Companies' professional opinion that additional horizontal delineation of TCE exceedance above MGW standards in soil is necessary to determine the extent of remedial excavation activities. Soil borings should be advanced to the southeast of K3-4 and west of K3-6 to be analyzed for TCE. See Table 2: AOC-K3: Concrete Filed Former Structure for the identified samples that exceed current MGW standards for the contaminant of concern.

AOC-L1: Debris Filled Pit

ERI proposed a remedial excavation of an estimated 11,000 square feet to a depth of 7' bgs associated with this area of concern to address contaminated soils with TCE, 1,1,1-trichloroethane, Tetrachloroethylene (PCE), cis-1,2-dichloroethene, Benzene, and 1,1-dichloroethene exceedances above IGWSRS Site specific criteria. The horizontal extent of the excavation was determined through site-specific remedial standard values for each of the aforementioned contaminants. It is BL Companies' professional opinion that additional horizontal delineation is needed to determine the extent of current MGW exceedances in soil for northern excavation areas. Additional soil borings should be advanced to the north of L1-10 and L1-13, as well as to the northwest of L1-11 and L1-10. Samples should be collected to be analyzed for Benzene, PCE, TCE, cis-1,2-dichloroethene, 1,1,1-trichloroethane, and 1,1-dichloroethene. Additionally, southern areas of the excavation should extend to the location of O2-1 based on an exceedance of TCE in O1-1A, the proposed southernmost excavation point. See Table 3: AOC-L1: Debris Filled Pit for the identified samples that exceed current MGW standards for the contaminant of concern. Additionally, see Figure 1 for proposed delineation sampling and extended excavation areas.

AOC-O: Floor Drains

During remedial investigation activities, ERI advanced several borings adjacent to identified floor drains within the easternmost Site structure. Trichloroethene was detected in exceedance of current MGW standard at 0.011 mg/kg in sample O1-1A. ERI concluded that TCE does not represent an active source of groundwater contamination; however, it is BL Companies' professional opinion that this TCE exceedance above its current MGW standard at sample location O1-1A should be addressed in the proposed deed notice, discussed in section 8.5 of the RAW. Activities involving source removal do not appear to be a necessary remedial action.

Conclusion

It is the professional opinion of Michael P. McGowan (LSRP # 574543) and BL Companies that the proposed remedies by ERI in conjunction with the above-discussed deviations represent appropriate remedies for the identified Areas of Concern at the Site. It should be noted that Site-wide groundwater contamination and Site-wide historic fill material are addressed by distinct Areas of Concern by ERI. Referenced changes to the NJDEP Remediation Standards do not appear to impact the effectiveness of the proposed remedies by ERI for these AOCs, as well as those that are not discussed above.

Sincerely,

BL Companies

Andrew Thompson

Project Scientist I

Michael P. McGowan, CHMM, LSRP

Senior Project Manager

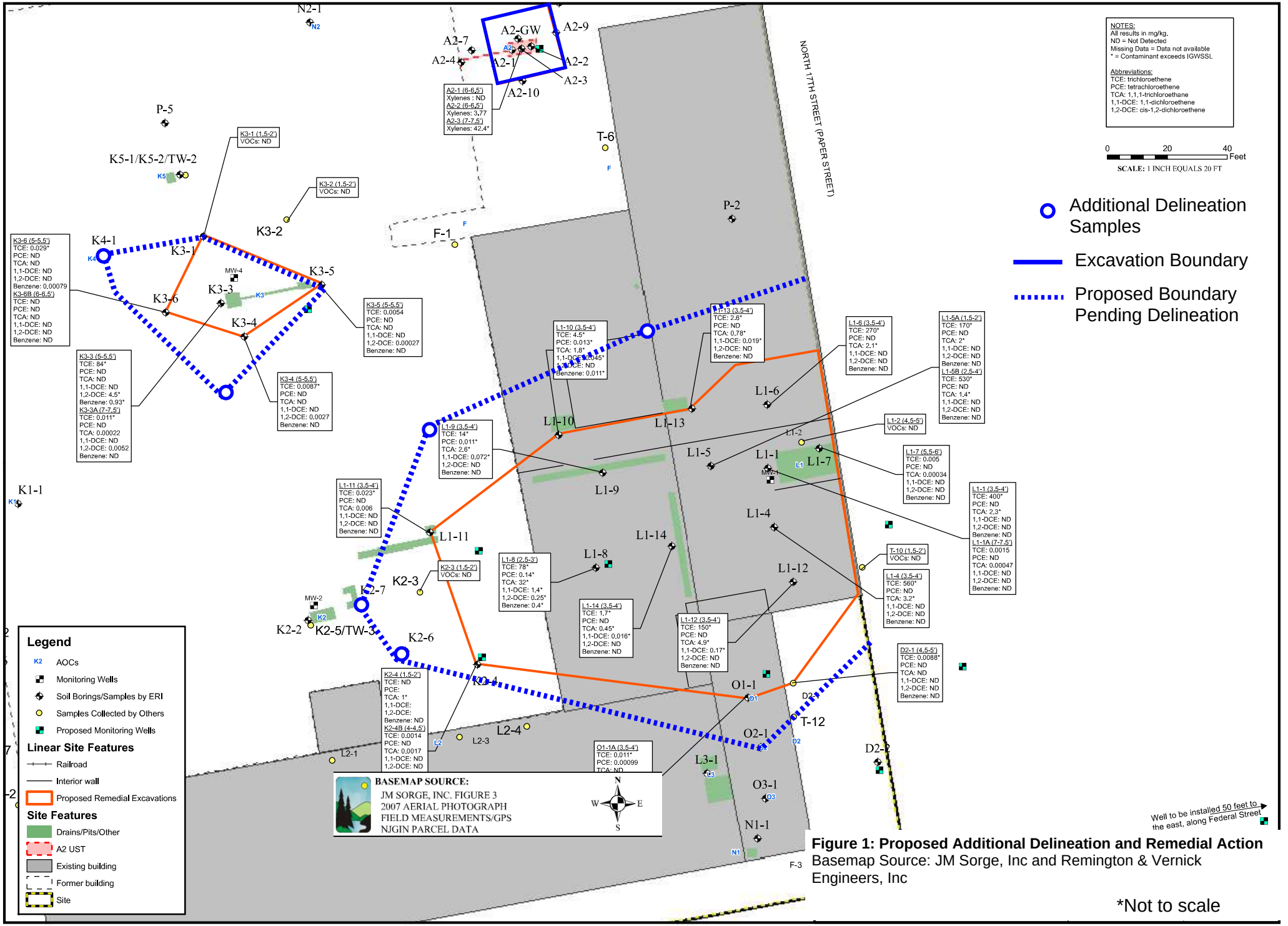

Figure 1: Proposed Additional Delineation and Remedial Action
Basemap Source: JM Sorge, Inc and Remington & Vernick Engineers, Inc

*Not to scale

Table 1: AOC-K2: Concrete Holding Tank				
Sample ID	Depth	Contaminant	Soil Concentration (mg/kg)	N.J.A.C. 7:26D MGW Standard (mg/kg)
K2-6	0.5-1'	Trichloroethylene	**0.0095**	0.0065
K2-7	3.5-4'	Trichloroethylene	**0.011**	0.0065
K-2-2	1.5-2'	Benzene	**0.71**	0.0094
K2-4	1.5-2'	1,1,1-trichloroethane	**1**	0.2

Table 2: AOC-K3: Concrete Filled Former Structure				
Sample ID	Depth	Contaminant	Soil Concentration (mg/kg)	N.J.A.C. 7:26D MGW Standard (mg/kg)
K3-4	5-5.5'	Trichloroethylene	**0.0087**	0.0065
K3-6	5-5.5'	Trichloroethylene	**0.029**	0.0065

Table 3: AOC-L1: Debris Filled Pit					
Contaminant	L1-13 (3.5-4')	L1-10 (3.5-4')	L1-11 (3.5-4')	O1-1A (3.5-4')	N.J.A.C. 7:26D MGW Standard (mg/kg)
Trichloroethylene	**2.6**	**4.5**	**0.023**	**0.011**	0.0065
Tetrachloroethylene	ND	**0.013**	ND	0.000099	0.0086
1,1,1-trichloroethane	**0.78**	**1.8**	0.006	ND	0.2
1,1-dichloroethene	**0.019**	**0.045**	ND	ND	0.0069
Benzene	ND	**0.011**	ND	ND	0.0094

BOLD TEXT – Exceedance above applicable MGW standard

ND – Non detect

REMEDIAL INVESTIGATION REPORT &
REMEDIAL ACTION WORKPLAN

FORMER BORDEN CHEMICAL PRINTING FACILITY
1625 FEDERAL STREET
BLOCK 1184, LOT 5
CITY OF CAMDEN
CAMDEN COUNTY, NEW JERSEY
NJDEP CASE #99-07-16-0034-09
NJDEP PROGRAM INTEREST #G000003602

PREPARED FOR:

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November 2011 (revised September 2012)
31330-01

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APPENDICES

1.0 INTRODUCTION

Environmental Resolutions, Inc. (ERI) has prepared this report to document the findings of a Remedial Investigation (RI) that has been conducted at the Former Borden Chemical Printing Facility located at 1625 Federal Street, Block 1184, Lot 5, City of Camden, Camden County, New Jersey (the Site). The RI was initiated at the request of the Camden Redevelopment Agency (CRA) on behalf of the City of Camden. The Site has been used for industrial purposes since at least the early 1900s, initially to manufacture steam heating supplies and more recently to manufacture printing inks and wire racks. The Site has been vacant since the 1990s. The City of Camden acquired the Site in 1999 through foreclosure and is attempting to remediate this Brownfield site for redevelopment.

Remington and Vernick Engineers, Inc. (Remington & Vernick) completed a Preliminary Assessment (PA) of the Site in 2001. Site Investigations (SI) were completed between 2002 and 2009 by Remington & Vernick and JM Sorge, Inc. (JMS). During the PA and subsequent investigations, the following areas of environmental concern (AOCs) have been identified at the Site.

- AOC A1 – Former Heating Oil USTs
- AOC A2 – Existing 550-gallon UST
- AOC B – Rail Sidings
- AOC C – Former Pump Station
- AOC D – Loading Areas
- AOC E – Drum Storage Areas
- AOC F – Roof Leaders
- AOC G – Soil Pile/Debris Pile
- AOC H – Transformers
- AOC I – Soil Staining
- AOC J – Former Boiler Room
- AOC K1 – Former Pit
- AOC K2 – Concrete Holding Tank
- AOC K3 – Concrete Filled Former Structure
- AOC K4 – Stained Concrete Area
- AOC K5 – Drain
- AOC L1 – Debris Filled Pit
- AOC L2 – Concrete Filled Former Trench
- AOC L3 – Additional Debris Filled Pits
- AOC M – Suspected Former ASTs
- AOC N – Sumps
- AOC O – Floor Drains

Based on the review of prior sampling results, it was determined that additional Site Investigation was needed at some of the AOCs and a Remedial Investigation was needed at AOCs were contamination was previously detected above the remedial standards. A Baseline Ecological Evaluation was also needed. The investigations documented in this Remedial

Investigation Report were conducted by ERI to address each of the AOCs. These investigations were conducted in accordance with the *Technical Requirements for Site Remediation*, N.J.A.C. 7:26E. Based on the findings of the Remedial Investigation, recommendations for additional investigations are presented in a Remedial Investigation Workplan included in this report.

2.0 PHYSICAL SETTING

2.1 Site Description

The Site is comprised of Block 1184 Lot 5 and is located at 1625 Federal Street, northwest of the intersection of Federal Street with North 17th Street. The Site is located in the Marlton section of the City of Camden, Camden County, New Jersey, and covers an area of approximately 2.9 acres. The Site is vacant. Two story buildings are located along the southern and eastern property boundaries. The remainder of the Site consists of concrete slabs of former buildings. Surrounding properties are commercial and industrial, with some residential use to the west. The New Jersey River Line borders the Site to the north. The Site location is depicted on **Figure 1: USGS Location Map**.

2.2 Surface Waters

The Cooper River is located approximately 700 feet west of the Site.

2.3 Hydrogeologic Setting

The Site is located within the New Jersey Coastal Plain physiographic province, and lies at an approximate elevation of 10-20 feet above mean sea level (ft-msl). The Site is located in a mapped outcrop of the Potomac Formation (Kp) which is composed of fine- to coarse-grained sand, interbedded with white, red, or yellow clay. The underlying bedrock aquifer is the Potomac-Raritan-Magothy (PRM) aquifer system. The PRM is an important source of water in the New Jersey Coastal Plain. In New Jersey, the Cretaceous age PRM is generally considered a single hydrogeologic unit or aquifer system (Fusillo, Voronin, 1980). There are several physically distinguishable units within the PRM Formation; however, individual formations may not be distinguishable over wide areas. Generally, lower, middle and upper sands and gravel aquifers, separated by clay and silt confining units, have been recognized.

Surficial geology of the Site is mapped as Unit 2 of the Cape May Formation, which is comprised of sand, pebble gravel, with minor silt, clay, peat, and cobble gravel. Investigations of the Site revealed a surficial historic fill layer of approximately three to four feet thick, with underlying native brown to greenish-brown sand. Groundwater at the Site occurs at approximately seven feet below the ground surface (ft-bgs). Groundwater flow direction at the Site is toward the east-southeast (see Section 4.19.3).

3.0 PREVIOUS INVESTIGATIONS

The following prior environmental reports and correspondence have been identified for the Site:

- NJDEP Site Inspection Report (incomplete), 1981
- Preliminary Assessment Report, June 4, 2001, Remington & Vernick
- Preliminary Assessment Report Comment Letter, July 3, 2001, NJDEP
- Response to Preliminary Assessment Report Comment Letter, August 2, 2001, Remington & Vernick
- Action Memorandum, September 20, 2004, EPA
- Removal Assessment document (incomplete), April 19, 2004, EPA
- Pollution Reports, November 4, 2005 and August 15, 2006, EPA
- Revised Site Investigation Work Plan, September 18, 2007, Brownfield Redevelopment Solutions, Inc. (BRS)
- Site Investigation Report, April 23, 2009, Remington & Vernick
- Supplemental Site Investigation Report, September 29, 2009, JMS
- NJDEP Approval of Site Investigation

Review of the prior reports indicates the Site was owned and operated by Warren Webster Factory to manufacture steam heating supplies from approximately 1906 to 1926. Cities Service Co. and subsequently Borden Chemical manufactured printing inks at the Site from 1940 until 1983. Lynkram manufactured wire display racks at the Site from 1983 until an unknown date. The Site has remained vacant since acquisition by the City of Camden in 1999. Historically, the Site was mostly covered by buildings until several sections were destroyed by fire in the late 1990s.

NJDEP classified the Borden Chemical facility as a Resource Conservation & Recovery Act (RCRA) Treatment, Storage and Disposal (TSD) facility (storing up to 150,000 gallons of hazardous wastes). An NJDEP inspection in 1981 identified leaking drums of oil-based and water-based printing ink wastes and other evidence of spillage. Borden Chemical mitigated the leaking drums under EPA oversight through a RCRA closure plan. At the request of the City of Camden, and subsequent to the fires in the late 1990s, EPA performed several removal actions between 2004 and 2006. EPA removed friable asbestos, surficial contaminated soil, and contaminated dust from within and around the buildings.

During the PA and subsequent investigations, and during an inspection performed following the EPA removal actions, AOCs were identified at the Site as indicated in Section 1 of this report.

Soil and groundwater contamination has been encountered at several of the AOCs. A description of each AOC, including a summary of the prior investigations, is provided in Section 4 of this report. Since contaminated historic fill has been identified at the Site, ERI has identified historic fill as a distinct AOC (AOC P).

4.0 REMEDIAL INVESTIGATION

4.1 Technical Overview

The Remedial Investigation was conducted to assess the identified AOCs, which are depicted on **Figure 2: Areas of Concern** included in **Appendix A.** The following table summarizes the additional actions documented in this RIR. The AOCs marked "NFA" are those for which No Further Action proposals were included in the NJDEP-approved SIRs.

Area of Concern Status Summary

AOC	Location	NFA	Actions Documented in this RIR
AOC-A1: Former Heating oil USTs	A1		Groundwater SI
AOC-A2: Existing 550-gallon UST	A2		UST Removal, SI
AOC-B: Rail Sidings	B	X	
AOC-C: Former Pump Station	C		Soil RI, groundwater SI
AOC-D: Loading Areas	D1	X	
	D2		Soil RI, groundwater SI
	D3	X	
AOC-E: Drum Storage Areas	E1	X	
	E2		Soil RI
AOC-F: Roof Leaders	F	X	
AOC-G: Soil Pile/Debris Pile	G	X	
AOC-H: Transformers	H1	X	
	H2		Soil RI, groundwater SI
AOC-I: Soil Staining	I	X	
AOC-J: Former Boiler Room	J	X	
AOC-K1: Former Pit	K1		Soil RI, groundwater SI
AOC-K2: Concrete Holding Tank	K2		Soil & groundwater RI
AOC-K3: Concrete Filled Former Structure	K3		Soil & groundwater RI
AOC-K4: Stained Concrete Area	K4		Soil RI
AOC-K5: Drain	K5		Soil RI
AOC-L1: Debris Filled Pit	L1		Soil RI, groundwater SI
AOC-L2: Concrete Filled Former Trench	L2	X	
AOC-L3: Additional Debris Filled Pits	L3		Soil SI
AOC-M: Suspected Former ASTs	M1-M2	X	
AOC-N: Sumps	N1-N2		Soil SI of N1, Inspect N2.
AOC-O: Floor Drains	O1-O2		Soil SI
AOC-P: Historic Fill	Site-wide		Soil RI, groundwater SI

Samples were collected by advancing soil borings using either a direct-push sampling unit or stainless steel hand auger. The direct-push sampler utilized a 1-3/4" outer diameter polyethylene insert to obtain five-foot long continuous soil samples. A photoionization detector (PID) was used to screen the soil for volatile vapors. Subsurface conditions are depicted on the Boring

Logs included in **Appendix C**. The boring locations are shown on **Figure 3: Boring Location Plan** included in **Appendix A**.

Site Investigation sampling was performed in accordance with N.J.A.C. 7:26E and the NJDEP *Field Sampling Procedures Manual* (August 2005) with no variances. A stainless-steel trowel was used to collect soil samples and to transfer the samples to laboratory-supplied glassware. Soil samples for volatile organic compounds analysis were collected using disposable Terra Core samplers and were preserved using distilled water and methanol for low-level analysis.

Groundwater samples were obtained at some of the AOCs using temporary well points. Temporary well points were installed using the Passively Placed Narrow Diameter Point method described in the NJDEP *Alternative Ground Water Sampling Techniques Guide* (April 1994). Temporary well points were purged with a peristaltic pump and groundwater samples were collected using disposable bailers. Groundwater sampling data sheets for the temporary well point sampling are provided in **Appendix D**.

Five (5) groundwater monitoring wells (MW-1 through MW-5) were installed to evaluate several AOCs. All monitoring wells are shown on **Figure 4: Monitoring Well Location Plan** included in **Appendix A**. The wells were installed using a hollow stem auger rig by East Coast Drilling, Inc. (ECDI) of Moorestown, New Jersey. The wells were installed to a depth of 15 ft-bsg using 10 feet of 10-slot screen. The wells were finished with flush-mount covers. Monitoring well construction logs, permits, well records, Form As, and Form Bs are included in **Appendix E**. Monitoring wells were sampled using bailers following a three-volume purge. Groundwater sampling data sheets for the well sampling are provided in **Appendix D**.

Samples were placed in an iced cooler and transported under proper chain-of-custody protocol to TestAmerica Edison (NJDEP Certification No. 12028) in Edison, New Jersey. Results were documented in laboratory reports that have been included under separate cover. Based on review of the reports, the laboratory data appears to be reliable as indicated by compliance with sample holding times and precision accuracy criteria for each analytical method and the results of the analyses of blanks, within the limitations noted in the laboratory reports. No significant events or seasonal variations occurred which may have influenced results. The Method Detection Limits (MDLs) for soil for several volatile organic compounds (VOCs) were elevated above the Impact to Groundwater Soil Screening Levels (IGWSSL) due to the detection of tentatively identified compounds (TICs) or targeted VOCs. The elevated MDLs do not significantly impact the findings of the investigation.

A summary of the investigation execution and findings are provided in the following sections arranged by AOC. All soil and groundwater samples obtained to date are summarized on **Table 1: Sample Summary** included in **Appendix B**. Extractible Petroleum Hydrocarbons (EPH) soil results are also included on **Table 1**. The remaining soil and groundwater sample results arranged by AOC are provided on **Tables 2** through **15**. Soil results are compared to the NJDEP Residential Soil Remediation Standards (RSRS), Non-Residential Soil Remediation Standards (NRSRS), and Impact to Groundwater Soil Screening Levels (IGWSSL). Please note that ERI has developed site-specific Impact to Groundwater Soil Remediation Standards for some contaminants as outlined in Section 5.0 of this report. Groundwater sample results are presented on **Table 16** and are compared to the Class II-A Groundwater Quality Standards (GWQS).

4.2 AOC-A1: Former Heating Oil USTs

4.2.1 Description of AOC

Remington & Vernick identified two heating oil USTs on the northeastern portion of the Site. It appears these USTs were removed during EPA removal actions in 2004 or during construction of the River Line located on the northern portion of the Site. The USTs were reportedly between 3,000 and 5,000 gallons each. A geophysical investigation performed in 2009 confirmed that no USTs were located in this area. The USTs appear to have supplied heating oil to the adjacent boiler room (since demolished).

4.2.2 Previous Sampling

JMS performed two (2) test pits and one (1) soil boring in the vicinity of the former USTs. Minor PID readings were encountered at 11.5-12 ft-bgs in the soil boring. Three (3) samples were collected for Petroleum Hydrocarbons (PHC) analysis via the EPA Diesel Range Organics (DRO) method. DRO was detected in one sample at 380 mg/kg, which does not exceed the remedial standard of 5,200 mg/kg in effect at that time, and was not detected in the remaining samples.

JMS obtained groundwater sample TW-1 from a temporary well point installed in boring A-3 for VOCs and SVOCs analysis. PAHs were detected marginally above the GWQS.

4.2.3 Groundwater Sampling

ERI installed monitoring well MW-5 near former JMS groundwater sample TW-1 to evaluate the prior detection of PAHs. ERI collected a groundwater sample from the well on February 4, 2011 using a disposable bailer following a standard three-volume purge. The groundwater sample was analyzed for Target Compound List (TCL) volatile organic compounds (VO+TICs), TCL semi-volatile organics with a library search (SVO+TICs), Target Analyte List (TAL) Metals, PCBs, and TCL Pesticides.

4.2.4 Findings/Recommendations

Contaminants were not detected above the GWQS in monitoring well MW-5. No further investigation of this AOC is proposed.

4.3 AOC-A2: Existing 550-gallon UST

4.3.1 Description of AOC

In August 2009, JMS performed a geophysical survey near the former boiler room on the northern portion of the Site and identified a UST. The UST was suspected to have been used to store heating oil.

4.3.2 Previous Sampling

JMS performed a limited investigation of the UST and sampled soil based on the assumed heating oil use of the UST. JMS performed test pit UST-1 adjacent to the UST and obtained sample UST-1A for Petroleum Hydrocarbons (PHC) analysis via New Jersey Method OQA-QAM-025 (QAM). JMS did not observe evidence of a discharge in the test pit and PHC was not detected in the sample.

4.3.3 UST Closure and Sampling

The UST was closed by removal on January 19, 2011 by Oxford Engineering Company. The UST closure and sampling following tank removal were performed in accordance with N.J.A.C. 7:26E-6.3(b). The UST measured 9'-4" by 4'-4" (approximately 1,000-gallon capacity) and was located approximately 2 ft-bgs. The UST contained some water with a petroleum odor. Upon removal, the UST was inspected for signs of deterioration. Although no holes were observed in the UST, some pitting was apparent. UST and product disposal documentation and photographs taken during UST closure are included in **Appendix F**.

The UST excavation was screened using a PID and elevated PID readings were encountered within the eastern portion of the excavation up to 95 parts per million (ppm). Samples A2-1 (0 ppm on PID) and A2-2 (95 ppm on PID) were collected along the centerline of the UST from the six-inch interval beneath the UST invert (6 ft-bgs). Since no PID readings were encountered during removal of piping associated with the UST, and the piping was less than 15 feet long, sample A2-4 was collected from beneath the elbow of the apparent UST fill port.

A test pit was also performed to evaluate the vertical distribution of elevated PID readings. The test pit extended to groundwater which entered the test pit at approximately 10 ft-bgs. Sample A2-3 was collected at a depth of 7-7.5 ft-bgs, the depth exhibiting the highest PID reading (1020 ppm). Soil at depth exhibited a gasoline-like odor.

Based on the gasoline-like odors observed during UST closure, soil samples were analyzed to evaluate potential discharges of leaded gasoline, and heating oil in accordance with NJDEP's *Protocol for Addressing Extractable Petroleum Hydrocarbons* (Version 5.0, August 9, 2010). Soil samples A2-1, A2-2, and A2-4 were analyzed for PHC via the Extractible Petroleum Hydrocarbons (EPH) method (non-fractional), VO+TICs, and lead. Sample A2-3 was analyzed for VO+TICs and lead.

As summarized in Section 4.3.5, contaminants were detected above the SRS in samples collected following UST removal. Therefore, soil borings A2-7 through A2-10 were subsequently advanced at offsets around the former UST location to further evaluate the impacts. Elevated PID readings indicative of a discharge from the UST were encountered only in boring A2-9 (downgradient of the UST), in the saturated zone. Groundwater was encountered in the offset borings at approximately 6 to 8 ft-bgs (due to irregular surface grades). One (1) soil sample was collected from each boring from the six-inch interval above groundwater for VO+TICs analysis.

During the investigation of the UST area, elevated PID readings were encountered in surficial soils of borings A2-8 and A2-9. These elevated PID readings did not appear to be associated

with the former UST. Sample A2-9A was collected at 0-0.5 ft-bgs from boring A2-9, the boring exhibiting the highest surficial PID readings. The sample was analyzed for VO+TICs.

4.3.4 Groundwater Sampling

On January 25, 2011, a temporary well point was installed in boring A2-GW at the former UST location. Groundwater sample A2-GW was collected for VO+TICs analysis.

4.3.5 Findings/Recommendations

EPH was not detected in the UST closure samples; therefore, analysis of the samples for naphthalene and 2-methylnaphthalene was not required.

Lead was detected above the IGWSSL, but below the RSRS and NRSRS, in samples A2-2 and A2-4; however, these samples were collected from historic fill and the detected lead does not appear indicative of a discharge from the UST.

Total xylenes were detected in sample A2-3 at 42.4 mg/kg, which exceeds the IGWSSL of 12 mg/kg, but does not exceed the RSRS or NRSRS. Sample A2-3 appears to have been collected at, or just above, the saturated zone.

Total TICs were detected in groundwater sample A2-GW at 1,428 ug/L, exceeding the GWQS of 500 ug/L. No other VOCs exceeded the GWQS.

TICs were detected at a maximum of 229 mg/kg (sample A2-3, excluding alkanes) in soil samples collected at this AOC. NJDEP has not published a SRS for TICs. ERI does not believe that the minor TICs detected in soil are a continuing source of the TICs detected in groundwater at this AOC. **However, remediation of soil with elevated TICs in the immediate vicinity of A2-3 is recommended since elevated TICs have been detected in groundwater at this AOC.** This remediation will include removal of total xylenes detected above the IGWSSL.

Following the soil remediation recommended above, installation of a monitoring well is recommended at the former UST location to verify the elevated TICs detected in groundwater sample A2-GW.

TCE was detected in sample A2-9A at 0.42 mg/kg, exceeding the IGWSSL of 0.007 mg/kg, but not exceeding the RSRS or NRSRS. The detected TCE does not appear related to the former UST. TCE was not detected in samples A2-9B or A2-9C. The TCE detected in A2-9A does not exceed the site-specific IGWSRS developed in Section 5.1 of this report. **No further investigation or remediation of the TCE detected at A2-9 appears warranted.**

TCE was also detected in sample A2-2 at 0.1 mg/kg, above the IGWSSL, but below the RSRS and NRSRS. TCE was not detected (with an elevated detection limit) in sample A2-3 collected below sample A2-2. TCE detected at location A2-2 also exceeds the site-specific IGWSRS developed in Section 5.1 of this report. However, TCE was not detected above the GWQS in groundwater sample A2-GW collected from this AOC. **Therefore, no further investigation or remediation of the TCE detected at A2-2 appears warranted at this time.** If TCE is detected

above the GWQS in the groundwater sample collected from the monitoring well recommended for this AOC, remediation of the TCE detected in sample A2-2 may be warranted.

4.4 AOC-C: Former Pump Station

4.4.1 Description of AOC

Historic Sanborn Maps depict a pump house on the southwestern portion of the Site. The purpose of this pump house has not been identified. No surficial evidence of the pump house remains. Five test pits have been performed near the former pump house, three by Remington & Vernick and two by JMS. No piping or other subsurface indications of a pump house were identified.

4.4.2 Previous Sampling

Remington & Vernick obtained three soil samples (S-4 through S-6) from their test pits for PHC and PP+40 analysis and JMS obtained two samples (TP-C1 and TP-C2) from their test pits for PP Metals, VO+10, cyanide, and hexavalent chromium analysis. Remington & Vernick observed no evidence of a discharge; however, JMS detected elevated PID readings in test pit TP-C1 at 2-2.5 ft-bgs.

Samples collected by Remington & Vernick identified elevated concentrations of PAHs and metals, which were attributed to historic fill. All samples were collected from historic fill material. Although not above the cleanup criteria applicable at the time of sampling, 1,1,1-trichloroethane was detected in sample S-6 at 2.4 mg/kg, above the IGWSSL of 0.2 mg/kg. No other contaminants were detected above the applicable standards. Additional investigation of the 1,1,1-trichloroethane detected in sample S-6 collected by Remington & Vernick was warranted.

Arsenic was detected in sample TP-C1 above the RSRS, NRSRS, and IGWSSL. Cadmium, lead, and mercury were also detected in sample TP-C1 above the IGWSSL. Sample TP-C1 was collected from historic fill, which was suggested as the source of the elevated metals. No other contaminants were detected above the applicable standards. The PAHs and metals detected in soil at this AOC are addressed under the historic fill AOC.

Remington & Vernick collected groundwater sample W-2 from a temporary well point installed near the former pump house. Except for arsenic, contaminants were not detected above the GWQS. The former pump house is not suspected as the source of the detected arsenic. Arsenic in groundwater is addressed as part of the site-wide groundwater investigation summarized in Section 4.19 of this report.

4.4.3 Soil Sampling

Boring S-6 was advanced at Remington & Vernick sample location S-6 to vertically delineate the prior detection of 1,1,1-trichloroethane. The boring extended to a depth of 10 ft-bgs and groundwater was encountered at approximately 7.5 ft-bgs. No PID readings, petroleum odors, or other evidence of a discharge was encountered in the boring. Samples S-6A and S-6B were collected at 4.5-5 and 7-7.5 ft-bgs. The soil samples were analyzed for VO+TICs.

4.4.4 Groundwater Sampling

Monitoring well MW-3 was installed between Remington & Vernick test pit S-6 and AOC-K1 to evaluate potential impacts to groundwater from VOCs detected at both of these AOCs. ERI collected a groundwater sample from the well on February 4, 2011 using a disposable bailer following a standard three-volume purge. The groundwater sample was analyzed for VO+TICs, SVO+TICs, TAL Metals, PCBs, and TCL Pesticides.

4.4.5 Findings/Recommendations

1,1,1-trichloroethane was not detected in the soil samples. No VOCs were detected above the SRS. Based on the results, the previously detected 1,1,1-trichloroethane has been vertically delineated in soil to a depth less than 4 ft-bgs. Site-specific IGWSRS have been developed for 1,1,1-trichloroethane as described in Section 5.1 of this report. 1,1,1-trichloroethane detected at this AOC does not exceed the site-specific IGWSRS.

1,1,1-trichloroethane was not detected in the groundwater sample collected from MW-3. No VOCs were detected above the GWQS. Arsenic, iron, and manganese were detected above the GWQS; however, these detections do not appear to be the result of a discharge at this AOC. Metals in groundwater are further discussed in Section 4.19 of this report.

Based on the soil and groundwater results, no further action is proposed for AOC-C.

4.5 AOC-D2: SE Loading Area

4.5.1 Description of AOC

A former truck loading area is located at the southeastern corner of the Site. The loading area consists of depressed concrete ramp truck access and six loading bays. Stained and deteriorated concrete have been observed in this area.

4.5.2 Previous Sampling

Remington & Vernick obtained one soil sample (T-12) from a boring advanced adjacent to the loading dock. Remington & Vernick observed no evidence of contamination. The sample was only analyzed for metals, which were not detected above the applicable standards. Remington & Vernick recommended resampling of this area for additional parameters. JMS assumed Remington & Vernick sample T-2 represented this resampling; however, sample T-2 appears to have been obtained at AOC-E1.

JMS obtained two samples (D2-1 and D2-2A) from two soil borings advanced in areas of staining and deteriorated concrete. JMS observed no evidence of contamination. The samples were analyzed for QAM, PP+40, and hexavalent chromium. PAHs, lead, and mercury exceeded the RSRS or NRSRS in sample D2-2A, which was obtained from historic fill material. Historic fill was suggested as the source of the elevated PAHs and metals. The PAHs and metals detected in soil at this AOC are addressed under the historic fill AOC.

Trichloroethene (TCE) was detected in samples D2-1 and D2-2A at 0.0088 and 0.055 mg/kg, respectively, above the IGWSSL of 0.007 mg/kg. No other contaminants were detected above the applicable standards. Additional investigation of the TCE detected in samples D2-1 and D2-2A collected by Remington & Vernick was warranted.

4.5.3 Soil Sampling

ERI advanced boring D2-2 at the location of boring D2-2 performed by JMS to vertically delineate the previously detected TCE. Location D2-1 was not accessible due to piles of snow. The boring extended to a depth of 15 ft-bgs; groundwater was encountered at approximately 7 ft-bgs. No PID readings, petroleum odors, or other evidence of a discharge was encountered in the boring. Sample D2-2B was collected from the six-inch interval above groundwater (6.5-7 ft-bgs), sample D2-2C was collected at 4-4.5 ft-bgs, and the samples were analyzed for VO+TICs.

4.5.4 Groundwater Sampling

On January 21, 2011, a temporary well point was installed in boring D2-2. Groundwater sample D2-2GW was collected for VO+TICs analysis.

4.5.5 Findings/Recommendations

TCE was not detected in soil sample D2-2B and was detected just below the IGWSSL in sample D2-2C. TCE did not exceed the RSRS or NRSRS. No VOCs were detected above the SRS. Based on the results, the previously detected TCE has been vertically delineated in soil to a depth less than 4 ft-bgs. Site-specific IGWSRS have been developed for TCE as described in Section 5.1 of this report. Although the TCE previously detected in D2-1 has not been vertically delineated, the TCE detected in D2-1 (0.0088 mg/kg) only marginally exceeds the IGWSSL. Therefore, TCE detected in D2-1 does not appear to be a continuing source of groundwater contamination. Otherwise, TCE detected at this AOC does not exceed the site-specific IGWSRS.

TCE was detected in groundwater sample D2-2GW at 4.7 ug/L, above the GWQS of 1 ug/L. No other VOCs were detected above the GWQS. The TCE detected in D2-2GW is likely due to an on-site upgradient source.

Based on the soil and groundwater results, no further action is proposed for AOC-D2.

4.6 AOC-E2: NE Drum Storage Area

4.6.1 Description of AOC

Remington & Vernick identified a former drum storage area on the northeastern portion of the Site, and observed staining in this area during the PA.

4.6.2 Previous Sampling

Remington & Vernick obtained two soil samples (T-8 and T-9) from two borings advanced at the former drum storage area. Remington & Vernick observed no evidence of contamination. The

samples were analyzed for PHC and PP+40. Elevated concentrations of PAHs and metals detected in the samples were attributed to historic fill. All samples were collected from historic fill material. The PAHs and metals detected in soil at this AOC are addressed under the historic fill AOC.

JMS obtained one sample (E2-1) from a soil boring advanced at the former drum storage area. JMS observed no evidence of contamination. The sample was analyzed for PP+40 and hexavalent chromium. PAHs and metals exceeded the applicable standards in sample E2-1. The JMS report suggests historic fill as the source of the elevated PAHs and metals; however, the JMS boring log indicates sample E2-1 was collected from native soil at 6-6.5 ft-bgs, two feet below the reported depth of the encountered historic fill. Additional investigation of this area was warranted.

Remington & Vernick collected groundwater sample W-3 from a temporary well point installed at the former drum storage area. Except for arsenic, contaminants were not detected above the GWQS. The former drum storage area is not suspected as the source of the detected arsenic. Arsenic in groundwater is addressed in the site-wide groundwater investigation as summarized in Section 4.19.

4.6.3 Soil Sampling

Two (2) borings (E2-1 and E2-2) were advanced at the E2 drum storage area. Historic fill was encountered in boring E2-1 to a depth of 9.5 ft-bgs. Based on this observation, it appears the boring log prepared by JMS for their boring E2-1 did not reflect the actual depth of the historic fill. Therefore, it is concluded that sample E2-1 was collected from historic fill material.

4.6.4 Findings/Recommendations

The PAHs and metals detected in soil at this AOC are addressed under the historic fill AOC. **No further action is proposed for AOC-E2.**

4.7 AOC-F: Roof Leaders

4.7.1 Description of AOC

Remington & Vernick identified several roof leaders where historic facility operations were vented to the roof. JMS was unable to identify the discharge points of the roof leaders, and many roof leaders were missing.

4.7.2 Previous Sampling

Remington & Vernick investigated five of the roof leader locations through installation of four soil borings (T-5, T-6, T-10, and T-11) and one test pit (S-7), and obtained one soil sample at each location for PHC and PP+40 analysis. Remington & Vernick observed no evidence of contamination. Elevated concentrations of PAHs detected in the samples were attributed to historic fill. All samples were collected from historic fill material. The PAHs and metals detected in soil at this AOC are addressed under the historic fill AOC.

JMS investigated three of the roof leaders not investigated by Remington & Vernick. JMS obtained samples F-1 through F-3 from three soil borings advanced near the roof leaders. Except for low PID readings and minor odors at 11 ft-bgs in F-2, JMS observed no evidence of contamination. The samples were analyzed for PP Metals, VOCs, and hexavalent chromium. Mercury exceeded the IGWSSL in sample F-3. The JMS report suggests historic fill as the source of the elevated mercury; however, the JMS boring log indicates sample F-3 was collected from native soil at 5-5.5 ft-bgs, one foot below the reported historic fill.

4.7.3 Findings/Recommendations

The relatively low mercury concentration detected at F-3 does not appear indicative of a release; therefore, no further investigation of this AOC appears warranted at this time. PAHs and metals detected in soil at this AOC are addressed under the historic fill AOC. **Based on the results, no further action is proposed for AOC-F.**

4.8 AOC-H2: Former Pad Mounted Transformer

4.8.1 Description of AOC

A plan prepared by an EPA contractor identified a former transformer area on the northeastern portion of the Site.

4.8.2 Previous Sampling

Investigation of this AOC was not reported in the Remington & Vernick SIR. A copy of EPA documents provided with the JMS report indicates four (4) soil samples (assumed to be surficial) were obtained at the former transformer area. Analysis indicated PCBs were detected in one of the four (4) soil samples at 0.51 mg/kg, which exceeds the current RSRS and IGWSSL. Since EPA removal actions (including removal of surficial soil staining) may have been performed after the sampling performed by JMS, it is possible this soil has been removed. Additional investigation of this area was warranted.

4.8.3 Soil Sampling

Surficial samples H2-1 and H2-2 were collected from the reported area of AOC-H2 and analyzed for PCBs. PCBs were detected in both samples at concentrations below the RSRS and IGWSSL.

4.8.4 Findings/Recommendations

Since PCBs were not detected above the applicable standards, it is confirmed that this soil has been removed. **No further action is proposed for this AOC.**

4.9 AOC-K1: Former Pit

4.9.1 Description of AOC

Remington & Vernick identified a former pit within the west-central portion of the building previously located on the central portion of the Site. The use of the pit has not been identified.

4.9.2 Previous Sampling

Remington & Vernick obtained sample K-1-1 at a depth of 1.5-2 ft-bgs from a soil boring advanced at the former pit location. Remington & Vernick observed no evidence of contamination. The sample was analyzed for PP+40 and hexavalent chromium.

TCE was detected at 0.15 mg/kg, above the IGWSSL of 0.007 mg/kg. Chlordane was detected at 0.031 mg/kg, marginally above the IGWSSL of 0.03 mg/kg. Additional investigation of the detected chlordane and TCE was warranted.

Benzo(a)pyrene was detected at 0.24 mg/kg, marginally above the IGWSSL of 0.2 mg/kg. Metals were also detected above the IGWSSL. Benzo(a)pyrene and metals detected in soil at this AOC were attributed to historic fill material. PAHs and metals detected in soil at this AOC are addressed under the historic fill AOC.

Remington & Vernick obtained groundwater sample W-2 at AOC-C, in close proximity to this AOC. However, the sample was not analyzed for VOCs. Additional investigation of groundwater at this AOC was warranted.

4.9.3 Soil Sampling

Soil boring K1-1 was advanced at former Remington & Vernick boring K-1-1. The boring extended to a depth of 10 ft-bgs; groundwater was encountered at approximately 7.5 ft-bgs. No PID readings, petroleum odors, or other evidence of a discharge was encountered in the boring. Sample K1-1A was collected at 4.5-5 ft-bgs for chlordane analysis, sample K1-1C was collected at 5-5.5 ft-bgs for VO+TICs analysis, and sample K1-1B was collected at 7-7.5 ft-bgs for VO+TICs analysis.

4.9.4 Groundwater Sampling

Monitoring well MW-3 was installed between Remington & Vernick test pit S-6 and AOC-K1 to evaluate potential impacts to groundwater from VOCs detected at both of these AOCs. ERI collected a groundwater sample from the well on February 4, 2011 using a disposable bailer following a standard three-volume purge. The groundwater sample was analyzed for VO+TICs, SVO+TICs, TAL Metals, PCBs, and TCL Pesticides.

4.9.5 Findings/Recommendations

Chlordane was not detected in sample K1-1A. Based on the results, the previously detected chlordane has been vertically delineated in soil to a depth less than 4.5 ft-bgs. ERI evaluated the impact to groundwater pathway for chlordane at this AOC as described in Section 5.2 of this report. It has been demonstrated that the detected chlordane will not impact groundwater.

No VOCs were detected in soil samples K1-1B or K1-1C. Based on the results, the previously detected TCE has been vertically delineated in soil to a depth less than 5 ft-bgs. Site-specific

IGWSRS have been developed for TCE as described in Section 5.1 of this report. TCE detected at this AOC does not exceed the site-specific IGWSRS.

TCE was detected in the groundwater sample collected from MW-3 at 0.26 ug/L, below the GWQS of 1 ug/L. No VOCs were detected above the GWQS. Arsenic, iron, and manganese were detected above the GWQS; however, these detections do not appear to be the result of a discharge at this AOC. Metals in groundwater are further discussed in Section 4.19 of this report.

Based on the soil and groundwater results, no further action is proposed for AOC-K1.

4.10 AOC-K2: Concrete Holding Tank

4.10.1 Description of AOC

Remington & Vernick identified a former vault or tank within the south-central portion of the building previously located on the central portion of the Site. The vault measures approximately 4 by 8 feet with a depth of approximately 4 ft-bgs. Standing water and sediment have been identified in the vault. The use of the vault has not been identified.

4.10.2 Previous Sampling

Remington & Vernick obtained four (4) samples from soil borings K2-1 through K2-4 advanced in the general vicinity of the vault. JMS obtained soil sample K2-5 from a soil boring advanced adjacently west of the vault. Remington & Vernick observed no evidence of contamination. JMS observed slight staining and low PID readings at 4-4.5 ft-bgs in their boring. The Remington & Vernick samples were analyzed for PP+40 and hexavalent chromium and the JMS sample was analyzed for VOCs, PCBs, and SVOCs.

Contaminants were not detected above the applicable standards in samples K-2-1, K-2-3, and K2-5. Benzene was detected in sample K-2-2 (1.5-2 ft-bgs) at 0.71 mg/kg, above the IGWSSL of 0.005 mg/kg. PAHs, lead, and mercury were also detected above the applicable criteria in sample K-2-2. 1,1,1-trichloroethane was detected in sample K2-4 (1.5-2 ft-bgs) at 1 mg/kg, above the IGWSSL of 0.2 mg/kg. PAHs and metals detected in soil at this AOC are addressed under the historic fill AOC. Additional investigation of the detected VOCs was warranted.

JMS collected groundwater sample TW-3 from a temporary well point installed in boring K2-5. Groundwater sample TW-3 was analyzed for VOCs, SVOCs, and PCBs. Benzo(a)anthracene, benzo(a)pyrene, 1,1-dichloroethene, 1,1,1- trichloroethene, and TCE were detected above the GWQS. Additional groundwater investigation was warranted at this AOC.

4.10.3 Soil Sampling

Soil borings K2-2 and K2-4 were advanced at former Remington & Vernick borings K2-2 and K2-4. Soil boring K2-6 was advanced midway between K2-2 and K2-4, and boring K2-7 was advanced east of the holding tank. The borings extended to depths of 10 to 15 ft-bgs; groundwater was encountered at approximately 7.5 ft-bgs. Except for elevated PID readings in surficial soil in boring K2-6, no PID readings, petroleum odors, or other evidence of a discharge

was encountered in the borings. Samples K2-2A and K2-4A were collected from the six-inch interval above groundwater (7-7.5 ft-bgs), sample K2-2B was collected at 3-3.5 ft-bgs, sample K2-4B was collected at 4-4.5 ft-bgs, and sample K2-4C was collected at 2.5-3 ft-bgs to vertically delineate contaminants previously detected in those borings. Sample K2-6 was obtained from boring K2-6 at 0.5-1 ft-bgs, the depth exhibiting the highest PID readings. Sample K2-7 was collected at a depth of 3.5-4 ft-bgs. Except for K2-4C, the samples were analyzed for VO+TICs. Samples K2-4B, K2-4C, and K2-7 were analyzed for mercury.

4.10.4 Groundwater Sampling

Monitoring well MW-2 was installed adjacent to the concrete vault to verify the contaminants previously detected in temporary well point TW-3. ERI collected a groundwater sample from the well on February 4, 2011 using a disposable bailer following a standard three-volume purge. The groundwater sample was analyzed for VO+TICs, SVO+TICs, TAL Metals, PCBs, and TCL Pesticides.

On January 21, 2011, a temporary well point was installed in boring K2-4. Groundwater sample K2-4GW was collected for VO+TICs analysis.

4.10.5 Findings/Recommendations

Benzene was not detected in soil samples K2-2A or K2-2B. Based on the results, the previously detected benzene has been vertically delineated in soil to a depth less than 3 ft-bgs. Site-specific IGWSRS have been developed for benzene as described in Section 5.1 of this report. Benzene detected at this AOC does not exceed the site-specific IGWSRS. Benzene was not detected in adjacent monitoring well MW-2, confirming that the benzene does not represent a threat to groundwater.

1,1,1-trichloroethane was not detected above the IGWSSL in soil samples K2-4A, K2-4B, or K2-4C. Based on the results, the previously detected 1,1,1-trichloroethane has been vertically delineated in soil to a depth less than 2.5 ft-bgs. Site-specific IGWSRS have been developed for 1,1,1-trichloroethane as described in Section 5.1 of this report. 1,1,1-trichloroethane detected at this AOC does not exceed the site-specific IGWSRS.

TCE was detected at 0.0095 mg/kg in soil sample K2-6 and at 0.011 mg/kg in sample K2-7, marginally above the IGWSSL of 0.007 mg/kg, but below the RSRS and NRSRS. ERI notes that TCE was not detected in sample K2-3 obtained at 7.5-8 ft-bgs in this area by Remington & Vernick. Based on these results, the TCE detected in K2-6 appears limited to a depth less than 7.5 ft-bgs. Site-specific IGWSRS have been developed for TCE as described in Section 5.1 of this report. TCE detected at this AOC does not exceed the site-specific IGWSRS. Vertical delineation of the TCE detected in sample K2-7 is needed to demonstrate compliance with the site-specific IGWSRS; however, it likely does not represent an ongoing source of groundwater contamination.

TCE, 1,1-dichloroethene, and 1,1,1-trichloroethane were detected above the GWQS in groundwater samples MW-2 and K2-4GW. These contaminants were detected at higher concentrations in sample K2-4GW. 1,1-dichloroethane was also detected above the GWQS in

sample K2-4GW. Chloroethane was detected marginally above the GWQS in sample MW-2. Aluminum, iron, and manganese were detected above the GWQS in MW-2; however, these detections do not appear to be the result of a discharge at this AOC. Metals in groundwater are further discussed in Section 4.19 of this report.

ERI proposes removal of the concrete vault with collection of additional soil samples to evaluate whether a source of the contaminants detected in MW-2 is present. Otherwise, soil remediation does not appear warranted at this AOC. Additional delineation of the VOCs detected in MW-2 is proposed.

4.11 AOC-K3: Concrete Filled Former Structure

4.11.1 Description of AOC

Remington & Vernick and JMS identified an "I" shaped concrete filled trench or structure within the central portion of the building previously located on the central portion of the Site. The I-shaped structure is approximately 25 feet long. The use of the former trench or structure has not been identified.

4.11.2 Previous Sampling

Remington & Vernick obtained two (2) samples from soil borings K3-1 and K3-2 advanced in the general vicinity of the I-shaped structure. Since the Remington & Vernick borings were performed some distance from the structure, JMS obtained soil sample K3-3 from a soil boring advanced adjacently west of the structure. Remington & Vernick observed no evidence of contamination. JMS observed low PID readings from the surface to 8 ft-bgs in their boring. The Remington & Vernick samples were analyzed for PP+40 and hexavalent chromium and the JMS sample was analyzed for VOCs, PCBs, and SVOCs.

Heptachlor epoxide and chlordane were detected above the IGWSSL in sample K-3-1 (1.5-2 ft-bgs). No other contaminants were detected above the applicable standards in the samples collected by Remington & Vernick. Based on distance from the I-shaped structure, and since the sample obtained by JMS adjacent to the structure was not analyzed for pesticides, it was unclear whether the pesticides detected in boring K3-1 are due to a discharge from the structure. Additional evaluation of the detected pesticides was warranted.

PAHs, benzene, cis-1,2-dichloroethene, TCE, and PCBs were detected above the applicable criteria in sample K3-3. TCE and PCBs were detected above the RSRS, NRSRS, and IGWSSL, and the remaining contaminants exceeded only the IGWSSL. Additional investigation of the apparent discharge from the I-shaped structure was warranted.

JMS collected groundwater sample TW-2 north of this AOC, at AOC-K5. Contaminants detected in groundwater appear to be associated with discharges at the I-shaped structure and levels detected in soil at this AOC were generally higher than those detected at AOC-K5. A groundwater investigation at AOC-K3 was warranted.

4.11.3 Soil Sampling

Borings K3-1 and K3-3 were advanced adjacent to borings K3-1 and K3-3 performed by JMS and Remington & Vernick. Three (3) borings (K3-4 through K3-6) were also advanced around the I-shaped structure and the previously detected contamination. The borings extended to a depth of 10 ft-bgs and groundwater was encountered at depths ranging from approximately 7.5 to 8 ft-bgs. Other than low PID readings encountered in boring K3-3, no PID readings, petroleum odors, or other evidence of a discharge was encountered in the borings.

Sample K3-1A was collected at 4.5-5 ft-bgs to vertically delineate pesticides previously detected in boring K3-1 and sample K3-3B was collected at 4.5-5 ft-bgs to evaluate whether the previously detected pesticides were due to a discharge from the I-shaped structure. The samples were analyzed for TCL Pesticides.

Samples K3-3A, K3-4, K3-5, and K3-6 were collected to delineate the PAHs, VOCs, and PCBs previously detected in sample K3-3. Sample K3-3A was collected for vertical delineation (7-7.5 ft-bgs) and the remaining samples were collected at 5-5.5 ft-bgs for horizontal delineation. The samples were analyzed for VO+TICs and PCBs. PAHs analysis was not performed since it appears to be a secondary contaminant.

4.11.4 Groundwater Sampling

Monitoring well MW-4 was installed just north of the I-shaped structure to evaluate potential groundwater impacts at this AOC. ERI collected a groundwater sample from the well on February 4, 2011 using a disposable bailer following a standard three-volume purge. The groundwater sample was analyzed for VO+TICs, SVO+TICs, TAL Metals, PCBs, and TCL Pesticides.

4.11.5 Findings/Recommendations

Benzene, cis-1,2-dichloroethene, and PCBs were not detected in soil sample K3-3A, indicating that these contaminants have been delineated to less than 7 ft-bgs. TCE marginally exceeded the IGWSSL, but does not exceed the RSRS or NRSRS, in sample K3-3A. Except for TCE marginally above the IGWSSL in samples K3-4 and K3-6, VOCs and PCBs were not detected above the SRS in the horizontal delineation samples. Site-specific IGWSRS have been developed for TCE as described in Section 5.1 of this report. TCE detected at location K3-3 (84 mg/kg) exceeds the site-specific IGWSRS. **Therefore, remediation of the TCE detected in sample K3-3 is proposed. Re-evaluation of the impact to groundwater pathway for other contaminants detected at this AOC is proposed through post-excavation soil sampling.**

Heptachlor epoxide and chlordane were not detected in sample K3-3B; therefore, the I-shaped structure does not appear to be the source of the pesticides. Heptachlor epoxide and chlordane previously detected above the IGWSSL in sample K-3-1 have been delineated to less than 4 ft-bgs based on the results for sample K3-1A. ERI evaluated the impact to groundwater pathway for heptachlor epoxide and chlordane at boring K3-1 as described in Section 5.2 of this report. It has been demonstrated that the detected heptachlor epoxide and chlordane will not impact groundwater. **No further investigation or remediation of chlordane or heptachlor epoxide is**

proposed. Beta-BHC was detected marginally above the IGWSSL in sample K3-1A. **Delineation of the beta-BHC at this AOC is proposed.**

TCE was detected above the GWQS in groundwater sample MW-4. The I-shaped structure appears to be the source of the TCE detected in groundwater. **Additional delineation of the VOCs detected in MW-4 is proposed.** Aluminum, iron, and manganese were detected above the GWQS in MW-4; however, these detections do not appear to be the result of a discharge at this AOC. Metals in groundwater are further discussed in Section 4.19 of this report.

4.12 AOC-K4: Stained Concrete Area

4.12.1 Description of AOC

Remington & Vernick identified an area of stained concrete, suspected to be creosote, within the central portion of the building previously located on the central portion of the Site.

4.12.2 Previous Sampling

Remington & Vernick obtained sample K-4-1 from a soil boring advanced at the stained area. Remington & Vernick observed no evidence of contamination. The sample was analyzed for PHC, SVOCs, PP Metals, and hexavalent chromium.

Elevated levels of PAHs were detected above the applicable criteria. No other contaminants were detected above the applicable standards. The Remington & Vernick report suggested the elevated levels of PAHs were due to historic fill material. The narrative of their report indicates sample K-4-1 was obtained from historic fill at 1.5-2 ft-bgs; however, their boring log indicates the sample was obtained from native soil at 7.5-8 ft-bgs. A sample depth of 1.5-2 ft-bgs appears more appropriate to evaluate this suspected discharge and no justification for the deeper sampling depth is provided (no PID readings were detected).

4.12.3 Soil Sampling

Boring K4-1 was advanced at the Remington & Vernick K-4-1 location. The boring extended to a depth of 10 ft-bgs and groundwater was encountered at a depth of 7.75 ft-bgs. No PID readings, petroleum odors, or other evidence of a discharge was encountered in the boring. Historic fill extended to a depth of 2 ft-bgs. Samples K4-1A and K4-1B were collected at 1.5-2 and 7.5-8 ft-bgs to verify the previous detections of PAHs. The samples were analyzed for PAHs.

4.12.4 Findings/Recommendations

Benzo(a)pyrene was detected in historic fill sample K4-1A above the RSRS, NRSRS, and IGWSSL. PAHs were not detected in sample K4-1B. These results verify that the sample obtained by Remington & Vernick was likely collected from historic fill. PAHs detected in soil at this AOC are addressed under the historic fill AOC. **Based on the results, no further action is proposed for AOC-K4.**

4.13 AOC-K5: Drain

4.13.1 Description of AOC

Remington & Vernick identified a drain within the central portion of the building previously located on the central portion of the Site. The discharge point of the drain has not been identified.

4.13.2 Previous Sampling

Remington & Vernick obtained sample K-5-1 from soil borings K5-1 advanced adjacent to the drain. JMS obtained soil sample K5-2 from a soil boring advanced adjacently to boring K5-1. Remington & Vernick and JMS observed no evidence of contamination. The Remington & Vernick sample (1.5-2 ft-bgs) was analyzed for PP+40 and hexavalent chromium and the JMS sample (7.5-8 ft-bgs) was analyzed for VOCs, PCBs, and SVOCs.

TCE was detected in sample K-5-1 at 1.1 mg/kg, above the IGWSSL of 0.007 mg/kg. Otherwise, contaminants were not detected in the soil samples above the applicable criteria. Additional investigation of the detected TCE was warranted.

JMS collected groundwater sample TW-2 from a temporary well point installed in boring K5-2. Groundwater sample TW-2 was analyzed for VOCs, SVOCs, and PCBs. TCE was detected at 3.3 ug/L, above the GWQS of 1 ug/L.

4.13.3 Soil Sampling

Boring K5-1 was advanced at the Remington & Vernick K5-1 location. The boring extended to a depth of 6 ft-bgs. No PID readings, petroleum odors, or other evidence of a discharge was encountered in the boring. Sample K5-1B was collected at 4.5-5 ft-bgs to vertically delineate the previous detection of TCE. The sample was analyzed for VO+TICs.

4.13.4 Findings/Recommendations

TCE was detected at 0.0013 mg/kg in soil sample K5-1B, below the IGWSSL of 0.007 mg/kg and the RSRS and NRSRS. Based on the results for all samples collected at this AOC, TCE at the K5 drain is limited to a depth less than 5 ft-bgs. Site-specific IGWSRS have been developed for TCE as described in Section 5.1 of this report. TCE detected at this AOC does not exceed the site-specific IGWSRS.

It is suspected that the source of the TCE groundwater contamination may be the I-shaped structure and associated higher levels of TCE detected in soil at AOC-K3.

The source of the TCE detected in sample TW-2 is likely AOC-K3; therefore, no further action is proposed for AOC-K5.

4.14 AOC-L1: Debris Filled Pit

4.14.1 Description of AOC

Clearing of debris by EPA revealed a pit within the eastern building. The pit contained standing water and debris during a prior site inspection by JMS. JMS estimated the pit to be five feet deep. The use of the pit has not been identified.

4.14.2 Previous Investigations

JMS obtained soil samples L1-1 and L1-2 from two (2) soil borings advanced on accessible sides of the pit. JMS detected low PID readings from 0-4.5 ft-bgs in the borings. The JMS samples were analyzed for PP+40 and hexavalent chromium.

No contaminants were detected above the applicable standards in sample L1-2, which was collected from native soil below the estimated invert of the pit. PAHs and several metals were detected above the applicable criteria in sample L1-1, which was collected from historic fill. PAHs and metals detected in soil at this AOC are addressed under the historic fill AOC. 1,1,1-trichloroethane was detected in sample L1-1 at 2.3 mg/kg, above the IGWSSL of 0.2 mg/kg, and TCE was detected at 400 mg/kg, above the RSRS, NRSRS, and IGWSSL. Additional investigation of the VOCs detected at the pit was warranted.

4.14.3 Soil Sampling

Prior to investigation, the debris was removed from the pit and stockpiled on-site with other debris. The open pit was inspected for evidence of breaches and inlet/outlet pipes. No breaches or pipes were identified. The pit was constructed of cinder block sidewalls with a concrete base. Following inspection, the pit was backfilled with certified clean import soil.

Boring L1-1 was advanced adjacent to boring L1-1 performed by JMS. Ten (10) borings (L1-4 through L1-14) were advanced to horizontally delineate the contamination previously detected in sample L1-1. Boring L1-7 was advanced through the filled pit. The borings extended to a depth of 10 ft-bgs and groundwater was encountered at depths ranging from approximately 5.5 to 8 ft-bgs. Low PID readings were encountered in shallow soil in borings L1-1 and L1-5. Otherwise, no PID readings, petroleum odors, or other evidence of a discharge was encountered in the borings.

Sample L1-1A was collected at 7-7.5 ft-bgs to vertically delineate the VOCs previously detected in boring L1-1. Samples collected from boring L1-5 targeted elevated PID readings. Sample L1-7 was collected below the base of the pit (5.5-6 ft-bgs) to evaluate whether the pit was the source of the detected VOCs. The remaining samples were collected for horizontal delineation and were collected at either 3.5-4 ft-bgs or 4-4.5 ft-bgs. The samples were analyzed for VO+TICs. Some of the samples were analyzed for mercury as summarized in Section 4.18 of this report.

4.14.4 Groundwater Sampling

Monitoring well MW-1 was installed just west of the pit to evaluate potential groundwater impacts at this AOC. ERI collected a groundwater sample from the well on February 4, 2011 using a disposable bailer following a standard three-volume purge. The groundwater sample was analyzed for VO+TICs, SVO+TICs, TAL Metals, PCBs, and TCL Pesticides.

4.14.5 Findings/Recommendations

Based on the distribution of TCE detected during this investigation, and since elevated levels of TCE were not detected in soil sample L1-7 collected beneath the pit, ERI suspects that the pit is not the source of the detected contamination. During the investigation, ERI noted several circular penetrations of the second story floor slab to the west of the L1 borings. It is suspected that storage tanks or chemical processing equipment may have been located in this area, and may be the source of the detected contamination.

TCE was detected above the RSRS, NRSRS, and IGWSSL in soil samples L1-4, L1-5A, L1-5B, L1-6, L1-8, L1-9, and L1-12. TCE exceeded only the IGWSSL in four (4) additional samples. TCE at boring L1-1 has been delineated to less than 7 ft-bgs. Site-specific IGWSRS have been developed for TCE as described in Section 5.1 of this report. TCE detected at locations L1-1, L1-4, L1-5, L1-6, L1-8, L1-9, and L1-12 exceeds the site-specific IGWSRS. **Therefore, remediation of the TCE detected in these samples is proposed.**

1,1,1-trichloroethane was detected above the IGWSSL, but below the RSRS and NRSRS, in ten (10) samples. Site-specific IGWSRS have been developed for 1,1,1-trichloroethane as described in Section 5.1 of this report. 1,1,1-trichloroethane detected at location L1-8. Based on the limited number of samples collected for vertical delineation, 1,1,1-trichloroethane may exceed the site-specific IGWSRS at other locations. However, remediation proposed to address TCE will also address the 1,1,1-TCA. **Remediation of TCE proposed above will be designed to address 1,1,1-trichloroethane above the site-specific IGWSRS.**

PCE, benzene, cis-1,2-dichlorethene, 1,1-dichloroethane, and 1,1-dichloroethene were detected above the IGWSSL, but below the RSRS and NRSRS, in some of the samples collected at this AOC. Site-specific IGWSRS have been developed for benzene, PCE, and 1,1-dichloroethene as described in Section 5.1 of this report. **Remediation of TCE proposed above will be designed to address these contaminants detected above the site-specific IGWSRS. This remediation will also address the cis-1,2-dichlorethene and 1,1-dichloroethane detected above the IGWSSL in sample L1-8.**

TCE was detected above the GWQS in groundwater sample MW-1. **Additional delineation of the VOCs detected in MW-1 is proposed.** Aluminum, iron, and manganese were detected above the GWQS in MW-4; however, these detections do not appear to be the result of a discharge at this AOC. Metals in groundwater are further discussed in Section 4.19 of this report.

4.15 AOC-L3: Additional Debris-Filled Pits

4.15.1 Description of AOC

Clearing of debris by EPA revealed two shallow pits within the eastern end of the southern building. JMS suspected the pits may be associated with hydraulic lifts for the adjacent loading docks. These pits were not been investigated by JMS.

Based on ERI's observation of these pits, it appears likely they were associated with the lift identified by JMS. Based on their location relative to the loading docks, it is unlikely that these pits were not related to chemical handling or processing. The pits are located approximately 5 feet apart.

4.15.2 Soil Sampling

ERI advanced boring L3-1 between the two pits. The boring extended to a depth of 10 ft-bgs; groundwater was encountered at approximately 7.5 ft-bgs. No PID readings, petroleum odors, or other evidence of a discharge was encountered in the boring. Sample L3-1 was collected from the six-inch interval below the estimated base of the pit (3-3.5 ft-bgs) and sample L3-1V was collected from the six-inch interval above groundwater (7-7.5 ft-bgs). Sample L3-1 was analyzed for Extractible Petroleum Hydrocarbons (EPH).

4.15.3 Findings/Recommendations

EPH was detected in sample L3-1 at 28 mg/kg, which does not exceed the EPH action limit of 1,700 mg/kg; therefore, calculation of site-specific EPH remedial standard for this sample is not warranted.

Since EPH was detected, sample L3-1 was further analyzed for SVO+TICs, TAL metals, PCBs, TCL Pesticides, and cyanide. Sample L3-1V was analyzed for VO+TICs.

Lead and mercury were detected marginally above the IGWSSL, but below the RSRS and NRSRS, in sample L3-1. These detections are indicative of historic fill. No other contaminants were detected above the most stringent SRS. Lead and mercury detected in soil at this AOC are addressed under the historic fill AOC. **Based on the results, no further action is proposed for AOC-L3.**

Based on the results, no further action is proposed for this AOC.

4.16 AOC-N: Sumps

4.16.1 Description of AOC

JMS identified a sump (N1) in a small basement area near loading dock D2. The sump appears to have been used to control groundwater infiltration into the basement. This sump was not investigated by JMS.

JMS identified a sump and trench drain (N2) in the former boiler room on the northern portion of the Site. The sump and trench drain appear to be associated with the boiler room and were likely utilized during maintenance of the boilers.

4.16.2 Previous Sampling

JMS performed soil boring J-1 near sump N2 during investigation of AOC-J. Contaminants indicative of a discharge were not detected above applicable standards.

4.16.3 Soil Sampling

ERI advanced boring N1-1 adjacent to the N1 sump pit. The boring extended to a depth of 5 ft-bgs; groundwater was encountered at approximately 4 ft-bgs. No PID readings, petroleum odors, or other evidence of a discharge was encountered in the boring. Sample N1-1 was collected from the six-inch interval below the estimated base of the pit (3.5-4 ft-bgs), which was also the six-inch interval above groundwater. The sample was analyzed for EPH (fractional and non-fractional).

ERI advanced boring N2-1 through the N2 sump pit. The boring extended to a depth of 8 ft-bgs; groundwater was encountered at approximately 7 ft-bgs. No PID readings, petroleum odors, or other evidence of a discharge was encountered in the boring. Sample N2-1 was collected from the six-inch interval below the estimated base of the pit (3.5-4 ft-bgs) and sample N2-1V was collected from the six-inch interval above groundwater. Sample N2-1 was analyzed for SVO+TICs and sample N2-1V was analyzed for VO+TICs.

4.16.4 Findings/Recommendations

EPH was detected in sample N1-1 at 370 mg/kg (fractionated), which does not exceed the EPH action limit of 1,700 mg/kg; therefore, calculation of site-specific EPH remedial standard for this sample is not warranted. Based on the detection of EPH, the sample was further analyzed for VO+TICs, SVO+TICs, TAL metals, PCBs, TCL Pesticides, and cyanide. No contaminants were detected above the most stringent SRS.

No SVOCs or VOCs were detected above the most stringent SRS in samples collected at the N2 sump.

Based on the results, no further action is proposed for this AOC.

4.17 AOC-O: Floor Drains

4.17.1 Description of AOC

JMS identified two floor drains (O1 and O2) in the small basement area near loading dock D2. The drains are reportedly filled with debris and ash. The discharge points of the drains have not been identified. These drains were not investigated by JMS. ERI identified a third drain in this area (O3). ERI probed the floor drains and measured the depth of the drain laterals to be 2 ft-bgs.

4.17.2 Soil Sampling

ERI advanced borings O1-1, O2-1, and O3-1 adjacent to the floor drains. The borings extended to depths of 4 to 5 ft-bgs; groundwater was encountered at approximately 4 ft-bgs. PID readings were encountered in borings O1-1 and O2-1. Petroleum odors were encountered in boring O1-1. No PID readings, petroleum odors, or other evidence of a discharge was encountered in boring O3-1. Two (2) samples, O1-1A and O1-1B, were collected from the depths with the highest PID readings above and below the water table. Sample O2-1 was collected from the depth exhibiting the highest PID reading. Sample O3-1 was collected from the six-inch interval below the pipe elbow and sample O3-1V was collected from the six-inch interval above groundwater. Samples O1-1A, O1-1B, O2-1, and O3-1 were analyzed for EPH.

4.17.3 Findings/Recommendations

EPH was detected in the samples at concentrations ranging from 40 to 5,200 mg/kg. Based on the results, samples O1-1A (the sample with the highest EPH from boring O1-1) and O2-1 were further analyzed for fractional EPH. The fractional EPH results were entered into the EPH remediation standard spreadsheet. The concentrations of fractionated EPH detected in both samples were below the calculated site-specific EPH remedial standards based on residential use. The EPH calculation spreadsheet is provided as **Table 14E**.

Samples O1-1A and O2-1 were further analyzed for VO+TICs, SVO+TICs, TAL metals, PCBs, TCL Pesticides, and cyanide. Samples O1-1B and O3-1V were also analyzed for VO+TICs.

TCE was detected in sample O1-1A at 0.011 mg/kg, above the IGWSSL of 0.007 mg/kg, but below the RSRS and NRSRS. TCE was not detected in sample O1-1B collected from the six-inch interval below the water table. No other contaminants were detected above the most stringent SRS.

Although the TCE detected in sample O1-1A exceeds the site-specific IGWSRS (see Section 5.1), it is ERI's opinion that the TCE is not an active source of groundwater contamination. **Groundwater monitoring is proposed to evaluate the potential impact on groundwater from contamination at drain O1. No further action is proposed for drains O2 and O3.**

4.18 AOC-P: Historic Fill

4.18.1 Description of AOC

Sampling performed by Remington & Vernick and JMS identified historic fill material at the Site which appears to have been impacted by PAHs and metals prior to emplacement. Historic fill was encountered at all Remington & Vernick and JMS sampling locations except at the depressed loading dock ramp. Therefore, historic fill is expected to be regional. Remington & Vernick described the historic fill as black fine to coarse sand with varying amounts of clayey silt or silt, ash, and cinders. JMS described the historic fill as brown to dark brown sand to silty sand with varying amounts of silt, cobbles, concrete and brick fragments, glass, and ash.

Remington & Vernick reported that the historic fill extended to depths of 2 to 4 ft-bgs. JMS reported that the historic fill extended to a depth of 4 ft-bgs.

4.18.2 Previous Sampling

Numerous samples of the historic fill have been collected during the investigation of other AOCs. PAHs and metals have been detected in the historic fill above applicable standards and these contaminants are suspected to be due to contamination of the historic fill prior to emplacement at the Site. However, all samples collected from historic fill were obtained to address specific AOCs. Sampling of historic fill distant from specific AOCs was warranted. In addition, groundwater sampling has not been performed to address the contaminated historic fill.

4.18.3 Soil Sampling

Historic fill is common in the City of Camden and the historic fill encountered at the Site appears regional. Therefore, horizontal delineation of the historic fill is not warranted.

Based on the size of the Site (2.9 acres), N.J.A.C. 7:26E would require twelve (12) soil borings to evaluate historic fill at the Site. Since remedial actions for the Site will likely include engineering and institutional controls, ERI limited the historic fill investigation to five (5) additional soil borings (P-1 through P-5). Since the primary purpose of the historic fill investigation was to assist in verifying that prior detections of PAHs and metals are due to the historic fill and not on-site discharges, ERI limited analysis of the historic fill samples to PAHs and metals.

Five (5) soil borings, P-1 through P-5, were advanced at various locations of the Site, distant from any identified AOCs. The borings extended to depths of 5 to 10 ft-bgs. No PID readings, petroleum odors, or other evidence of a discharge was encountered in the borings. Historic fill was encountered to depths ranging from 2.5 to 4 ft-bgs. The historic fill appeared consistent with the historic fill described by others. Samples of the historic fill were obtained from borings P-1, P-2, P-4, and P-5 for PAHs and TAL Metals analysis. ERI also performed soil borings at prior sampling locations S-4, T-5, T-8, and E2-1 to further assist in distinguishing between historic fill contamination and contamination from site discharges.

4.18.4 Groundwater Sampling

Five (5) monitoring wells were installed at the Site to evaluate specific AOCs. ERI collected groundwater samples from the wells on February 4, 2011 using a disposable bailer following a standard three-volume purge. The groundwater samples were analyzed for VO+TICs, SVO+TICs, TAL Metals, and PCBs.

4.18.5 Findings/Recommendations

PAHs were detected above the most stringent SRS in sample P-5. Arsenic was detected above the RSRS and NRSRS in samples P-4 and P-5 and lead was detected above the RSRS in sample P-4. Several metals also exceeded the IGWSSL in samples P-4 and P-5. PAHs were not

detected in samples P-1 and P-2. Metals were not detected in samples P-1 and P-2 above the most stringent SRS.

ERI evaluated metals concentrations detected in all historic fill samples at the Site. Detections, average concentrations, and calculated statistical outlier concentrations for each metal of concern detected in historic fill samples collected at the Site are summarized on the following table.

AOC	Sample	Arsenic (mg/kg)	Lead (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)
A2	A2-2	NA	245	NA	NA	NA	NA
A2	A2-4	NA	335	NA	NA	NA	NA
B	S-1	17.1	141	0.15	0.12	0.33	4.9
B	S-2	29	217	0.5	1.4	0.23	36.2
B	S-3	49.4*	287	0.44	2.3*	0.58	15.1
C	S-4	15.6	189	0.38	0.58	0.55	30.4
C	S-5	19.3	185	0.54	0.95	0.4	12.5
C	S-6	35.6	263	0.26	0.73	0.31	3.3
C	TP-C1	35	190	ND	1.6	0.35	9.8
D	D2-2A	13	93	ND	ND	0.35	7.2
E1	T-1	7.8	207	0.32	0.57	0.09	10.1
E1	T-2	7.9	197	0.3	0.43	0.13	8.5
E1	T-2	17.1	529	0.47	1.1	0.2	16.3
E1	T-3	11.8	306	0.39	0.42	0.13	12.2
E1	T-4	13.2	365	0.43	0.51	0.14	13
E2	T-8	53.1*	833*	0.8	5.6*	0.7*	29.3
E2	T-8B	5.1	62.2	0.28	0.41	0.068	19
E2	T-8C	5.4	84	1.1*	0.25	0.06	22.3
E2	T-9	21.4	471	0.51	0.81	0.17	18.6
E2	E2-1	7.9	230	23*	ND	0.11	35*
E2	E2-1B	NA	NA	1.8*	NA	NA	45.6*
F	T-5	13	348	0.44	0.55	0.13	17
F	T-6	6.8	141	0.3	ND	0.09	7.7
F	T-10	20.7	480	0.55	1	0.22	20.1
F	T-11	16.2	387	0.48	0.85	0.22	12.7
F	S-7	17.3	10.1	0.85	ND	0.03	3.7
I	T-7	14.3	389	0.43	0.61	0.15	14.3
K1	K-1-1	10.7	97.8	ND	ND	0.24	11.5
K2	K-2-2	7.13	60.6	ND	ND	0.44	7.23
K2	K-2-4	11.2	52.5	ND	ND	32*	7.23
K3	K-3-1	1.48	ND	ND	ND	ND	ND
K4	K-4-1	2.6	10.7	ND	ND	ND	9.37
K5	K-5-1	2.31	ND	ND	ND	ND	4.76

AOC	Sample	Arsenic (mg/kg)	Lead (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)
L1	L1-1	39*	140	ND	2.2	0.4	19
L2	L2-1	4.4	57	ND	ND	0.29	ND
L2	L2-2	8.4	92	ND	ND	0.31	6.6
L2	L2-3	8.2	53	ND	ND	0.22	ND
L2	L2-4	4.5	30	ND	ND	0.12	6
L3	L3-1	11.7	78.9	0.28	0.22	0.21	6.8
P	P-1	13.4	25.2	0.35	ND	0.051	16
P	P-2	6.9	7.4	0.29	ND	ND	7.4
P	P-4	33.4	550	0.48	3*	0.25	15
P	P-5	34.4	200	0.87	1	0.35	64.6*
Average		16.32	216	1.33	1.13	1.13	15.96
Outlier Concentration*		37.7	671	0.88	2.2	0.68	36.3
NJDEP Maximum		1098	10700	80	510	Not listed	Not listed
NJDEP Average		13.15	574	1.23	11.15	Not listed	Not listed

Non-detect results are not included in the averaging.
* - Exceeds outlier concentration calculated based on N.J.A.C. 7:26E-3.10(a)3.vi

Although detected at concentrations that are considered statistical outliers, arsenic, lead, beryllium, and cadmium were not detected above the maximum concentrations listed in N.J.A.C. 7:26E-4.6. Therefore, the detected arsenic, lead, beryllium, and cadmium appear indicative of historic fill contaminated prior to emplacement at the Site and do not warrant further investigation. NJDEP has not established typical concentration ranges for mercury or nickel. However, the levels of mercury and nickel appear indicative of historic fill. ERI submitted the table above to Mr. Chris Dwyer, NJDEP case manager, who agreed that the detected metals appeared indicative of historic fill.

ERI evaluated PAHs concentrations detected in all historic fill samples at the Site. Detections, average concentrations, and calculated statistical outlier concentrations for each PAH of concern detected in historic fill samples collected at the Site are summarized on the following table.

AOC	Sample	B(a)A (mg/kg)	B(b)F (mg/kg)	B(a)P (mg/kg)	I(1,2,3-cd)P (mg/kg)	D(a,h)A (mg/kg)
B	S-1	0.2	0.23	0.1	ND	ND
B	S-2	1.7	6.7	2	ND	ND
B	S-3	1.2	3.1	1.3	ND	ND
C	S-4	25*	140*	74*	1	0.32
C	S-5	6	44*	20*	ND	ND
C	S-6	1	2.6	0.82	ND	ND
D	D2-2A	2.1	2.5	1.8	1.1	0.37

AOC	Sample	B(a)A (mg/kg)	B(b)F (mg/kg)	B(a)P (mg/kg)	I(1,2,3-cd)P (mg/kg)	D(a,h)A (mg/kg)
E1	T-1	1.3	1.8	1.3	0.51	0.32
E1	T-2	1.6	2.1	1.5	0.81	0.22
E1	T-2	22	19	16*	4.8	1.7
E1	T-3	5.3	6.8	4.7	2.3	1.3
E1	T-4	2.3	1.9	2	0.38	0.18
E2	T-8	20	18	17	5.4	3.3*
E2	T-9	6.6	8.1	5.7	1.6	0.56
E2	E2-1	0.85	0.98	0.88	0.46	0.23
F	T-5	31*	25	28*	4.3	2.5*
F	T-6	11	20	0.12	2.1	0.58
F	T-10	4.5	3.9	3.7	1.3	ND
F	T-11	6.9	5.8	5.9	2	0.66
F	S-7	0.11	0.19	ND	ND	ND
I	T-7	28*	33	27*	5.2	3.6*
K1	K-1-1	0.26	0.29	0.24	0.15	ND
K2	K-2-2	3.2	3.4	2.4	0.56	0.43
K2	K-2-4	0.17	0.23	0.16	0.1	ND
K4	K-4-1	8.9	10	1.8	3.9	0.4
K4	K4-1A	0.25	0.37	0.28	0.28	0.035
L1	L1-1	2.1	2.4	1.8	1	0.38
L2	L2-1	11	9.9	7.9	3.5	1.5
L2	L2-2	0.6	0.63	0.5	0.27	0.1
L2	L2-3	0.086	0.12	ND	ND	ND
L2	L2-4	ND	ND	ND	ND	ND
L3	L3-1	0.12	0.12	0.11	0.051	ND
P	P-1	ND	ND	ND	ND	ND
P	P-2	ND	ND	ND	ND	ND
P	P-4	0.039	0.04	ND	ND	ND
P	P-5	0.51	0.87	0.65	0.92	0.15
Average		7.82	32.1	7.2	1.78	0.85
Outlier Concentration*		24.0	33.9	13.4	5.9	2.1
NJDEP Maximum		160	110	120	67	25
NJDEP Average		1.37	1.91	1.89	1.41	1.24

Non-detect results are not included in the averaging.
* - Exceeds outlier concentration calculated based on N.J.A.C. 7:26E-3.10(a)3.vi

Although detected at concentrations that are considered statistical outliers, the PAHs exceeded the maximum concentrations listed in N.J.A.C. 7:26E-4.6 in only one instance (benzo(b)fluoranthene in sample S-4).

ERI evaluated the elevated PAHs previously detected in samples T-5 and S-4 through the collection of additional soil samples for vertical delineation. Samples were collected from the six-inch interval below the historic fill material (T-5B at 2.5-3 ft-bgs and S-4B at 4-4.5 ft-bgs). PAHs were not detected in the samples. It is unclear whether the PAHs detected in samples T-5 or S-4 are indicative of historic fill contaminated prior to emplacement or the result of a Site-related discharge into the historic fill. ERI has evaluated the impact to groundwater pathway for the elevated PAHs detected in samples T-5 and S-4 as summarized in Section 5 of this report.

Although PAHs were detected in other samples marginally above the outlier concentration, the remaining PAHs detected in the historic fill do not appear indicative of a discharge.

Groundwater analytical results are discussed in Section 4.19 of this report. **Based on the results, it is concluded that historic fill has not impacted groundwater at the Site.**

4.19 Site Groundwater

4.19.1 Description of AOC

Remington & Vernick and JMS previously obtained groundwater samples from temporary well points at AOCs A1, C, E1, E2, K2, and K5. Elevated concentrations of VOCs, PAHs, arsenic, and lead were detected in the temporary well points. The elevated PAHs and metals were suspected to be due to the sampling method and the presence of historic fill. Additional investigation of groundwater was warranted.

4.19.2 Groundwater Sampling

Five (5) groundwater monitoring wells (MW-1 through MW-5) were installed to evaluate site-wide groundwater conditions. The wells targeted AOCs L1 (MW-1), K2 (MW-2), C/K1 (MW-3), K3/K5 (MW-4), and A1 (MW-5). The monitoring wells were allowed to stabilize for two weeks prior to sampling. ERI collected groundwater samples from the wells on February 4, 2011 using disposable bailers following a standard three-volume purge. Groundwater samples were analyzed for VO+TICs, SVO+TICs, PCBs, and TAL metals.

Temporary well points were also installed and sampled at AOCs A2, D2, and K2 as described in the sections above. The temporary well points were also sampled using disposable bailers following a standard three-volume purge. Temporary well point samples A2-GW, D2-GW, and K2-4GW were analyzed for VO+TICs.

4.19.3 Groundwater Flow Direction

Wellhead elevations were surveyed relative to mean sea level by a licensed surveyor. Prior to sampling, the depth to groundwater was measured in each well with a water level indicator. A summary of groundwater level information is provided in the following table.

Monitoring Well Information

Well	Well Depth below Ground Surface	Screen Length	Top of Casing Elevation	Depth to Groundwater 2/4/11	Groundwater Elevation 2/4/11
MW-1	15	10	8.31	7.11	1.20
MW-2	15	10	8.02	6.73	1.29
MW-3	15	10	7.93	6.52	1.41
MW-4	15	10	8.05	6.70	1.35
MW-5	15	10	8.18	6.87	1.31

All measurements are in feet. Elevation based on feet above mean sea level.

The generalized direction of groundwater flow, based on the gauged groundwater elevations, is depicted on the Groundwater Contour Plan included as **Figure 5**. A Contour Map Reporting Form is included with the contour plan. Groundwater flow during the February 2011 sampling event was toward the east-southeast.

4.19.4 Findings/Recommendations

Analytical results for parameters exceeding the GWQS are shown on **Figure 6: Groundwater Analytical Results** included in **Appendix A**. Isopleth maps have not been developed since a limited number of wells have been installed at the Site and there appears to be more than one source of the contaminants detected in groundwater. Isopleths will be developed following the installation and sampling of additional monitoring wells as outlined in Section 8 of this Report.

VOCs were detected above the GWQS in all temporary well point and monitoring well samples except MW-5. The VOCs results for each sampling location are discussed in prior sections of this report. Based on the east-southeast groundwater flow direction observed during the February 2011 groundwater sampling event, the extent of the VOCs groundwater contamination has not been delineated. The VOCs groundwater contamination may extend off site to the southeast. **Additional delineation of VOCs in groundwater is proposed (see Section 8.5).**

SVOCs were not detected above the GWQS in the monitoring wells, confirming that the previously reported detections were due to the sampling methods. PCBs were not detected in the monitoring wells. **No further evaluation of SVOCs or PCBs in groundwater appears warranted.**

Aluminum, iron, and/or manganese were detected above the GWQS in wells MW-1 through MW-4. Arsenic was detected above the GWQS in well MW-3. **The detected metals are suspected to be naturally occurring, with elevated levels due to the sampling method. Sampling using low-flow procedures is proposed to confirm the detections.**

5.0 IMPACT TO GROUNDWATER STANDARD DEVELOPMENT

ERI has developed site-specific IGWSRS for the Site. The SRS guidance indicates IGWSRS are to be developed on a site-specific basis; however, NJDEP guidance provides IGWSSL developed using a soil-water partition equation that may be used as default criteria. ERI has compared the SI/RI data to the IGWSSL and, where applicable, has completed alternative evaluations of the impact to groundwater pathway or has developed site-specific alternative IGWSRS. The alternative evaluations of the impact to groundwater pathway were based on NJDEP guidance for immobile chemicals and Synthetic Precipitation Leaching Procedure (SPLP) methods. Site-specific IGWSRS were developed using Seasonal Soil Compartment Model (SESOIL) and the applicable NJDEP guidance document (*Using The SESOIL Transport Model To Assess The Impact To Ground Water Pathway(December 2008)).* A description of the samples exceeding the IGWSSL, arranged by contaminant of concern, is included below. Documentation required to support the site-specific IGWSRS determination is included in **Appendix G.**

Immobile Contaminants

Several contaminants detected at the Site above the IGWSSL are considered immobile, in accordance with the NJDEP's *Guidance for the Evaluation of Immobile Chemicals for the Impact to Ground Water Pathway* (June 2, 2008). For immobile contaminants, the impact to groundwater pathway is considered incomplete if certain conditions are met. Site conditions appear compatible with the immobile contaminant requirements, including:

- Contaminants were not discharged as part of a mixture that could effect the mobility of the contaminants;
- A co-solvent is not present that could effect the mobility of the contaminants;
- Soil texture at the Site is not more coarse than sandy loam;
- Soil pH has not been altered by the discharge of acids or bases; and
- Contaminants are not present at levels associated with free or residual product.

Therefore, evaluation of immobile contaminants at the Site is limited to demonstration that at least a two-foot clean zone exists between the contamination and the water table. The contaminants defined as immobile are identified in the subsections herein.

Parameters for Use in SESOIL Modeling

Investigations of the Site revealed a surficial historic fill layer of approximately three to four feet thick, with underlying native brown to greenish-brown sand. ERI collected three samples (K2-GS, K3-GS, and L1-GS) to evaluate the soil type between the historic fill and the water table. The results indicate that the soil is classified as sand to sandy loam. Groundwater at the Site occurs at approximately 7 ft-bgs.

The following default parameters were used for SESOIL modeling:

Valence (-):	0
Neutral Hydrolysis Constant (/day)	0
Base Hydrolysis Constant (l/mol-day):	0
Acid Hydrolysis Constant (l/mol-day):	0
Degradation Rate in Moisture (/day):	0

Degradation Rate on Soil (/day):	0
Ligand-Pollutant Stability Constant	0
No. Moles Ligand/Mole Pollutant (-):	0
Ligand Molecular Weight (g/mol):	0
Soil Density (g/m^3):	1.5
Organic Carbon Content (%):	0.200
Intrinsic Permeability (cm^2):	$0.1e^{-07}$ (Sand)
Disconnectedness Index (-):	3.70
Porosity (-):	0.30
Clay Content (%):	0
Cation Exchange Capacity (milli eq./100g dry soil):	0
Freundlich Exponent (-):	1.00
VOLF parameter	1
Sub Layers	1 foot
Release Type	Instantaneous
Model Mode	Monthly
Duration	100 years
Climate data	SEVIEW, Freehold, New Jersey
Site latitude	39.9 degrees
Area of contamination (ft^2)	900
Depth to groundwater (ft)	7

Values for the following parameters were obtained from the NJDEP Chemical Properties Table:

Solubility (ug/ml)
Diffusion Coefficient in Air (cm^2/sec)
Henrys Law Constant (m^3-atm/mole)
Adsorption Coefficient on Organic Carbon (Koc)
Adsorption Coefficient on Soil (K)
Molecular Weight (g/mol)
Diffusion Coefficient in Water (cm^2/sec)

5.1 Volatile Organic Compounds

ERI has established acceptable vertical profiles for the various VOCs detected above the IGWSSL. The following scenarios were considered when developing the profiles:

- High levels of contamination within historic fill with no impact to underlying soil
- Moderate to high levels of contamination within historic fill with some impact to underlying soil and no impact at the groundwater interface

The profiles determined to result in acceptable leachate concentrations as developed using the SESOIL model are summarized below. The listed Leachate Criteria are based on the default Dilution Attenuation Factor (DAF) of 13.

Acceptable Contaminant Profiles Developed Through SESOIL Modeling

Contaminant	Depth	Soil Concentration	Resulting Leachate	Leachate Criteria
TCE	0-4	10	0.1518	13
	4-7	0		
TCE	0-4	0.3	12.78	13
	4-6	0.01		
	6-7	0		
1,1,1-TCA	0-6	14	379	390
	6-7	0		
1,1-DCE	0-5	0.1	0.0008234	13
	5-7	0		
PCE	0-4	0.1	0.0000001	5.2
	4-7	0		
Benzene	0-4	0.1	1.842	2.6
	4-7	0		
Benzene	0-3	0.8	0.4539	2.6
	3-7	0		

Soil concentrations in mg/kg
Leachate Concentrations in ug/L

In an email dated February 28, 2012, Dr. Paul Sanders of the NJDEP provided an initial review of the above SESOIL modeling and the proposed site-specific IGWSRS contaminant profiles. Dr. Sanders indicated that having the VOLF parameter turned on with a soil texture of sand was acceptable assuming that a) the area is not or is not going to be capped, and b) the soil texture is actually sand.

ERI responded in a letter dated July 27, 2012. ERI stated that the SESOIL model simulated pervious conditions that may not be applicable if the areas of contamination are capped. To resolve this concern, ERI proposed to revise the Remedial Action Workplan to indicate the proposed site-specific IGWSRS contaminant profiles will used in areas that are under pervious surfaces or under buildings where sub-slab vapor intrusion mitigation systems have been installed. ERI also provided documentation demonstrating that the vertical soil profile is sand and verified the depth to groundwater.

In a subsequent phone conversation, Dr. Sanders indicated that it was likely that the above site-specific IGWSRS contaminant profiles will be approved in conjunction this remedial approach if they are proposed by the Licensed Site Remediation Professional that will be responsible for remedial oversight. Copies of the email and the July 27, 2012 letter are included in **Appendix G**.

5.2 Pesticides

Chlordane exceeded the IGWSSL in sample K1-1 collected at AOC-K1 and in K3-3 at AOC-K3. Chlordane is considered an immobile contaminant. Based on the results of remedial investigation sampling (see Sections 4.9 and 4.11), chlordane above the IGWSSL of 0.03 mg/kg

is limited to a depth less than 5 ft-bgs. Groundwater was encountered at a depth of 7 ft-bgs in monitoring well MW-3 located near these AOCs. Based on the RI sample results and depth to groundwater, at least a two-foot clean zone exists between the chlordane contamination and the water table. Therefore, compliance with the impact to groundwater pathway for chlordane has been demonstrated at AOC-K1 and AOC-K3.

Heptachlor epoxide exceeded the IGWSSL in sample K3-3 collected at AOC-K3. Heptachlor epoxide is considered an immobile contaminant. Based on the results of remedial investigation sampling (see Section 4.11), heptachlor epoxide above the IGWSSL of 0.009 mg/kg is limited to a depth less than 4 ft-bgs. Groundwater was encountered at a depth of 7 ft-bgs in monitoring well MW-3 located near this AOC. Based on the RI sample results and depth to groundwater, at least a two-foot clean zone exists between the heptachlor epoxide contamination and the water table. Therefore, compliance with the impact to groundwater pathway for heptachlor epoxide has been demonstrated at AOC-K3.

Additional delineation is needed to address the impact to groundwater pathway for beta-BHC detected in sample K3-1.

5.3 Metals

As summarized in Section 4.18 of this report, metals were detected above the IGWSSL in historic fill at T-8 and E2-1. ERI evaluated the impact to groundwater pathway for these metals as summarized below.

Nickel and beryllium were detected above the IGWSSL in sample E2-1 (AOC-E2) collected by JMS. ERI resampled this location (sample E2-1B) and analyzed the sample for nickel and beryllium via the total and SPLP methods.

Total nickel detected in sample E2-1B was higher than the level previously detected in sample E2-1. The SPLP analysis indicated nickel was detected at 6.2 ug/L, below the Leachate Criteria of 1,300 ug/L. Based on the results, it is concluded that the nickel detected at this AOC does not represent a potential source of groundwater contamination. In addition, nickel has not been detected above the GWQS in Site groundwater. No further evaluation of nickel at AOC-E2 is warranted.

Total beryllium detected in sample E2-1B was an order of magnitude lower than the level previously detected in sample E2-1, but exceeded the IGWSSL. The SPLP analysis indicated beryllium was not detected. Based on the results, it is concluded that the beryllium detected at this AOC does not represent a potential source of groundwater contamination. In addition, beryllium has not been detected above the GWQS in Site groundwater. No further evaluation of beryllium at AOC-E2 is warranted.

ERI evaluated the elevated metals previously detected in sample T-8 through the collection of two (2) additional soil samples at the approximate location of T-8. ERI collected sample T-8B at a depth of 1.5-2 ft-bgs (the depth of prior sample T-8) and sample T-8C and 4.5-5 ft-bgs. Elevated levels of arsenic, lead, cadmium, and mercury were not detected in these samples. As

indicated in Section 4.18.5 of this report, these metals appear indicative of historic fill and further evaluation of the impact to groundwater pathway does not appear warranted.

5.4 PAHs

The levels of PAHs previously detected in samples T-5 and S-4 appear to exceed levels typical to Site historic fill (See Section 4.18). ERI collected soil samples for vertical delineation at these locations (T-5B at 2.5-3 ft-bgs and S-4B at 4-4.5 ft-bgs). PAHs were not detected in the samples. These contaminants are considered immobile. Based on the RI sample results and depth to groundwater (7 ft-bgs), at least a two-foot clean zone exists between the PAHs contamination and the water table. Therefore, compliance with the impact to groundwater pathway for PAHs has been demonstrated for samples T-5 and S-4.

6.0 RECEPTOR EVALUATION

6.1 Land Use

The Site is currently vacant with no buildings. Redevelopment plans are not final.

ERI has reviewed land uses within 200 feet of the Site. Several residences were identified along Federal Street, to the southwest of the Site. Otherwise, sensitive land uses such as schools, child care centers, parks, playgrounds, or recreational areas were not identified within 200 feet of the Site. **Figure 7** depicts the Site, a 200 foot boundary around the Site, and the identified residences.

No major subsurface public utilities were identified in close proximity to the Site. The site vicinity is serviced by public water and sewer.

6.2 Groundwater

Since contamination has been detected in groundwater above the GWQS, ERI obtained well records from the NJDEP Bureau of Water Allocation (BWA). An attempt was made to determine the location of the wells in relation to the Site. The wells were located by either block and lot, well address, maps included on well records, or the coordinates supplied by BWA.

The well records of all domestic and monitoring wells within ½ mile of the Site and all public-supply wells, industrial wells, irrigation wells, and wells with water allocation permits within one mile of the Site are summarized on the figure and accompanying table included in **Appendix H**. Copies of the available well records are also included in **Appendix H**. The BWA well search identified no domestic wells, three (3) non-public (commercial use) wells, three (3) industrial wells, and twelve (12) public supply wells located within the specified search distances. Numerous monitoring wells were also identified. Only one (1) of these wells is located within 250 upgradient, 500 feet sidegradient, or 1,000 feet downgradient of the currently known extent of Site groundwater contamination. This industrial well is estimated to be located approximately 300 feet down or sidegradient of the currently know extent of the Site groundwater contamination. This well was completed to a depth of 166 feet with a 15 foot screened interval, and was installed in 1964. The current status of this well has not been verified. This property is currently owned by Paris Foods Corporation. ERI notes that this property is located adjacently dowgradient of the Concord Chemical Company property (NJDEP Program Interest #002734). ERI also understands that USEPA recently completed the removal of over 400 drums of hazardous chemicals from the abandoned Concord Chemical site, and that some of the drums were leaking. Based on the depth of the Paris Foods Corporation well and the presence of the Concord Chemical property between the Site and the Paris Foods Corporation property, sampling of the Paris Foods Corporation well does not appear warranted at this time.

ERI also reviewed information on existing Tier 1 and Tier 2 well head protection areas using NJDEP GIS data. The currently known extent of the Site groundwater contamination is not located within a Tier 1 or Tier 2 well head protection area.

Since the Site is located in a groundwater use area, ERI performed a canvas of the area within 250 upgradient, 500 feet sidegradient, and 1,000 feet downgradient of the currently known extent of Site groundwater contamination. No wells were identified within this area.

No further evaluation of potential potable well receptors appears warranted at this time.

6.3 Vapor Intrusion

TCE was detected in temporary well point and monitoring well samples D2-2GW, K2-4GW, MW-1, MW-2, and MW-4 above the NJDEP Vapor Intrusion Groundwater Screening Level (GWSL). Chloroethane was also detected above the GWSL in well MW-2. No other VOCs were detected at the Site above the GWSLs. Since the Site is currently vacant, vapor intrusion is not of concern at the Site at this time. A vapor mitigation system may be needed if the Site is redeveloped. Concord Chemical Company is located within 100 feet of the currently known extent of groundwater exceeding the GWSL. ERI understands that this known contaminated site is vacant, recently contained numerous drums of hazardous chemicals, and has documented groundwater contamination. Therefore, a vapor intrusion investigation of the Concord Chemical property does not appear warranted. No other off-site structures are located within 100 feet of the currently known extent of groundwater exceeding the GWSL. No major utilities were identified in close proximity to the Site that would be anticipated to act as a preferential pathway for vapors.

6.4 Ecological

ERI reviewed available information on NJDEP's iMap website and performed a site visit to identify environmentally sensitive natural resources on or within 200 feet of the Site boundaries. No environmentally sensitive natural resources were identified. Therefore, no further ecological evaluation appears warranted.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the completed Site/Remedial Investigations, the following actions are proposed for the identified AOCs:

AOC	Location	Action	Reasoning
AOC-A1: Former Heating oil USTs	A1	NFA	SI/RI Results
AOC-A2: Existing 550-gallon UST	A2	RA	Excavate soil acting as a source of groundwater contamination, verify VOC TICs detected in A2-GW
AOC-B: Rail Sidings	B	NFA	SI Previously Approved by NJDEP
AOC-C: Former Pump Station	C	NFA	SI/RI Results
AOC-D: Loading Areas	D1	NFA	SI Previously Approved by NJDEP
	D2	NFA	SI/RI Results
	D3	NFA	SI Previously Approved by NJDEP
AOC-E: Drum Storage Areas	E1	NFA	SI Previously Approved by NJDEP
	E2	NFA	SI/RI Results
AOC-F: Roof Leaders	F	NFA	SI Previously Approved by NJDEP
AOC-G: Soil Pile/Debris Pile	G	NFA	SI Previously Approved by NJDEP
AOC-H: Transformers	H1	NFA	SI Previously Approved by NJDEP
	H2	NFA	SI/RI Results
AOC-I: Soil Staining	I	NFA	SI Previously Approved by NJDEP
AOC-J: Former Boiler Room ales	J	NFA	SI Previously Approved by NJDEP
AOC-K1: Former Pit	K1	NFA	SI/RI Results
AOC-K2: Concrete Holding Tank	K2	RI, RA	Delineate @ K2-7, Remove Holding Tank
AOC-K3: Concrete Filled Former Structure	K3	RI, RA	Excavate soil acting as a source of groundwater contamination, delineate & monitor groundwater, delineate beta-BHC in soil to demonstrate compliance with IGW pathway
AOC-K4: Stained Concrete Area	K4	NFA	SI/RI Results
AOC-K5: Drain	K5	NFA	SI/RI Results
AOC-L1: Debris Filled Pit	L1	RI, RA	Excavate soil acting as a source of groundwater contamination, delineate & monitor groundwater
AOC-L2: Concrete Filled Former Trench	L2	NFA	SI Previously Approved by NJDEP
AOC-L3: Additional Debris Filled Pits	L3	NFA	SI Results
AOC-M: Suspected Former ASTs	M1-M2	NFA	SI Previously Approved by NJDEP
AOC-N: Sumps	N1-N2	NFA	SI Results
AOC-O: Floor Drains	O1-O3	NFA O2/O3 RI O1	O2/O3: SI Results O1: Evaluate potential impacts to groundwater through groundwater monitoring
AOC-P: Historic Fill	Site-wide	RI, RA	Verify elevated metals detected in groundwater. Remediate soil through engineering and institutional controls
Site Groundwater	Site-wide	RA	Natural attenuation and Classification Exception Area

Remedial actions are proposed for AOCs K2, K3, L1, P, and Site Groundwater in Section 8 of this Report. Additional Remedial Investigation is needed for some of the AOCs as summarized earlier in this Report. It is recommended that the proposed Remedial Investigations be completed prior to initiating remediation.

8.0 REMEDIAL ACTION WORKPLAN

8.1 Remedial Selection

Remediation is proposed for contaminated soil and groundwater at the Site. A remedy is required because soil and groundwater contains contaminants above the applicable NJDEP remedial standards. A combination of excavation and offsite disposal and the use of engineering and institutional controls are the proposed remedial alternatives for soil contamination at the Site. Monitored natural attenuation (MNA) and establishment of a Classification Exception Area are the proposed remedial alternatives for groundwater.

Engineering/institutional controls are proposed to address contaminated historic fill that is assumed to be present beneath the entire Site. The engineering/institutional controls will also address non-historic fill contamination not removed through excavation. The proposed engineering/institutional controls would mitigate the direct contact pathway by controlling access and preventing exposure to the contaminated soil. The proposed engineering/institutional controls are consistent with the planned future use of the site (assumed to be non-residential) and can be maintained indefinitely. The engineering controls can be implemented in conjunction with Site development.

In addition to limiting the potential for direct contact exposure, the remedial actions will prevent off-site migration of the contamination. Thus, the remedial actions will be protective of both human health and the environment. The potential remedies will not adversely impact the local community and are consistent with redevelopment plans for the area of the Site.

Several remedial alternatives were evaluated prior to the selection of the proposed remedial actions. The selected alternatives provided the best balance of effectiveness and cost, while minimizing the threat to human health and the environment. Other less effective remedial alternatives that were evaluated included no action and treatment of the contaminated soils. These alternatives were not selected for the following reasons:

- The no action alternative was considered an unacceptable alternative because contaminants were detected above residential and site-specific impact to groundwater soil remediation standards.

- Due to the properties of detected contaminants, treatment options, such as bio-remediation, soil washing, and incineration, were judged either technically infeasible or not cost effective.

Based on the contaminant levels detected during this RI, it is anticipated that groundwater contamination will naturally attenuate over time once the source areas are removed as described above. As proposed below, long-term monitoring will be performed following source removal to verify the applicability of the MNA remedy.

8.2 Proposed Remediation Standards

The NJDEP RSRS, NRSRS, IGWSSL, and/or site-specific IGWSRS are proposed as the applicable remediation standards for soil. Contaminants of concern and the proposed remedial standards are summarized below.

Soil Remediation Standards

Contaminant	CASRN	Remedial Standard (mg/kg)	Basis
Arsenic	7440-38-2	19	NRSRS
Lead	7439-92-1	800	NRSRS
Mercury	7439-97-6	65	NRSRS
Beryllium	7440-41-7	140	NRSRS
Benzo(a)anthracene	56-55-3	2	NRSRS
Benzo(b)fluoranthene	205-99-2	2	NRSRS
Benzo(a)pyrene	50-32-8	0.2	NRSRS
Indeno(1,2,3-cd)pyrene	193-39-5	2	NRSRS
1,1-Dichloroethane	75-34-3	0.2	IGWSSL
Cis-1,2-dichloroethene	156-59-2	0.2	IGWSSL
TCE	79-01-6	10 (0-4') 0.007 (4-7')	Site-specific IGWSRS
		0.3 (0-4') 0.01 (4-6') 0.007(6-7')	Site-specific IGWSRS
1,1,1-Trichloroethane	71-55-6	14 (0-6') 0.2 (6-7')	Site-specific IGWSRS
1,1-Dichloroethene	75-35-4	0.1 (0-5') 0.005 (5-7')	Site-specific IGWSRS
PCE	127-18-4	0.1 (0-4') 0.005 (4-7')	Site-specific IGWSRS
Benzene	71-43-2	0.1 (0-4') 0.005 (4-7')	Site-specific IGWSRS
		0.8 (0-3') 0.005 (3-7')	Site-specific IGWSRS
Total Xylenes	1330-20-7	12	IGWSSL

Please note that these remedial standards may be refined based on the results of additional Remedial Investigation or post-excavation sampling. Site-specific IGWSRS contaminant profiles for TCE, 1,1,1-Trichloroethane, 1,1-Dichloroethene, PCE, Benzene, and Xylenes will be used in areas that are under previous surfaces or under buildings where sub-slab vapor intrusion mitigation systems have been installed.

The NJDEP Class II-A GWQS are proposed as the applicable remediation standards for groundwater. Contaminants of concern and the proposed remedial standards are summarized in the following table.

Contaminant	CASRN	Remedial Standard (ug/L)
TCE	79-01-6	1
PCE	127-18-4	1
1,1-Dichloroethene	75-35-4	1
1,1-Dichloroethane	75-34-3	50
Benzene	71-43-2	1
Chloroethane	75-00-3	5
VOC TICs	NA	500

8.3 Description of Soil Remedial Actions

Active remediation is proposed for soil with VOCs exceeding the site-specific IGWSRS at AOCs AOC K3 and L1 as summarized below. VOCs soil analytical results for all AOCs are included on **Figure 8.**

AOC A2 – Existing 550-gallon UST
Excavation and off-site disposal is proposed for the elevated TICs and total xylenes detected in sample A2-3. The extents of the proposed excavation have been estimated based on RI delineation. It is estimated that an approximately 400 square foot area will require remediation to a depth of approximately eight (8) feet. The estimated volume of soil to be remediated is 120 cubic yards. The proposed remedial excavation is shown on **Figure 9**.

AOC K2 – Concrete Holding Tank
Removal of the concrete holding tank is proposed. Post-excavation soil samples will be collected in accordance with UST sampling protocol. Samples will be analyzed for VO+TICs.

AOC K3 – Concrete Filled Former Structure
Excavation and off-site disposal is proposed for sample location K3-3 where TCE exceeds the site-specific IGWSRS. This excavation will also likely address benzene, cis-1,2-dichloroethene, and PCBs detected in this area. The extents of the proposed excavation have been estimated based on RI delineation. It is estimated that an approximately 1,000 square foot area will require remediation to a depth of approximately seven (7) feet. The estimated volume of soil to be remediated is 260 cubic yards. The proposed remedial excavation is shown on **Figure 9**. This excavation will require removal of the I-shaped structure. Additional investigation of the I-shaped structure should be performed during removal.

AOC L1 – Debris Filled Pit
Excavation and off-site disposal is proposed where TCE and 1,1,1-trichloroethane exceed the site-specific IGWSRS. This excavation will include boring locations L1-1, L1-4, L1-5, L1-6, L1-8, L1-9, and L1-12. The extents of the proposed excavation have been estimated based on RI delineation. It is estimated that an approximately 11,000 square foot area will require remediation to a depth of approximately seven (7) feet. The estimated volume of soil to be remediated is 2,850 cubic yards. The proposed remedial excavation is shown on **Figure 9**. The specific source of the soil contamination in this area has not been identified; several sources may

be present.

Site-Wide - Engineering and Institutional Controls

Following removal of soil above the site-specific IGWSRS as described above, the remaining soil contamination will be remediated through the use of engineering and institutional controls. Since it is assumed that contaminated historic fill material extends beneath the entire Site, the entire site will be capped.

It is anticipated that concrete and block from demolition of Site buildings will be crushed and reused on-site. The crushed concrete and block will be reused only under capping. Alternatively, the concrete and block will be sampled prior to demolition in accordance with *Guidance for the Sampling and Analysis of Concrete Designated for Recycling* (Updated February 20, 2007) and materials that do not exceed the RSRS or NRSRS will be reused in an unrestricted fashion.

It may not be practical to cap all of the contaminated soil and reuse all of the crushed concrete/block in conjunction with site development. Excess contaminated materials will be disposed offsite at an approved facility.

The proposed caps are intended to provide a physical separation between the contaminants and potential direct contact receptors. The capping technologies proposed for this site are impervious surface barriers (walkways and auxiliary structures) and soil cover with vegetation. It is planned that most of the Site will be capped with impervious covers. **This RAW assumes that the Site will not be redeveloped for a use that requires Presumptive Remedies.**

Descriptions of proposed cap types are provided below. The proposed caps will be designed to provide a sufficient barrier between the contaminants and potential direct contact receptors.

Asphalt Pavement

Parking areas will be constructed of asphalt pavement. The asphalt pavement will act as an impervious cap. The cap will consist of a minimum of 3 inches of asphalt overlying a minimum of 4 inches of aggregate base. A visual boundary marker will be established prior to construction of the cap.

Concrete

Site buildings will be constructed on concrete slabs. These slabs will function as an impervious cap. The cap will consist of a minimum of 4 inches of concrete overlying a minimum of 4 inches of aggregate base. A visual boundary marker will be established prior to construction of the cap.

Clean Soil/Landscape Materials

All areas of the Site that are not capped with the above impervious caps will have pervious caps. These caps will consist of either at least 24 inches of clean fill or landscape materials over a visual boundary marker or at least 12 inches of clean fill or landscape materials over geotextile fabric. A one-foot clean soil buffer will be maintained around the root balls of trees or large shrubs.

8.4 Description of Groundwater Remedial Actions

Once soil is remediated at AOCs A2, K3 and L1 through excavation and off-site disposal, additional groundwater monitoring wells will be installed to evaluate long-term trends in groundwater contaminant concentrations and the behavior of the contaminant plume. A groundwater monitoring well will also be installed at AOC A2 following soil removal to verify the prior elevated detection of VOC TICs. Proposed monitoring well locations are shown on **Figure 9**. Quarterly groundwater monitoring is proposed, with samples analyzed for VO+TICs and other parameters necessary to evaluate the viability of natural attenuation as a groundwater remedy. Alternative groundwater remedies will be evaluated if the long-term monitoring indicates natural attenuation is not viable.

8.5 Institutional Controls

Deed Notice

A Deed Notice will be used to limit human activities that could result in exposure to contaminants that will be contained at the site and to ensure the effectiveness of the engineering controls over time. The Notice will be limited to contaminants outlined in section 8.2 of this report. The Notice will include a narrative description of engineering controls and associated monitoring and maintenance activities. As a condition of the Notice, the owner will be required to notify any person who intends to excavate on the property of the nature and location of any contamination existing on the property and of any conditions or measures necessary to prevent exposure to contaminants.

Classification Exception Area

A CEA will be established once the extent of the Site-related groundwater contamination is determined.

8.6 Remedial Verification

Soil

Post-excavation sidewall samples will be collected at a rate of one per 30 linear feet of sidewall. The depth of the sidewall samples will be based on the depth of nearby impacted SI/RI samples, PID readings, and/or the site-specific IGWSRS profiles established in Section 5.1 of this report. Post-excavation bottom samples will be obtained at a rate of one per 900 square feet of excavation. Post-excavation soil samples will be analyzed for TCL VO+TICs. Samples collected at the K3-3 excavation will also be analyzed for PCBs.

Groundwater

As described in Section 8.4, quarterly groundwater monitoring is proposed to evaluate the viability of natural attenuation as a groundwater remedy. This quarterly monitoring will be performed for a period of two (2) years. The cumulative groundwater monitoring data will be evaluated using appropriate graphical or statistical methods to determine whether contaminants are degrading. The behavior of the plume (e.g., shrinking or expanding) will also be evaluated.

The natural attenuation remedy will be deemed viable if contaminant degradation is demonstrated and the aerial extent of the plume is either stable or shrinking.

8.7 Remedial Oversight

An environmental scientist will provide oversight of remedial activities. No specific construction facilities will be necessary at the site for the implementation of the proposed remedial actions.

8.8 Permits

A Soil Remedial Action Permit will be obtained from the Department following implementation of the engineering and institutional controls. Once eight (8) quarters of groundwater data are obtained, and if natural attenuation is deemed viable, a Groundwater Remedial Action Permit will be obtained from the Department.

8.9 Remedial Schedule

The timeframe for remediation is contingent on funding availability and redevelopment potential; therefore, a specific remediation schedule has not been provided.

8.10 Monitoring and Maintenance

Soil

Long-term monitoring and maintenance of the engineering controls will be conducted to ensure their continued integrity. Periodic inspection of the engineering controls will be performed to evaluate whether the controls are operating as designed and intended, including their integrity, operability, and effectiveness. The owner and/or operator will submit to the NJDEP a monitoring report documenting and certifying compliance with these requirements every two years or as required by the Soil Remedial Action Permit.

Groundwater

The owner and/or operator will prepare and submit the required Classification Exception Area biennial certification to NJDEP and perform any groundwater monitoring that may be required under the Ground Water Remedial Action Permit.

8.11 Remedial Action Report

A Remedial Action Report will be prepared for submittal to the NJDEP to document the active soil remediation and the results of the long-term groundwater monitoring performed following soil removal. A separate Remedial Action Report will be prepared following implementation of the soil engineering and institutional controls.

APPENDIX A

FIGURES

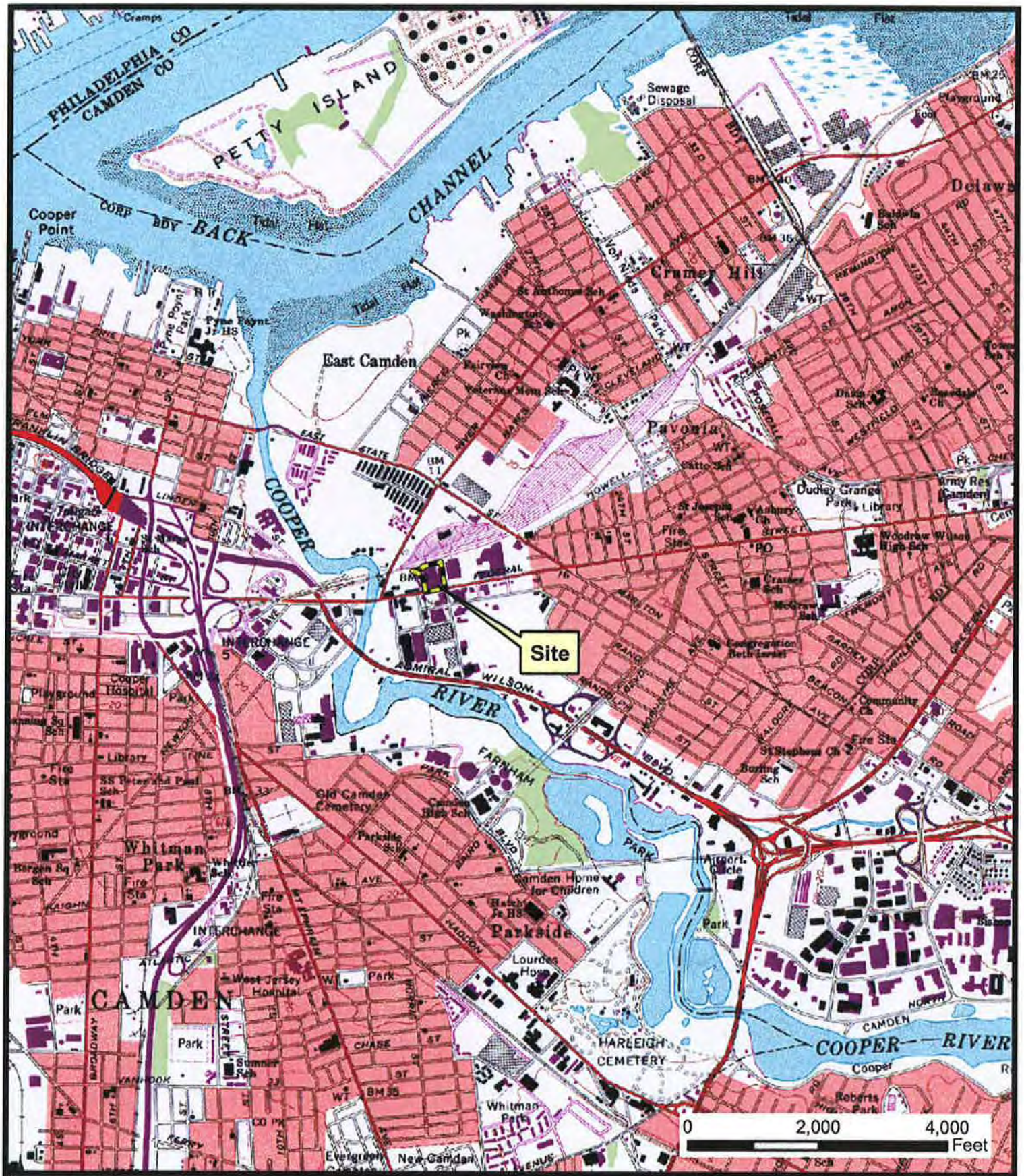

FIGURE 1: USGS LOCATION MAP

BASEMAP SOURCE:
USGS QUADRANGLE
CAMDEN, NJ

N
W E
S

SCALE: 1 INCH EQUALS 2,000 FT

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CITY OF CAMDEN
CAMDEN COUNTY, NEW JERSEY

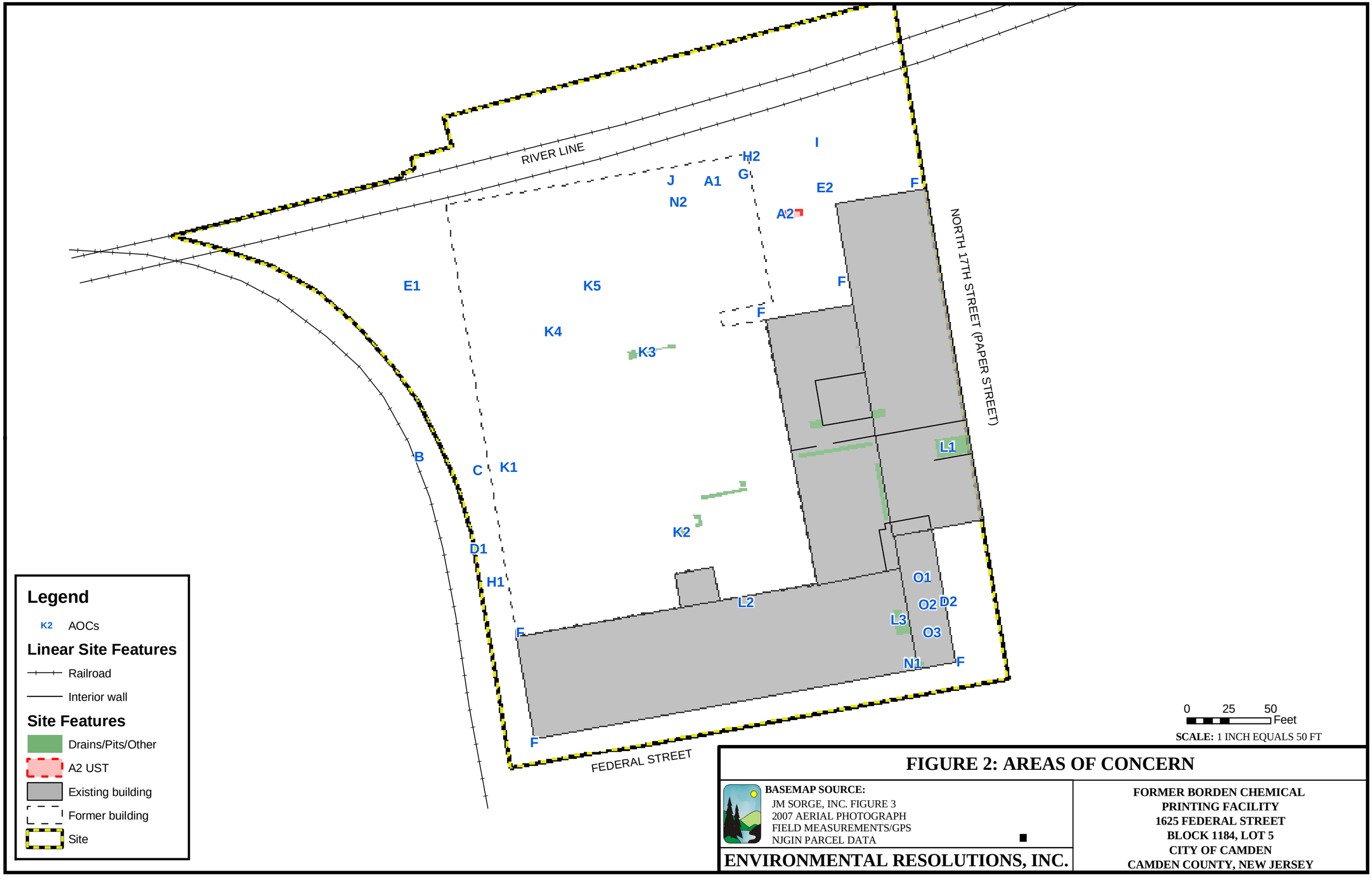

FIGURE 2: AREAS OF CONCERN

BASEMAP SOURCE:
JM SORGE, INC. FIGURE 3
2007 AERIAL PHOTOGRAPH
FIELD MEASUREMENTS/GPS
NJGIN PARCEL DATA

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CAMDEN COUNTY, NEW JERSEY

RIVER LINE

NORTH 17TH STREET (PAPER STREET)

FEDERAL STREET

UST PIPING

TP-A3/TW-1

TP-A1

TP-A2

TP-C1

TP-C2

K5-1/K5-2/TW-2

K2-5/TW-3

MW-1

MW-2

MW-3

MW-4

MW-5

T-1 T-2 T-3 T-4 T-5 T-6 T-7 T-8 T-9 T-10 T-11 T-12

W-1 W-2 W-3

S-1 S-2 S-3 S-4 S-5 S-6 S-7

H-1 H2-1 H2-2

J-1 G-1 N2-1

A2-1 A2-2 A2-3 A2-4 A2-7 A2-8 A2-9 A2-10 A2-GW

E2-1 E2-2

F-1 F-2 F-3

K1-1 K2-1 K2-2 K2-3 K2-4 K2-6 K2-7 K3-1 K3-2 K3-3 K3-4 K3-5 K3-6 K4-1

L1-1 L1-2 L1-4 L1-5 L1-6 L1-8 L1-9 L1-10 L1-11 L1-12 L1-13 L1-14

L2-1 L2-2 L2-3 L2-4

L3-1

O1-1 O2-1 O3-1

D2-1 D2-2

N1-1

P-1 P-2 P-3 P-4 P-5

A1 A2 B C D1 E1 E2 F G H1 H2 I J K1 K2 K3 K4 K5 L1 L2 L3 O1 O2 O3 N1 N2

0 30 60 Feet

SCALE: 1 INCH EQUALS 30 FT

Legend

- K2 AOCs
- * Monitoring Wells
- A Soil Borings/Samples by ERI
- Samples Collected by Others

Linear Site Features

- Railroad
- Interior wall

Site Features

- Drains/Pits/Other
- A2 UST
- Existing building
- Former building
- Site

FIGURE 3: BORING LOCATION PLAN

BASEMAP SOURCE:
JM SORGE, INC. FIGURE 3
2007 AERIAL PHOTOGRAPH
FIELD MEASUREMENTS/GPS
NJGIN PARCEL DATA

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CAMDEN COUNTY, NEW JERSEY

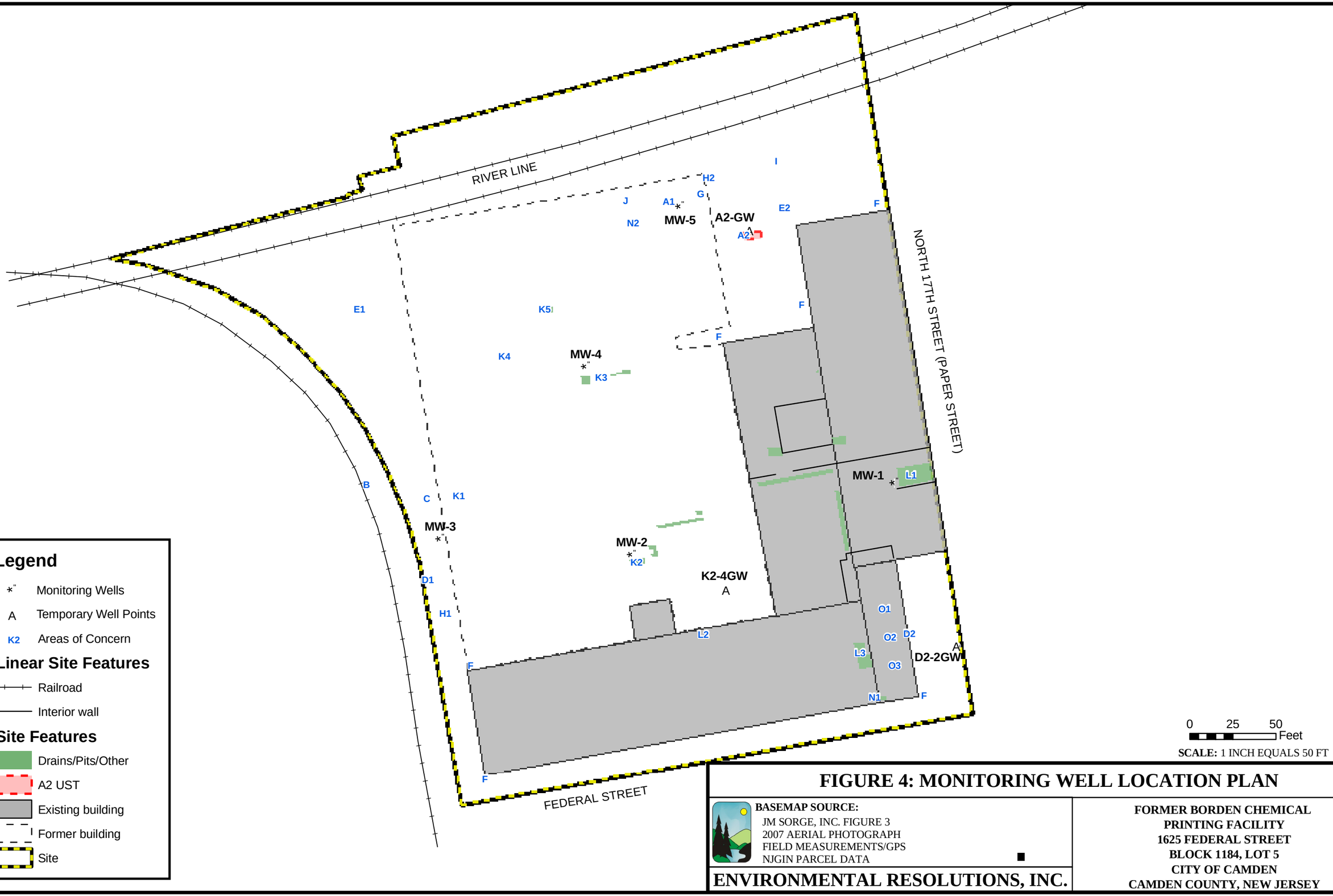

FIGURE 4: MONITORING WELL LOCATION PLAN

BASEMAP SOURCE:
JM SORGE, INC. FIGURE 3
2007 AERIAL PHOTOGRAPH
FIELD MEASUREMENTS/GPS
NJGIN PARCEL DATA

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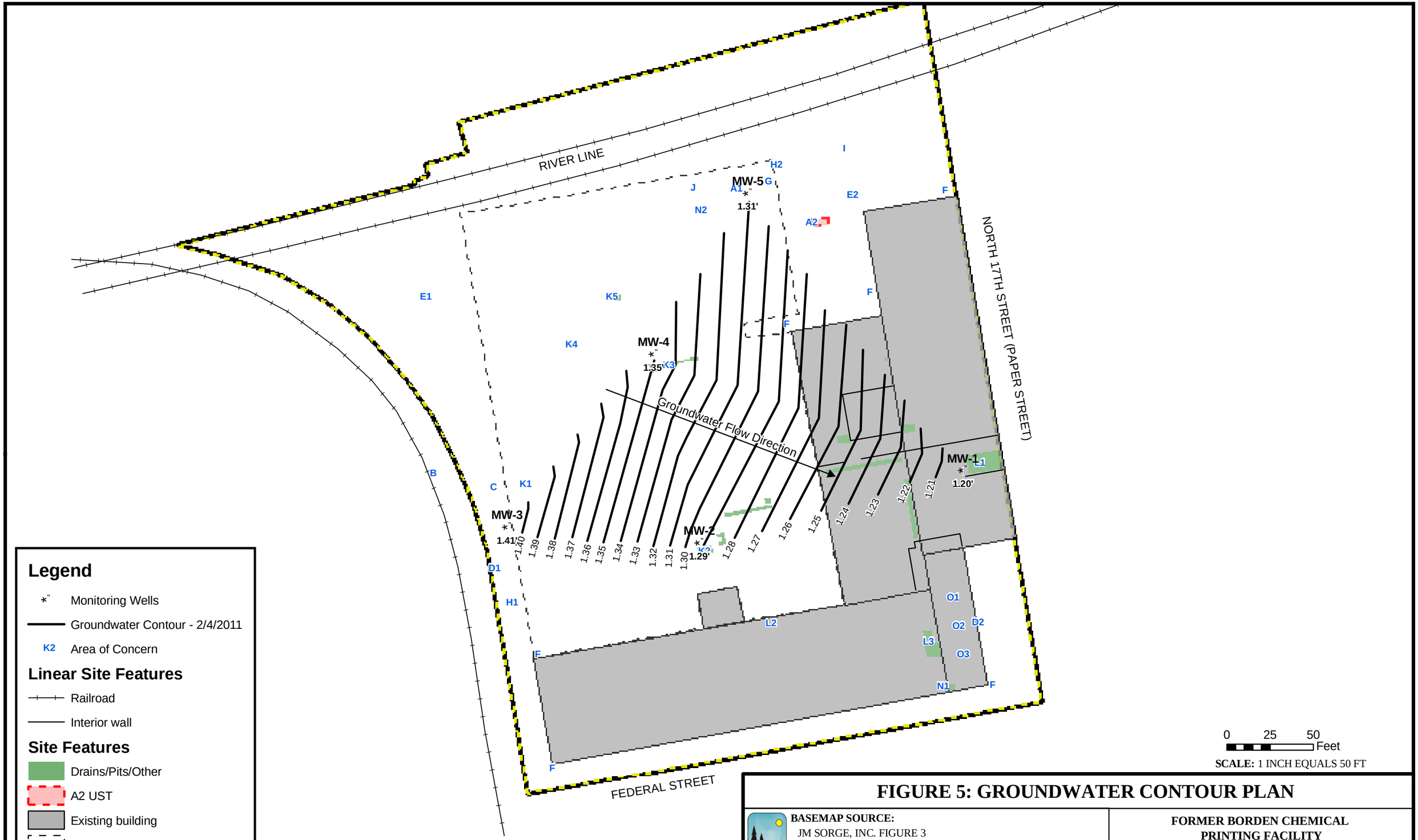

Legend

- Monitoring Wells
- Groundwater Contour - 2/4/2011
- K2 Area of Concern

Linear Site Features

- Railroad
- Interior wall

Site Features

- Drains/Pits/Other
- A2 UST
- Existing building
- Former building
- Site

0 25 50 Feet

SCALE: 1 INCH EQUALS 50 FT

FIGURE 5: GROUNDWATER CONTOUR PLAN

BASEMAP SOURCE:
JM SORGE, INC. FIGURE 3
2007 AERIAL PHOTOGRAPH
FIELD MEASUREMENTS/GPS
NJGIN PARCEL DATA

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CAMDEN COUNTY, NEW JERSEY

CONTOUR MAP REPORTING FORM – FEBRUARY 4, 2011

1. Did any surveyed well casing elevations change from the previous sampling event? Yes___ No__X__. If yes, attach new "Well Certification - Form B – Location Certification" as found in the "Guide for the Submission of Remedial Action Workplans" (NJDEP, March 1995) and identify the reason for the elevation change (damage to casing, installation of recovery system in monitoring well, etc.).

2. Are there any monitor wells in unconfined aquifers in which the water table elevation is higher than the top of the well screen? Yes____ No_X_. If yes, identify these wells.

3. Are there any monitor wells present at the site but omitted from the contour map? Yes____ No__X__. Unless the omission of the well(s) has been previously approved by the Department, justify the omissions.

4. Are there any monitor wells containing separate phase product during this measuring event? Yes___ No_X__. Were any of the monitor wells with separate phase product included in the ground water contour map? Yes___ No___. If yes, show the formula used to correct the water table elevation.

5. Has the ground water flow direction changed more than 45° from the previous ground water contour map? Yes___ No__X__. If yes, discuss the reasons for the change.

6. Has ground water mounding and/or depressions been identified in the ground water contour map? Yes___ No_X__. Unless the ground water mounds and/or depressions are caused by the ground water remediation system, discuss the reasons for this occurrence.

7. Are all the wells used in the contour map screened in the same water-bearing zone? Yes_X__ No___. If no, justify inclusion of those wells.

8. Were the ground water contours computer generated__X__, computer aided___, or hand-drawn___? If computer aided or generated, identify the interpolation method(s) used.

Surfer version 8 used to create contours using the Triangulation with Linear Interpolation method.

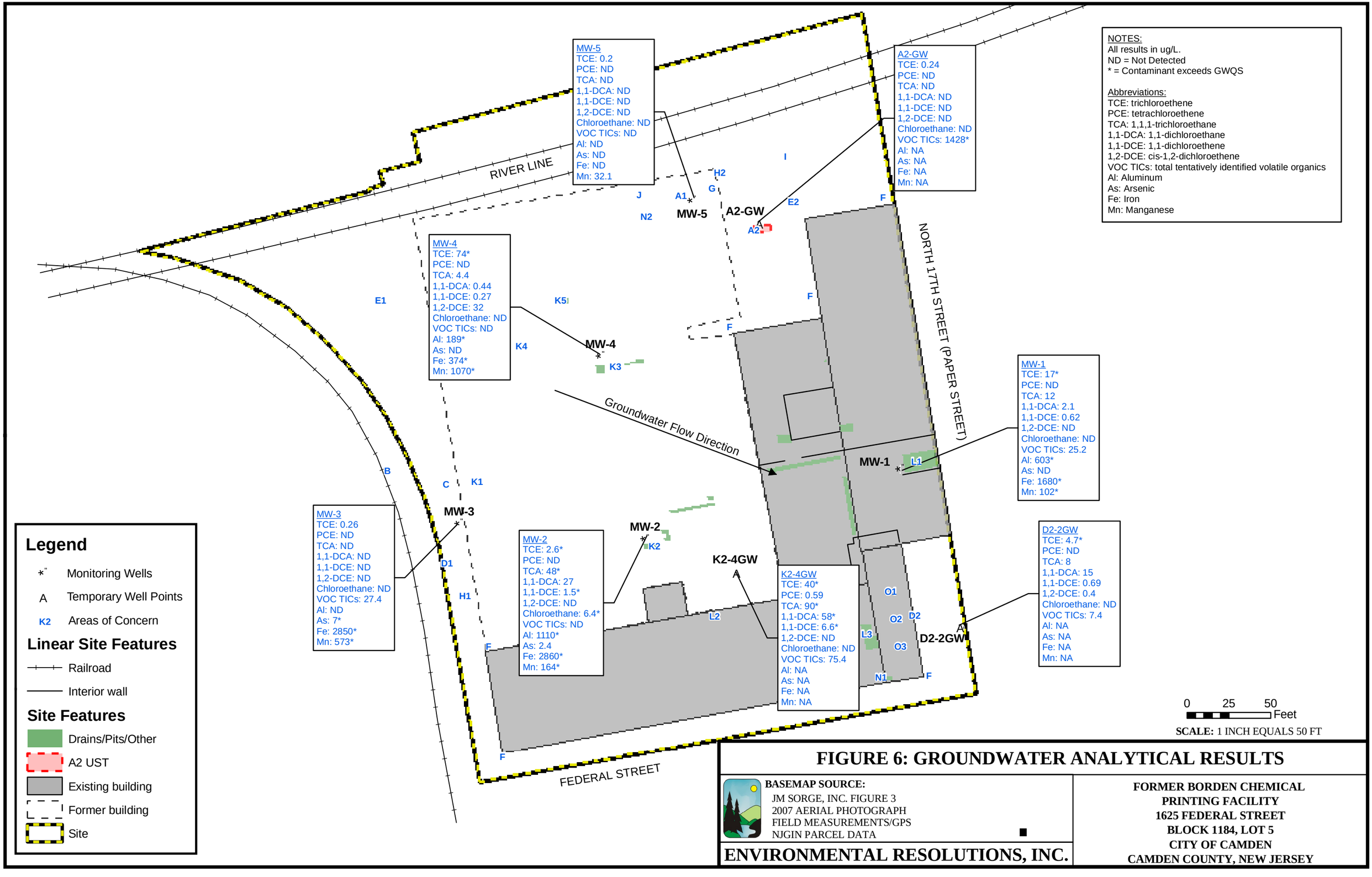

FIGURE 6: GROUNDWATER ANALYTICAL RESULTS

BASEMAP SOURCE:
JM SORGE, INC. FIGURE 3
2007 AERIAL PHOTOGRAPH
FIELD MEASUREMENTS/GPS
NJGIN PARCEL DATA

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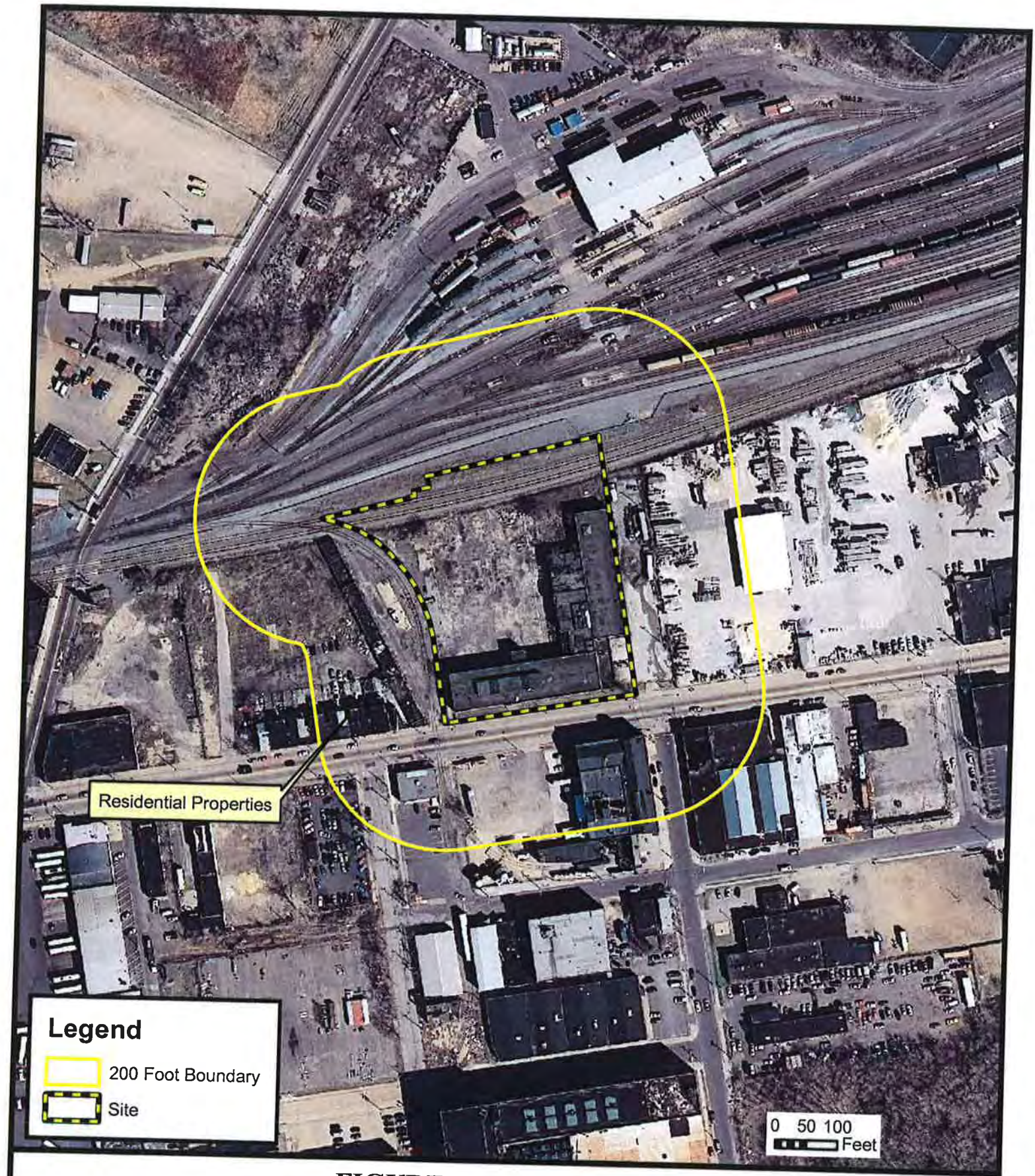

FIGURE 7: LAND USE MAP

BASEMAP SOURCE:
NJ GIN
2007 AERIAL ORTHOPHOTOGRAPHY
PHOTO:G13A6

SCALE: 1 INCH EQUALS 200 FT

N
W E
S

ENVIRONMENTAL RESOLUTIONS, INC.

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BLOCK 1184, LOT 5
CITY OF CAMDEN
CAMDEN COUNTY, NEW JERSEY

NOTES:
All results in mg/kg.
ND = Not Detected
Missing Data = Data not available
* = Contaminant exceeds IGWSSL

Abbreviations:
TCE: trichloroethene
PCE: tetrachloroethene
TCA: 1,1,1-trichloroethane
1,1-DCE: 1,1-dichloroethene
1,2-DCE: cis-1,2-dichloroethene

RIVER LINE

NORTH 17TH STREET (PAPER STREET)

FEDERAL STREET

K5-1 (1.5-2')
TCE: 1.1*
PCE:
TCA: ND
1,1-DCE:
1,2-DCE:
Benzene: ND
K5-1B (4.5-5')
TCE: 0.0013
PCE: ND
TCA: ND
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
K5-2 (7.5-8')
VOCs: ND

T-4 (1.5-2') VOCs: ND
T-3 (1.5-2') VOCs: ND
S-1 (1.5-2') VOCs: ND
T-2 (1.5-2') VOCs: ND
T-1 (1.5-2') VOCs: ND
S-2 (1.5-2') VOCs: ND
K-1-1 (1.5-2')
TCE: 0.15*
PCE:
TCA: ND
1,1-DCE:
1,2-DCE:
Benzene: ND
K1-1C (5-5.5')
VOCs: ND
K1-1B (7-7.5')
VOCs: ND
S-5 (1.5-2') VOCs: ND
TP-C1 (2-2.5') VOCs: ND
S-4 (1.5-2') VOCs: ND
S-6 (1.5-2')
TCE:
PCE:
TCA: 2.4*
1,1-DCE:
1,2-DCE:
Benzene:
S-6A (4.5-5')
VOCs: ND
S-6B (7-7.5')
VOCs: ND
S-7 (1.5-2') VOCs: ND
S-3 (1.5-2') VOCs: ND
T-11 (1.5-2') VOCs: ND
TP-C2 (9.5-10') VOCs: ND
F-2 (11-11.5') VOCs: ND

K3-6 (5-5.5')
TCE: 0.029*
PCE: ND
TCA: ND
1,1-DCE: ND
1,2-DCE: ND
Benzene: 0.00079
K3-6B (6-6.5')
TCE: ND
PCE: ND
TCA: ND
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND

K3-1 (1.5-2') VOCs: ND
K3-2 (1.5-2') VOCs: ND
K3-3 (5-5.5')
TCE: 84*
PCE: ND
TCA: ND
1,1-DCE: ND
1,2-DCE: 4.5*
Benzene: 0.93*
K3-3A (7-7.5')
TCE: 0.011*
PCE: ND
TCA: 0.00022
1,1-DCE: ND
1,2-DCE: 0.0052
Benzene: ND
K3-4 (5-5.5')
TCE: 0.0087*
PCE: ND
TCA: ND
1,1-DCE: ND
1,2-DCE: 0.0027
Benzene: ND
K3-5 (5-5.5')
TCE: 0.0054
PCE: ND
TCA: ND
1,1-DCE: ND
1,2-DCE: 0.00027
Benzene: ND

K2-2 (1.5-2')
TCE: ND
PCE:
TCA: ND
1,1-DCE:
1,2-DCE:
Benzene: 0.71*
K2-5 (4-4.5')
TCE: ND
PCE: ND
TCA: 0.0083
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
K2-2A (7-7.5')
TCE: ND
PCE: ND
TCA: 0.00091
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
K2-4 (1.5-2')
TCE: ND
PCE:
TCA: 1*
1,1-DCE:
1,2-DCE:
Benzene: ND
K2-4B (4-4.5')
TCE: 0.0014
PCE: ND
TCA: 0.0017
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
K2-4A (7-7.5')
TCE: 0.0016
PCE: ND
TCA: 0.0051
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
K2-7 (3.5-4')
TCE: 0.011*
PCE: 0.00041
TCA: 0.041
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
K2-6 (0.5-1')
TCE: 0.0095*
PCE: 0.00041
TCA: 0.026
1,1-DCE: 0.0013
1,2-DCE: ND
Benzene: ND
K2-3 (1.5-2') VOCs: ND
L2-1 (1.5-2')
TCE: ND
PCE: ND
TCA: 0.01
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
L2-2 (0.5-1') VOCs: ND
L2-3 (1.5-2') VOCs: ND
L2-3 (2.25-2.75') VOCs: ND

L1-11 (3.5-4')
TCE: 0.023*
PCE: ND
TCA: 0.006
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
L1-9 (3.5-4')
TCE: 14*
PCE: 0.011*
TCA: 2.6*
1,1-DCE: 0.072*
1,2-DCE: ND
Benzene: ND
L1-8 (2.5-3')
TCE: 78*
PCE: 0.14*
TCA: 32*
1,1-DCE: 1.4*
1,2-DCE: 0.25*
Benzene: 0.4*
L1-14 (3.5-4')
TCE: 1.7*
PCE: ND
TCA: 0.45*
1,1-DCE: 0.016*
1,2-DCE: ND
Benzene: ND
L1-12 (3.5-4')
TCE: 150*
PCE: ND
TCA: 4.9*
1,1-DCE: 0.17*
1,2-DCE: ND
Benzene: ND
L1-10 (3.5-4')
TCE: 4.5*
PCE: 0.013*
TCA: 1.8*
1,1-DCE: 0.045*
1,2-DCE: ND
Benzene: 0.011*
L1-13 (3.5-4')
TCE: 2.6*
PCE: ND
TCA: 0.78*
1,1-DCE: 0.019*
1,2-DCE: ND
Benzene: ND
L1-6 (3.5-4')
TCE: 270*
PCE: ND
TCA: 2.1*
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
L1-5A (1.5-2')
TCE: 170*
PCE: ND
TCA: 2*
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
L1-5B (2.5-4')
TCE: 530*
PCE: ND
TCA: 1.4*
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
L1-2 (4.5-5') VOCs: ND
L1-7 (5.5-6')
TCE: 0.005
PCE: ND
TCA: 0.00034
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
L1-1 (3.5-4')
TCE: 400*
PCE: ND
TCA: 2.3*
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
L1-1A (7-7.5')
TCE: 0.0015
PCE: ND
TCA: 0.00047
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
L1-4 (3.5-4')
TCE: 560*
PCE: ND
TCA: 3.2*
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
T-10 (1.5-2') VOCs: ND
D2-1 (4.5-5')
TCE: 0.0088*
PCE: ND
TCA: ND
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
D2-2A (1.5-2')
TCE: 0.055*
PCE: ND
TCA: 0.049
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
D2-2C (4-4.5')
TCE: 0.0033
PCE: ND
TCA: 0.0057
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
D2-2B (6.5-7')
TCE: ND
PCE: ND
TCA: 0.00028
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
O2-1 (2-2.5')
TCE: 0.00084
PCE: 0.00076
TCA: ND
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
F-3 (5-5.5') VOCs: ND
O1-1A (3.5-4')
TCE: 0.011*
PCE: 0.00099
TCA: ND
1,1-DCE: ND
1,2-DCE: 0.00088
Benzene: ND
O1-1B (4-4.5')
VOCs: ND
O3-1V (3.5-4')
TCE: ND
PCE: ND
TCA: 0.0016
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
N1-1 (3.5-4')
TCE: 0.0011
PCE: 0.00079
TCA: 0.0027
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
L3-1V (7-7.5')
TCE: 0.0025
PCE: ND
TCA: 0.011
1,1-DCE: 0.00081
1,2-DCE: ND
Benzene: ND

T-8 (1.5-2') VOCs: ND
T-7 (1.5-2') VOCs: ND
T-5 (1.5-2') VOCs: ND
A2-8B (5.5-6') VOCs below SRS
T-9 (1.5-2') VOCs: ND
E2-1 (6-6.5')
TCE: ND
PCE: ND
TCA: ND
1,1-DCE: ND
1,2-DCE: ND
Benzene: 0.0019
A2-9A (0-0.5')
TCE: 0.42*
A2-9B (6-6.5')
VOCs: ND
A2-3 (7-7.5')
VOCs below SRS
A2-10 (5.5-6') VOCs: ND
T-6 (1.5-2') VOCs: ND
F-1 (7-7.5') VOCs: ND
A2-7 (7.5-8') VOCs below SRS
A2-4 (1.5-2') VOCs: ND
A2-1 (6-6.5')
VOCs: ND
A2-2 (6-6.5')
TCE: 0.1*
A2-3 (7-7.5')
Xylenes: 42.4*
G-1 (1-1.5') VOCs: ND
J-1 (6.5-7') VOCs: ND
N2-1V (6.5-7') VOCs: ND

TP-A3/TW-1
TP-A1
TP-A2
MW-5
MW-4
MW-3
MW-2
MW-1
W-1
W-2
W-3
H2-1
H2-2
A2-8
A2-GW
A2-7
A2-4
A2-5
A2-6
A2-2
A2-3
E2-1
E2-2
A2-9
N2-1
T-1
T-2
T-3
T-4
T-5
T-6
T-7
T-8
T-9
T-10
T-11
T-12
S-1
S-2
S-3
S-4
S-5
S-6
S-7
H-1
K1-1
K2-1
K2-2
K2-3
K2-4
K2-5/TW-3
K2-6
K3-1
K3-2
K3-3
K3-4
K3-5
K3-6
K4-1
K5-1/K5-2/TW-2
P-1
P-2
P-3
P-4
P-5
F-1
F-2
F-3
L1-1
L1-2
L1-4
L1-5
L1-6
L1-7
L1-9
L1-10
L1-11
L1-12
L1-13
L1-14
L2-1
L2-2
L2-3
L2-4
L3-1
N1-1
O1-1
O2-1
O3-1
D2-1
D2-2

0 30 60 Feet

SCALE: 1 INCH EQUALS 30 FT

Legend

- AOCs
- Monitoring Wells
- Soil Borings/Samples by ERI
- Samples Collected by Others

Linear Site Features
- Railroad
- Interior wall

Site Features
- Drains/Pits/Other
- A2 UST
- Existing building
- Former building
- Site

FIGURE 8: VOCs SOIL ANALYTICAL RESULTS

BASEMAP SOURCE:
JM SORGE, INC. FIGURE 3
2007 AERIAL PHOTOGRAPH
FIELD MEASUREMENTS/GPS
NJGIN PARCEL DATA

ENVIRONMENTAL RESOLUTIONS, INC.

FORMER BORDEN CHEMICAL
PRINTING FACILITY
1625 FEDERAL STREET
BLOCK 1184, LOT 5
CITY OF CAMDEN
CAMDEN COUNTY, NEW JERSEY

NOTES:
All results in mg/kg.
ND = Not Detected
Missing Data = Data not available
* = Contaminant exceeds IGWSSL

Abbreviations:
TCE: trichloroethene
PCE: tetrachloroethene
TCA: 1,1,1-trichloroethane
1,1-DCE: 1,1-dichloroethene
1,2-DCE: cis-1,2-dichloroethene

0 20 40 Feet

SCALE: 1 INCH EQUALS 20 FT

NORTH 17TH STREET (PAPER STREET)

N2-1
A2-GW
A2-7
A2-9
A2-4
A2-1
A2-2
A2-3
A2-10
A2-1 (6-6.5')
Xylenes : ND
A2-2 (6-6.5')
Xylenes: 3.77
A2-3 (7-7.5')
Xylenes: 42.4*
P-5
T-6
F
F-1
P-2
K5-1/K5-2/TW-2
K3-1 (1.5-2')
VOCs: ND
K3-2 (1.5-2')
VOCs: ND
K3-2
K4-1
K3-1
K3-6 (5-5.5')
TCE: 0.029*
PCE: ND
TCA: ND
1,1-DCE: ND
1,2-DCE: ND
Benzene: 0.00079
K3-6B (6-6.5')
TCE: ND
PCE: ND
TCA: ND
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
MW-4
K3-3
K3-5
K3-6
K3-4
K3-5 (5-5.5')
TCE: 0.0054
PCE: ND
TCA: ND
1,1-DCE: ND
1,2-DCE: 0.00027
Benzene: ND
K3-3 (5-5.5')
TCE: 84*
PCE: ND
TCA: ND
1,1-DCE: ND
1,2-DCE: 4.5*
Benzene: 0.93*
K3-3A (7-7.5')
TCE: 0.011*
PCE: ND
TCA: 0.00022
1,1-DCE: ND
1,2-DCE: 0.0052
Benzene: ND
K3-4 (5-5.5')
TCE: 0.0087*
PCE: ND
TCA: ND
1,1-DCE: ND
1,2-DCE: 0.0027
Benzene: ND
L1-10 (3.5-4')
TCE: 4.5*
PCE: 0.013*
TCA: 1.8*
1,1-DCE: 0.045*
1,2-DCE: ND
Benzene: 0.011*
L1-13 (3.5-4')
TCE: 2.6*
PCE: ND
TCA: 0.78*
1,1-DCE: 0.019*
1,2-DCE: ND
Benzene: ND
L1-6 (3.5-4')
TCE: 270*
PCE: ND
TCA: 2.1*
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
L1-5A (1.5-2')
TCE: 170*
PCE: ND
TCA: 2*
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
L1-5B (2.5-4')
TCE: 530*
PCE: ND
TCA: 1.4*
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
L1-6
L1-10
L1-13
L1-9 (3.5-4')
TCE: 14*
PCE: 0.011*
TCA: 2.6*
1,1-DCE: 0.072*
1,2-DCE: ND
Benzene: ND
L1-2 (4.5-5')
VOCs: ND
L1-2
L1-5
L1-1
L1-7
L1-7 (5.5-6')
TCE: 0.005
PCE: ND
TCA: 0.00034
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
MW-1
L1-9
L1-11 (3.5-4')
TCE: 0.023*
PCE: ND
TCA: 0.006
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
L1-1 (3.5-4')
TCE: 400*
PCE: ND
TCA: 2.3*
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
L1-1A (7-7.5')
TCE: 0.0015
PCE: ND
TCA: 0.00047
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
L1-4
L1-14
L1-11
L1-8 (2.5-3')
TCE: 78*
PCE: 0.14*
TCA: 32*
1,1-DCE: 1.4*
1,2-DCE: 0.25*
Benzene: 0.4*
L1-8
T-10 (1.5-2')
VOCs: ND
L1-4 (3.5-4')
TCE: 560*
PCE: ND
TCA: 3.2*
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
L1-12
K2-3 (1.5-2')
VOCs: ND
K2-3
K2-7
MW-2
K2-2
K2-5/TW-3
K2-6
L1-14 (3.5-4')
TCE: 1.7*
PCE: ND
TCA: 0.45*
1,1-DCE: 0.016*
1,2-DCE: ND
Benzene: ND
L1-12 (3.5-4')
TCE: 150*
PCE: ND
TCA: 4.9*
1,1-DCE: 0.17*
1,2-DCE: ND
Benzene: ND
D2-1 (4.5-5')
TCE: 0.0088*
PCE: ND
TCA: ND
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
K2-4
K2-4 (1.5-2')
TCE: ND
PCE:
TCA: 1*
1,1-DCE:
1,2-DCE:
Benzene: ND
K2-4B (4-4.5')
TCE: 0.0014
PCE: ND
TCA: 0.0017
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
K2-4A (7-7.5')
TCE: 0.0016
PCE: ND
TCA: 0.0051
1,1-DCE: ND
1,2-DCE: ND
Benzene: ND
O1-1
O1-1A (3.5-4')
TCE: 0.011*
PCE: 0.00099
TCA: ND
1,1-DCE: ND
1,2-DCE: 0.00088
Benzene: ND
O1-1B (4-4.5')
VOCs: ND
D2-1
T-12
O2-1
D2-2
L2-4
L2-3
L2-1
L3-1
O3-1
N1-1
F-3
Well to be installed 50 feet to the east, along Federal Street

Legend

- AOCs
- Monitoring Wells
- Soil Borings/Samples by ERI
- Samples Collected by Others
- Proposed Monitoring Wells

Linear Site Features

- Railroad
- Interior wall
- Proposed Remedial Excavations

Site Features

- Drains/Pits/Other
- A2 UST
- Existing building
- Former building
- Site

FIGURE 9: PROPOSED REMEDIAL ACTIONS

BASEMAP SOURCE:
JM SORGE, INC. FIGURE 3
2007 AERIAL PHOTOGRAPH
FIELD MEASUREMENTS/GPS
NJGIN PARCEL DATA

ENVIRONMENTAL RESOLUTIONS, INC.

FORMER BORDEN CHEMICAL
PRINTING FACILITY
1625 FEDERAL STREET
BLOCK 1184, LOT 5
CITY OF CAMDEN
CAMDEN COUNTY, NEW JERSEY

APPENDIX B

TABLES

TABLE 1
SAMPLE SUMMARY
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Field ID	Sample ID	Lab ID	Sample Date	Media	Sample Depth (ft bgs)	ANALYSES							
						EPH (mg/kg)	VO+TICS	PAHs	SVO+15	TAL Metals	PCBs	TCL Pesticides	Grain Size
AOC-A2: 550-GALLON UST													
A2-1	A2-1	460-22270-3	1/19/2011	Soil	6-6.5	ND	X			Pb			
A2-2	A2-2	460-22270-4	1/19/2011	Soil	6-6.5	ND	X			Pb			
A2-2	A2-3	460-22270-5	1/19/2011	Soil	7-7.5		X			Pb			
A2-4	A2-4	460-22270-6	1/19/2011	Soil	1.5-2	ND	X			Pb			
A2-7	A2-7	460-22477-1	1/25/2011	Soil	7.5-8		X						
A2-8	A2-8B	460-22477-3	1/25/2011	Soil	5.5-6		X						
A2-9	A2-9A	460-22477-4	1/25/2011	Soil	0-0.5		X						
A2-9	A2-9B	460-22477-5	1/25/2011	Soil	4.5-5		X						
A2-9	A2-9C	460-22477-6	1/25/2011	Soil	8.5-9		X						
A2-10	A2-10	460-22477-7	1/25/2011	Soil	5.5-6		X						
A2-GW	A2-GW	460-22340-11	1/21/2011	Groundwater			X						
AOC-C: FORMER PUMP STATION													
S-6	S-6A	460-22335-3	1/20/2011	Soil	4.5-5		X						
S-6	S-6B	460-22335-4	1/20/2011	Soil	7-7.5		X						
AOC-D2: SE LOADING AREA													
D2-2	D2-2B	460-22340-1	1/21/2011	Soil	6.5-7		X						
D2-2	D2-2C	460-24232-1	3/17/2011	Soil	4-4.5		X						
D2-2	D2-GW	460-22340-3	1/21/2011	Groundwater			X						
AOC-H2: FORMER PAD MOUNTED TRANSFORMER													
H2-1	H2-1	460-22477-8	1/25/2011	Soil	0-0.5						X		
H2-2	H2-2	460-22477-9	1/25/2011	Soil	0-0.5						X		
AOC-K1: FORMER PIT													
K1-1	K1-1A	460-22335-1	1/20/2011	Soil	4.5-5							X	
K1-1	K1-1B	460-22335-2	1/20/2011	Soil	7-7.5		X						
K1-1	K1-1C	460-24232-16	3/17/2011	Soil	5-5.5		X						
AOC-K2: CONCRETE HOLDING TANK													
K2-2	K2-2A	460-22335-5	1/20/2011	Soil	7-7.5		X						
K2-2	K2-2B	460-24232-17	3/17/2011	Soil	3-3.5		X						
K2-4	K2-4A	460-22340-2	1/21/2011	Soil	7-7.5		X						
K2-4	K2-4B	460-24232-18	3/17/2011	Soil	4-4.5		X			Hg			
K2-4	K2-4C	460-24232-19	3/17/2011	Soil	2.5-3		X			Hg			
K2-4	K2-4GW	460-22340-4	1/21/2011	Groundwater			X						
K2-6	K2-6	460-22477-10	1/25/2011	Soil	0.5-1		X						
K2-7	K2-7	460-24232-20	3/17/2011	Soil	3.5-4		X			Hg			
MW-2	K2-GS	460-22335-13	1/20/2011	Soil	~4-6								X
AOC-K3: CONCRETE FILLED FORMER STRUCTURE													
K3-1	K3-1A	460-22335-6	1/20/2011	Soil	4.5-5							X	
K3-3	K3-3A	460-22335-7	1/20/2011	Soil	7-7.5		X				X		
K3-3	K3-3B	460-22335-8	1/20/2011	Soil	4.5-5							X	
K3-4	K3-4	460-22335-9	1/20/2011	Soil	5-5.5		X				X		
K3-5	K3-5	460-22335-10	1/20/2011	Soil	5-5.5		X				X		
K3-6	K3-6	460-22477-11	1/25/2011	Soil	5-5.5		X				X		
K3-6	K3-6B	460-24232-10	3/17/2011	Soil	6-6.5		X						
K3-1	K3-GS	460-22335-14	1/20/2011	Soil	~4-6								X
AOC-K4: STAINED CONCRETE AREA													
K4-1	K4-1A	460-22477-12	1/25/2011	Soil	1.5-2			X					
K4-1	K4-1B	460-22477-13	1/25/2011	Soil	7.5-8			X					
AOC-K5: DRAIN													
K5-1	K5-1B	460-24232-9	3/17/2011	Soil	4.5-5		X						
AOC-L1: DEBRIS FILLED PIT													
L1-1	L1-1A	460-22477-14	1/25/2011	Soil	7-7.5		X						
L1-4	L1-4	460-22248-1	1/18/2011	Soil	3.5-4		X						
L1-5	L1-5A	460-22248-2	1/18/2011	Soil	1.5-2		X						
L1-5	L1-5B	460-22248-3	1/18/2011	Soil	3.5-4		X						
L1-6	L1-6	460-22248-4	1/19/2011	Soil	3.5-4		X						
L1-7	L1-7	460-22335-11	1/20/2011	Soil	5.5-6		X						
L1-8	L1-8	460-24232-2	3/17/2011	Soil	2.5-3		X			Hg			
L1-9	L1-9	460-24232-3	3/17/2011	Soil	3.5-4		X			Hg			
L1-10	L1-10	460-24232-4	3/17/2011	Soil	3.5-4		X			Hg			
L1-11	L1-11	460-24232-5	3/17/2011	Soil	3.5-4		X			Hg			
L1-12	L1-12	460-24232-6	3/17/2011	Soil	3.5-4		X			Hg			
L1-13	L1-13	460-24232-7	3/17/2011	Soil	4-4.5		X			Hg			
L1-14	L1-14	460-24232-8	3/17/2011	Soil	3.5-4		X			Hg			
L1-1	L1-GS	460-22477-15	1/25/2011	Soil	~5-7								X
AOC-L3: ADDITIONAL DEBRIS FILLED PITS													
L3-1	L3-1	460-22248-5	1/18/2011	Soil	3-3.5	28*			X	X	X	X	
L3-1	L3-1V	460-22248-6	1/18/2011	Soil	7-7.5		X						

TABLE 1
SAMPLE SUMMARY
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Field ID	Sample ID	Lab ID	Sample Date	Media	Sample Depth (ft bgs)	ANALYSES							
						EPH (mg/kg)	VO+TICS	PAHs	SVO+15	TAL Metals	PCBs	TCL Pesticides	Grain Size
AOC-N: SUMPS													
N1-1	N1-1	460-22477-16	1/25/2011	Soil	3.5-4	300*	X		X	X	X	X	
N2-1	N2-1	460-22477-17	1/25/2011	Soil	3.5-4				X				
N2-1	N2-1V	460-22477-18	1/25/2011	Soil	6.5-7		X						
AOC-O: FLOOR DRAINS													
O1-1	O1-1A	460-22477-19	1/25/2011	Soil	3.5-4	5200*	X		X	X	X	X	
O1-1	O1-1B	460-22477-20	1/25/2011	Soil	4-4.5	3700*	X						
O2-1	O2-1	460-22477-21	1/25/2011	Soil	2-2.5	1900*	X		X	X	X	X	
O3-1	O3-1	460-22477-22	1/25/2011	Soil	2-2.5	40*							
O3-1	O3-1V	460-22477-23	1/25/2011	Soil	3.5-4		X						
AOC-P: HISTORIC FILL													
P-1	P-1	460-22270-1	1/19/2011	Soil	1.5-2			X		X			
P-2	P-2	460-22270-2	1/19/2011	Soil	1.5-2			X		X			
P-4	P-4	460-22335-12	1/20/2011	Soil	1-1.5			X		X			
P-5	P-5	460-22477-24	1/25/2011	Soil	2-2.5			X		X			
T-5	T-5B	460-24232-14	3/17/2011	Soil	2.5-3			X					
T-8	T-8B	460-24232-11	3/17/2011	Soil	1.5-2					X			
T-8	T-8C	460-24232-12	3/17/2011	Soil	4.5-5					X			
E2-1	E2-1B	460-24232-13	3/17/2011	Soil	6-6.5					Be, Ni, SPLP			
S-4	S-4B	460-24232-15	3/17/2011	Soil	4-4.5			X					
SITE GROUNDWATER													
MW-1	MW-1	460-22854-1	2/4/2011	Groundwater			X		X	X	X		
MW-2	MW-2	460-22854-2	2/4/2011	Groundwater			X		X	X	X		
MW-3	MW-3	460-22854-3	2/4/2011	Groundwater			X		X	X	X		
MW-4	MW-4	460-22854-4	2/4/2011	Groundwater			X		X	X	X		
MW-5	MW-5	460-22854-5	2/4/2011	Groundwater			X		X	X	X		
QA/QC													
	FB0317	460-24232-21	3/17/2011	Soil Field Blank			X						
	Trip Blank	460-24232-22	3/17/2011	Trip Blank			X						

* - Non-fractionated EPH results are reported on this table

SPLP - sample also analyzed via SPLP

TABLE 2
SOIL ANALYTICAL RESULTS: AOC-A2
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			A2-1	A2-2	A2-3	A2-4	A2-7	A2-8B
Lab Sample Number				460-22270-3	460-22270-4	460-22270-5	460-22270-6	460-22477-1	460-22477-3
Sampling Date				01/19/11	01/19/11	01/19/11	01/19/11	01/25/11	01/25/11
Sampling Depth (feet)				6-6.5	6-6.5	7-7.5	1.5-2	7.5-8	5.5-6
Saturated Zone?				No	No	No	No	No	No
Units	Residential mg/kg	Non-Residential mg/kg	Impact to Ground Water Soil Screening Levels mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
VOLATILE COMPOUNDS									
1,1,1-Trichloroethane	290	4,200	0.2	0.00019 U	0.013 U	0.095 U	0.00019 U	0.00018 U	0.00016 U
1,1,2,2-Tetrachloroethane	1	3	0.005	0.00076 U	0.0044 U	0.033 U	0.00079 U	0.00075 U	0.00067 U
1,1,2-Trichloroethane	2	6	0.01	0.00059 U	0.0049 U	0.038 U	0.00062 U	0.00058 U	0.00052 U
1,1-Dichloroethane	8	24	0.2	0.00025 U	0.0051 U	0.039 U	0.00026 U	0.00025 U	0.00022 U
1,1-Dichloroethene	11	150	0.005	0.00037 U	0.0071 U	0.054 U	0.00038 U	0.00036 U	0.00032 U
1,2,3-Trichlorobenzene	NL	NL	NL	0.00065 U	0.042 U	0.32 U	0.00067 U	0.00064 U	0.00057 U
1,2,4-Trichlorobenzene	73	820	0.4	0.00054 U	0.022 U	0.17 U	0.00056 U	0.00053 U	0.00047 U
1,2-Dibromo-3-Chloropropan	0.08	0.2	0.005	0.00061 U	0.0078 U	0.059 U	0.00063 U	0.00060 U	0.00053 U
1,2-Dibromoethane	0.008	0.04	0.005	0.00052 U	0.0046 U	0.035 U	0.00054 U	0.00051 U	0.00045 U
1,2-Dichlorobenzene	5300	59000	11	0.00064 U	0.0083 U	0.063 U	0.00066 U	0.00063 U	0.00056 U
1,2-Dichloroethane	0.9	3	0.005	0.00039 U	0.012 U	0.095 U	0.00041 U	0.00038 U	0.00034 U
1,2-Dichloropropane	0.9	3	0.005	0.00032 U	0.0044 U	0.034 U	0.00033 U	0.00031 U	0.00028 U
1,3-Dichlorobenzene	5,300	59,000	12	0.00049 U	0.011 U	0.087 U	0.00050 U	0.00048 U	0.00042 U
1,4-Dichlorobenzene	5	13	1	0.00071 U	0.0077 U	0.058 U	0.00074 U	0.00070 U	0.00062 U
1,4-Dioxane	NL	NL	ISGWQS	0.0042 U	0.43 U	3.3 U	0.0043 U	0.0041 U	0.0036 U
2-Butanone	3,100	44,000	0.6	0.00057 U	0.042 U	0.32 U	0.00059 U	0.00056 U	0.0075 J
2-Hexanone	NL	NL	NL	0.0017 U	0.028 U	0.21 U	0.0017 U	0.0016 U	0.0015 U
4-Methyl-2-pentanone	NL	NL	NL	0.00072 U	0.035 U	0.26 U	0.00074 U	0.00070 U	0.00063 U
Acetone	70,000	NL	12	0.0037 U	0.13 U	0.96 U	0.0038 U	0.0042 JB	0.047 B
Benzene	2	4	0.005	0.00074 U	0.006 U	0.046 U	0.00077 U	0.00073 U	0.0011
Bromochloromethane	NL	NL	NL	0.00027 U	0.0088 U	0.067 U	0.00028 U	0.00027 U	0.00024 U
Bromodichloromethane	1	3	0.005	0.00030 U	0.0045 U	0.035 U	0.00032 U	0.00030 U	0.00027 U
Bromoform	81	280	0.02	0.00070 U	0.005 U	0.038 U	0.00073 U	0.00069 U	0.00061 U
Bromomethane	25	59	0.03	0.00041 U	0.016 U	0.12 U	0.00042 U	0.00040 U	0.00036 U
Carbon disulfide	7,800	110,000	4	0.00047 U	0.0074 U	0.056 U	0.00048 U	0.00046 U	0.00063 J
Carbon tetrachloride	0.6	2	0.005	0.00010 U	0.0091 U	0.069 U	0.00010 U	0.000099 U	0.000088 U
Chlorobenzene	510	7,400	0.4	0.00048 U	0.0084 U	0.064 U	0.00050 U	0.00047 U	0.00042 U
Chloroethane	220	1,100	NL	0.00040 U	0.023 U	0.17 U	0.00041 U	0.00039 U	0.00035 U
Chloroform	0.6	2	0.2	0.00024 U	0.0079 U	0.060 U	0.00025 U	0.00023 U	0.00021 U
Chloromethane	4	11	NL	0.00064 U	0.011 U	0.081 U	0.00066 U	0.00062 U	0.00055 U
cis-1,2-Dichloroethene	230	560	0.2	0.00024 U	0.0098 U	0.075 U	0.00025 U	0.00023 U	0.00021 U
cis-1,3-Dichloropropene	2	7	0.005	0.00020 U	0.0052 U	0.039 U	0.00021 U	0.00020 U	0.00018 U
Cyclohexane	NL	NL	NL	0.00022 U	0.0063 U	0.048 U	0.00023 U	0.00022 U	0.00019 U
Dibromochloromethane	3	8	0.005	0.00056 U	0.0051 U	0.039 U	0.00058 U	0.00055 U	0.00049 U
Dichlorodifluoromethane	490	230,000	25	0.00041 U	0.014 U	0.11 U	0.00042 U	0.00040 U	0.00036 U
Ethylbenzene	7,800	110,000	8	0.00019 U	0.34	1.2	0.00020 U	0.00019 U	0.00030 J
Freon TF	NL	NL	NL	0.00048 U	0.015 U	0.11 U	0.00049 U	0.00047 U	0.00042 U
Isopropylbenzene	NL	NL	NL	0.00026 U	0.011 U	0.082 U	0.00027 U	0.00026 U	0.00023 U
m&p-Xylene	12000*	170000*	12*	0.00046 U	2.9	**» 39**	0.00048 U	0.00046 U	0.0012 J
Methyl acetate	78,000	NL	14	0.00090 U	0.017 U	0.13 U	0.00093 U	0.00088 U	0.00078 U
Methylcyclohexane	NL	NL	NL	0.00027 U	0.012 J	0.031 U	0.00028 U	0.00027 U	0.0012
Methylene Chloride	34	97	0.007	0.00047 U	0.0098 U	0.074 U	0.00049 U	0.00046 U	0.00041 U
MTBE	110	320	0.2	0.00034 U	0.0094 U	0.071 U	0.00036 U	0.00034 U	0.00030 U
o-Xylene	12000*	170000*	12*	0.00034 U	0.87	**» 3.4**	0.00036 U	0.00034 U	0.00046 J
Styrene	90	260	2	0.00035 U	0.0071 U	0.054 U	0.00036 U	0.00034 U	0.00030 U
Tetrachloroethene	2	5	0.005	0.00033 U	0.0099 U	0.076 U	0.00034 U	0.00032 U	0.00029 U
Toluene	6,300	91,000	4	0.00030 U	0.051	0.036 U	0.00031 U	0.00030 J	0.00031 J
trans-1,2-Dichloroethene	300	720	0.4	0.00028 U	0.007 U	0.053 U	0.00029 U	0.00028 U	0.00025 U
trans-1,3-Dichloropropene	2	5	0.005	0.00022 U	0.0062 U	0.047 U	0.00023 U	0.00022 U	0.00019 U
Trichloroethene	7	20	0.007	0.00036 U	**» 0.10**	0.068 U	0.00038 U	0.00036 U	0.00032 U
Trichlorofluoromethane	23,000	340,000	22	0.00026 U	0.008 U	0.060 U	0.00027 U	0.00026 U	0.00023 U
Vinyl chloride	0.7	2	0.005	0.00023 U	0.0061 U	0.046 U	0.00024 U	0.00023 U	0.00020 U
METALS									
Lead	400	800	Immobile (59)	12.2	**» 245**	5.1	**» 335**	NA	NA

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

SPLP = Synthetic Precipitation Leaching Procedure can be used to develop a site specific IGWSRS

* = Listed standard is for total xylenes

TABLE 2
SOIL ANALYTICAL RESULTS: AOC-A2
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			A2-9A	A2-9B	A2-9C	A2-10
Lab Sample Number				460-22477-4	460-22477-5	460-22477-6	460-22477-7
Sampling Date				01/25/11	01/25/11	01/25/11	01/25/11
Sampling Depth (feet)				0-0.5	4.5-5	8.5-9	5.5-6
Saturated Zone?				No	No	Yes	No
Units	Residential mg/kg	Non-Residential mg/kg	Impact to Ground Water Soil Screening Levels mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
VOLATILE COMPOUNDS							
1,1,1-Trichloroethane	290	4,200	0.2	0.014 U	0.00018 U	0.11 U	0.00018 U
1,1,2,2-Tetrachloroethane	1	3	0.005	0.0051 U	0.00073 U	0.039 U	0.00074 U
1,1,2-Trichloroethane	2	6	0.01	0.0057 U	0.00057 U	0.045 U	0.00057 U
1,1-Dichloroethane	8	24	0.2	0.0059 U	0.00024 U	0.046 U	0.00024 U
1,1-Dichloroethene	11	150	0.005	0.0082 U	0.00035 U	0.064 U	0.00036 U
1,2,3-Trichlorobenzene	NL	NL	NL	0.049 U	0.00062 U	0.38 U	0.00063 U
1,2,4-Trichlorobenzene	73	820	0.4	0.026 U	0.00051 U	0.20 U	0.00052 U
1,2-Dibromo-3-Chloropropan	0.08	0.2	0.005	0.009 U	0.00059 U	0.070 U	0.00059 U
1,2-Dibromoethane	0.008	0.04	0.005	0.0054 U	0.00050 U	0.042 U	0.00050 U
1,2-Dichlorobenzene	5300	59000	11	0.0095 U	0.00061 U	0.074 U	0.00062 U
1,2-Dichloroethane	0.9	3	0.005	0.014 U	0.00037 U	0.11 U	0.00038 U
1,2-Dichloropropane	0.9	3	0.005	0.0051 U	0.00031 U	0.040 U	0.00031 U
1,3-Dichlorobenzene	5,300	59,000	12	0.013 U	0.00047 U	0.10 U	0.00047 U
1,4-Dichlorobenzene	5	13	1	0.0088 U	0.00068 U	0.069 U	0.00069 U
1,4-Dioxane	NL	NL	ISGWQS	0.50 U	0.004 U	3.9 U	0.004 U
2-Butanone	3,100	44,000	0.6	0.048 U	0.00055 U	0.38 U	0.00055 U
2-Hexanone	NL	NL	NL	0.032 U	0.0016 U	0.25 U	0.0016 U
4-Methyl-2-pentanone	NL	NL	NL	0.040 U	0.00069 U	0.31 U	0.00069 U
Acetone	70,000	NL	12	0.15 U	0.0036 U	1.1 U	0.0036 U
Benzene	2	4	0.005	0.007 U	0.00071 U	0.054 U	0.00072 U
Bromochloromethane	NL	NL	NL	0.010 U	0.00026 U	0.079 U	0.00026 U
Bromodichloromethane	1	3	0.005	0.0052 U	0.00029 U	0.041 U	0.00029 U
Bromoform	81	280	0.02	0.0058 U	0.00067 U	0.045 U	0.00068 U
Bromomethane	25	59	0.03	0.018 U	0.00039 U	0.14 U	0.00040 U
Carbon disulfide	7,800	110,000	4	0.0086 U	0.00045 U	0.067 U	0.00045 U
Carbon tetrachloride	0.6	2	0.005	0.011 U	0.000097 U	0.082 U	0.000098 U
Chlorobenzene	510	7,400	0.4	0.0097 U	0.00046 U	0.076 U	0.00047 U
Chloroethane	220	1,100	NL	0.026 U	0.00038 U	0.20 U	0.00039 U
Chloroform	0.6	2	0.2	0.0091 U	0.00023 U	0.071 U	0.00023 U
Chloromethane	4	11	NL	0.012 U	0.00061 U	0.096 U	0.00061 U
cis-1,2-Dichloroethene	230	560	0.2	0.014 J	0.00023 U	0.088 U	0.00023 U
cis-1,3-Dichloropropene	2	7	0.005	0.006 U	0.00019 U	0.047 U	0.00019 U
Cyclohexane	NL	NL	NL	0.0073 U	0.00021 U	0.057 U	0.00021 U
Dibromochloromethane	3	8	0.005	0.0059 U	0.00054 U	0.046 U	0.00054 U
Dichlorodifluoromethane	490	230,000	25	0.017 U	0.00039 U	0.13 U	0.00039 U
Ethylbenzene	7,800	110,000	8	0.17	0.00018 U	2.4	0.00018 U
Freon TF	NL	NL	NL	0.017 U	0.00046 U	0.13 U	0.00046 U
Isopropylbenzene	NL	NL	NL	0.012 U	0.00025 U	1.9	0.00025 U
m&p-Xylene	12000*	170000*	12*	3.8	0.00045 U	110	0.00045 U
Methyl acetate	78,000	NL	14	0.019 U	0.00086 U	0.15 U	0.00087 U
Methylcyclohexane	NL	NL	NL	0.10	0.00026 U	0.037 U	0.00026 U
Methylene Chloride	34	97	0.007	0.011 U	0.00045 U	0.088 U	0.00046 U
MTBE	110	320	0.2	0.011 U	0.00033 U	0.085 U	0.00033 U
o-Xylene	12000*	170000*	12*	3.5	0.00033 U	2.2	0.00033 U
Styrene	90	260	2	0.093	0.00033 U	0.064 U	0.00033 U
Tetrachloroethene	2	5	0.005	0.011 U	0.00032 U	0.090 U	0.00032 U
Toluene	6,300	91,000	4	0.017 J	0.00029 U	0.043 U	0.00029 U
trans-1,2-Dichloroethene	300	720	0.4	0.0081 U	0.00027 U	0.063 U	0.00027 U
trans-1,3-Dichloropropene	2	5	0.005	0.0072 U	0.00021 U	0.056 U	0.00021 U
Trichloroethene	7	20	0.007	» 0.42	0.00035 U	0.081 U	0.00035 U
Trichlorofluoromethane	23,000	340,000	22	0.0092 U	0.00025 U	0.072 U	0.00025 U
Vinyl chloride	0.7	2	0.005	0.007 U	0.00022 U	0.055 U	0.00023 U
METALS							
Lead	400	800	Immobile (59)	NA	NA	NA	NA

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Lir

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

SPLP = Synthetic Precipitation Leaching Procedure can be used to develop a site specific IGWSRS

* = Listed standard is for total xylenes

TABLE 3
SOIL ANALYTICAL RESULTS: AOC-C
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			S-6A	S-6B
Lab Sample Number				460-22335-3	460-22335-4
Sampling Date				01/20/11	01/20/11
Sampling Depth (feet)				4.5-5	7-7.5
Saturated Zone?				No	No
Units	Residential mg/kg	Non-Residential mg/kg	Impact to Ground Water Soil Screening Levels mg/kg	mg/kg	mg/kg
VOLATILE COMPOUNDS					
1,1,1-Trichloroethane	290	4,200	0.2	0.00018 U	0.00018 U
1,1,2,2-Tetrachloroethane	1	3	0.005	0.00073 U	0.00075 U
1,1,2-Trichloroethane	2	6	0.01	0.00057 U	0.00058 U
1,1-Dichloroethane	8	24	0.2	0.00024 U	0.00025 U
1,1-Dichloroethene	11	150	0.005	0.00036 U	0.00036 U
1,2,3-Trichlorobenzene	NL	NL	NL	0.00062 U	0.00064 U
1,2,4-Trichlorobenzene	73	820	0.4	0.00052 U	0.00053 U
1,2-Dibromo-3-Chloropropan	0.08	0.2	0.005	0.00059 U	0.00060 U
1,2-Dibromoethane	0.008	0.04	0.005	0.00050 U	0.00051 U
1,2-Dichlorobenzene	5300	59000	11	0.00061 U	0.00063 U
1,2-Dichloroethane	0.9	3	0.005	0.00038 U	0.00038 U
1,2-Dichloropropane	0.9	3	0.005	0.00031 U	0.00031 U
1,3-Dichlorobenzene	5,300	59,000	12	0.00047 U	0.00048 U
1,4-Dichlorobenzene	5	13	1	0.00069 U	0.00070 U
1,4-Dioxane	NL	NL	ISGWQS	0.004 U	0.0041 U
2-Butanone	3,100	44,000	0.6	0.00055 U	0.00056 U
2-Hexanone	NL	NL	NL	0.0016 U	0.0016 U
4-Methyl-2-pentanone	NL	NL	NL	0.00069 U	0.00070 U
Acetone	70,000	NL	12	0.0036 U	0.0076 J
Benzene	2	4	0.005	0.00071 U	0.00073 U
Bromochloromethane	NL	NL	NL	0.00026 U	0.00027 U
Bromodichloromethane	1	3	0.005	0.00029 U	0.00030 U
Bromoform	81	280	0.02	0.00068 U	0.00069 U
Bromomethane	25	59	0.03	0.00039 U	0.00040 U
Carbon disulfide	7,800	110,000	4	0.00045 U	0.00046 U
Carbon tetrachloride	0.6	2	0.005	0.000097 U	0.000099 U
Chlorobenzene	510	7,400	0.4	0.00046 U	0.00047 U
Chloroethane	220	1,100	NL	0.00038 U	0.00039 U
Chloroform	0.6	2	0.2	0.00023 U	0.00023 U
Chloromethane	4	11	NL	0.00061 U	0.00062 U
cis-1,2-Dichloroethene	230	560	0.2	0.00023 U	0.00023 U
cis-1,3-Dichloropropene	2	7	0.005	0.00019 U	0.00020 U
Cyclohexane	NL	NL	NL	0.00021 U	0.00022 U
Dibromochloromethane	3	8	0.005	0.00054 U	0.00055 U
Dichlorodifluoromethane	490	230,000	25	0.00039 U	0.00040 U
Ethylbenzene	7,800	110,000	8	0.00018 U	0.00019 U
Freon TF	NL	NL	NL	0.00046 U	0.00047 U
Isopropylbenzene	NL	NL	NL	0.00025 U	0.00025 U
m&p-Xylene	12000*	170000*	12*	0.00045 U	0.00046 U
Methyl acetate	78,000	NL	14	0.00086 U	0.00088 U
Methylcyclohexane	NL	NL	NL	0.00026 U	0.00027 U
Methylene Chloride	34	97	0.007	0.00045 U	0.00046 U
MTBE	110	320	0.2	0.00033 U	0.00034 U
o-Xylene	12000*	170000*	12*	0.00033 U	0.00034 U
Styrene	90	260	2	0.00033 U	0.00034 U
Tetrachloroethene	2	5	0.005	0.00032 U	0.00032 U
Toluene	6,300	91,000	4	0.00029 U	0.00029 U
trans-1,2-Dichloroethene	300	720	0.4	0.00027 U	0.00028 U
trans-1,3-Dichloropropene	2	5	0.005	0.00021 U	0.00022 U
Trichloroethene	7	20	0.007	0.00035 U	0.00036 U
Trichlorofluoromethane	23,000	340,000	22	0.00025 U	0.00026 U
Vinyl chloride	0.7	2	0.005	0.00023 U	0.00023 U

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

SPLP = Synthetic Precipitation Leaching Procedure can be used to develop a site specific IGWSRS

* = Listed standard is for total xylenes

TABLE 4
SOIL ANALYTICAL RESULTS: AOC-D
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			D2-2B	D2-2C
Lab Sample Number			Impact to Ground Water Soil Screening Levels	460-22340-1	460-24232-1
Sampling Date				01/21/11	03/17/11
Sampling Depth (feet)	Residential	Non-Residential		6.5-7	4-4.5
Saturated Zone?				No	No
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
VOLATILE COMPOUNDS					
1,1,1-Trichloroethane	290	4,200	0.2	0.00028 J	0.0057
1,1,2,2-Tetrachloroethane	1	3	0.005	0.00077 U	0.00068 U
1,1,2-Trichloroethane	2	6	0.01	0.00060 U	0.00053 U
1,1-Dichloroethane	8	24	0.2	0.00026 U	0.00023 U
1,1-Dichloroethene	11	150	0.005	0.00037 U	0.00033 U
1,2,3-Trichlorobenzene	NL	NL	NL	0.00066 U	0.00058 U
1,2,4-Trichlorobenzene	73	820	0.4	0.00054 U	0.00048 U
1,2-Dibromo-3-Chloropropan	0.08	0.2	0.005	0.00062 U	0.00055 U
1,2-Dibromoethane	0.008	0.04	0.005	0.00053 U	0.00046 U
1,2-Dichlorobenzene	5300	59000	11	0.00065 U	0.00057 U
1,2-Dichloroethane	0.9	3	0.005	0.00040 U	0.00035 U
1,2-Dichloropropane	0.9	3	0.005	0.00032 U	0.00028 U
1,3-Dichlorobenzene	5,300	59,000	12	0.00049 U	0.00043 U
1,4-Dichlorobenzene	5	13	1	0.00072 U	0.00064 U
1,4-Dioxane	NL	NL	ISGWQS	0.0042 U	0.0037 U
2-Butanone	3,100	44,000	0.6	0.00058 U	0.00051 U
2-Hexanone	NL	NL	NL	0.0017 U	0.0015 U
4-Methyl-2-pentanone	NL	NL	NL	0.00073 U	0.00064 U
Acetone	70,000	NL	12	0.0037 U	0.0033 U
Benzene	2	4	0.005	0.00075 U	0.00066 U
Bromochloromethane	NL	NL	NL	0.00027 U	0.00024 U
Bromodichloromethane	1	3	0.005	0.00031 U	0.00027 U
Bromoform	81	280	0.02	0.00071 U	0.00063 U
Bromomethane	25	59	0.03	0.00041 U	0.00037 U
Carbon disulfide	7,800	110,000	4	0.00047 U	0.00042 U
Carbon tetrachloride	0.6	2	0.005	0.00010 U	0.00009 U
Chlorobenzene	510	7,400	0.4	0.00049 U	0.00043 U
Chloroethane	220	1,100	NL	0.00040 U	0.00036 U
Chloroform	0.6	2	0.2	0.00024 U	0.00021 U
Chloromethane	4	11	NL	0.00064 U	0.00057 U
cis-1,2-Dichloroethene	230	560	0.2	0.00024 U	0.00021 U
cis-1,3-Dichloropropene	2	7	0.005	0.00020 U	0.00018 U
Cyclohexane	NL	NL	NL	0.00023 U	0.00020 U
Dibromochloromethane	3	8	0.005	0.00057 U	0.00050 U
Dichlorodifluoromethane	490	230,000	25	0.00041 U	0.00036 U
Ethylbenzene	7,800	110,000	8	0.00019 U	0.00017 U
Freon TF	NL	NL	NL	0.00048 U	0.00043 U
Isopropylbenzene	NL	NL	NL	0.00026 U	0.00023 U
m&p-Xylene	12000*	170000*	12*	0.00047 U	0.00041 U
Methyl acetate	78,000	NL	14	0.00091 U	0.00080 U
Methylcyclohexane	NL	NL	NL	0.00028 U	0.00024 U
Methylene Chloride	34	97	0.007	0.00048 U	0.00042 U
MTBE	110	320	0.2	0.00035 U	0.00031 U
o-Xylene	12000*	170000*	12*	0.00035 U	0.00031 U
Styrene	90	260	2	0.00035 U	0.00031 U
Tetrachloroethene	2	5	0.005	0.00033 U	0.00030 U
Toluene	6,300	91,000	4	0.00030 U	0.00027 U
trans-1,2-Dichloroethene	300	720	0.4	0.00029 U	0.00025 U
trans-1,3-Dichloropropene	2	5	0.005	0.00022 U	0.00020 U
Trichloroethene	7	20	0.007	0.00037 U	0.0033
Trichlorofluoromethane	23,000	340,000	22	0.00026 U	0.00023 U
Vinyl chloride	0.7	2	0.005	0.00024 U	0.00021 U

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

SPLP = Synthetic Precipitation Leaching Procedure can be used to develop a site specific IGWSRS

* = Listed standard is for total xylenes

TABLE 5
SOIL ANALYTICAL RESULTS: AOC-H2
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			H2-1	H2-2
Lab Sample Number				460-22477-8	460-22477
Sampling Date				01/25/11	01/25/11
Sampling Depth (feet)				0-0.5	0-0.5
Saturated Zone?				No	No
Units	Residential mg/kg	Non-Residential mg/kg	Impact to Ground Water Soil Screening Levels mg/kg	mg/kg	mg/kg
PCBs					
Aroclor-1016	0.2	1	Immobile (0.2)	0.014 U	0.015 U
Aroclor-1221	0.2	1	Immobile (0.2)	0.022 U	0.023 U
Aroclor-1232	0.2	1	Immobile (0.2)	0.042 U	0.044 U
Aroclor-1242	0.2	1	Immobile (0.2)	0.014 U	0.015 U
Aroclor-1248	0.2	1	Immobile (0.2)	0.020 U	0.021 U
Aroclor-1254	0.2	1	Immobile (0.2)	0.044 J	0.059 J
Aroclor-1260	0.2	1	Immobile (0.2)	0.0083 U	0.0087 U
Aroclor-1262	0.2	1	Immobile (0.2)	0.013 U	0.013 U
Aroclor-1268	0.2	1	Immobile (0.2)	0.013 U	0.013 U

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

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U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

P = For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

Immobile = Not considered a threat to groundwater if certain conditions are met. Listed standard may be used if conditions not met.

TABLE 6A
SOIL ANALYTICAL RESULTS: AOC-K1
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			K1-1B	K1-1C
Lab Sample Number			Impact to Ground Water Soil Screening Levels	460-22335-2	460-24232-16
Sampling Date				01/20/11	03/17/11
Sampling Depth (feet)	Residential	Non-Residential		7-7.5	5-5.5
Saturated Zone?				No	No
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
VOLATILE COMPOUNDS					
1,1,1-Trichloroethane	290	4,200	0.2	0.00017 U	0.00018 U
1,1,2,2-Tetrachloroethane	1	3	0.005	0.00071 U	0.00072 U
1,1,2-Trichloroethane	2	6	0.01	0.00055 U	0.00056 U
1,1-Dichloroethane	8	24	0.2	0.00024 U	0.00024 U
1,1-Dichloroethene	11	150	0.005	0.00034 U	0.00035 U
1,2,3-Trichlorobenzene	NL	NL	NL	0.00061 U	0.00061 U
1,2,4-Trichlorobenzene	73	820	0.4	0.00050 U	0.00050 U
1,2-Dibromo-3-Chloropropan	0.08	0.2	0.005	0.00057 U	0.00058 U
1,2-Dibromoethane	0.008	0.04	0.005	0.00048 U	0.00049 U
1,2-Dichlorobenzene	5300	59000	11	0.00060 U	0.00060 U
1,2-Dichloroethane	0.9	3	0.005	0.00036 U	0.00037 U
1,2-Dichloropropane	0.9	3	0.005	0.00030 U	0.00030 U
1,3-Dichlorobenzene	5,300	59,000	12	0.00045 U	0.00046 U
1,4-Dichlorobenzene	5	13	1	0.00066 U	0.00067 U
1,4-Dioxane	NL	NL	ISGWQS	0.0039 U	0.0039 U
2-Butanone	3,100	44,000	0.6	0.00053 U	0.00054 U
2-Hexanone	NL	NL	NL	0.0016 U	0.0016 U
4-Methyl-2-pentanone	NL	NL	NL	0.00067 U	0.00067 U
Acetone	70,000	NL	12	0.0035 U	0.016
Benzene	2	4	0.005	0.00069 U	0.00070 U
Bromochloromethane	NL	NL	NL	0.00025 U	0.00026 U
Bromodichloromethane	1	3	0.005	0.00028 U	0.00029 U
Bromoform	81	280	0.02	0.00066 U	0.00066 U
Bromomethane	25	59	0.03	0.00038 U	0.00039 U
Carbon disulfide	7,800	110,000	4	0.00043 U	0.00044 U
Carbon tetrachloride	0.6	2	0.005	0.000094 U	0.000095 U
Chlorobenzene	510	7,400	0.4	0.00045 U	0.00045 U
Chloroethane	220	1,100	NL	0.00037 U	0.00038 U
Chloroform	0.6	2	0.2	0.00022 U	0.00022 U
Chloromethane	4	11	NL	0.00059 U	0.00060 U
cis-1,2-Dichloroethene	230	560	0.2	0.00022 U	0.00022 U
cis-1,3-Dichloropropene	2	7	0.005	0.00019 U	0.00019 U
Cyclohexane	NL	NL	NL	0.00021 U	0.00021 U
Dibromochloromethane	3	8	0.005	0.00052 U	0.00053 U
Dichlorodifluoromethane	490	230,000	25	0.00038 U	0.00038 U
Ethylbenzene	7,800	110,000	8	0.00018 U	0.00018 U
Freon TF	NL	NL	NL	0.00044 U	0.00045 U
Isopropylbenzene	NL	NL	NL	0.00024 U	0.00024 U
m&p-Xylene	12000*	170000*	12*	0.00043 U	0.00044 U
Methyl acetate	78,000	NL	14	0.00084 U	0.00084 U
Methylcyclohexane	NL	NL	NL	0.00026 U	0.00026 U
Methylene Chloride	34	97	0.007	0.00044 U	0.00044 U
MTBE	110	320	0.2	0.00032 U	0.00032 U
o-Xylene	12000*	170000*	12*	0.00032 U	0.00032 U
Styrene	90	260	2	0.00032 U	0.00033 U
Tetrachloroethene	2	5	0.005	0.00031 U	0.00031 U
Toluene	6,300	91,000	4	0.00028 U	0.00028 U
trans-1,2-Dichloroethene	300	720	0.4	0.00026 U	0.00027 U
trans-1,3-Dichloropropene	2	5	0.005	0.00021 U	0.00021 U
Trichloroethene	7	20	0.007	0.00034 U	0.00034 U
Trichlorofluoromethane	23,000	340,000	22	0.00024 U	0.00025 U
Vinyl chloride	0.7	2	0.005	0.00022 U	0.00022 U

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

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NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

SPLP = Synthetic Precipitation Leaching Procedure can be used to develop a site specific IGWSRS

* = Listed standard is for total xylenes

TABLE 6B
SOIL ANALYTICAL RESULTS: AOC-K1
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			K1-1A
Lab Sample Number				460-22335-1
Sampling Date				01/20/11
Sampling Depth (feet)	Residential	Non-Residential	Impact to Ground Water Soil Screening Levels	4.5-5
Saturated Zone?				No
Units	mg/kg	mg/kg	mg/kg	mg/kg
Pesticides				
4,4'-DDD	3	13	Immobile (3)	0.00087 U
4,4'-DDE	2	9	Immobile (12)	0.0014 U
4,4'-DDT	2	8	Immobile (7)	0.00092 U
Aldrin	0.04	0.2	Immobile (0.1)	0.0016 U
alpha-BHC	0.1	1	0.002	0.0014 U
beta-BHC	0.4	2	0.002	0.00099 U
Chlordane	0.2	1	Immobile (0.03)	0.016 U
delta-BHC	NL	NL	NL	0.0011 U
Dieldrin	0.04	0.2	0.003	0.0014 U
Endosulfan I	470	6,800	2.3	0.0015 U
Endosulfan II	470	6,800	2.3	0.0011 U
Endosulfan Sulfate	470	6,800	1	0.00094 U
Endrin	23	340	0.6	0.001 U
Endrin Aldehyde	NL	NL	NL	0.0018 U
Endrin ketone	NL	NL	NL	0.0011 U
gamma-BHC(Lindane)	0.4	2	0.002	0.00085 U
Heptachlor	0.1	0.7	Immobile (0.3)	0.001 U
Heptachlor Epoxide	0.07	0.3	Immobile (0.009)	0.0015 U
Methoxychlor	390	5,700	Immobile (100)	0.00082 U
Toxaphene	0.6	3	Immobile (0.2)	0.015 U

Notes:

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» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

P = For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

Immobile = Not considered a threat to groundwater if certain conditions are met. Listed standard may be used if conditions not met.

TABLE 7
SOIL ANALYTICAL RESULTS: AOC-K2
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			K2-2A	K2-2B	K2-4A	K2-4B	K2-4C	K2-6
Lab Sample Number				460-22335-5	460-24232-17	460-22340-2	460-24232-18	460-24232-19	460-22477-10
Sampling Date				01/20/11	03/17/11	01/21/11	03/17/11	03/17/11	01/25/11
Sampling Depth (feet)	Residential	Non-Residential	Impact to Ground Water Soil Screening Levels	7-7.5	3-3.5	7-7.5	4-4.5	2.5-3	0.5-1
Saturated Zone?				No	No	No	No	No	No
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
VOLATILE COMPOUNDS									
1,1,1-Trichloroethane	290	4,200	0.2	0.00091 J	0.013	0.0051	0.0017	NA	0.026
1,1,2,2-Tetrachloroethane	1	3	0.005	0.00070 U	0.00067 U	0.00079 U	0.00073 U	NA	0.00071 U
1,1,2-Trichloroethane	2	6	0.01	0.00055 U	0.00052 U	0.00061 U	0.00057 U	NA	0.00055 U
1,1-Dichloroethane	8	24	0.2	0.00023 U	0.002	0.00053 J	0.00024 U	NA	0.0019
1,1-Dichloroethene	11	150	0.005	0.00034 U	0.00032 U	0.00038 U	0.00035 U	NA	0.0013
1,2,3-Trichlorobenzene	NL	NL	NL	0.00060 U	0.00057 U	0.00067 U	0.00062 U	NA	0.00060 U
1,2,4-Trichlorobenzene	73	820	0.4	0.00049 U	0.00047 U	0.00055 U	0.00051 U	NA	0.00050 U
1,2-Dibromo-3-Chloropropan	0.08	0.2	0.005	0.00056 U	0.00054 U	0.00063 U	0.00059 U	NA	0.00057 U
1,2-Dibromoethane	0.008	0.04	0.005	0.00048 U	0.00045 U	0.00054 U	0.00050 U	NA	0.00048 U
1,2-Dichlorobenzene	5300	59000	11	0.00059 U	0.00056 U	0.00066 U	0.00061 U	NA	0.00059 U
1,2-Dichloroethane	0.9	3	0.005	0.00036 U	0.00034 U	0.00040 U	0.00037 U	NA	0.00036 U
1,2-Dichloropropane	0.9	3	0.005	0.00029 U	0.00028 U	0.00033 U	0.00031 U	NA	0.00030 U
1,3-Dichlorobenzene	5,300	59,000	12	0.00045 U	0.00043 U	0.00050 U	0.00047 U	NA	0.00045 U
1,4-Dichlorobenzene	5	13	1	0.00066 U	0.00062 U	0.00074 U	0.00068 U	NA	0.00066 U
1,4-Dioxane	NL	NL	ISGWQS	0.0038 U	0.0036 U	0.0043 U	0.004 U	NA	0.0039 U
2-Butanone	3,100	44,000	0.6	0.00053 U	0.00050 U	0.00059 U	0.00055 U	NA	0.00053 U
2-Hexanone	NL	NL	NL	0.0015 U	0.0015 U	0.0017 U	0.0016 U	NA	0.0016 U
4-Methyl-2-pentanone	NL	NL	NL	0.00066 U	0.00063 U	0.00074 U	0.00069 U	NA	0.00067 U
Acetone	70,000	NL	12	0.0034 U	0.0032 U	0.0038 U	0.012	NA	0.0064 J
Benzene	2	4	0.005	0.00068 U	0.00065 U	0.00077 U	0.00071 U	NA	0.00069 U
Bromochloromethane	NL	NL	NL	0.00025 U	0.00024 U	0.00028 U	0.00026 U	NA	0.00025 U
Bromodichloromethane	1	3	0.005	0.00028 U	0.00027 U	0.00032 U	0.00029 U	NA	0.00028 U
Bromoform	81	280	0.02	0.00065 U	0.00062 U	0.00073 U	0.00067 U	NA	0.00065 U
Bromomethane	25	59	0.03	0.00038 U	0.00036 U	0.00042 U	0.00039 U	NA	0.00038 U
Carbon disulfide	7,800	110,000	4	0.00043 U	0.00041 U	0.00048 U	0.00045 U	NA	0.00043 U
Carbon tetrachloride	0.6	2	0.005	0.000093 U	0.000089 U	0.00010 U	0.000097 U	NA	0.000094 U
Chlorobenzene	510	7,400	0.4	0.00044 U	0.00042 U	0.00050 U	0.00046 U	NA	0.00045 U
Chloroethane	220	1,100	NL	0.00037 U	0.00035 U	0.00041 U	0.00038 U	NA	0.00037 U
Chloroform	0.6	2	0.2	0.00022 U	0.00021 U	0.00025 U	0.00023 U	NA	0.00076 J
Chloromethane	4	11	NL	0.00059 U	0.00056 U	0.00066 U	0.00061 U	NA	0.00059 U
cis-1,2-Dichloroethene	230	560	0.2	0.00022 U	0.00021 U	0.00024 U	0.00023 U	NA	0.00022 U
cis-1,3-Dichloropropene	2	7	0.005	0.00019 U	0.00018 U	0.00021 U	0.00019 U	NA	0.00019 U
Cyclohexane	NL	NL	NL	0.00020 U	0.00019 U	0.00023 U	0.00021 U	NA	0.00021 U
Dibromochloromethane	3	8	0.005	0.00052 U	0.00049 U	0.00058 U	0.00054 U	NA	0.00052 U
Dichlorodifluoromethane	490	230,000	25	0.00038 U	0.00036 U	0.00042 U	0.00039 U	NA	0.00038 U
Ethylbenzene	7,800	110,000	8	0.00018 U	0.00017 U	0.00020 U	0.00018 U	NA	0.00018 U
Freon TF	NL	NL	NL	0.00044 U	0.00042 U	0.00049 U	0.00046 U	NA	0.00044 U
Isopropylbenzene	NL	NL	NL	0.00024 U	0.00023 U	0.00027 U	0.00025 U	NA	0.00024 U
m&p-Xylene	12000*	170000*	12*	0.00043 U	0.00041 U	0.00048 U	0.00045 U	NA	0.00043 U
Methyl acetate	78,000	NL	14	0.00083 U	0.00079 U	0.00093 U	0.00086 U	NA	0.00084 U
Methylcyclohexane	NL	NL	NL	0.00025 U	0.00024 U	0.00028 U	0.00026 U	NA	0.00087 J
Methylene Chloride	34	97	0.007	0.00043 U	0.00041 U	0.00049 U	0.00045 U	NA	0.00044 U
MTBE	110	320	0.2	0.00032 U	0.00030 U	0.00036 U	0.00033 U	NA	0.00032 U
o-Xylene	12000*	170000*	12*	0.00032 U	0.00030 U	0.00036 U	0.00033 U	NA	0.00032 U
Styrene	90	260	2	0.00032 U	0.00030 U	0.00036 U	0.00033 U	NA	0.00032 U
Tetrachloroethene	2	5	0.005	0.00030 U	0.00029 U	0.00034 U	0.00032 U	NA	0.00041 J
Toluene	6,300	91,000	4	0.00028 U	0.00026 U	0.00031 U	0.00029 U	NA	0.00080 J
trans-1,2-Dichloroethene	300	720	0.4	0.00026 U	0.00025 U	0.00029 U	0.00027 U	NA	0.00026 U
trans-1,3-Dichloropropene	2	5	0.005	0.00020 U	0.00019 U	0.00023 U	0.00021 U	NA	0.00021 U
Trichloroethene	7	20	0.007	0.00033 U	0.00032 U	0.0016	0.0014	NA	**» 0.0095**
Trichlorofluoromethane	23,000	340,000	22	0.00024 U	0.00023 U	0.00027 U	0.00025 U	NA	0.00024 U
Vinyl chloride	0.7	2	0.005	0.00022 U	0.00021 U	0.00024 U	0.00022 U	NA	0.00022 U
Metals									
Mercury	23	65	0.1	NA	NA	NA	0.029 U	**» 0.13**	NA

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

SPLP = Synthetic Precipitation Leaching Procedure can be used to develop a site specific IGWSRS

* = Listed standard is for total xylenes

TABLE 7
SOIL ANALYTICAL RESULTS: AOC-K2
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			K2-7
Lab Sample Number			Impact to Ground Water Soil Screening Levels	460-24232-20
Sampling Date				03/17/11
Sampling Depth (feet)	Residential	Non-Residential		3.5-4
Saturated Zone?				No
Units	mg/kg	mg/kg	mg/kg	mg/kg
VOLATILE COMPOUNDS				
1,1,1-Trichloroethane	290	4,200	0.2	0.041
1,1,2,2-Tetrachloroethane	1	3	0.005	0.00070 U
1,1,2-Trichloroethane	2	6	0.01	0.00055 U
1,1-Dichloroethane	8	24	0.2	0.0032
1,1-Dichloroethene	11	150	0.005	0.00034 U
1,2,3-Trichlorobenzene	NL	NL	NL	0.00060 U
1,2,4-Trichlorobenzene	73	820	0.4	0.00049 U
1,2-Dibromo-3-Chloropropan	0.08	0.2	0.005	0.00056 U
1,2-Dibromoethane	0.008	0.04	0.005	0.00048 U
1,2-Dichlorobenzene	5300	59000	11	0.00059 U
1,2-Dichloroethane	0.9	3	0.005	0.00036 U
1,2-Dichloropropane	0.9	3	0.005	0.00029 U
1,3-Dichlorobenzene	5,300	59,000	12	0.00045 U
1,4-Dichlorobenzene	5	13	1	0.00066 U
1,4-Dioxane	NL	NL	ISGWQS	0.0038 U
2-Butanone	3,100	44,000	0.6	0.00053 U
2-Hexanone	NL	NL	NL	0.0015 U
4-Methyl-2-pentanone	NL	NL	NL	0.00066 U
Acetone	70,000	NL	12	0.0034 U
Benzene	2	4	0.005	0.00068 U
Bromochloromethane	NL	NL	NL	0.00025 U
Bromodichloromethane	1	3	0.005	0.00028 U
Bromoform	81	280	0.02	0.00065 U
Bromomethane	25	59	0.03	0.00038 U
Carbon disulfide	7,800	110,000	4	0.00043 U
Carbon tetrachloride	0.6	2	0.005	0.000093 U
Chlorobenzene	510	7,400	0.4	0.00045 U
Chloroethane	220	1,100	NL	0.00037 U
Chloroform	0.6	2	0.2	0.0011
Chloromethane	4	11	NL	0.00059 U
cis-1,2-Dichloroethene	230	560	0.2	0.00022 U
cis-1,3-Dichloropropene	2	7	0.005	0.00019 U
Cyclohexane	NL	NL	NL	0.00021 U
Dibromochloromethane	3	8	0.005	0.00052 U
Dichlorodifluoromethane	490	230,000	25	0.00038 U
Ethylbenzene	7,800	110,000	8	0.00018 U
Freon TF	NL	NL	NL	0.00044 U
Isopropylbenzene	NL	NL	NL	0.00024 U
m&p-Xylene	12000*	170000*	12*	0.00043 U
Methyl acetate	78,000	NL	14	0.00083 U
Methylcyclohexane	NL	NL	NL	0.00025 U
Methylene Chloride	34	97	0.007	0.00043 U
MTBE	110	320	0.2	0.00032 U
o-Xylene	12000*	170000*	12*	0.00032 U
Styrene	90	260	2	0.00032 U
Tetrachloroethene	2	5	0.005	0.00041 J
Toluene	6,300	91,000	4	0.00028 U
trans-1,2-Dichloroethene	300	720	0.4	0.00026 U
trans-1,3-Dichloropropene	2	5	0.005	0.00020 U
Trichloroethene	7	20	0.007	**» 0.011**
Trichlorofluoromethane	23,000	340,000	22	0.00024 U
Vinyl chloride	0.7	2	0.005	0.00022 U
Metals				
Mercury	23	65	0.1	**» 0.25**

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Lir

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

SPLP = Synthetic Precipitation Leaching Procedure can be used to develop a site specific IGWSRS

* = Listed standard is for total xylenes

TABLE 8A

SOIL ANALYTICAL RESULTS: AOC-K3
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			K3-3A	K3-4	K3-5	K3-6	K3-6B
Lab Sample Number				460-22335-7	460-22335-9	460-22335-10	460-22477-11	460-24232-10
Sampling Date				01/20/11	01/20/11	01/20/11	01/25/11	03/17/11
Sampling Depth (feet)				7-7.5	5-5.5	5-5.5	5-5.5	6-6.5
Saturated Zone?				No	No	No	No	No
Units	Residential mg/kg	Non-Residential mg/kg	Impact to Ground Water Soil Screening Levels mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
VOLATILE COMPOUNDS								
1,1,1-Trichloroethane	290	4,200	0.2	0.00022 J	0.00018 U	0.00019 U	0.00016 U	0.00017 U
1,1,2,2-Tetrachloroethane	1	3	0.005	0.00073 U	0.00072 U	0.00079 U	0.00066 U	0.00067 U
1,1,2-Trichloroethane	2	6	0.01	0.00057 U	0.00056 U	0.00061 U	0.00051 U	0.00052 U
1,1-Dichloroethane	8	24	0.2	0.00024 U	0.00024 U	0.00026 U	0.00022 U	0.00022 U
1,1-Dichloroethene	11	150	0.005	0.00035 U	0.00035 U	0.00038 U	0.00032 U	0.00033 U
1,2,3-Trichlorobenzene	NL	NL	NL	0.00062 U	0.00061 U	0.00067 U	0.00056 U	0.00057 U
1,2,4-Trichlorobenzene	73	820	0.4	0.00051 U	0.00050 U	0.00055 U	0.00046 U	0.00047 U
1,2-Dibromo-3-Chloropropan	0.08	0.2	0.005	0.00059 U	0.00058 U	0.00063 U	0.00053 U	0.00054 U
1,2-Dibromoethane	0.008	0.04	0.005	0.00050 U	0.00049 U	0.00054 U	0.00045 U	0.00046 U
1,2-Dichlorobenzene	5300	59000	11	0.00061 U	0.00060 U	0.00066 U	0.00055 U	0.00056 U
1,2-Dichloroethane	0.9	3	0.005	0.00037 U	0.00037 U	0.00040 U	0.00034 U	0.00035 U
1,2-Dichloropropane	0.9	3	0.005	0.00031 U	0.00030 U	0.00033 U	0.00028 U	0.00028 U
1,3-Dichlorobenzene	5,300	59,000	12	0.00047 U	0.00046 U	0.00050 U	0.00042 U	0.00043 U
1,4-Dichlorobenzene	5	13	1	0.00068 U	0.00067 U	0.00074 U	0.00062 U	0.00063 U
1,4-Dioxane	NL	NL	ISGWQS	0.004 U	0.0039 U	0.0043 U	0.0036 U	0.0037 U
2-Butanone	3,100	44,000	0.6	0.00055 U	0.00054 U	0.00059 U	0.00049 U	0.00050 U
2-Hexanone	NL	NL	NL	0.0016 U	0.0016 U	0.0017 U	0.0015 U	0.0015 U
4-Methyl-2-pentanone	NL	NL	NL	0.00069 U	0.00067 U	0.00074 U	0.00062 U	0.00063 U
Acetone	70,000	NL	12	0.0075 J	0.010	0.012	0.0064 J	0.0084 JB
Benzene	2	4	0.005	0.00071 U	0.00070 U	0.00077 U	0.00079 J	0.00065 U
Bromochloromethane	NL	NL	NL	0.00026 U	0.00026 U	0.00028 U	0.00023 U	0.00024 U
Bromodichloromethane	1	3	0.005	0.00029 U	0.00029 U	0.00031 U	0.00026 U	0.00027 U
Bromoform	81	280	0.02	0.00067 U	0.00066 U	0.00073 U	0.00061 U	0.00062 U
Bromomethane	25	59	0.03	0.00039 U	0.00039 U	0.00042 U	0.00035 U	0.00036 U
Carbon disulfide	7,800	110,000	4	0.00045 U	0.00044 U	0.00048 U	0.00040 U	0.00041 U
Carbon tetrachloride	0.6	2	0.005	0.000097 U	0.000095 U	0.00010 U	0.000088 U	0.000089 U
Chlorobenzene	510	7,400	0.4	0.00046 U	0.00045 U	0.00050 U	0.00042 U	0.00043 U
Chloroethane	220	1,100	NL	0.00038 U	0.00038 U	0.00041 U	0.00035 U	0.00035 U
Chloroform	0.6	2	0.2	0.00023 U	0.00022 U	0.00025 U	0.00022 J	0.00021 U
Chloromethane	4	11	NL	0.00061 U	0.00060 U	0.00066 U	0.00055 U	0.00056 U
cis-1,2-Dichloroethene	230	560	0.2	0.0052	0.0027	0.00027 J	0.00020 U	0.00021 U
cis-1,3-Dichloropropene	2	7	0.005	0.00019 U	0.00019 U	0.00021 U	0.00017 U	0.00018 U
Cyclohexane	NL	NL	NL	0.00021 U	0.00021 U	0.00023 U	0.00019 U	0.00020 U
Dibromochloromethane	3	8	0.005	0.00054 U	0.00053 U	0.00058 U	0.00049 U	0.00050 U
Dichlorodifluoromethane	490	230,000	25	0.00039 U	0.00038 U	0.00042 U	0.00035 U	0.00036 U
Ethylbenzene	7,800	110,000	8	0.00018 U	0.00018 U	0.00020 U	0.00017 U	0.00017 U
Freon TF	NL	NL	NL	0.00046 U	0.00045 U	0.00049 U	0.00041 U	0.00042 U
Isopropylbenzene	NL	NL	NL	0.00025 U	0.00024 U	0.00027 U	0.00022 U	0.00023 U
m&p-Xylene	12000*	170000*	12*	0.00045 U	0.00044 U	0.00076 J	0.00040 U	0.00041 U
Methyl acetate	78,000	NL	14	0.00086 U	0.00084 U	0.00093 U	0.00078 U	0.00079 U
Methylcyclohexane	NL	NL	NL	0.00026 U	0.00026 U	0.00028 U	0.00024 U	0.00024 U
Methylene Chloride	34	97	0.007	0.00045 U	0.00044 U	0.00049 U	0.00041 U	0.00042 U
MTBE	110	320	0.2	0.00033 U	0.00032 U	0.00036 U	0.00030 U	0.00030 U
o-Xylene	12000*	170000*	12*	0.00033 U	0.00032 U	0.00036 U	0.00030 U	0.00030 U
Styrene	90	260	2	0.00033 U	0.00033 U	0.00036 U	0.00030 U	0.00031 U
Tetrachloroethene	2	5	0.005	0.00032 U	0.00031 U	0.00034 U	0.00029 U	0.00029 U
Toluene	6,300	91,000	4	0.00029 U	0.00028 U	0.00031 U	0.00048 J	0.00026 U
trans-1,2-Dichloroethene	300	720	0.4	0.00027 U	0.00027 U	0.00029 U	0.00025 U	0.00025 U
trans-1,3-Dichloropropene	2	5	0.005	0.00021 U	0.00021 U	0.00023 U	0.00019 U	0.00020 U
Trichloroethene	7	20	0.007	**» 0.011**	**» 0.0087**	0.0054	**» 0.029**	0.00032 U
Trichlorofluoromethane	23,000	340,000	22	0.00025 U	0.00025 U	0.00027 U	0.00023 U	0.00023 U
Vinyl chloride	0.7	2	0.005	0.00022 U	0.00022 U	0.00024 U	0.00020 U	0.00021 U

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

SPLP = Synthetic Precipitation Leaching Procedure can be used to develop a site specific IGWSRS

* = Listed standard is for total xylenes

TABLE 8B
SOIL ANALYTICAL RESULTS: AOC-K3
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			K3-1A	K3-3A	K3-3B	K3-4	K3-5	K3-6
Lab Sample Number				460-22335-6	460-22335-7	460-22335-8	460-22335-9	460-22335-10	460-22477-11
Sampling Date				01/20/11	01/20/11	01/20/11	01/20/11	01/20/11	01/25/11
Sampling Depth (feet)	Residential	Non-Residential	Impact to Ground Water Soil Screening Levels	4-4.5	7-7.5	4-4.5	5-5.5	5-5.5	5-5.5
Saturated Zone?				No	No	No	No	No	No
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
PCBs									
Aroclor-1016	0.2	1	Immobile (0.2)		0.014 U		0.015 U	0.015 U	0.014 U
Aroclor-1221	0.2	1	Immobile (0.2)		0.022 U		0.023 U	0.023 U	0.023 U
Aroclor-1232	0.2	1	Immobile (0.2)		0.042 U		0.043 U	0.043 U	0.042 U
Aroclor-1242	0.2	1	Immobile (0.2)		0.014 U		0.014 U	0.014 U	0.014 U
Aroclor-1248	0.2	1	Immobile (0.2)		0.020 U		0.020 U	0.020 U	0.020 U
Aroclor-1254	0.2	1	Immobile (0.2)		0.025 U		0.026 U	0.042 J	0.026 U
Aroclor-1260	0.2	1	Immobile (0.2)		0.0083 U		0.0085 U	0.0085 U	0.0084 U
Aroclor-1262	0.2	1	Immobile (0.2)		0.013 U		0.013 U	0.013 U	0.013 U
Aroclor-1268	0.2	1	Immobile (0.2)		0.013 U		0.013 U	0.013 U	0.013 U
Pesticides									
4,4'-DDD	3	13	Immobile (3)	0.00085 U		0.0017 Jp			
4,4'-DDE	2	9	Immobile (12)	0.0014 U		0.0014 U			
4,4'-DDT	2	8	Immobile (7)	0.00089 U		0.0033 J			
Aldrin	0.04	0.2	Immobile (0.1)	0.0016 U		0.0016 U			
alpha-BHC	0.1	1	0.002	0.0013 U		0.0013 U			
beta-BHC	0.4	2	0.002	**» 0.0026 Jp**		0.00097 U			
Chlordane	0.2	1	Immobile (0.03)	0.015 U		0.015 U			
delta-BHC	NL	NL	NL	0.0011 U		0.0011 U			
Dieldrin	0.04	0.2	0.003	0.0014 U		0.0014 U			
Endosulfan I	470	6,800	2.3	0.0015 U		0.0015 U			
Endosulfan II	470	6,800	2.3	0.0011 U		0.0011 U			
Endosulfan Sulfate	470	6,800	1	0.00091 U		0.00091 U			
Endrin	23	340	0.6	0.001 U		0.001 U			
Endrin Aldehyde	NL	NL	NL	0.0018 U		0.0018 U			
Endrin ketone	NL	NL	NL	0.001 U		0.0011 U			
gamma-BHC(Lindane)	0.4	2	0.002	0.0015 Jp		0.00083 U			
Heptachlor	0.1	0.7	Immobile (0.3)	0.001 U		0.001 U			
Heptachlor Epoxide	0.07	0.3	Immobile (0.009)	0.0014 U		0.0014 U			
Methoxychlor	390	5,700	Immobile (100)	0.00080 U		0.00080 U			
Toxaphene	0.6	3	Immobile (0.2)	0.015 U		0.015 U			

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

P = For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

Immobile = Not considered a threat to groundwater if certain conditions are met. Listed standard may be used if conditions not met.

TABLE 9
SOIL ANALYTICAL RESULTS: AOC-K4
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			K4-1A	K4-1B
Lab Sample Number			Impact to Ground Water Soil Screening Levels	460-22477-12	460-22477-13
Sampling Date				01/25/11	01/25/11
Sampling Depth (feet)	Residential	Non-Residential		1.5-2	7.5-8
Saturated Zone?				No	No
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
PAHs					
Acenaphthene	3,400	37,000	74.0	0.055 U	0.057 U
Acenaphthylene	NL	300,000	NL	0.055 U	0.057 U
Anthracene	17,000	30,000	1,500	0.068 U	0.070 U
Benzo(a)anthracene	0.6	2	Immobile (0.5)	0.25	0.0074 U
Benzo(a)pyrene	0.2	0.2	Immobile (0.2)	» 0.28	0.0049 U
Benzo(b)fluoranthene	0.6	2	Immobile (2)	0.37	0.0059 U
Benzo(g,h,i)perylene	380,000	30,000	Immobile	0.28 J	0.042 U
Benzo(k)fluoranthene	6	23	Immobile (16)	0.11	0.0056 U
Chrysene	62	230	Immobile (52)	0.32 J	0.058 U
Dibenz(a,h)anthracene	0.2	0.2	Immobile (0.5)	0.035 J	0.0048 U
Fluoranthene	2,300	24,000	Immobile (840)	0.37 J	0.066 U
Fluorene	2,300	24,000	110	0.065 U	0.067 U
Indeno(1,2,3-cd)pyrene	0.6	2	Immobile (5)	0.28	0.0064 U
Naphthalene	6	17	16	0.056 U	0.058 U
Phenanthrene	NL	300,000	NL	0.13 J	0.069 U
Pyrene	1,700	18,000	Immobile (550)	0.36 J	0.069 U

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

Immobile = Not considered a threat to groundwater if certain conditions are met. Listed standard may be used if conditions not met.

* Listed standards are ingestion-dermal/inhalation/Allergic Contact Dermatitis
The Allergic Contact Dermatitis standard is site-specific

TABLE 10
SOIL ANALYTICAL RESULTS: AOC-K5
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			K5-1B	
Lab Sample Number			Impact to	460-24232-9	
Sampling Date			Ground Water	03/17/11	
Sampling Depth (feet)	Residential	Non-Residential	Soil Screening	4.5-5	
Saturated Zone?			Levels	No	
Units	mg/kg	mg/kg	mg/kg	mg/kg	
VOLATILE COMPOUNDS					
1,1,1-Trichloroethane	290	4,200	0.2	0.00017	U
1,1,2,2-Tetrachloroethane	1	3	0.005	0.00068	U
1,1,2-Trichloroethane	2	6	0.01	0.00053	U
1,1-Dichloroethane	8	24	0.2	0.00023	U
1,1-Dichloroethene	11	150	0.005	0.00033	U
1,2,3-Trichlorobenzene	NL	NL	NL	0.00058	U
1,2,4-Trichlorobenzene	73	820	0.4	0.00048	U
1,2-Dibromo-3-Chloropropan	0.08	0.2	0.005	0.00055	U
1,2-Dibromoethane	0.008	0.04	0.005	0.00046	U
1,2-Dichlorobenzene	5300	59000	11	0.00057	U
1,2-Dichloroethane	0.9	3	0.005	0.00035	U
1,2-Dichloropropane	0.9	3	0.005	0.00028	U
1,3-Dichlorobenzene	5,300	59,000	12	0.00043	U
1,4-Dichlorobenzene	5	13	1	0.00063	U
1,4-Dioxane	NL	NL	ISGWQS	0.0037	U
2-Butanone	3,100	44,000	0.6	0.00051	U
2-Hexanone	NL	NL	NL	0.0015	U
4-Methyl-2-pentanone	NL	NL	NL	0.00064	U
Acetone	70,000	NL	12	0.004	JB
Benzene	2	4	0.005	0.00066	U
Bromochloromethane	NL	NL	NL	0.00024	U
Bromodichloromethane	1	3	0.005	0.00027	U
Bromoform	81	280	0.02	0.00063	U
Bromomethane	25	59	0.03	0.00037	U
Carbon disulfide	7,800	110,000	4	0.00042	U
Carbon tetrachloride	0.6	2	0.005	0.00009	U
Chlorobenzene	510	7,400	0.4	0.00043	U
Chloroethane	220	1,100	NL	0.00036	U
Chloroform	0.6	2	0.2	0.00021	U
Chloromethane	4	11	NL	0.00057	U
cis-1,2-Dichloroethene	230	560	0.2	0.00021	U
cis-1,3-Dichloropropene	2	7	0.005	0.00018	U
Cyclohexane	NL	NL	NL	0.00020	U
Dibromochloromethane	3	8	0.005	0.00050	U
Dichlorodifluoromethane	490	230,000	25	0.00036	U
Ethylbenzene	7,800	110,000	8	0.00017	U
Freon TF	NL	NL	NL	0.00043	U
Isopropylbenzene	NL	NL	NL	0.00023	U
m&p-Xylene	12000*	170000*	12*	0.00041	U
Methyl acetate	78,000	NL	14	0.00080	U
Methylcyclohexane	NL	NL	NL	0.00024	U
Methylene Chloride	34	97	0.007	0.00042	U
MTBE	110	320	0.2	0.00031	U
o-Xylene	12000*	170000*	12*	0.00031	U
Styrene	90	260	2	0.00031	U
Tetrachloroethene	2	5	0.005	0.00029	U
Toluene	6,300	91,000	4	0.00027	U
trans-1,2-Dichloroethene	300	720	0.4	0.00025	U
trans-1,3-Dichloropropene	2	5	0.005	0.00020	U
Trichloroethene	7	20	0.007	0.0013	
Trichlorofluoromethane	23,000	340,000	22	0.00023	U
Vinyl chloride	0.7	2	0.005	0.00021	U

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

SPLP = Synthetic Precipitation Leaching Procedure can be used to develop a site specific IGWSRS

* = Listed standard is for total xylenes

TABLE 11
SOIL ANALYTICAL RESULTS: AOC-L1
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			L1-1A	L1-4	L1-5A	L1-5B	L1-6	L1-7
Lab Sample Number				460-22477-14	460-22248-1	460-22248-2	460-22248-3	460-22248-4	460-22335-11
Sampling Date				01/25/11	01/19/11	01/19/11	01/19/11	01/19/11	01/20/11
Sampling Depth (feet)	Residential	Non-Residential	Impact to Ground Water Soil Screening Levels	7-7.5	3.5-4	1.5-2	3.5-4	3.5-4	5.5-6
Saturated Zone?				No	No	No	No	No	No
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
VOLATILE COMPOUNDS									
1,1,1-Trichloroethane	290	4,200	0.2	0.00047 J	» 3.2 J	» 2.0	» 1.4 J	» 2.1	0.00034 J
1,1,2,2-Tetrachloroethane	1	3	0.005	0.00073 U	0.33 U	0.048 U	0.18 U	0.079 U	0.00074 U
1,1,2-Trichloroethane	2	6	0.01	0.00057 U	0.37 U	0.054 U	0.20 U	0.089 U	0.00058 U
1,1-Dichloroethane	8	24	0.2	0.00024 U	0.38 U	0.055 U	0.21 U	0.091 U	0.00025 U
1,1-Dichloroethene	11	150	0.005	0.00036 U	0.53 U	0.078 U	0.29 U	0.13 U	0.00036 U
1,2,3-Trichlorobenzene	NL	NL	NL	0.00063 U	3.1 U	0.46 U	1.7 U	0.76 U	0.00063 U
1,2,4-Trichlorobenzene	73	820	0.4	0.00052 U	1.7 U	0.24 U	0.90 U	0.40 U	0.00052 U
1,2-Dibromo-3-Chloropropan	0.08	0.2	0.005	0.00059 U	0.58 U	0.085 U	0.32 U	0.14 U	0.00060 U
1,2-Dibromoethane	0.008	0.04	0.005	0.00050 U	0.35 U	0.051 U	0.19 U	0.083 U	0.00051 U
1,2-Dichlorobenzene	5300	59000	11	0.00062 U	0.62 U	0.090 U	0.34 U	0.15 U	0.00062 U
1,2-Dichloroethane	0.9	3	0.005	0.00038 U	0.93 U	0.14 U	0.51 U	0.23 U	0.00038 U
1,2-Dichloropropane	0.9	3	0.005	0.00031 U	0.33 U	0.048 U	0.18 U	0.080 U	0.00031 U
1,3-Dichlorobenzene	5,300	59,000	12	0.00047 U	0.85 U	0.13 U	0.47 U	0.21 U	0.00047 U
1,4-Dichlorobenzene	5	13	1	0.00069 U	0.57 U	0.084 U	0.31 U	0.14 U	0.00070 U
1,4-Dioxane	NL	NL	ISGWQS	0.004 U	32 U	4.7 U	18 U	7.8 U	0.0041 U
2-Butanone	3,100	44,000	0.6	0.00055 U	3.1 U	0.45 U	1.7 U	0.75 U	0.00056 U
2-Hexanone	NL	NL	NL	0.0016 U	2.1 U	0.30 U	1.1 U	0.50 U	0.0016 U
4-Methyl-2-pentanone	NL	NL	NL	0.00069 U	2.6 U	0.38 U	1.4 U	0.62 U	0.00070 U
Acetone	70,000	NL	12	0.0063 J	9.4 U	1.4 U	5.1 U	2.3 U	0.007 J
Benzene	2	4	0.005	0.00071 U	0.45 U	0.066 U	0.25 U	0.11 U	0.00072 U
Bromochloromethane	NL	NL	NL	0.00026 U	0.65 U	0.096 U	0.36 U	0.16 U	0.00027 U
Bromodichloromethane	1	3	0.005	0.00029 U	0.34 U	0.050 U	0.19 U	0.082 U	0.00030 U
Bromoform	81	280	0.02	0.00068 U	0.38 U	0.055 U	0.21 U	0.091 U	0.00069 U
Bromomethane	25	59	0.03	0.00039 U	1.2 U	0.17 U	0.65 U	0.29 U	0.00040 U
Carbon disulfide	7,800	110,000	4	0.00045 U	0.55 U	0.081 U	0.30 U	0.13 U	0.00046 U
Carbon tetrachloride	0.6	2	0.005	0.000098 U	0.68 U	0.10 U	0.37 U	0.16 U	0.000099 U
Chlorobenzene	510	7,400	0.4	0.00047 U	0.63 U	0.092 U	0.34 U	0.15 U	0.00047 U
Chloroethane	220	1,100	NL	0.00039 U	1.7 U	0.25 U	0.92 U	0.41 U	0.00039 U
Chloroform	0.6	2	0.2	0.00023 U	0.59 U	0.12 J	0.32 U	0.14 U	0.00023 U
Chloromethane	4	11	NL	0.00061 U	0.80 U	0.12 U	0.44 U	0.19 U	0.00062 U
cis-1,2-Dichloroethene	230	560	0.2	0.00023 U	0.73 U	0.11 U	0.40 U	0.18 U	0.00023 U
cis-1,3-Dichloropropene	2	7	0.005	0.00019 U	0.39 U	0.057 U	0.21 U	0.093 U	0.00020 U
Cyclohexane	NL	NL	NL	0.00021 U	0.47 U	0.069 U	0.26 U	0.11 U	0.00022 U
Dibromochloromethane	3	8	0.005	0.00054 U	0.38 U	0.056 U	0.21 U	0.092 U	0.00055 U
Dichlorodifluoromethane	490	230,000	25	0.00039 U	1.1 U	0.16 U	0.59 U	0.26 U	0.00040 U
Ethylbenzene	7,800	110,000	8	0.00018 U	0.93 U	0.14 U	0.51 U	0.23 U	0.00019 U
Freon TF	NL	NL	NL	0.00046 U	1.1 U	0.16 U	0.60 U	0.26 U	0.00047 U
Isopropylbenzene	NL	NL	NL	0.00025 U	0.80 U	0.12 U	0.44 U	0.19 U	0.00025 U
m&p-Xylene	12000*	170000*	12*	0.00045 U	1.1 U	0.16 U	0.60 U	0.27 U	0.00045 U
Methyl acetate	78,000	NL	14	0.00086 U	1.2 U	0.18 U	0.68 U	0.30 U	0.00088 U
Methylcyclohexane	NL	NL	NL	0.00026 U	0.30 U	0.044 U	0.17 U	0.073 U	0.00027 U
Methylene Chloride	34	97	0.007	0.00045 U	0.73 U	0.11 U	0.40 U	0.18 U	0.00046 U
MTBE	110	320	0.2	0.00033 U	0.70 U	0.10 U	0.38 U	0.17 U	0.00034 U
o-Xylene	12000*	170000*	12*	0.00033 U	0.58 U	0.086 U	0.32 U	0.14 U	0.00034 U
Styrene	90	260	2	0.00033 U	0.53 U	0.077 U	0.29 U	0.13 U	0.00034 U
Tetrachloroethene	2	5	0.005	0.00032 U	0.74 U	0.11 U	0.41 U	0.18 U	0.00032 U
Toluene	6,300	91,000	4	0.00029 U	0.36 U	0.053 U	0.20 U	0.087 U	0.00029 U
trans-1,2-Dichloroethene	300	720	0.4	0.00027 U	0.52 U	0.076 U	0.29 U	0.13 U	0.00028 U
trans-1,3-Dichloropropene	2	5	0.005	0.00021 U	0.46 U	0.068 U	0.25 U	0.11 U	0.00022 U
Trichloroethene	7	20	0.007	0.0015	» 560	» 170	» 530	» 270	0.005
Trichlorofluoromethane	23,000	340,000	22	0.00025 U	0.59 U	0.087 U	0.32 U	0.14 U	0.00098 U
Vinyl chloride	0.7	2	0.005	0.00023 U	0.45 U	0.066 U	0.25 U	0.11 U	0.00098 U
Metals									
Mercury	23	65	0.1	» 0.21		NA	NA	NA	NA

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

SPLP = Synthetic Precipitation Leaching Procedure can be used to develop a site specific IGWSRS

* = Listed standard is for total xylenes

TABLE 11
SOIL ANALYTICAL RESULTS: AOC-L1
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			L1-8	L1-9	L1-10	L1-11	L1-12	L1-13
Lab Sample Number				460-24232-2	460-24232-3	460-24232-4	460-24232-5	460-24232-6	460-24232-7
Sampling Date				03/17/11	03/17/11	03/17/11	03/17/11	03/17/11	03/17/11
Sampling Depth (feet)	Residential	Non-Residential	Impact to Ground Water Soil Screening Levels	2.5-3	3.5-4	3.5-4	3.5-4	3.5-4	4-4.5
Saturated Zone?				No	No	No	No	No	No
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
VOLATILE COMPOUNDS									
1,1,1-Trichloroethane	290	4,200	0.2	**» 32**	**» 2.6**	**» 1.8**	0.006	**» 4.9**	**» 0.78**
1,1,2,2-Tetrachloroethane	1	3	0.005	0.021 U	0.0047 U	0.0051 U	0.00074 U	0.046 U	0.0041 U
1,1,2-Trichloroethane	2	6	0.01	0.023 U	0.0053 U	0.0058 U	0.00058 U	0.052 U	0.0046 U
1,1-Dichloroethane	8	24	0.2	**» 0.62**	0.021 J	0.0059 U	0.0016	0.053 U	0.0047 U
1,1-Dichloroethene	11	150	0.005	**» 1.4**	**» 0.072**	**» 0.045 J**	0.00036 U	**» 0.17 J**	**» 0.019 J**
1,2,3-Trichlorobenzene	NL	NL	NL	0.20 U	0.046 U	0.049 U	0.00063 U	0.44 U	0.039 U
1,2,4-Trichlorobenzene	73	820	0.4	0.10 U	0.024 U	0.026 U	0.00052 U	0.23 U	0.021 U
1,2-Dibromo-3-Chloropropan	0.08	0.2	0.005	0.037 U	0.0084 U	0.0091 U	0.00060 U	0.081 U	0.0073 U
1,2-Dibromoethane	0.008	0.04	0.005	0.022 U	0.005 U	0.0054 U	0.00050 U	0.048 U	0.0043 U
1,2-Dichlorobenzene	5300	59000	11	0.039 U	0.0089 U	0.0096 U	0.00062 U	0.086 U	0.0077 U
1,2-Dichloroethane	0.9	3	0.005	0.059 U	0.014 U	0.015 U	0.00038 U	0.13 U	0.012 U
1,2-Dichloropropane	0.9	3	0.005	0.021 U	0.0048 U	0.0052 U	0.00031 U	0.046 U	0.0041 U
1,3-Dichlorobenzene	5,300	59,000	12	0.054 U	0.012 U	0.013 U	0.00047 U	0.12 U	0.011 U
1,4-Dichlorobenzene	5	13	1	0.036 U	0.0083 U	0.0089 U	0.00069 U	0.080 U	0.0071 U
1,4-Dioxane	NL	NL	ISGWQS	2.0 U	0.47 U	0.50 U	0.004 U	4.5 U	0.40 U
2-Butanone	3,100	44,000	0.6	0.20 U	0.045 U	0.048 U	0.00055 U	0.43 U	0.039 U
2-Hexanone	NL	NL	NL	0.13 U	0.030 U	0.032 U	0.0016 U	0.29 U	0.026 U
4-Methyl-2-pentanone	NL	NL	NL	0.16 U	0.037 U	0.040 U	0.00070 U	0.36 U	0.032 U
Acetone	70,000	NL	12	0.60 U	0.14 U	0.15 U	0.0088 JB	1.3 U	0.12 U
Benzene	2	4	0.005	**» 0.40**	0.0065 U	**» 0.011 J**	0.00072 U	0.063 U	0.0056 U
Bromochloromethane	NL	NL	NL	0.042 U	0.0095 U	0.010 U	0.00026 U	0.092 U	0.0082 U
Bromodichloromethane	1	3	0.005	0.022 U	0.0049 U	0.0053 U	0.00030 U	0.047 U	0.0042 U
Bromoform	81	280	0.02	0.024 U	0.0054 U	0.0059 U	0.00068 U	0.053 U	0.0047 U
Bromomethane	25	59	0.03	0.075 U	0.017 U	0.019 U	0.00040 U	0.17 U	0.015 U
Carbon disulfide	7,800	110,000	4	0.035 U	0.008 U	0.0086 U	0.00045 U	0.077 U	0.0069 U
Carbon tetrachloride	0.6	2	0.005	0.043 U	0.0099 U	0.011 U	0.00042 J	0.095 U	0.0085 U
Chlorobenzene	510	7,400	0.4	0.040 U	0.0091 U	0.0098 U	0.00047 U	0.088 U	0.0078 U
Chloroethane	220	1,100	NL	0.11 U	0.024 U	0.026 U	0.00039 U	0.24 U	0.021 U
Chloroform	0.6	2	0.2	0.16 J	0.012 J	0.0096 J	0.0043	0.13 J	0.0073 U
Chloromethane	4	11	NL	0.051 U	0.012 U	0.012 U	0.00062 U	0.11 U	0.010 U
cis-1,2-Dichloroethene	230	560	0.2	**» 0.25**	0.011 U	0.011 U	0.00023 U	0.10 U	0.0091 U
cis-1,3-Dichloropropene	2	7	0.005	0.025 U	0.0056 U	0.006 U	0.00020 U	0.054 U	0.0048 U
Cyclohexane	NL	NL	NL	0.030 U	0.0068 U	0.0073 U	0.00022 U	0.066 U	0.0059 U
Dibromochloromethane	3	8	0.005	0.024 U	0.0055 U	0.0059 U	0.00055 U	0.053 U	0.0048 U
Dichlorodifluoromethane	490	230,000	25	0.068 U	0.016 U	0.017 U	0.00040 U	0.15 U	0.013 U
Ethylbenzene	7,800	110,000	8	0.16 J	0.014 U	0.015 U	0.00019 U	0.13 U	0.012 U
Freon TF	NL	NL	NL	0.069 U	0.016 U	0.017 U	0.00046 U	0.15 U	0.014 U
Isopropylbenzene	NL	NL	NL	0.082 J	0.012 U	0.013 U	0.00025 U	0.11 U	0.010 U
m&p-Xylene	12000*	170000*	12*	0.12 J	0.016 U	0.017 U	0.00045 U	0.37 J	0.014 U
Methyl acetate	78,000	NL	14	0.079 U	0.018 U	0.019 U	0.00087 U	0.17 U	0.016 U
Methylcyclohexane	NL	NL	NL	0.39	0.058	0.048 J	0.00027 U	0.042 U	0.015 J
Methylene Chloride	34	97	0.007	0.046 U	0.011 U	0.011 U	0.00046 U	0.10 U	0.0091 U
MTBE	110	320	0.2	0.045 U	0.010 U	0.011 U	0.00034 U	0.098 U	0.0087 U
o-Xylene	12000*	170000*	12*	0.047 J	0.0085 U	0.013 J	0.00034 U	0.12 J	0.0073 U
Styrene	90	260	2	0.033 U	0.0076 U	0.0082 U	0.00034 U	0.074 U	0.0066 U
Tetrachloroethene	2	5	0.005	**» 0.14 J**	**» 0.011 J**	**» 0.013 J**	0.00032 U	0.10 U	0.0093 U
Toluene	6,300	91,000	4	0.21 J	0.0052 U	0.011 J	0.00029 U	0.22 J	0.0045 U
trans-1,2-Dichloroethene	300	720	0.4	0.033 U	0.0076 U	0.0081 U	0.00028 U	0.073 U	0.0065 U
trans-1,3-Dichloropropene	2	5	0.005	0.029 U	0.0067 U	0.0072 U	0.00022 U	0.065 U	0.0058 U
Trichloroethene	7	20	0.007	**» 78**	**» 14**	**» 4.5**	**» 0.023**	**» 150**	**» 2.6**
Trichlorofluoromethane	23,000	340,000	22	0.038 U	0.0086 U	0.0093 U	0.00025 U	0.083 U	0.0074 U
Vinyl chloride	0.7	2	0.005	0.029 U	0.0066 U	0.0071 U	0.00023 U	0.064 U	0.0057 U
Metals									
Mercury	23	65	0.1	**» 0.35**	**» 0.29**	**» 0.80**	0.062	**» 0.18**	**» 0.31**

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Lir

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

SPLP = Synthetic Precipitation Leaching Procedure can be used to develop a site specific IGWSRS

* = Listed standard is for total xylenes

TABLE 11
SOIL ANALYTICAL RESULTS: AOC-L1
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			L1-14
Lab Sample Number				460-24232-8
Sampling Date				03/17/11
Sampling Depth (feet)				3.5-4
Saturated Zone?				No
Units	Residential mg/kg	Non-Residential mg/kg	Impact to Ground Water Soil Screening Levels mg/kg	mg/kg
VOLATILE COMPOUNDS				
1,1,1-Trichloroethane	290	4,200	0.2	**» 0.45**
1,1,2,2-Tetrachloroethane	1	3	0.005	0.0039 U
1,1,2-Trichloroethane	2	6	0.01	0.0044 U
1,1-Dichloroethane	8	24	0.2	0.0045 U
1,1-Dichloroethene	11	150	0.005	**» 0.016 J**
1,2,3-Trichlorobenzene	NL	NL	NL	0.037 U
1,2,4-Trichlorobenzene	73	820	0.4	0.020 U
1,2-Dibromo-3-Chloropropan	0.08	0.2	0.005	0.0069 U
1,2-Dibromoethane	0.008	0.04	0.005	0.0041 U
1,2-Dichlorobenzene	5300	59000	11	0.0073 U
1,2-Dichloroethane	0.9	3	0.005	0.011 U
1,2-Dichloropropane	0.9	3	0.005	0.0039 U
1,3-Dichlorobenzene	5,300	59,000	12	0.010 U
1,4-Dichlorobenzene	5	13	1	0.0068 U
1,4-Dioxane	NL	NL	ISGWQS	0.38 U
2-Butanone	3,100	44,000	0.6	0.037 U
2-Hexanone	NL	NL	NL	0.025 U
4-Methyl-2-pentanone	NL	NL	NL	0.031 U
Acetone	70,000	NL	12	0.11 U
Benzene	2	4	0.005	0.0053 U
Bromochloromethane	NL	NL	NL	0.0078 U
Bromodichloromethane	1	3	0.005	0.004 U
Bromoform	81	280	0.02	0.0045 U
Bromomethane	25	59	0.03	0.014 U
Carbon disulfide	7,800	110,000	4	0.0066 U
Carbon tetrachloride	0.6	2	0.005	0.0081 U
Chlorobenzene	510	7,400	0.4	0.0074 U
Chloroethane	220	1,100	NL	0.020 U
Chloroform	0.6	2	0.2	0.007 U
Chloromethane	4	11	NL	0.0095 U
cis-1,2-Dichloroethene	230	560	0.2	0.0087 U
cis-1,3-Dichloropropene	2	7	0.005	0.0046 U
Cyclohexane	NL	NL	NL	0.0056 U
Dibromochloromethane	3	8	0.005	0.0045 U
Dichlorodifluoromethane	490	230,000	25	0.013 U
Ethylbenzene	7,800	110,000	8	0.011 U
Freon TF	NL	NL	NL	0.013 U
Isopropylbenzene	NL	NL	NL	0.0095 U
m&p-Xylene	12000*	170000*	12*	0.013 U
Methyl acetate	78,000	NL	14	0.015 U
Methylcyclohexane	NL	NL	NL	0.0036 U
Methylene Chloride	34	97	0.007	0.0087 U
MTBE	110	320	0.2	0.0083 U
o-Xylene	12000*	170000*	12*	0.0069 U
Styrene	90	260	2	0.0062 U
Tetrachloroethene	2	5	0.005	0.0088 U
Toluene	6,300	91,000	4	0.0043 U
trans-1,2-Dichloroethene	300	720	0.4	0.0062 U
trans-1,3-Dichloropropene	2	5	0.005	0.0055 U
Trichloroethene	7	20	0.007	**» 1.7**
Trichlorofluoromethane	23,000	340,000	22	0.0071 U
Vinyl chloride	0.7	2	0.005	0.0054 U
Metals				
Mercury	23	65	0.1	**» 0.27**

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Lir

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

SPLP = Synthetic Precipitation Leaching Procedure can be used to develop a site specific IGWSRS

* = Listed standard is for total xylenes

TABLE 12A
SOIL ANALYTICAL RESULTS: AOC-L3
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			L3-1V	
Lab Sample Number			Impact to Ground Water Soil Screening Levels	460-22248-6	
Sampling Date				01/18/11	
Sampling Depth (feet)	Residential	Non-Residential		7-7.5	
Saturated Zone?				No	
Units	mg/kg	mg/kg	mg/kg	mg/kg	
VOLATILE COMPOUNDS					
1,1,1-Trichloroethane	290	4,200	0.2	0.011	
1,1,2,2-Tetrachloroethane	1	3	0.005	0.00068	U
1,1,2-Trichloroethane	2	6	0.01	0.00053	U
1,1-Dichloroethane	8	24	0.2	0.00023	U
1,1-Dichloroethene	11	150	0.005	0.00081	J
1,2,3-Trichlorobenzene	NL	NL	NL	0.00058	U
1,2,4-Trichlorobenzene	73	820	0.4	0.00048	U
1,2-Dibromo-3-Chloropropan	0.08	0.2	0.005	0.00055	U
1,2-Dibromoethane	0.008	0.04	0.005	0.00046	U
1,2-Dichlorobenzene	5300	59000	11	0.00057	U
1,2-Dichloroethane	0.9	3	0.005	0.00035	U
1,2-Dichloropropane	0.9	3	0.005	0.00029	U
1,3-Dichlorobenzene	5,300	59,000	12	0.00043	U
1,4-Dichlorobenzene	5	13	1	0.00064	U
1,4-Dioxane	NL	NL	ISGWQS	0.0037	U
2-Butanone	3,100	44,000	0.6	0.00051	U
2-Hexanone	NL	NL	NL	0.0015	U
4-Methyl-2-pentanone	NL	NL	NL	0.00064	U
Acetone	70,000	NL	12	0.0033	U
Benzene	2	4	0.005	0.00066	U
Bromochloromethane	NL	NL	NL	0.00024	U
Bromodichloromethane	1	3	0.005	0.00027	U
Bromoform	81	280	0.02	0.00063	U
Bromomethane	25	59	0.03	0.00037	U
Carbon disulfide	7,800	110,000	4	0.00042	U
Carbon tetrachloride	0.6	2	0.005	0.000091	U
Chlorobenzene	510	7,400	0.4	0.00043	U
Chloroethane	220	1,100	NL	0.00036	U
Chloroform	0.6	2	0.2	0.00021	U
Chloromethane	4	11	NL	0.00057	U
cis-1,2-Dichloroethene	230	560	0.2	0.00021	U
cis-1,3-Dichloropropene	2	7	0.005	0.00018	U
Cyclohexane	NL	NL	NL	0.00020	U
Dibromochloromethane	3	8	0.005	0.00050	U
Dichlorodifluoromethane	490	230,000	25	0.00036	U
Ethylbenzene	7,800	110,000	8	0.00017	U
Freon TF	NL	NL	NL	0.00043	U
Isopropylbenzene	NL	NL	NL	0.00023	U
m&p-Xylene	12000*	170000*	12*	0.00042	U
Methyl acetate	78,000	NL	14	0.00080	U
Methylcyclohexane	NL	NL	NL	0.00024	U
Methylene Chloride	34	97	0.007	0.00042	U
MTBE	110	320	0.2	0.00031	U
o-Xylene	12000*	170000*	12*	0.00031	U
Styrene	90	260	2	0.00031	U
Tetrachloroethene	2	5	0.005	0.00030	U
Toluene	6,300	91,000	4	0.00027	U
trans-1,2-Dichloroethene	300	720	0.4	0.00025	U
trans-1,3-Dichloropropene	2	5	0.005	0.00020	U
Trichloroethene	7	20	0.007	0.0025	
Trichlorofluoromethane	23,000	340,000	22	0.00023	U
Vinyl chloride	0.7	2	0.005	0.00021	U

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

SPLP = Synthetic Precipitation Leaching Procedure can be used to develop a site specific IGWSRS

* = Listed standard is for total xylenes

TABLE 12B
SOIL ANALYTICAL RESULTS: AOC-L3
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			L3-1	
Lab Sample Number				460-22248-5	
Sampling Date				01/18/11	
Sampling Depth (feet)	Residential	Non-Residential	Impact to Ground Water Soil Screening Levels	3-3.5	
Saturated Zone?				No	
Units	mg/kg	mg/kg	mg/kg	mg/kg	
SEMI-VOLATILE COMPOUNDS					
1,2,4,5-Tetrachlorobenzene				0.049	U
2,2'-oxybis[1-chloropropane]				0.048	U
2,3,4,6-Tetrachlorophenol				0.073	U
2,4,5-Trichlorophenol	6,100	68,000	44	0.070	U
2,4,6-Trichlorophenol	19	74	0.2	0.065	U
2,4-Dichlorophenol	180	2,100	0.2	0.058	U
2,4-Dimethylphenol	1,200	14,000	0.7	0.058	U
2,4-Dinitrophenol	120	1,400	0.3	0.077	U
2,4-Dinitrotoluene	0.7	3	0.2	0.011	U
2,6-Dinitrotoluene	0.7	3	0.2	0.0092	U
2-Chloronaphthalene	NL	NL	NL	0.051	U
2-Chlorophenol	310	2,200	0.5	0.049	U
2-Methylnaphthalene	230	2,400	5	0.053	U
2-Methylphenol	310	3,400	NL	0.052	U
2-Nitroaniline	39	23,000	NL	0.099	U
2-Nitrophenol	NL	NL	NL	0.060	U
3,3'-Dichlorobenzidine	1	4	0.2	0.080	U
3-Nitroaniline	NL	NL	NL	0.082	U
4,6-Dinitro-2-methylphenol	6	68	0.3	0.17	U
4-Bromophenyl-phenylether	NL	NL	NL	0.065	U
4-Chloro-3-methylphenol	NL	NL	NL	0.061	U
4-Chloroaniline	9	66	NL	0.046	U
4-Chlorophenyl-phenylether	NL	NL	NL	0.063	U
4-Methylphenol	31	340	NL	0.060	U
4-Nitroaniline	NL	NL	NL	0.075	U
4-Nitrophenol	NL	NL	NL	0.093	U
Acenaphthene	3,400	37,000	74.0	0.052	U
Acenaphthylene	NL	300,000	NL	0.052	U
Acetophenone				0.054	U
Anthracene	17,000	30,000	1,500	0.064	U
Atrazine				0.068	U
Benzaldehyde				0.023	U
Benzo(a)anthracene	0.6	2	Immobile (0.5)	0.12	
Benzo(a)pyrene	0.2	0.2	Immobile (0.2)	0.11	
Benzo(b)fluoranthene	0.6	2	Immobile (2)	0.12	
Benzo(g,h,i)perylene	380,000	30,000	Immobile	0.053	J
Benzo(k)fluoranthene	6	23	Immobile (16)	0.076	
bis(2-Chloroethoxy)methane	NL	NL	NL	0.052	U
bis(2-Chloroethyl)ether	0.4	2	0.2	0.0076	U
bis(2-Ethylhexyl)phthalate	35	140	Immobile (790)	0.11	J
Butylbenzylphthalate	1,200	14,000	Immobile (150)	0.042	U
Caprolactam				0.050	U
Carbazole	24	96	NL	0.058	U
Chrysene	62	230	Immobile (52)	0.12	J
Dibenz(a,h)anthracene	0.2	0.2	Immobile (0.5)	0.0044	U
Dibenzofuran	NL	NL	NL	0.055	U
Diethylphthalate	49,000	550,000	57	0.049	U
Dimethylphthalate	NL	NL	NL	0.049	U
Di-n-butylphthalate	6,100	68,000	Immobile (620)	0.056	U
Di-n-octylphthalate	2,400	27,000	Immobile (3,300)	0.043	U
Diphenyl				0.060	U
Fluoranthene	2,300	24,000	Immobile (840)	0.19	J
Fluorene	2,300	24,000	110	0.062	U
Hexachlorobenzene	0.3	1	Immobile (0.2)	0.005	U
Hexachlorobutadiene	6	25	Immobile (0.6)	0.015	U
Hexachlorocyclopentadiene	45	110	Immobile (210)	0.11	U
Hexachloroethane	35	140	0.2	0.0061	U
Indeno(1,2,3-cd)pyrene	0.6	2	Immobile (5)	0.051	
Isophorone	510	2,000	0.2	0.042	U
Naphthalene	6	17	16	0.053	U
Nitrobenzene	31	340	0.2	0.0081	U
N-Nitroso-di-n-propylamine	0.2	0.3	0.2	0.0048	U
N-Nitrosodiphenylamine	99	390	0.2	0.059	U
Pentachlorophenol	3	10	0.3	0.18	U
Phenanthrene	NL	300,000	NL	0.12	J
Phenol	18,000	210,000	5	0.044	U
Pyrene	1,700	18,000	Immobile (550)	0.19	J

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

NL = Soil Remediation Standard Not Listed NA = Not Analyzed

Saturated zone samples not compared to IGWSSL

Immobile = Not considered a threat to groundwater if certain conditions are met. Listed standard may be used if conditions not met.

* Values listed reflects combined standard for 2,4/2,6-Dinitrotoluene mixture

TABLE 12C
SOIL ANALYTICAL RESULTS: AOC-L3
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			L3-1
Lab Sample Number				460-22248-5
Sampling Date				01/18/11
Sampling Depth (feet)	Residential	Non-Residential	Impact to Ground Water Soil Screening Levels	3-3.5
Saturated Zone?				No
Units	mg/kg	mg/kg	mg/kg	mg/kg
PCBs				
Aroclor-1016	0.2	1	Immobile (0.2)	0.014 U
Aroclor-1221	0.2	1	Immobile (0.2)	0.022 U
Aroclor-1232	0.2	1	Immobile (0.2)	0.042 U
Aroclor-1242	0.2	1	Immobile (0.2)	0.014 U
Aroclor-1248	0.2	1	Immobile (0.2)	0.020 U
Aroclor-1254	0.2	1	Immobile (0.2)	0.025 U
Aroclor-1260	0.2	1	Immobile (0.2)	0.0082 U
Aroclor-1262	0.2	1	Immobile (0.2)	0.013 U
Aroclor-1268	0.2	1	Immobile (0.2)	0.013 U
Pesticides				
4,4'-DDD	3	13	Immobile (3)	0.00088 U
4,4'-DDE	2	9	Immobile (12)	0.0014 U
4,4'-DDT	2	8	Immobile (7)	0.0035 J p
Aldrin	0.04	0.2	Immobile (0.1)	0.0016 U
alpha-BHC	0.1	1	0.002	0.0014 U
beta-BHC	0.4	2	0.002	0.001 U
Chlordane	0.2	1	Immobile (0.03)	0.016 U
delta-BHC	NL	NL	NL	0.0011 U
Dieldrin	0.04	0.2	0.003	0.0014 U
Endosulfan I	470	6,800	2.3	0.0015 U
Endosulfan II	470	6,800	2.3	0.0011 U
Endosulfan Sulfate	470	6,800	1	0.00094 U
Endrin	23	340	0.6	0.001 U
Endrin Aldehyde	NL	NL	NL	0.0025 J
Endrin ketone	NL	NL	NL	0.0011 U
gamma-BHC(Lindane)	0.4	2	0.002	0.00085 U
Heptachlor	0.1	0.7	Immobile (0.3)	0.0011 U
Heptachlor Epoxide	0.07	0.3	Immobile (0.009)	0.0015 U
Methoxychlor	390	5,700	Immobile (100)	0.00082 U
Toxaphene	0.6	3	Immobile (0.2)	0.015 U

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

P = For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

Immobile = Not considered a threat to groundwater if certain conditions are met. Listed standard may be used if conditions not met.

TABLE 12D
SOIL ANALYTICAL RESULTS: AOC-L3
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			L3-1	
Lab Sample Number				460-22248-5	
Sampling Date				01/18/11	
Sampling Depth (feet)				3-3.5	
Saturated Zone?				No	
Units	Residential mg/kg	Non-Residential mg/kg	Impact to Ground Water Soil Screening Levels mg/kg	mg/kg	
Metals					
Aluminium	78,000	NL		2940	
Antimony	31	450	6	0.96	U
Arsenic	19	19	19	11.7	
Barium	16,000	59,000	1,300	58.3	
Beryllium	16	140	0.5	0.28	J
Cadmium	78	78	1	0.22	J
Calcium	NL	NL	NL	3920	
Chromium (Total)	120,000	NL	Site-Specific	20.0	
Cobalt	1,600	590	59	2.9	J
Copper	3,100	45,000	Immobile (7,300)	52.7	
Iron	NL	NL	NL	8870	
Lead	400	800	Immobile (59)	**» 78.9**	
Magnesium	NL	NL	NL	1070	J
Manganese	11,000	5,900		85.6	
Mercury	23	65	0.1	**» 0.21**	
Nickel	1,600	23,000	31	6.8	J
Potassium	NL	NL	NL	448	J
Selenium	390	5,700	7	1.0	U
Silver	390	5,700	1	0.17	U
Sodium	NL	NL	NL	66.8	U
Thallium	5	79	3	1.1	U
Vanadium	78	1,100	Immobile	10.3	J
Zinc	23,000	110,000	600	79.7	
Wet Chemistry					
Cyanide	1,600	23,000	13	0.12	U

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

Immobile = Not considered a threat to groundwater if certain conditions are met. Listed standard may be used if conditions not met.

* Listed standards are ingestion-dermal/inhalation/Allergic Contact Dermatitis The Allergic Contact Dermatitis standard is site-specific

TABLE 13A
SOIL ANALYTICAL RESULTS: AOC-N
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			N1-1	N2-1V
Lab Sample Number				460-22477-16	460-22477-18
Sampling Date				01/25/11	01/25/11
Sampling Depth (feet)	Residential	Non-Residential	Impact to Ground Water Soil Screening Levels	3.5-4	6.5-7
Saturated Zone?				No	No
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
VOLATILE COMPOUNDS					
1,1,1-Trichloroethane	290	4,200	0.2	0.0027	0.00016 U
1,1,2,2-Tetrachloroethane	1	3	0.005	0.00080 U	0.00063 U
1,1,2-Trichloroethane	2	6	0.01	0.00063 U	0.00049 U
1,1-Dichloroethane	8	24	0.2	0.0016	0.00021 U
1,1-Dichloroethene	11	150	0.005	0.00039 U	0.00031 U
1,2,3-Trichlorobenzene	NL	NL	NL	0.00068 U	0.00054 U
1,2,4-Trichlorobenzene	73	820	0.4	0.00056 U	0.00045 U
1,2-Dibromo-3-Chloropropane	0.08	0.2	0.005	0.00065 U	0.00051 U
1,2-Dibromoethane	0.008	0.04	0.005	0.00055 U	0.00043 U
1,2-Dichlorobenzene	5300	59000	11	0.00067 U	0.00053 U
1,2-Dichloroethane	0.9	3	0.005	0.00041 U	0.00032 U
1,2-Dichloropropane	0.9	3	0.005	0.00034 U	0.00026 U
1,3-Dichlorobenzene	5,300	59,000	12	0.00051 U	0.00040 U
1,4-Dichlorobenzene	5	13	1	0.00075 U	0.00059 U
1,4-Dioxane	NL	NL	ISGWQS	0.0044 U	0.0035 U
2-Butanone	3,100	44,000	0.6	0.0021 J	0.00047 U
2-Hexanone	NL	NL	NL	0.0018 U	0.0014 U
4-Methyl-2-pentanone	NL	NL	NL	0.00075 U	0.00060 U
Acetone	70,000	NL	12	0.023	0.0031 U
Benzene	2	4	0.005	0.00078 U	0.00062 U
Bromochloromethane	NL	NL	NL	0.00029 U	0.00023 U
Bromodichloromethane	1	3	0.005	0.00032 U	0.00025 U
Bromoform	81	280	0.02	0.00074 U	0.00058 U
Bromomethane	25	59	0.03	0.00043 U	0.00034 U
Carbon disulfide	7,800	110,000	4	0.00049 U	0.00039 U
Carbon tetrachloride	0.6	2	0.005	0.00011 U	0.000084 U
Chlorobenzene	510	7,400	0.4	0.00051 U	0.00040 U
Chloroethane	220	1,100	NL	0.00042 U	0.00033 U
Chloroform	0.6	2	0.2	0.00025 U	0.00020 U
Chloromethane	4	11	NL	0.00067 U	0.00053 U
cis-1,2-Dichloroethene	230	560	0.2	0.00025 U	0.00020 U
cis-1,3-Dichloropropene	2	7	0.005	0.00021 U	0.00017 U
Cyclohexane	NL	NL	NL	0.00023 U	0.00018 U
Dibromochloromethane	3	8	0.005	0.00059 U	0.00047 U
Dichlorodifluoromethane	490	230,000	25	0.00043 U	0.00034 U
Ethylbenzene	7,800	110,000	8	0.00020 U	0.00016 U
Freon TF	NL	NL	NL	0.00050 U	0.00040 U
Isopropylbenzene	NL	NL	NL	0.00027 U	0.00022 U
m&p-Xylene	12000*	170000*	12*	0.00049 U	0.00039 U
Methyl acetate	78,000	NL	14	0.00094 U	0.00075 U
Methylcyclohexane	NL	NL	NL	0.00029 U	0.00023 U
Methylene Chloride	34	97	0.007	0.00050 U	0.00039 U
MTBE	110	320	0.2	0.00036 U	0.00029 U
o-Xylene	12000*	170000*	12*	0.00036 U	0.00029 U
Styrene	90	260	2	0.00037 U	0.00029 U
Tetrachloroethene	2	5	0.005	0.00079 J	0.00027 U
Toluene	6,300	91,000	4	0.00036 J	0.00025 U
trans-1,2-Dichloroethene	300	720	0.4	0.00030 U	0.00024 U
trans-1,3-Dichloropropene	2	5	0.005	0.00023 U	0.00018 U
Trichloroethene	7	20	0.007	0.0011	0.00030 U
Trichlorofluoromethane	23,000	340,000	22	0.00027 U	0.00022 U
Vinyl chloride	0.7	2	0.005	0.00025 U	0.00019 U

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

SPLP = Synthetic Precipitation Leaching Procedure can be used to develop a site specific IGWSRS

* = Listed standard is for total xylenes

TABLE 13B
SOIL ANALYTICAL RESULTS: AOC-N
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			N1-1	N2-1
Lab Sample Number			Impact to Ground Water Soil Screening Levels	460-22477-16	460-22477-17
Sampling Date				01/25/11	01/25/11
Sampling Depth (feet)	Residential	Non-Residential		3.5-4	3.5-4
Saturated Zone?				No	No
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEMI-VOLATILE COMPOUNDS					
1,2,4,5-Tetrachlorobenzene				0.053 U	0.052 U
2,2'-oxybis[1-chloropropane]				0.052 U	0.051 U
2,3,4,6-Tetrachlorophenol				0.079 U	0.077 U
2,4,5-Trichlorophenol	6,100	68,000	44	0.076 U	0.074 U
2,4,6-Trichlorophenol	19	74	0.2	0.070 U	0.069 U
2,4-Dichlorophenol	180	2,100	0.2	0.063 U	0.062 U
2,4-Dimethylphenol	1,200	14,000	0.7	0.063 U	0.062 U
2,4-Dinitrophenol	120	1,400	0.3	0.083 U	0.082 U
2,4-Dinitrotoluene	0.7	3	0.2	0.011 U	0.011 U
2,6-Dinitrotoluene	0.7	3	0.2	0.010 U	0.0098 U
2-Chloronaphthalene	NL	NL	NL	0.056 U	0.055 U
2-Chlorophenol	310	2,200	0.5	0.053 U	0.052 U
2-Methylnaphthalene	230	2,400	5	0.057 U	0.056 U
2-Methylphenol	310	3,400	NL	0.057 U	0.056 U
2-Nitroaniline	39	23,000	NL	0.11 U	0.11 U
2-Nitrophenol	NL	NL	NL	0.065 U	0.064 U
3,3'-Dichlorobenzidine	1	4	0.2	0.087 U	0.085 U
3-Nitroaniline	NL	NL	NL	0.089 U	0.087 U
4,6-Dinitro-2-methylphenol	6	68	0.3	0.19 U	0.18 U
4-Bromophenyl-phenylether	NL	NL	NL	0.070 U	0.069 U
4-Chloro-3-methylphenol	NL	NL	NL	0.066 U	0.065 U
4-Chloroaniline	9	66	NL	0.049 U	0.049 U
4-Chlorophenyl-phenylether	NL	NL	NL	0.068 U	0.066 U
4-Methylphenol	31	340	NL	0.064 U	0.063 U
4-Nitroaniline	NL	NL	NL	0.081 U	0.080 U
4-Nitrophenol	NL	NL	NL	0.10 U	0.099 U
Acenaphthene	3,400	37,000	74.0	0.056 U	0.055 U
Acenaphthylene	NL	300,000	NL	0.056 U	0.055 U
Acetophenone				0.058 U	0.057 U
Anthracene	17,000	30,000	1,500	0.069 U	0.068 U
Atrazine				0.073 U	0.072 U
Benzaldehyde				0.025 U	0.024 U
Benzo(a)anthracene	0.6	2	Immobile (0.5)	0.0073 U	0.0071 U
Benzo(a)pyrene	0.2	0.2	Immobile (0.2)	0.0048 U	0.0048 U
Benzo(b)fluoranthene	0.6	2	Immobile (2)	0.0059 U	0.0057 U
Benzo(g,h,i)perylene	380,000	30,000	Immobile	0.042 U	0.041 U
Benzo(k)fluoranthene	6	23	Immobile (16)	0.0055 U	0.0054 U
bis(2-Chloroethoxy)methane	NL	NL	NL	0.056 U	0.055 U
bis(2-Chloroethyl)ether	0.4	2	0.2	0.0082 U	0.008 U
bis(2-Ethylhexyl)phthalate	35	140	Immobile (790)	0.052 U	0.051 U
Butylbenzylphthalate	1,200	14,000	Immobile (150)	0.046 U	0.045 U
Caprolactam				0.054 U	0.053 U
Carbazole	24	96	NL	0.063 U	0.061 U
Chrysene	62	230	Immobile (52)	0.057 U	0.056 U
Dibenz(a,h)anthracene	0.2	0.2	Immobile (0.5)	0.0047 U	0.0046 U
Dibenzofuran	NL	NL	NL	0.059 U	0.058 U
Diethylphthalate	49,000	550,000	57	0.053 U	0.052 U
Dimethylphthalate	NL	NL	NL	0.053 U	0.052 U
Di-n-butylphthalate	6,100	68,000	Immobile (620)	0.060 U	0.059 U
Di-n-octylphthalate	2,400	27,000	Immobile (3,300)	0.047 U	0.046 U
Diphenyl				0.065 U	0.064 U
Fluoranthene	2,300	24,000	Immobile (840)	0.065 U	0.064 U
Fluorene	2,300	24,000	110	0.067 U	0.065 U
Hexachlorobenzene	0.3	1	Immobile (0.2)	0.0055 U	0.0054 U
Hexachlorobutadiene	6	25	Immobile (0.6)	0.016 U	0.016 U
Hexachlorocyclopentadiene	45	110	Immobile (210)	0.12 U	0.11 U
Hexachloroethane	35	140	0.2	0.0066 U	0.0065 U
Indeno(1,2,3-cd)pyrene	0.6	2	Immobile (5)	0.0063 U	0.0062 U
Isophorone	510	2,000	0.2	0.045 U	0.044 U
Naphthalene	6	17	16	0.058 U	0.057 U
Nitrobenzene	31	340	0.2	0.0088 U	0.0086 U
N-Nitroso-di-n-propylamine	0.2	0.3	0.2	0.0052 U	0.0051 U
N-Nitrosodiphenylamine	99	390	0.2	0.064 U	0.063 U
Pentachlorophenol	3	10	0.3	0.19 U	0.19 U
Phenanthrene	NL	300,000	NL	0.069 U	0.067 U
Phenol	18,000	210,000	5	0.048 U	0.047 U
Pyrene	1,700	18,000	Immobile (550)	0.068 U	0.067 U

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

Immobile = Not considered a threat to groundwater if certain conditions are met. Listed standard may be used if conditions not met.

* Values listed reflects combined standard for 2,4/2,6-Dinitrotoluene mixture

TABLE 13C
SOIL ANALYTICAL RESULTS: AOC-N
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			N1-1
Lab Sample Number				460-22477-16
Sampling Date				01/25/11
Sampling Depth (feet)	Residential	Non-Residential	Impact to Ground Water Soil Screening Levels	3.5-4
Saturated Zone?				No
Units	mg/kg	mg/kg	mg/kg	mg/kg
PCBs				
Aroclor-1016	0.2	1	Immobile (0.2)	0.015 U
Aroclor-1221	0.2	1	Immobile (0.2)	0.024 U
Aroclor-1232	0.2	1	Immobile (0.2)	0.045 U
Aroclor-1242	0.2	1	Immobile (0.2)	0.015 U
Aroclor-1248	0.2	1	Immobile (0.2)	0.021 U
Aroclor-1254	0.2	1	Immobile (0.2)	0.027 U
Aroclor-1260	0.2	1	Immobile (0.2)	0.0089 U
Aroclor-1262	0.2	1	Immobile (0.2)	0.014 U
Aroclor-1268	0.2	1	Immobile (0.2)	0.014 U
Pesticides				
4,4'-DDD	3	13	Immobile (3)	0.00095 U
4,4'-DDE	2	9	Immobile (12)	0.0015 U
4,4'-DDT	2	8	Immobile (7)	0.001 U
Aldrin	0.04	0.2	Immobile (0.1)	0.0017 U
alpha-BHC	0.1	1	0.002	0.0015 U
beta-BHC	0.4	2	0.002	0.0011 U
Chlordane	0.2	1	Immobile (0.03)	0.017 U
delta-BHC	NL	NL	NL	0.0012 U
Dieldrin	0.04	0.2	0.003	0.0015 U
Endosulfan I	470	6,800	2.3	0.0017 U
Endosulfan II	470	6,800	2.3	0.012 p
Endosulfan Sulfate	470	6,800	1	0.001 U
Endrin	23	340	0.6	0.0011 U
Endrin Aldehyde	NL	NL	NL	0.002 U
Endrin ketone	NL	NL	NL	0.0012 U
gamma-BHC(Lindane)	0.4	2	0.002	0.00093 U
Heptachlor	0.1	0.7	Immobile (0.3)	0.0011 U
Heptachlor Epoxide	0.07	0.3	Immobile (0.009)	0.0016 U
Methoxychlor	390	5,700	Immobile (100)	0.00089 U
Toxaphene	0.6	3	Immobile (0.2)	0.017 U

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

P = For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

Immobile = Not considered a threat to groundwater if certain conditions are met. Listed standard may be used if conditions not met.

TABLE 13D
SOIL ANALYTICAL RESULTS: AOC-N
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			N1-1	
Lab Sample Number				460-22477-16	
Sampling Date				01/25/11	
Sampling Depth (feet)	Residential	Non-Residential	Impact to Ground Water Soil Screening Levels	3.5-4	
Saturated Zone?				No	
Units	mg/kg	mg/kg	mg/kg	mg/kg	
Metals					
Aluminium	78,000	NL		8160	
Antimony	31	450	6	1.0	U
Arsenic	19	19	19	6.1	
Barium	16,000	59,000	1,300	19.8	J
Beryllium	16	140	0.5	0.41	J
Cadmium	78	78	1	0.18	U
Calcium	NL	NL	NL	588	J
Chromium (Total)	120,000	NL	Site-Specific	15.4	
Cobalt	1,600	590	59	8.7	J
Copper	3,100	45,000	Immobile (7,300)	6.8	
Iron	NL	NL	NL	19500	
Lead	400	800	Immobile (59)	7.7	
Magnesium	NL	NL	NL	1420	
Manganese	11,000	5,900		191	
Mercury	23	65	0.1	0.031	U
Nickel	1,600	23,000	31	9.6	
Potassium	NL	NL	NL	1160	
Selenium	390	5,700	7	1.1	U
Silver	390	5,700	1	0.17	U
Sodium	NL	NL	NL	70.3	U
Thallium	5	79	3	1.1	U
Vanadium	78	1,100	Immobile	20.7	
Zinc	23,000	110,000	600	30.4	
Wet Chemistry					
Cyanide	1,600	23,000	13	0.13	U

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

Immobile = Not considered a threat to groundwater if certain conditions are met. Listed standard may be used if conditions not met.

* Listed standards are ingestion-dermal/inhalation/Allergic Contact Dermatitis
The Allergic Contact Dermatitis standard is site-specific

TABLE 14A
SOIL ANALYTICAL RESULTS: AOC-O
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			O1-1A	O1-1B	O2-1	O3-1V
Lab Sample Number				460-22477-19	460-22477-20	460-22477-21	460-22477-23
Sampling Date				01/25/11	01/25/11	01/25/11	01/25/11
Sampling Depth (feet)	Residential	Non-Residential	Impact to Ground Water Soil Screening Levels	3.5-4	4-4.5	2-2.5	3.5-4
Saturated Zone?				No	No	No	No
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
VOLATILE COMPOUNDS							
1,1,1-Trichloroethane	290	4,200	0.2	0.00022 U	0.013 U	0.00018 U	0.0016
1,1,2,2-Tetrachloroethane	1	3	0.005	0.00088 U	0.0045 U	0.00074 U	0.00074 U
1,1,2-Trichloroethane	2	6	0.01	0.00069 U	0.0051 U	0.00058 U	0.00058 U
1,1-Dichloroethane	8	24	0.2	0.005	0.0053 U	0.0048	0.00025 U
1,1-Dichloroethene	11	150	0.005	0.00043 U	0.0074 U	0.00036 U	0.00036 U
1,2,3-Trichlorobenzene	NL	NL	NL	0.00075 U	0.044 U	0.00063 U	0.00063 U
1,2,4-Trichlorobenzene	73	820	0.4	0.00062 U	0.023 U	0.00052 U	0.00052 U
1,2-Dibromo-3-Chloropropan	0.08	0.2	0.005	0.00071 U	0.0081 U	0.00060 U	0.00060 U
1,2-Dibromoethane	0.008	0.04	0.005	0.00060 U	0.0048 U	0.00051 U	0.00051 U
1,2-Dichlorobenzene	5300	59000	11	0.00074 U	0.0086 U	0.00062 U	0.00062 U
1,2-Dichloroethane	0.9	3	0.005	0.00045 U	0.013 U	0.00038 U	0.00038 U
1,2-Dichloropropane	0.9	3	0.005	0.00037 U	0.0046 U	0.00031 U	0.00031 U
1,3-Dichlorobenzene	5,300	59,000	12	0.00056 U	0.012 U	0.00047 U	0.00047 U
1,4-Dichlorobenzene	5	13	1	0.00082 U	0.0079 U	0.00069 U	0.00070 U
1,4-Dioxane	NL	NL	ISGWQS	0.0048 U	0.45 U	0.004 U	0.0041 U
2-Butanone	3,100	44,000	0.6	0.00066 U	0.043 U	0.00055 U	0.00056 U
2-Hexanone	NL	NL	NL	0.0019 U	0.029 U	0.0016 U	0.0016 U
4-Methyl-2-pentanone	NL	NL	NL	0.00083 U	0.036 U	0.00070 U	0.00070 U
Acetone	70,000	NL	12	0.0043 U	0.13 U	0.0036 U	0.0086 J
Benzene	2	4	0.005	0.00086 U	0.0062 U	0.00072 U	0.00072 U
Bromochloromethane	NL	NL	NL	0.00031 U	0.0091 U	0.00026 U	0.00027 U
Bromodichloromethane	1	3	0.005	0.00035 U	0.0047 U	0.00030 U	0.00030 U
Bromoform	81	280	0.02	0.00081 U	0.0052 U	0.00068 U	0.00069 U
Bromomethane	25	59	0.03	0.00047 U	0.016 U	0.00040 U	0.00040 U
Carbon disulfide	7,800	110,000	4	0.00054 U	0.0077 U	0.00045 U	0.00045 U
Carbon tetrachloride	0.6	2	0.005	0.00012 U	0.0095 U	0.000098 U	0.000099 U
Chlorobenzene	510	7,400	0.4	0.00056 U	0.0087 U	0.00047 U	0.00047 U
Chloroethane	220	1,100	NL	0.00046 U	0.023 U	0.00039 U	0.00039 U
Chloroform	0.6	2	0.2	0.00027 U	0.0081 U	0.00023 U	0.00023 U
Chloromethane	4	11	NL	0.00074 U	0.011 U	0.00062 U	0.00062 U
cis-1,2-Dichloroethene	230	560	0.2	0.00088 J	0.010 U	0.00023 U	0.00023 U
cis-1,3-Dichloropropene	2	7	0.005	0.00023 U	0.0054 U	0.00020 U	0.00020 U
Cyclohexane	NL	NL	NL	0.00026 U	0.0065 U	0.00022 U	0.00022 U
Dibromochloromethane	3	8	0.005	0.00065 U	0.0053 U	0.00055 U	0.00055 U
Dichlorodifluoromethane	490	230,000	25	0.00047 U	0.015 U	0.00040 U	0.00040 U
Ethylbenzene	7,800	110,000	8	0.00022 U	0.013 U	0.00019 U	0.00019 U
Freon TF	NL	NL	NL	0.00055 U	0.015 U	0.00046 U	0.00047 U
Isopropylbenzene	NL	NL	NL	0.00030 U	0.011 U	0.00025 U	0.00025 U
m&p-Xylene	12000*	170000*	12*	0.00054 U	0.022 J	0.00045 U	0.00045 U
Methyl acetate	78,000	NL	14	0.001 U	0.017 U	0.00087 U	0.00088 U
Methylcyclohexane	NL	NL	NL	0.037	0.0042 U	0.021	0.00027 U
Methylene Chloride	34	97	0.007	0.00055 U	0.010 U	0.00046 U	0.00046 U
MTBE	110	320	0.2	0.00040 U	0.0097 U	0.00034 U	0.00034 U
o-Xylene	12000*	170000*	12*	0.00040 U	0.0081 U	0.00034 U	0.00034 U
Styrene	90	260	2	0.00040 U	0.0073 U	0.00034 U	0.00034 U
Tetrachloroethene	2	5	0.005	0.00099 J	0.010 U	0.00076 J	0.00032 U
Toluene	6,300	91,000	4	0.00061 J	0.005 U	0.00029 U	0.00029 U
trans-1,2-Dichloroethene	300	720	0.4	0.00033 U	0.0072 U	0.00028 U	0.00028 U
trans-1,3-Dichloropropene	2	5	0.005	0.00026 U	0.0064 U	0.00022 U	0.00022 U
Trichloroethene	7	20	0.007	**» 0.011**	0.0093 U	0.00084 J	0.00036 U
Trichlorofluoromethane	23,000	340,000	22	0.00030 U	0.0082 U	0.00025 U	0.00025 U
Vinyl chloride	0.7	2	0.005	0.00027 U	0.0063 U	0.00023 U	0.00023 U

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

SPLP = Synthetic Precipitation Leaching Procedure can be used to develop a site specific IGWSRS

* = Listed standard is for total xylenes

TABLE 14B
SOIL ANALYTICAL RESULTS: AOC-O
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			O1-1A	O2-1
Lab Sample Number			Impact to Ground Water Soil Screening Levels	460-22477-19	460-22477-21
Sampling Date				01/25/11	01/25/11
Sampling Depth (feet)	Residential	Non-Residential		3.5-4	2-2.5
Saturated Zone?				No	No
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
SEMI-VOLATILE COMPOUNDS					
1,2,4,5-Tetrachlorobenzene				0.051 U	0.055 U
2,2'-oxybis[1-chloropropane]				0.050 U	0.053 U
2,3,4,6-Tetrachlorophenol				0.076 U	0.082 U
2,4,5-Trichlorophenol	6,100	68,000	44	0.073 U	0.078 U
2,4,6-Trichlorophenol	19	74	0.2	0.068 U	0.073 U
2,4-Dichlorophenol	180	2,100	0.2	0.061 U	0.065 U
2,4-Dimethylphenol	1,200	14,000	0.7	0.061 U	0.065 U
2,4-Dinitrophenol	120	1,400	0.3	0.080 U	0.086 U
2,4-Dinitrotoluene	0.7	3	0.2	0.011 U	0.012 U
2,6-Dinitrotoluene	0.7	3	0.2	0.0096 U	0.010 U
2-Chloronaphthalene	NL	NL	NL	0.053 U	0.057 U
2-Chlorophenol	310	2,200	0.5	0.051 U	0.054 U
2-Methylnaphthalene	230	2,400	5	0.055 U	0.059 U
2-Methylphenol	310	3,400	NL	0.054 U	0.059 U
2-Nitroaniline	39	23,000	NL	0.10 U	0.11 U
2-Nitrophenol	NL	NL	NL	0.062 U	0.067 U
3,3'-Dichlorobenzidine	1	4	0.2	0.084 U	0.090 U
3-Nitroaniline	NL	NL	NL	0.086 U	0.092 U
4,6-Dinitro-2-methylphenol	6	68	0.3	0.18 U	0.19 U
4-Bromophenyl-phenylether	NL	NL	NL	0.067 U	0.073 U
4-Chloro-3-methylphenol	NL	NL	NL	0.063 U	0.068 U
4-Chloroaniline	9	66	NL	0.048 U	0.051 U
4-Chlorophenyl-phenylether	NL	NL	NL	0.065 U	0.070 U
4-Methylphenol	31	340	NL	0.062 U	0.067 U
4-Nitroaniline	NL	NL	NL	0.078 U	0.084 U
4-Nitrophenol	NL	NL	NL	0.097 U	0.10 U
Acenaphthene	3,400	37,000	74.0	0.054 U	0.058 U
Acenaphthylene	NL	300,000	NL	0.054 U	0.058 U
Acetophenone				0.056 U	0.060 U
Anthracene	17,000	30,000	1,500	0.067 U	0.072 U
Atrazine				0.071 U	0.076 U
Benzaldehyde				0.024 U	0.025 U
Benzo(a)anthracene	0.6	2	Immobile (0.5)	0.007 U	0.0075 U
Benzo(a)pyrene	0.2	0.2	Immobile (0.2)	0.0047 U	0.005 U
Benzo(b)fluoranthene	0.6	2	Immobile (2)	0.0056 U	0.0061 U
Benzo(g,h,i)perylene	380,000	30,000	Immobile	0.040 U	0.043 U
Benzo(k)fluoranthene	6	23	Immobile (16)	0.0053 U	0.0057 U
bis(2-Chloroethoxy)methane	NL	NL	NL	0.054 U	0.058 U
bis(2-Chloroethyl)ether	0.4	2	0.2	0.0079 U	0.0085 U
bis(2-Ethylhexyl)phthalate	35	140	Immobile (790)	0.050 U	0.054 U
Butylbenzylphthalate	1,200	14,000	Immobile (150)	0.044 U	0.048 U
Caprolactam				0.052 U	0.056 U
Carbazole	24	96	NL	0.060 U	0.065 U
Chrysene	62	230	Immobile (52)	0.055 U	0.059 U
Dibenz(a,h)anthracene	0.2	0.2	Immobile (0.5)	0.0046 U	0.0049 U
Dibenzofuran	NL	NL	NL	0.057 U	0.061 U
Diethylphthalate	49,000	550,000	57	0.051 U	0.055 U
Dimethylphthalate	NL	NL	NL	0.051 U	0.055 U
Di-n-butylphthalate	6,100	68,000	Immobile (620)	0.058 U	0.062 U
Di-n-octylphthalate	2,400	27,000	Immobile (3,300)	0.045 U	0.048 U
Diphenyl				0.062 U	0.067 U
Fluoranthene	2,300	24,000	Immobile (840)	0.063 U	0.068 U
Fluorene	2,300	24,000	110	0.064 U	0.069 U
Hexachlorobenzene	0.3	1	Immobile (0.2)	0.0053 U	0.0057 U
Hexachlorobutadiene	6	25	Immobile (0.6)	0.015 U	0.016 U
Hexachlorocyclopentadiene	45	110	Immobile (210)	0.11 U	0.12 U
Hexachloroethane	35	140	0.2	0.0064 U	0.0069 U
Indeno(1,2,3-cd)pyrene	0.6	2	Immobile (5)	0.0061 U	0.0065 U
Isophorone	510	2,000	0.2	0.043 U	0.047 U
Naphthalene	6	17	16	0.055 U	0.060 U
Nitrobenzene	31	340	0.2	0.0085 U	0.0091 U
N-Nitroso-di-n-propylamine	0.2	0.3	0.2	0.005 U	0.0054 U
N-Nitrosodiphenylamine	99	390	0.2	0.062 U	0.066 U
Pentachlorophenol	3	10	0.3	0.19 U	0.20 U
Phenanthrene	NL	300,000	NL	0.066 U	0.071 U
Phenol	18,000	210,000	5	0.046 U	0.050 U
Pyrene	1,700	18,000	Immobile (550)	0.065 U	0.070 U

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

Immobile = Not considered a threat to groundwater if certain conditions are met. Listed standard may be used if conditions not met.

* Values listed reflects combined standard for 2,4/2,6-Dinitrotoluene mixture.

TABLE 14C
SOIL ANALYTICAL RESULTS: AOC-N
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			O1-1A	O2-1
Lab Sample Number			Impact to	460-22477-19	460-22477-21
Sampling Date			Ground Water	01/25/11	01/25/11
Sampling Depth (feet)	Residential	Non-Residential	Soil Screening	3.5-4	2-2.5
Saturated Zone?			Levels	No	No
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
PCBs					
Aroclor-1016	0.2	1	Immobile (0.2)	0.015 U	0.016 U
Aroclor-1221	0.2	1	Immobile (0.2)	0.023 U	0.025 U
Aroclor-1232	0.2	1	Immobile (0.2)	0.044 U	0.047 U
Aroclor-1242	0.2	1	Immobile (0.2)	0.015 U	0.016 U
Aroclor-1248	0.2	1	Immobile (0.2)	0.020 U	0.022 U
Aroclor-1254	0.2	1	Immobile (0.2)	0.026 U	0.028 U
Aroclor-1260	0.2	1	Immobile (0.2)	0.0086 U	0.0092 U
Aroclor-1262	0.2	1	Immobile (0.2)	0.013 U	0.014 U
Aroclor-1268	0.2	1	Immobile (0.2)	0.013 U	0.014 U
Pesticides					
4,4'-DDD	3	13	Immobile (3)	0.00092 U	0.00098 U
4,4'-DDE	2	9	Immobile (12)	0.0015 U	0.0016 U
4,4'-DDT	2	8	Immobile (7)	0.00096 U	0.001 U
Aldrin	0.04	0.2	Immobile (0.1)	0.0017 U	0.0018 U
alpha-BHC	0.1	1	0.002	0.0014 U	0.0015 U
beta-BHC	0.4	2	0.002	0.001 U	0.0011 U
Chlordane	0.2	1	Immobile (0.03)	0.017 U	0.018 U
delta-BHC	NL	NL	NL	0.0012 U	0.0013 U
Dieldrin	0.04	0.2	0.003	0.0015 U	0.0016 U
Endosulfan I	470	6,800	2.3	0.0016 U	0.0017 U
Endosulfan II	470	6,800	2.3	0.0012 U	0.0096
Endosulfan Sulfate	470	6,800	1	0.00099 U	0.0011 U
Endrin	23	340	0.6	0.0011 U	0.0012 U
Endrin Aldehyde	NL	NL	NL	0.0019 U	0.0021 U
Endrin ketone	NL	NL	NL	0.0011 U	0.0012 U
gamma-BHC(Lindane)	0.4	2	0.002	0.00089 U	0.00096 U
Heptachlor	0.1	0.7	Immobile (0.3)	0.0011 U	0.0012 U
Heptachlor Epoxide	0.07	0.3	Immobile (0.009)	0.0015 U	0.0017 U
Methoxychlor	390	5,700	Immobile (100)	0.00086 U	0.00092 U
Toxaphene	0.6	3	Immobile (0.2)	0.016 U	0.017 U

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

P = For dual column analysis, the percent difference between the quantitated concentrations on the two columns is greater than 40%

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

Immobile = Not considered a threat to groundwater if certain conditions are met. Listed standard may be used if conditions not met.

TABLE 14D
SOIL ANALYTICAL RESULTS: AOC-O
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			O1-1A	O2-1
Lab Sample Number			Impact to	460-22477-19	460-22477-21
Sampling Date			Ground Water	01/25/11	01/25/11
Sampling Depth (feet)	Residential	Non-Residential	Soil Screening	3.5-4	2-2.5
Saturated Zone?			Levels	No	No
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Metals					
Aluminium	78,000	NL		3800	10100
Antimony	31	450	6	0.95 U	1.0 U
Arsenic	19	19	19	6.1	7.8
Barium	16,000	59,000	1,300	6.2 J	33.2 J
Beryllium	16	140	0.5	0.39 J	0.46
Cadmium	78	78	1	0.17 U	0.18 U
Calcium	NL	NL	NL	184 J	902 J
Chromium (Total)	120,000	NL	Site-Specific	24.5	22.4
Cobalt	1,600	590	59	2.6 J	4.0 J
Copper	3,100	45,000	Immobile (7,300)	4.5 J	6.5
Iron	NL	NL	NL	13400	23700
Lead	400	800	Immobile (59)	4.2	11.6
Magnesium	NL	NL	NL	1010 J	1740
Manganese	11,000	5,900		41.4	65.2
Mercury	23	65	0.1	0.028 U	0.029 U
Nickel	1,600	23,000	31	5.3 J	10.8
Potassium	NL	NL	NL	1410	1480
Selenium	390	5,700	7	1.0 U	1.1 U
Silver	390	5,700	1	0.16 U	0.17 U
Sodium	NL	NL	NL	66.4 U	70.2 U
Thallium	5	79	3	1.0 U	1.1 U
Vanadium	78	1,100	Immobile	14.2	26.3
Zinc	23,000	110,000	600	30.9	55.7
Wet Chemistry					
Cyanide	1,600	23,000	13	1.4	0.14 U

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

Immobile = Not considered a threat to groundwater if certain conditions are met. Listed standard may be used if conditions not met

* Listed standards are ingestion-dermal/inhalation/Allergic Contact Dermatitis The Allergic Contact Dermatitis standard is site-specific

TABLE 14E
SOIL ANALYTICAL RESULTS: AOC-O
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

COMPOSITION-SPECIFIC EXTRACTABLE PETROLEUM HYDROCARBON (EPH) SOIL REMEDIATION CRITERION (SRC) CALCULATOR
(Version 1.0, November 6, 2009)

DATA ENTRY CELLS

ENTER ALL CONCENTRATIONS AS MILLIGRAMS/KILOGRAM (mg/kg)
FOR NON DETECT VALUES, ENTER "0" or "ND" (without the quotation marks)
REMEMBER TO ENTER ACTUAL SAMPLE IDENTIFICATION IN PLACE OF "SAMPLE 1", ETC.
REMEMBER TO INDICATE WHETHER THE SAMPLE IS "RESIDENTIAL" (R) OR "NON-RESIDENTIAL" (N) [OR USE DROP-DOWN LIST]
REMEMBER TO INDICATE WHETHER THE SAMPLE IS "#2 FUEL OIL/DIESEL" (#2 F) OR "OTHER" (O) [OR USE DROP-DOWN LIST]
ALL DATA MUST BE ENTERED FOR EACH SAMPLE FOR THE EPH CRITERION TO BE CALCULATED
CLICK ON THE "CALCULATE EPH SRC" BUTTON TO CALCULATE THE SAMPLE-SPECIFIC EPH SOIL REMEDIATION CRITERION
IF YOU CHANGE ANY INPUT DATA, YOU MUST CLICK ON "CALCULATE EPH SRC" AGAIN TO RECALCULATE THE SOIL REMEDIATION CRITERION

EC* RANGE / SAMPLE ID		O1-1A	O2-1			
Enter Residential or Non-Residential		Residential	Residential	Residential	Non-Residential	Non-Residential
Enter "#2 Fuel Oil/Diesel" or "Other"		Other	Other	Other	Other	Other
ALIPHATICS	EC9-EC12	0.0	0.0			
	EC12-EC16	0.0	0.0			
	EC16-EC21	150.0	96.0			
	EC21-EC40	1,700.0	1,300.0			
AROMATICS	EC10-EC12	0.0	0.0			
	EC12-EC16	0.0	0.0			
	EC16-EC21	130.0	74.0			
	EC21-EC36	630.0	430.0			
Total Concentration (mg/kg)		2,610.0	1,900.0			

Calculated EPH SRC# (mg/kg)	5,700	6,200			
Allowable% EPH SRC (mg/kg)	5,700	6,200			
ABOVE/BELOW ALLOWABLE EPH SRC (i.e., PASS or FAIL)	BELOW (PASS)	BELOW (PASS)			

* = Equivalent Carbon
\# = Soil Remediation Criterion
% = Accounts for residual product
5,100^ = Default value for residential #2 Fuel Oil/Diesel
8,000^ = Default maximum value for #2 Fuel Oil/Diesel
17,000^ = Default maximum value for all other petroleum hydrocarbon mixtures

Calculate EPH SRC | Print Results | Reset Data | Instructions

Run Date = 05/05/2011

TABLE 15
SOIL ANALYTICAL RESULTS: AOC-P
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			P-1	P-2	P-4	P-5	T-5B	T-8B
Lab Sample Number				460-22270-1	460-22270-2	460-22335-12	460-22477-24	460-24232	460-24232
Sampling Date				01/19/11	01/19/11	01/20/11	01/25/11	03/17/11	03/17/11
Sampling Depth (feet)	Residential	Non-Residential	Impact to Ground Water Soil Screening Levels	1.5-2	1.5-2	1-1.5	2-2.5	2.5-3	1.5-2
Saturated Zone?				No	No	No	No	No	No
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
PAHs									
2-Methylnaphthalene				0.054 U	0.054 U	NA	NA	NA	NA
Acenaphthene	3,400	37,000	74.0	0.053 U	0.053 U	0.056 U	0.056 U	0.051 U	NA
Acenaphthylene	NL	300,000	NL	0.053 U	0.053 U	0.056 U	0.056 U	0.051 U	NA
Anthracene	17,000	30,000	1,500	0.065 U	0.065 U	0.069 U	0.14 J	0.063 U	NA
Benzo(a)anthracene	0.6	2	Immobile (0.5)	0.0068 U	0.0068 U	0.039	**» 0.51**	0.0066 U	NA
Benzo(a)pyrene	0.2	0.2	Immobile (0.2)	0.0045 U	0.0045 U	0.0048 U	**» 0.65**	0.0044 U	NA
Benzo(b)fluoranthene	0.6	2	Immobile (2)	0.0055 U	0.0055 U	0.040	**0.87**	0.0053 U	NA
Benzo(g,h,i)perylene	380,000	30,000	Immobile	0.053 J	0.039 U	0.041 U	0.93	0.038 U	NA
Benzo(k)fluoranthene	6	23	Immobile (16)	0.0052 U	0.0052 U	0.0055 U	0.32	0.005 U	NA
Chrysene	62	230	Immobile (52)	0.054 U	0.054 U	0.057 U	0.68	0.052 U	NA
Dibenz(a,h)anthracene	0.2	0.2	Immobile (0.5)	0.0044 U	0.0044 U	0.0047 U	0.15	0.0043 U	NA
Fluoranthene	2,300	24,000	Immobile (840)	0.061 U	0.061 U	0.065 U	0.97	0.060 U	NA
Fluorene	2,300	24,000	110	0.062 U	0.063 U	0.066 U	0.066 U	0.061 U	NA
Indeno(1,2,3-cd)pyrene	0.6	2	Immobile (5)	0.0059 U	0.0059 U	0.0063 U	**0.92**	0.0057 U	NA
Naphthalene	6	17	16	0.054 U	0.054 U	0.057 U	0.065 J	0.052 U	NA
Phenanthrene	NL	300,000	NL	0.064 U	0.064 U	0.068 U	0.55	0.062 U	NA
Pyrene	1,700	18,000	Immobile (550)	0.064 U	0.064 U	0.068 U	0.68	0.062 U	NA
Metals									
Aluminium	78,000	NL		2350	1210	2640	5510	NA	5180
Antimony	31	450	6	0.97 U	0.98 U	3.7	6.6	NA	**» 7.4**
Arsenic	19	19	19	13.4	6.9	**33.4**	**34.4**	NA	5.1
Barium	16,000	59,000	1,300	77.1	75.6	361	115	NA	51.7
Beryllium	16	140	0.5	0.35 J	0.29 J	0.48	**» 0.87**	NA	0.28 J
Cadmium	78	78	1	0.17 U	0.17 U	**» 3.0**	1.0 J	NA	0.41 J
Calcium	NL	NL	NL	3160	410 J	2180	10500	NA	20700
Chromium (Total)	120,000	NL	Site-Specific	6.2	7.3	24.5	28.6	NA	29.6
Cobalt	1,600	590	59	7.1 J	2.9 J	7.4 J	12.2	NA	5.6 J
Copper	3,100	45,000	Immobile (7,300)	21.0	17.6	85.0	121	NA	27.9
Iron	NL	NL	NL	27100	12400	24200	104000	NA	15000
Lead	400	800	Immobile (59)	25.2	7.4	**550**	**» 200**	NA	**» 62.2**
Magnesium	NL	NL	NL	668 J	85.5 J	215 J	2180	NA	8950
Manganese	11,000	5,900		33.8	11.7	83.5	539	NA	266
Mercury	23	65	0.1	0.051	0.028 U	0.25	**» 0.35**	NA	0.068
Nickel	1,600	23,000	31	16.0	7.4 J	15.0	**» 64.6**	NA	19.0
Potassium	NL	NL	NL	689 J	337 J	383 J	822 J	NA	1130
Selenium	390	5,700	7	1.0 U	1.0 U	2.6	1.1 U	NA	0.90 U
Silver	390	5,700	1	0.17 U	0.17 U	0.18 U	0.18 U	NA	0.15 U
Sodium	NL	NL	NL	103 J	68.6 U	77.8 J	71.9 U	NA	147 J
Thallium	5	79	3	1.1 U	1.1 U	1.1 J	1.1 J	NA	0.93 U
Vanadium	78	1,100	Immobile	15.9	11.3	15.7	16.5	NA	28.2
Zinc	23,000	110,000	600	12.8	7.2	378	214	NA	99.9

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

» = Concentration exceeds Impact to Groundwater Soil Screening Level

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

NA = Not Analyzed

NL = Soil Remediation Standard Not Listed

Saturated zone samples not compared to IGWSSL

Immobile = Not considered a threat to groundwater if certain conditions are met. Listed standard may be used if conditions not met.

* Listed standards are ingestion-dermal/inhalation/Allergic Contact Dermatitis
The Allergic Contact Dermatitis standard is site-specific

TABLE 15
SOIL ANALYTICAL RESULTS: AOC-P
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID	New Jersey Soil Remediation Standards			T-8C	E2-1B	S-4B
Lab Sample Number				460-24232	460-24232	460-24232
Sampling Date				03/17/11	03/17/11	03/17/11
Sampling Depth (feet)	Residential	Non-Residential	Impact to Ground Water Soil Screening Levels	4.5-5	6-6.5	4-4.5
Saturated Zone?				No	No	No
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
PAHs						
2-Methylnaphthalene				NA	NA	NA
Acenaphthene	3,400	37,000	74.0	NA	NA	0.054 U
Acenaphthylene	NL	300,000	NL	NA	NA	0.055 U
Anthracene	17,000	30,000	1,500	NA	NA	0.068 U
Benzo(a)anthracene	0.6	2	Immobile (0.5)	NA	NA	0.0071 U
Benzo(a)pyrene	0.2	0.2	Immobile (0.2)	NA	NA	0.0047 U
Benzo(b)fluoranthene	0.6	2	Immobile (2)	NA	NA	0.0057 U
Benzo(g,h,i)perylene	380,000	30,000	Immobile	NA	NA	0.040 U
Benzo(k)fluoranthene	6	23	Immobile (16)	NA	NA	0.0054 U
Chrysene	62	230	Immobile (52)	NA	NA	0.056 U
Dibenz(a,h)anthracene	0.2	0.2	Immobile (0.5)	NA	NA	0.0046 U
Fluoranthene	2,300	24,000	Immobile (840)	NA	NA	0.064 U
Fluorene	2,300	24,000	110	NA	NA	0.065 U
Indeno(1,2,3-cd)pyrene	0.6	2	Immobile (5)	NA	NA	0.0061 U
Naphthalene	6	17	16	NA	NA	0.056 U
Phenanthrene	NL	300,000	NL	NA	NA	0.067 U
Pyrene	1,700	18,000	Immobile (550)	NA	NA	0.066 U
Metals						
Aluminium	78,000	NL		4720	NA	NA
Antimony	31	450	6	1.3 J	NA	NA
Arsenic	19	19	19	5.4	NA	NA
Barium	16,000	59,000	1,300	52.4	NA	NA
Beryllium	16	140	0.5	**» 1.1**	**» 1.8**	NA
Cadmium	78	78	1	0.25 J	NA	NA
Calcium	NL	NL	NL	15200	NA	NA
Chromium (Total)	120,000	NL	Site-Specific	14.1	NA	NA
Cobalt	1,600	590	59	5.9 J	NA	NA
Copper	3,100	45,000	Immobile (7,300)	70.3	NA	NA
Iron	NL	NL	NL	13600	NA	NA
Lead	400	800	Immobile (59)	**» 84.0**	NA	NA
Magnesium	NL	NL	NL	2450	NA	NA
Manganese	11,000	5,900		250	NA	NA
Mercury	23	65	0.1	0.060	NA	NA
Nickel	1,600	23,000	31	22.3	**» 45.6**	NA
Potassium	NL	NL	NL	1430	NA	NA
Selenium	390	5,700	7	0.85 U	NA	NA
Silver	390	5,700	1	0.14 U	NA	NA
Sodium	NL	NL	NL	175 J	NA	NA
Thallium	5	79	3	0.88 U	NA	NA
Vanadium	78	1,100	Immobile	24.3	NA	NA
Zinc	23,000	110,000	600	482	NA	NA

Notes:

outlined = Concentration exceeds Res. or Non-Res. SRS

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Saturated zone samples not compared to IGWSSL

Immobile = Not considered a threat to groundwater if certain conditions are met. Listed standard may be used if conditions not met.

* Listed standards are ingestion-dermal/inhalation/Allergic Contact Dermatitis The Allergic Contact Dermatitis standard is site-specific

TABLE 16A
GROUNDWATER ANALYTICAL RESULTS
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID Lab Sample Number Sampling Date Units	Higher of PQLs and NJDEP Groundwater Quality Standard	A2-GW 460-22340-5 01/21/11 ug/L	D2-2GW 460-22340-3 01/21/11 ug/L	K2-4GW 460-22340-4 01/21/11 ug/L	MW-1 460-22854-1 02/04/11 ug/L	MW-2 460-22854-2 02/04/11 ug/L	MW-3 460-22854-3 02/04/11 ug/L	MW-4 460-22854-4 02/04/11 ug/L
VOLATILE COMPOUNDS								
1,1,1-Trichloroethane	30	0.25 U	8.0	**90**	12	**48**	0.25 U	4.4
1,1,2,2-Tetrachloroethane	1	0.090 U	0.090 U	0.090 U	0.090 U	0.090 U	0.090 U	0.090 U
1,1,2-Trichloroethane	3	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
1,1-Dichloroethane	50	0.10 U	15	**58**	2.1	27	0.10 U	0.44 J
1,1-Dichloroethene	1	0.14 U	0.69 J	**6.6**	0.62 J	**1.5**	0.14 U	0.27 J
1,2,3-Trichlorobenzene	Not listed	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U	0.83 U
1,2,4-Trichlorobenzene	9	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U	0.44 U
1,2-Dibromo-3-Chloropropan	0.02	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
1,2-Dibromoethane	0.03	0.090 U	0.090 U	0.090 U	0.016 U	0.016 U	0.016 U	0.016 U
1,2-Dichlorobenzene	600	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
1,2-Dichloroethane	2	0.24 U	0.24 U	0.92 J	0.24 U	0.24 U	0.24 U	0.24 U
1,2-Dichloropropane	1	0.090 U	0.090 U	0.69 J	0.090 U	0.090 U	0.090 U	0.090 U
1,3-Dichlorobenzene	600	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
1,4-Dichlorobenzene	75	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
1,4-Dioxane	10 (is)	8.4 U	8.4 U	8.4 U	8.4 U	8.4 U	8.4 U	8.4 U
2-Butanone	300	0.82 U	0.82 U	3.5 J	0.82 U	0.82 U	0.82 U	0.82 U
2-Hexanone	300 (ig)	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
4-Methyl-2-pentanone	Not listed	0.68 U	0.68 U	0.68 U	0.68 U	0.68 U	0.68 U	0.68 U
Acetone	6,000	6.0 J	2.5 U	9.4 J	2.5 U	2.5 U	2.5 U	2.5 U
Benzene	1	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
Bromochloromethane	Not listed	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U
Bromodichloromethane	1	0.093 U	0.093 U	0.093 U	0.093 U	0.093 U	0.093 U	0.093 U
Bromoform	4	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Bromomethane	10	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
Carbon disulfide	700	0.49 J	0.15 U	0.15 U	0.15 U	0.18 J	0.15 U	0.15 U
Carbon tetrachloride	1	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Chlorobenzene	50	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
Chloroethane	5 (ig)	0.45 U	0.45 U	0.45 U	0.45 U	6.4	0.45 U	0.45 U
Chloroform	70	0.15 U	0.15 U	5.7	0.15 U	0.90 J	0.15 U	0.93 J
Chloromethane	5 (ig)	0.21 U	0.21 U	2.3	0.21 U	0.21 U	0.21 U	0.21 U
cis-1,2-Dichloroethene	70	0.20 U	0.40 J	0.20 U	0.20 U	0.20 U	0.20 U	32
cis-1,3-Dichloropropene	1*	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
Cyclohexane	Not listed	0.82 J	0.13 U	0.13 U	0.13 U	0.13 U	0.30 J	0.13 U
Dibromochloromethane	1	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
Dichlorodifluoromethane	1000	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Ethylbenzene	700	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Freon TF	Not listed	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U	0.28 U
Isopropylbenzene	Not listed	16	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
m&p-Xylene	1000*	290	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Methyl acetate	7000	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U
Methylcyclohexane	Not listed	1.2	0.090 U	0.090 U	0.090 U	0.090 U	0.81 J	0.090 U
Methylene Chloride	3	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
MTBE	70	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
o-Xylene	1000*	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
Styrene	100	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
Tetrachloroethene	1	0.20 U	0.20 U	0.59 J	0.20 U	0.20 U	0.20 U	0.20 U
Toluene	600	0.090 U	0.090 U	0.090 U	0.090 U	0.090 U	0.090 U	0.090 U
trans-1,2-Dichloroethene	100	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U	1.0
trans-1,3-Dichloropropene	1*	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
Trichloroethene	1	0.24 J	**4.7**	**40**	**17**	**2.6**	0.26 J	**74**
Trichlorofluoromethane	2000	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U	0.16 U
Vinyl chloride	1	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
Total VOCs	Not listed	314.75	28.79	217.7	31.72	87.68	1.37	113.04
Total VOCs TICs	500 (ig)	**1428**	7.4	75.4	25.2	0	27.4	0

Notes:

outlined = Concentration exceeds GWQS

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

NA = Not Analyzed

(ig) = Interim Generic Criteria

* Values listed reflect combined standard for the isomers

TABLE 16A
GROUNDWATER ANALYTICAL RESULTS
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID Lab Sample Number Sampling Date Units	Higher of PQLs and NJDEP Groundwater Quality Standard	**MW-5** 460-22854-5 02/04/11 ug/L
VOLATILE COMPOUNDS		
1,1,1-Trichloroethane	30	0.25 U
1,1,2,2-Tetrachloroethane	1	0.090 U
1,1,2-Trichloroethane	3	0.10 U
1,1-Dichloroethane	50	0.10 U
1,1-Dichloroethene	1	0.14 U
1,2,3-Trichlorobenzene	Not listed	0.83 U
1,2,4-Trichlorobenzene	9	0.44 U
1,2-Dibromo-3-Chloropropan	0.02	0.15 U
1,2-Dibromoethane	0.03	0.016 U
1,2-Dichlorobenzene	600	0.16 U
1,2-Dichloroethane	2	0.24 U
1,2-Dichloropropane	1	0.090 U
1,3-Dichlorobenzene	600	0.22 U
1,4-Dichlorobenzene	75	0.15 U
1,4-Dioxane	10 (is)	8.4 U
2-Butanone	300	0.82 U
2-Hexanone	300 (ig)	0.55 U
4-Methyl-2-pentanone	Not listed	0.68 U
Acetone	6,000	2.5 U
Benzene	1	0.13 U
Bromochloromethane	Not listed	0.17 U
Bromodichloromethane	1	0.093 U
Bromoform	4	0.10 U
Bromomethane	10	0.31 U
Carbon disulfide	700	0.15 U
Carbon tetrachloride	1	0.19 U
Chlorobenzene	50	0.16 U
Chloroethane	5 (ig)	0.45 U
Chloroform	70	0.15 U
Chloromethane	5 (ig)	0.21 U
cis-1,2-Dichloroethene	70	0.20 U
cis-1,3-Dichloropropene	1*	0.11 U
Cyclohexane	Not listed	0.13 U
Dibromochloromethane	1	0.11 U
Dichlorodifluoromethane	1000	0.29 U
Ethylbenzene	700	0.25 U
Freon TF	Not listed	0.28 U
Isopropylbenzene	Not listed	0.21 U
m&p-Xylene	1000*	0.29 U
Methyl acetate	7000	0.33 U
Methylcyclohexane	Not listed	0.090 U
Methylene Chloride	3	0.19 U
MTBE	70	0.18 U
o-Xylene	1000*	0.15 U
Styrene	100	0.13 U
Tetrachloroethene	1	0.20 U
Toluene	600	0.090 U
trans-1,2-Dichloroethene	100	0.14 U
trans-1,3-Dichloropropene	1*	0.12 U
Trichloroethene	1	0.20 J
Trichlorofluoromethane	2000	0.16 U
Vinyl chloride	1	0.13 U
Total VOCs	Not listed	0.2
Total VOCs TICs	500 (ig)	0

Notes:

outlined = Concentration exceeds GWQS

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

NA = Not Analyzed

(ig) = Interim Generic Criteria

* Values listed reflect combined standard for the isomers

TABLE 16B
GROUNDWATER ANALYTICAL RESULTS
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID Lab Sample Number Sampling Date Units	Higher of PQLs and NJDEP Groundwater Quality Standard	MW-1 460-22854-1 02/04/11 ug/L	MW-2 460-22854-2 02/04/11 ug/L	MW-3 460-22854-3 02/04/11 ug/L	MW-4 460-22854-4 02/04/11 ug/L	MW-5 460-22854-5 02/04/11 ug/L
SEMI-VOLATILE COMPOUNDS						
1,2,4,5-Tetrachlorobenzene	Not listed	2.5 U	2.5 U	2.7 U	2.5 U	2.5 U
2,2'-oxybis[1-chloropropane]	Not listed	3.4 U	3.4 U	3.6 U	3.4 U	3.4 U
2,3,4,6-Tetrachlorophenol	200	2.2 U	2.2 U	2.3 U	2.2 U	2.2 U
2,4,5-Trichlorophenol	700	2.6 U	2.6 U	2.8 U	2.6 U	2.6 U
2,4,6-Trichlorophenol	20	3.3 U	3.3 U	3.5 U	3.3 U	3.3 U
2,4-Dichlorophenol	20	2.9 U	2.9 U	3.1 U	2.9 U	2.9 U
2,4-Dimethylphenol	100	2.6 U	2.6 U	2.8 U	2.6 U	2.6 U
2,4-Dinitrophenol	40	5.1 U	5.1 U	5.3 U	5.1 U	5.1 U
2,4-Dinitrotoluene	10*	0.45 U	0.45 U	0.48 U	0.45 U	0.45 U
2,6-Dinitrotoluene	10*	0.62 U	0.62 U	0.66 U	0.62 U	0.62 U
2-Chloronaphthalene	600	3.9 U	3.9 U	4.2 U	3.9 U	3.9 U
2-Chlorophenol	40	2.8 U	2.8 U	2.9 U	2.8 U	2.8 U
2-Methylnaphthalene	30(is)	3.3 U	3.3 U	3.4 U	3.3 U	3.3 U
2-Methylphenol	Not listed	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
2-Nitroaniline	Not listed	6.0 U	6.0 U	6.3 U	6.0 U	6.0 U
2-Nitrophenol	Not listed	3.6 U	3.6 U	3.8 U	3.6 U	3.6 U
3,3'-Dichlorobenzidine	30	7.3 U	7.3 U	7.7 U	7.3 U	7.3 U
3-Nitroaniline	Not listed	4.6 U	4.6 U	4.8 U	4.6 U	4.6 U
4,6-Dinitro-2-methylphenol	Not listed	5.5 U	5.5 U	5.8 U	5.5 U	5.5 U
4-Bromophenyl phenyl ether	100(ig)	4.1 U	4.1 U	4.4 U	4.1 U	4.1 U
4-Chloro-3-methylphenol	100(ig)	2.1 U	2.1 U	2.2 U	2.1 U	2.1 U
4-Chloroaniline	30	2.2 U	2.2 U	2.3 U	2.2 U	2.2 U
4-Chlorophenyl phenyl ether	100(ig)	4.1 U	4.1 U	4.4 U	4.1 U	4.1 U
4-Methylphenol	Not listed	1.7 U	1.7 U	1.8 U	1.7 U	1.7 U
4-Nitroaniline	Not listed	4.2 U	4.2 U	4.4 U	4.2 U	4.2 U
4-Nitrophenol	Not listed	2.4 U	2.4 U	2.6 U	2.4 U	2.4 U
Acenaphthene	400	4.0 U	4.0 U	4.2 U	4.0 U	4.0 U
Acenaphthylene	100(ig)	4.2 U	4.2 U	4.5 U	4.2 U	4.2 U
Acetophenone	700	4.5 U	4.5 U	4.8 U	4.5 U	4.5 U
Anthracene	2,000	3.7 U	3.7 U	3.9 U	3.7 U	3.7 U
Atrazine	3	2.6 U	2.6 U	2.8 U	2.6 U	2.6 U
Benzaldehyde	Not listed	1.4 U	1.4 U	1.5 U	1.4 U	1.4 U
Benzo[g,h,i]perylene	100(ig)	2.9 U	2.9 U	3.0 U	2.9 U	2.9 U
Benzo[k]fluoranthene	0.5	0.32 U	0.32 U	0.33 U	0.32 U	0.32 U
Bis(2-chloroethoxy)methane	100(ig)	3.7 U	3.7 U	3.9 U	3.7 U	3.7 U
Bis(2-chloroethyl)ether	7	0.43 U	0.43 U	0.46 U	0.43 U	0.43 U
Bis(2-ethylhexyl) phthalate	3	2.5 U	2.5 U	2.7 U	2.5 U	2.5 U
Butyl benzyl phthalate	100	2.9 U	2.9 U	3.1 U	2.9 U	2.9 U
Caprolactam	5,000(is)	0.53 U	0.53 U	0.56 U	0.53 U	0.53 U
Carbazole	Not listed	3.2 U	3.2 U	3.4 U	3.2 U	3.2 U
Chrysene	5	4.0 U	4.0 U	4.2 U	4.0 U	4.0 U
Dibenz(a,h)anthracene	0.3	0.17 U	0.17 U	0.18 U	0.17 U	0.17 U
Dibenzofuran	Not listed	3.8 U	3.8 U	4.0 U	3.8 U	3.8 U
Diethyl phthalate	6,000	4.0 U	4.0 U	4.2 U	4.0 U	4.0 U
Dimethyl phthalate	100(ig)	3.4 U	3.4 U	3.6 U	3.4 U	3.4 U
Di-n-butyl phthalate	700	2.9 U	2.9 U	3.1 U	2.9 U	2.9 U
Di-n-octyl phthalate	100	2.0 U	2.0 U	2.1 U	2.0 U	2.0 U
Diphenyl	Not listed	5.7 U	5.7 U	6.0 U	5.7 U	5.7 U
Fluoranthene	300	2.8 U	2.8 U	2.9 U	2.8 U	2.8 U
Fluorene	300	3.4 U	3.4 U	3.6 U	3.4 U	3.4 U
Hexachlorobutadiene	1	0.99 U	0.99 U	1.0 U	0.99 U	0.99 U
Hexachlorocyclopentadiene	40	4.8 U	4.8 U	5.1 U	4.8 U	4.8 U
Hexachloroethane	7	0.53 U	0.53 U	0.56 U	0.53 U	0.53 U
Indeno[1,2,3-cd]pyrene	0.1	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
Isophorone	40	3.8 U	3.8 U	4.0 U	3.8 U	3.8 U
Naphthalene	300	3.9 U	3.9 U	4.1 U	3.9 U	3.9 U
Nitrobenzene	6	0.43 U	0.43 U	0.46 U	0.43 U	0.43 U
N-Nitrosodi-n-propylamine	10	0.34 U	0.34 U	0.36 U	0.34 U	0.34 U
N-Nitrosodiphenylamine	10	4.1 U	4.1 U	4.3 U	4.1 U	4.1 U
Phenanthrene	100(ig)	3.7 U	3.7 U	4.0 U	3.7 U	3.7 U
Phenol	2,000	0.94 U	0.94 U	0.99 U	0.94 U	0.94 U
Pyrene	200	4.5 U	4.5 U	4.7 U	4.5 U	4.5 U
Benzo[a]anthracene	0.1	0.021 U	0.021 U	0.022 U	0.021 U	0.021 U
Benzo[a]pyrene	0.1	0.032 U	0.032 U	0.033 U	0.032 U	0.032 U
Benzo[b]fluoranthene	0.2	0.042 U	0.042 U	0.044 U	0.042 U	0.042 U
Hexachlorobenzene	0.02	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U
Pentachlorophenol	0.30	0.15 U	0.15 U	0.16 U	0.15 U	0.15 U
Total SVOCs	Not listed	0	0	0	0	0
Total SVOCs TICs	500 (ig)	0	0	0	13	0

Notes:

outlined = Concentration exceeds GWQS

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

NA = Not Analyzed

(ig) = Interim Generic Criteria

(is) = Interim Specific Criteria

* Values listed reflects combined standard for 2,4/2,6-Dinitrotoluene mixture.

TABLE 16C
GROUNDWATER ANALYTICAL RESULTS
BORDEN CHEMICAL
CAMDEN, NEW JERSEY

Sample ID Lab Sample Number Sampling Date Units	Higher of PQLs and NJDEP Groundwater Quality Standard	MW-1 460-22854-1 02/04/11 ug/L	MW-2 460-22854-2 02/04/11 ug/L	MW-3 460-22854-3 02/04/11 ug/L	MW-4 460-22854-4 02/04/11 ug/L	MW-5 460-22854-5 02/04/11 ug/L
Metals						
Aluminum	200	**603**	**1110**	48.5 U	**189**	48.5 U
Antimony	6	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
Arsenic	3	2.3 U	2.4 J	**7.0**	2.3 U	2.3 U
Barium	6,000	12.4	14.9	14.4	26.7	12.6
Beryllium	1	0.72 U	0.72 U	0.72 U	0.72 U	0.72 U
Cadmium	4	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Calcium	Not Listed	55600	35900	104000	73100	63100
Chromium	70	3.7 U	8.2	3.7 U	3.7 U	3.7 U
Cobalt	100	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U
Copper	1,300	4.1 U	10.9	4.1 U	4.1 U	4.1 U
Iron	300	**1680**	**2860**	**2850**	**374**	126 U
Lead	5	2.2	1.6	1.2 U	1.2 U	1.2 U
Magnesium	Not Listed	8800	9540	18700	15700	11800
Manganese	50	**102**	**164**	**573**	**1070**	32.1
Mercury	2	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
Nickel	100	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U
Potassium	Not Listed	9810	7980	4430	8010	8570
Selenium	40	1.9 U	7.0	1.9 U	3.7	3.5
Silver	40	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Sodium	50,000	6960	1830	6330	19300	6000
Thallium	2	0.78 U	0.78 U	0.78 U	0.78 U	0.78 U
Vanadium	Not Listed	4.3 U	4.9 J	4.3 U	4.3 U	4.3 U
Zinc	2,000	16.4 U	16.4 U	16.4 U	16.4 U	16.4 U
PCBs						
Aroclor-1016	0.5	0.14 U	0.14 U	0.14 U	0.14 U	0.14 U
Aroclor-1221	0.5	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
Aroclor-1232	0.5	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
Aroclor-1242	0.5	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
Aroclor-1248	0.5	0.27 U	0.27 U	0.27 U	0.27 U	0.27 U
Aroclor-1254	0.5	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Aroclor-1260	0.5	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U
Aroclor-1262	0.5	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U
Aroclor-1268	0.5	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U

U = not detected above listed Method Detection Limit

J = compound detected above Method Detection Limit but below Reporting Limit

NA = Not Analyzed

APPENDIX C

BORING & TEST PIT LOGS

Test Pit Log

TEST PIT NO.: **TP-A2**

Project: **Former Borden Chemical**
Location: AOC A2
Project No.: 31330-01
Date: 1/19/11

Contractor: Oxford
Equipment: Excavator
Logged by: E. Snee
Depth to Groundwater: ~10'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	FILL - brown to black silty sand	
1	A2-6		0.0	coal, cinders, brick, ash	
			0.0	SM - brown silty sand (f-m); little gravel; few cobbles	
2	A2-4, A2-5		0.0	SM - light brown to orange brown silty sand (f-m)	
			0.0		
3			0.0		
			0.0		
4			0.0		
			0.0		
5			0.0		
			0.0		
6			0.0		
	A2-1, A2-2		0, 94.6	SM - pale brown to pale brownish grey silty sand (f)	
7			29.4		
	A2-3		1019.0		
8			927.0	SM - light olive to olive brown silty sand (f) some gravel @base	increasing gasoline-type odors
			811.0		
9			873.0		
			729.0		
10			638.0		
				end of test pit	
11					
12				~2' overburden covered tank	
				UST - 112"x52"; no holes observed	
13					
				Samples A2-1 & A2-2 obtained below UST invert	
14				Samples A2-4, A2-5, & A2-6 obtained below pipe runs	
15				9" metal drain pipe observed @~3.5' to east of excavation	
16					
17					
18					
19					
20					

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Test Pit Log

TEST PIT NO.: **TP-L1**

Project: **Former Borden Chemical**
Location: AOC L1
Project No.: 31330-01
Date: 1/19/11

Contractor: Oxford
Equipment: Excavator
Logged by: E. Snee
Depth to Groundwater:

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	pit filled with trash, debris	
1			0.0	~2-3" water @ base	
			0.0	no pipes observed	
2			0.0	C.B. walls, concrete base	
			0.0		
3			0.0	pit - 7.5' x 18' x 4.25' deep	
			0.0		
4			0.0	backfilled pit with clean import sand	
			0.0	boring L1-7 subsequently advanced within pit	
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **A2-7**

Project: **Former Borden Chemical**
Location: AOC A2
Project No.: 31330-01
Date: 1/25/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~8'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	FILL - brown to black silty sand (f-m)	
1			0.0	coal, brick, concrete, cinders fragments	0-5': ~3' recovery
			0.0	trace gravel	
2			0.0		
			0.0	SM - light brown to orange brown silty sand (f-m)	
3			0.0	little clay @ 8-8.5'	
			0.0	trace pale grey @ 9-10'	
4			0.0		
			0.0		
5			0.0		
			0.0		
6			0.0		
			0.0		
7			0.0		
			0.0		
8	A2-7	7.5-8	0.0		
			0.0		
9			0.0		
			0.0		
10			0.0		
				end of boring	
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **A2-8**

Project: **Former Borden Chemical**
Location: AOC A2
Project No.: 31330-01
Date: 1/25/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~6'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
	A2-8A	0-0.5	13.0	FILL - brown to black silty sand (f-m) and gravel	
1			7.5	some coal, ash, cinders; ~1" concrete @0.75"+	moist @ 0.5'+
			12.2	SM - dark brown silty sand	
2			4.0	trace clay	
			2.0	trace coal, brick, cinders	
3			2.7	lumber and cobbles @ base	
			0.3		
4			0.0		
			2.6		
5			0.2		
			0.0		
6	A2-8B	5.5-6	0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0		
10			0.0		
				end of boring	
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **A2-9**

Project: **Former Borden Chemical**
Location: AOC A2
Project No.: 31330-01
Date: 1/25/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~6'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
	A2-9A	0-0.5	17.4	FILL - brown to black silty sand (f-m)	
1			4.4	little coal, gravel	0-5': ~3.5' recovery
			0.0	SM - light brown to orange brown silty sand (f-m)	5-10': ~3' recovery
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
			0.0		
5			0.0		
			0.0		
6	A2-9B	5.5-6	0.0		
			0.0		
7			0.0		
			26.3	SM - brown to greyish brown silty sand (f-m)	staining @7-8'
8			524.0		
			331.0		gasoline odors @7-10'
9	A2-9C	8.5-9	1197.0	SM - olive brown to olive silty sand (f-c)	
			580.0	~2" grey to dark grey silty sand (f-c) @ base	
10			174.0		
				end of boring	
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **A2-10**

Project: **Former Borden Chemical**
Location: AOC A2
Project No.: 31330-01
Date: 1/25/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~6'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	FILL - brown silty sand (f-m)	
1			0.0	trace coal, brick, glass, cinders	
			0.0	SM - light brown to pale orange brown silty sand (f-m)	
2			0.0	trace glass, gravel, coal @ 1-4'	
			0.0		
3			0.0		
			0.0		
4			0.0		
			0.0		
5			0.0		
			0.0		
6	A2-10	5.5-6	0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0	SM - brown to olive brown silty sand (f-m)	
			0.0	~1" orange brown coarse sand and gravel @ base	
10			0.0		
11				end of boring	
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **S-6**

Project: **Former Borden Chemical**
Location: AOC C
Project No.: 31330-01
Date: 1/20/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	SM - brown to orange brown silty sand (f-m); cobbles @ba	
1			0.0	FILL - brown to black silty sand, trace clay	
			0.0	coal, cinders, ash, slag, glass fragments	
2			0.0	brick @ base	
			0.0		
3			0.0		
			0.0		
4			0.0	SM - light brown to orange brown silty sand (f-m)	
			0.0	dark brown @ 4.25-4.75'	
5	S-6A	4.5-5	0.0	trace clay @ 5.5-6.5'	
			0.0	little gravel @ 8-8.5'	
6			0.0		
			0.0		
7			0.0		
	S-6B	7-7.5	0.0		
8			0.0		
			0.0		
9			0.0		
			0.0		
10			0.0		
				end of boring	
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **D2-2**

Project: **Former Borden Chemical**
Location: AOC D2
Project No.: 31330-01
Date: 1/21/2011 & 3/17/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete (~6")	
1			0.0	gravel (~3")	
			0.0	SM - brown to moderate brown silty sand (f-m)	
2			0.0	increasing gravel, brick, coal (trace to some)	
			0.0		
3			0.0		
			0.0	FILL - brown to black silty sand (f-m); brick, cinders, ash	trace gravel
4			0.0	SM - light brown to orange brown silty sand (f-m)	
	D2-2C	4-4.5	0.0		
5			0.0		
			0.0		
6			0.0		
			0.0		
7	D2-2B	6.5-7	0.0		
			0.0		
8			0.0		
			0.0	SM - brown to olive brown silty sand (f-c)	
9			0.0	little mica	
			0.0		
10			0.0	SM - light brown to orange brown silty sand (f-m)	
			0.0	trace clay	
11			0.0		
			0.0		
12			0.0		
			0.0		
13			0.0		
			0.0		
14			0.0		
			0.0	SM - light brown to pale yellow brown silty sand (f-c)	
15			0.0	trace mica	
				end of boring	
16					
17				Temporary wellpoint installed @~14'	
				Groundwater sample D2-2GW obtained	
18					
19					
20					

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Soil Boring Log

BORING NO.: **E2-1**

Project: **Former Borden Chemical**
Location: AOC E2
Project No.: 31330-01
Date: 1/25/2011 & 3/17/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~8'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			5.5	FILL - brown to black silty sand; coal, cinders, ash	
1			0.4	SM - dark brown silty sand (f-m)	
			0.0	trace clay	
2			0.0	brick, concrete, cobbles, cinders @ ~1-8'	
			0.0		
3			0.0		
			0.0		
4			0.0		
			0.0		
5			0.0		
			0.0		
6			0.0		
	E2-1B	6-6.5	0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0		
10			0.0	SM - grey to black (~3"), brown to olive brown (~3")	silty sand (f-m)
11				end of boring	
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **E2-2**

Project: **Former Borden Chemical**
Location: AOC E2
Project No.: 31330-01
Date: 1/25/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~8'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	SM - brown to dark brown silty sand (f-m) and organics	
1			0.0		
			0.0	concrete (~3")	
2			0.0	SM - brownish grey to black silty sand (f-m)	
			0.0	SM - light brown to orange brown silty sand (f-m)	
3			0.0	trace clay @~7.5-8.5'	
			0.0		
4			0.0		
			0.0		
5			0.0		
			0.0		
6			0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0	SM - brown to olive brown silty sand (f-c)	
10			0.0		
11				end of boring	
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **H2-1**

Project: **Former Borden Chemical**
Location: AOC H2
Project No.: 31330-01
Date: 1/25/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: not encountered

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
	H2-1	0-0.5	0.0	SM - dark brown silty sand (f-m)	
1			0.0	trace brick, coal, glass, concrete, cinders	gravel @ surface
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
			0.0		
5			0.0		
				end of boring	
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **H2-2**

Project: **Former Borden Chemical**
Location: AOC H2
Project No.: 31330-01
Date: 1/25/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: not encountered

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
	H2-2	0-0.5	0.0	SM - dark brown silty sand (f-m)	
1			0.0	trace brick, coal, glass, concrete, cinders	gravel @ surface
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
			0.0		
5			0.0		
				end of boring	
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
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Soil Boring Log

BORING NO.: **K1-1**

Project: **Former Borden Chemical**
Location: AOC K1
Project No.: 31330-01
Date: 1/20/2011 & 3/17/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	SM - brown silty sand (f-m)	
			0.0	little brick toward top	
2			0.0	little coal, cinders toward base	0-5': ~3.5' recovery
			0.0	FILL - brown to black silty sand	
3			0.0	coal, slag, cinders, ash	
			0.0		
4			0.0	SM - brown silty sand (f-m)	
			0.0	SM - light brown to orange brown silty sand (f-m)	
5	K1-1A	4.5-5	0.0	clayey @ ~7.5-8.5'	
	K1-1C	5-5.5	0.0		
6			0.0		
			0.0		5-10': ~3.5' recovery
7			0.0		
	K1-1B	7-7.5	0.0		
8			0.0		
			0.0		
9			0.0	SM - brown to olive brownsilty sand (f-m); trace clay	
			0.0	some gravel @ base	
10			0.0	orange brown and olive grey @ base	
				end of boring	
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **K2-2**

Project: **Former Borden Chemical**
Location: AOC K2
Project No.: 31330-01
Date: 1/20/2011 & 3/17/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	SM - brown to orange brown silty sand (f-m)	
			0.0		
2			0.0		
			0.0		
3			0.0	SM - reddish brown silty sand (f-m); trace clay, gravel	
	K2-2B	3-3.5	0.0	SM - brown to moderate brown silty sand (f-m)	
4			0.0	SM - brown to orange brown silty sand (f-m)	
			0.0	little clayey @ 7.5-8.5'	
5			0.0		
			0.0		
6			0.0		
			0.0		
7			0.0		
	K2-2A	7-7.5	0.0		
8			0.0		
			0.0		
9			0.0		
			0.0	SM - brown to olive brown silty sand (f-m)	
10			0.0	some orange brown, trace mica	
				end of boring	
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **K2-4**

Project: **Former Borden Chemical**
Location: SE of AOC K2
Project No.: 31330-01
Date: 1/20/2011 & 3/17/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	SM - brown to light brown silty sand (f-m)	
			0.0		
2			0.0	FILL - brown to black silty sand	
			0.0		
3	K2-4C	2.5-3	0.0	SM - light brown to orange brown silty sand (f-m)	
			0.0		
4			0.0		
	K2-4B	4-4.5	0.0		
5			0.0		
			0.0		
6			0.0		
			0.0		
7			0.0		
	K2-4A	7-7.5	0.0		
8			0.0		
			0.0		
9			0.0		
			0.0	SM - brown to olive brown silty sand (f-m)	
10			0.0	trace gravel	
			0.0	SM - brown to pale yellow brown silty sand	
11			0.0	(f-m) @ 10-13'	
			0.0	(f-c) @ 13-15'	
12			0.0		
			0.0		
13			0.0		
			0.0		
14			0.0		
			0.0		
15			0.0		
				end of boring	
16					
17				Temporary well point set @ ~14'	
				Groundwater sample K2-4GW obtained	
18					
19					
20					

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Soil Boring Log

BORING NO.: **K2-6**

Project: **Former Borden Chemical**
Location: SE of AOC K2
Project No.: 31330-01
Date: 1/25/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			37.6	concrete (~6"), gravel (~3")	
1	K2-6	0.5-1	4.8	SM - brown silty sand (f-m)	
			0.0	trace clay	
2			0.0	~2" fill @ base; brown to black silty sand and coal	
			0.0		
3			0.0		
			0.0		
4			0.0	CL - pale brown to orange brown silty clay	
			0.0	SM - brown silty sand (f-m)	
5			0.0	SM - orange brown to light brown silty sand (f-m)	
			0.0		
6			0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0		
10			0.0	SM - brown to olive brown silty sand (f-m)	
11				end of boring	
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **K2-7**

Project: **Former Borden Chemical**
Location: SE of AOC K2
Project No.: 31330-01
Date: 1/20/2011 & 3/17/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: R. Lake
Depth to Groundwater: ~7'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	SM - brown to light brown silty sand (f-m)	
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0	FILL - brown to black silty sand	
4	K2-7	3.5-4	0.0		
			0.0		
5			0.0		
			0.0		
6			0.0	SM - brown to light brown silty sand (f-m)	
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0		
10			0.0	SM - brown to olive brown silty sand (f-m), trace gravel	
				end of boring	
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **K3-1**

Project: **Former Borden Chemical**
Location: AOC K3
Project No.: 31330-01
Date: 1/20/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~8'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	SM - brown to orange brown silty sand (f-m)	
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
			0.0		
5	K3-1A	4.5-5	0.0		
	K3-GS	~4-6	0.0		
6			0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0	SM - brown to olive brown silty sand (f-c)	
10			0.0	little orange brown, gravel	
				end of boring	
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **K3-3**

Project: **Former Borden Chemical**
Location: AOC K3
Project No.: 31330-01
Date: 1/20/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	SM - brown silty sand (f-m)	
			0.0	trace clay; little gravel	
2			0.0		
			2.4	FILL - brown to black silty sand	
3			1.9		
			1.8	SM - brown silty sand (f-m)	
4			2.1	SM - light brown to orange brown silty sand (f-m)	
			0.0		
5	K3-3B	4.5-5	0.0		
			0.0		
6			0.0		
			0.0		
7			0.0		
	K3-3A	7-7.5	0.0		
8			0.0		
			0.0		
9			0.0	SM - brown to olive brown silty sand	
			0.0	(f-m) @ 8.5-9.5'	
10			0.0	(f-c) @ 9.5-10' ; little gravel	
				end of boring	
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **K3-4**

Project: **Former Borden Chemical**
Location: AOC K3
Project No.: 31330-01
Date: 1/20/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	SM - brown silty sand (f-m); little gravel	
			0.0	FILL - brown to black silty sand, trace clay	
2			0.0	coal, slag, cinders, ash	
			0.0		
3			0.0	SM - brown silty sand (f-m)	
			0.0	SM - light brown to orange brown silty sand (f-m)	
4			0.0	~1" brown to olive brown silty sand (f-c) @ base	
			0.0	little mica, gravel	
5			0.0		
	K3-4	5-5.5	0.0		
6			0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0		
10			0.0		
11				end of boring	
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **K3-5**

Project: **Former Borden Chemical**
Location: AOC K3
Project No.: 31330-01
Date: 1/20/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	SM - brown silty sand (f-m)	
			0.0	trace brick, coal @ ~2-2.5'	
2			0.0		
			0.0		
3			0.0	SM - light brown to orange brown silty sand (f-m)	
			0.0	trace brick @ top	
4			0.0		
			0.0		
5			0.0		
	K3-5	5-5.5	0.0		
6			0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0	SM - brown to olive brown silty sand (f-c)	
			0.0	trace gravel; little mica	
10			0.0		
				end of boring	
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **K3-6**

Project: **Former Borden Chemical**
Location: AOC K3
Project No.: 31330-01
Date: 1/25/2011 & 3/17/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	SM - brown silty sand (f-m)	(~9")
			0.0		
2			0.0	FILL - brown to black silty sand; coal, slag, cinders	(~9")
			0.0		
3			0.0	SM - light brown to orange brown silty sand (f-m)	
			0.0	little clay @ ~7.5-8.5'	
4			0.0		
			0.0		
5			0.0		
	K3-6	5-5.5	0.0		
6			0.0		
	K3-6B	6-6.5	0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0		
10			0.0	SM - brown to olive brown silty sand (f-c); trace mica, grave	
11				end of boring	
12					
13					
14					
15					
16					
17					
18					
19					
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Soil Boring Log

BORING NO.: **K4-1**

Project: **Former Borden Chemical**
Location: AOC K4
Project No.: 31330-01
Date: 1/25/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7.75'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	FILL - brown to black silty sand (f-m)	
			0.0	trace brick, coal	
2	K4-1A	1.5-2	0.0		
			0.0	SM - light brown to orange brown silty sand (f-m)	
3			0.0		
			0.0		
4			0.0		
			0.0		
5			0.0		
			0.0		
6			0.0		
			0.0		
7			0.0		
			0.0		
8	K4-1B	7.5-8	0.0		
			0.0		
9			0.0	SM - brown to olive silty sand (f-c)	
			0.0	trace gravel, orange brown	
10			0.0		
				end of boring	
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **K5-1**

Project: **Former Borden Chemical**
Location: AOC K5
Project No.: 31330-01
Date: 3/17/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: R. Lake
Depth to Groundwater: Not encountered

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	FILL - brown to black silty sand with slag, cinders, ash	
			0.0	SM - dark brown to brown silty sand (f-m)	
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
			0.0		
5	K5-1B	4.5-5	0.0		
			0.0		
6			0.0		
				end of boring	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
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Soil Boring Log

BORING NO.: **L1-1**

Project: **Former Borden Chemical**
Location: AOC L1
Project No.: 31330-01
Date: 1/25/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete (~9")	
1			0.0	FILL - brown to moderate brown silty sand	
			0.0	some black silty sand, gravel	
2			0.0	coal, brick, slag, cinders, glass	
			0.0	little fill @ 4-5'	
3			4.9		
			0.0		
4			0.0		
			0.0		
5			0.0		
			0.0	SM - light brown to orange brown silty sand (f-m)	
6	L1-GS	~5-7	0.0	trace clay @ ~7.5-8.5'	
			0.0		
7			0.0		
	L1-1A	7-7.5	0.0		
8			0.0		
			0.0		
9			0.0		
			0.0	SM - brown to orange brown silty sand (f-c)	
10			0.0	trace clay	
11				end of boring	
12					
13					
14					
15					
16					
17					
18					
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Soil Boring Log

BORING NO.: **L1-3/MW-1**

Project: **Former Borden Chemical**
Location: AOC L1
Project No.: 31330-01
Date: 1/18/11

Driller: ECDI
Drilling Method: HSA
Logged by: E. Snee
Depth to Groundwater: ~7.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	FILL - brown to black silty sand	
			0.0	little slag; trace brick	
2			0.0		
			0.0		
3			0.0		
			0.0	SM - moderate brown to orange brown silty sand (f)	
4	L1-3		0.0		
			0.0		
5			0.0		
			0.0	SM - orange brown silty sand (f)	
6			0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0	SM - brown to olive brown silty sand	
9			0.0	(f-c) @ 8-12'	
			0.0	little gravel @~11-12'	
10			0.0	(f) @ 12-13	
			0.0		
11			0.0		
			0.0		
12			0.0		
			0.0		
13			0.0		
			0.0	SM - brown to orange brown silty sand (f-m)	
14			0.0		
			0.0		
15			0.0		
				end of boring	
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **L1-4**

Project: **Former Borden Chemical**
Location: AOC L1
Project No.: 31330-01
Date: 1/18/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	SM - light to dark brown silty sand (f)	
			0.0	brick, coal, cincrete	
2			0.0		
			0.0		
3			0.0	SM - brown to black silty sand	
			0.0	slag, cinders	
4	L1-4	3.5-4	0.0		
			0.0	SM - light to dark orange brown silty sand (f)	
5			0.0		
			0.0		
6			0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0	SM - brown to olive brown silty sand (f-c)	
9			0.0		
			0.0		
10			0.0		
				end of boring	
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **L1-5**

Project: **Former Borden Chemical**
Location: AOC L1
Project No.: 31330-01
Date: 1/18/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete (~9")	
1			3.2	FILL - brown to black silty sand (~1.5')	
			3.4	brick, slag	
2	L1-5A	1.5-2	4.6		
			0.6	concrete, brick (~3")	
3			0.0	FILL - brown to black silty sand	
			0.2	trace clay	
4	L1-5B	3.5-4	0.8	coal, cinders, slag	
			0.0		
5			0.0	SM - light to dark orange brown silty sand (f)	
			0.0		
6			0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			1.6	SM - brown to olive brown silty sand (f-c)	
			0.0		
10			0.0		
				end of boring	
11					
12					
13					
14					
15					
16					
17					
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Soil Boring Log

BORING NO.: **L1-6**

Project: **Former Borden Chemical**
Location: AOC L1
Project No.: 31330-01
Date: 1/19/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~8'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	FILL - brown to black silty sand	
			0.0	slag, cinders, ash	
2			0.0		
			0.0		
3			0.0		
			0.0		
4	L1-6	3.5-4	0.0		
			0.0	SM - brown silty sand	
5			0.0	trace gravel	
			0.0	SM - light brown to orange brown silty sand (f)	
6			0.0	clayey @ ~6.5-8'	
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0	SM - brown to olive brown silty sand (f-c)	
10			0.0	mica, some orange brown	
11				end of boring	
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **L1-7**

Project: **Former Borden Chemical**
Location: AOC L1
Project No.: 31330-01
Date: 1/20/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	SM - orange brown silty sand	
1			0.0	imported clean fill within pit L1 (~4.75')	
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
			0.0		
5			0.0	SM - brown to black silty sand (f-m) @ base of pit (<1")	
			0.0	concrete, gravel	
6	L1-7	5.5-6	0.0	SM - brown to light brown silty sand (f-m)	
			0.0		
7			0.0		
			0.0	SM - light brown to orange brown silty sand (f-m)	
8			0.0	some clay @ ~7-8'	
			0.0	little clay @ ~8-9.5'	
9			0.0		
			0.0		
10			0.0	SM - brown to olive brown silty sand (f-m)	
				end of boring	
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **L1-8**

Project: **Former Borden Chemical**
Location: AOC L1
Project No.: 31330-01
Date: 3/17/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: R. Lake
Depth to Groundwater: ~7'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	FILL - brown to black silty sand	
			0.0	slag, cinders, ash	
2			0.0		
			0.0		
3	L1-8	2.5-3	0.0		
			0.0		
4			0.0		
			0.0		
5			0.0		
			0.0		
6			0.0	SM - brown to light brown silty sand (f-m)	
			0.0		
7			0.0		
			0.0	SM - light brown to orange brown silty sand (f-m)	
8			0.0		
			0.0	SM - light brown silty sand (f-m)	
9			0.0		
			0.0		
10			0.0	SM - brown to olive brown silty sand (f-c)	
				end of boring	
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **L1-9**

Project: **Former Borden Chemical**
Location: AOC L1
Project No.: 31330-01
Date: 3/17/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: R. Lake
Depth to Groundwater: ~6'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	FILL - brown to black silty sand	
			0.0	slag, cinders, ash	
2			0.0		
			0.0		
3			0.0		
			0.0		
4	L1-9	3.5-4	0.0		
			0.0	SM - orange brown silty sand (f-m)	
5			0.0		
			0.0	SM - brown to light brown silty sand (f-m)	
6			0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0		
10			0.0	SM - brown to olive brown silty sand (f-c), trace gravel	
11				end of boring	
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **L1-10**

Project: **Former Borden Chemical**
Location: AOC L1
Project No.: 31330-01
Date: 3/17/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: R. Lake
Depth to Groundwater: ~6.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	FILL - brown to black silty sand	
			0.0	slag, cinders, ash	
2			0.0		
			0.0		
3			0.0		
			0.0		
4	L1-10	3.5-4	0.0		
			0.0	SM - brown to light brown silty sand (f-m)	
5			0.0		
			0.0		
6			0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0	SM - brown to olive brown silty sand (f-c), trace gravel	
10			0.0		
				end of boring	
11					
12					
13					
14					
15					
16					
17					
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Soil Boring Log

BORING NO.: **L1-11**

Project: **Former Borden Chemical**
Location: AOC L1
Project No.: 31330-01
Date: 3/17/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: R. Lake
Depth to Groundwater: ~7'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	FILL - brown to black silty sand	
			0.0	slag, cinders, ash	
2			0.0		
			0.0		
3			0.0		
			0.0		
4	L1-11	3.5-4	0.0		
			0.0		
5			0.0		
			0.0		
6			0.0	SM - Grey silty sand (f-m)	
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0		
10			0.0	SM - brown silty sand (f-m)	
11				end of boring	
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **L1-12**

Project: **Former Borden Chemical**
Location: AOC L1
Project No.: 31330-01
Date: 3/17/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: R. Lake
Depth to Groundwater: ~5.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	FILL - brown to black silty sand	
			0.0	slag, cinders, ash	
2			0.0		
			0.0		
3			0.0		
			0.0		
4	L1-12	3.5-4	0.0		
			0.0		
5			0.0	SM - Dark brown silty sand (f-m)	
			0.0		
6			0.0	SM - light brown silty sand (f-m)	
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0		
10			0.0	SM - orange brown silty sand (m-c), trace gravel	
				end of boring	
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **L1-13**

Project: **Former Borden Chemical**
Location: AOC L1
Project No.: 31330-01
Date: 3/17/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: R. Lake
Depth to Groundwater: ~5.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	FILL - brown to black silty sand	
			0.0	slag, cinders, ash	
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
	L1-13	4-4.5	0.0		
5			0.0	SM - brown to light borwn silty sand (f-m)	
			0.0		
6			0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0		
10			0.0	SM - olive brown silty sand (m-c), trace gravel	
				end of boring	
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **L1-14**

Project: **Former Borden Chemical**
Location: AOC L1
Project No.: 31330-01
Date: 3/17/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: R. Lake
Depth to Groundwater: ~7'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	FILL - brown to black silty sand	
			0.0	slag, cinders, ash	
2			0.0		
			0.0		
3			0.0		
			0.0		
4	L1-14	3.5-4	0.0		
			0.0		
5			0.0		
			0.0		
6			0.0	SM - brown to light brown silty sand (f-m)	
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0		
10			0.0	SM - brown to olive brown silty sand (f-c)	
11				end of boring	
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **L3-1**

Project: **Former Borden Chemical**
Location: AOC L3
Project No.: 31330-01
Date: 1/18/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	SM - brown silty sand (f)	
			0.0	trace brick toward base	
2			0.0	some light brown toward base	
			0.0		
3			0.0		
	L3-1	3-3.5	0.0		
4			0.0	FILL - brown to black silty sand (~9"), ash, slag, cinders	
			0.0	SM - light to dark orange brown silty sand (f)	
5			0.0		
			0.0		
6			0.0		
			0.0		
7			0.0		
	L3-1V	7-7.5	0.0		
8			0.0		
			0.0		
9			0.0		
			0.0		
10			0.0	SM - brown to olive brown silty sand, little gravel	
11				end of boring	
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **N1-1**

Project: **Former Borden Chemical**
Location: AOC N1
Project No.: 31330-01
Date: 1/25/11

Driller: ERI
Drilling Method: Hand Auger
Logged by: R. Lake
Depth to Groundwater: ~4'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	SM - moderate brown fine sand with silt	
1			0.0		
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4	N1-1	3.5-4	0.0		
			0.0		
5			0.0		
				end of boring	
6					
				N1 sump pit ~3' deep	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **N2-1**

Project: **Former Borden Chemical**
Location: AOC N2
Project No.: 31330-01
Date: 1/25/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
1				disturbed soil and debris within sump N2 (3' deep) SM - brownish grey to black silty sand bricks, concrete, gravel, lumber	
2					
3					
			0.0	concrete (~4")	
4	N2-1	3.5-4	0.0	SM - light brown to orange brown silty sand	
			0.0		
5			0.0		
			0.0		
6			0.0		
			0.0		
7	N2-1V	6.5-7	0.0		
			0.0	SM - brown to olive brown silty sand (f-m)	
8			0.0	(f-c) and gravel @ base	
9				end of boring	
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **O1-1**

Project: **Former Borden Chemical**
Location: AOC O1
Project No.: 31330-01
Date: 1/25/11

Driller: ERI
Drilling Method: Hand Auger
Logged by: R. Lake
Depth to Groundwater: ~4'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	moderate brown fine sand with silt	
1			0.0		
			0.0		
2			0.0		
			0.0		
3			0.0		
			1.8	grey to brown sand (m)	
4	O1-1A	3.5-4	8.1	trace silt and gravel	
	O1-1B	4-4.5	26.0		
5			0.0		
				end of boring	
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **O2-1**

Project: **Former Borden Chemical**
Location: AOC O2
Project No.: 31330-01
Date: 1/25/11

Driller: ERI
Drilling Method: Hand Auger
Logged by: R. Lake
Depth to Groundwater: ~4'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	SM - dark grey silty sand	
1			0.0		
			0.0		
2			0.0	moderate brown fine sand with silt	
	O2-1	2-2.5	19.5		
3			2.0		
			7.1		
4			0.1		
				end of boring	
5					
6					
7					
8					
9					
10					
11					
12					
13					
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Soil Boring Log

BORING NO.: **O3-1**

Project: **Former Borden Chemical**
Location: AOC O3
Project No.: 31330-01
Date: 1/25/11

Driller: ERI
Drilling Method: Hand Auger
Logged by: R. Lake
Depth to Groundwater: ~4'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	SM - moderate brown fine sand with silt	
1			0.0		
			0.0		
2			0.0		
	O3-1	2-2.5	0.0		
3			0.0		
			0.0		
4	O3-1V	3.5-4	0.0		
			0.0		
5			0.0		
			0.0		
6				end of boring	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

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Soil Boring Log

BORING NO.: **P-1**

Project: **Former Borden Chemical**
Location:
Project No.: 31330-01
Date: 1/19/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	FILL - brown to black silty sand	
			0.0	coal, brick, cinders	
2	P-1	1.5-2	0.0	cobbles @ ~1-1.5'	
			0.0		
3			0.0		
			0.0	SM - brown to moderate brown silty sand (f-m)	
4			0.0		
			0.0		
5			0.0		
			0.0	SM - light to dark orange brown silty sand (f)	
6			0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0		
10			0.0		
				end of boring	
11					
12					
13					
14					
15					
16					
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Soil Boring Log

BORING NO.: **P-2**

Project: **Former Borden Chemical**
Location:
Project No.: 31330-01
Date: 1/19/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	FILL - brown to black silty sand	
			0.0	coal, brick, cinders, ash	
2	P-2	1.5-2	0.0		
			0.0		
3			0.0	SM - brown to moderate brown silty sand (f)	
			0.0		
4			0.0	SM - light to dark orange brown silty sand	
			0.0	trace clay @~7.5-8'	
5			0.0		
			0.0		
6			0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0	SM - brown to olive brown silty sand (f-c)	
			0.0	some mica	
10			0.0	trace gravel	
				end of boring	
11					
12					
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14					
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Soil Boring Log

BORING NO.: **P-3**

Project: **Former Borden Chemical**
Location:
Project No.: 31330-01
Date: 1/20/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater:

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	SM - brown silty sand (f-m)	
			0.0	trace brick fragments	
2			0.0		
			0.0		
3			0.0		
			0.0	SM - brown to black silty sand (f-m)	
4			0.0	SM - brown to orange brown silty sand (f-m)	
			0.0		
5			0.0		
			0.0		
6			0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0	SM - brown to olive brown silty sand (f-c), trace gravel	
			0.0	ML - orange brown and olive clayey silt	
10			0.0	SM - brown silty sand (f-m)	
				end of boring	
11					
12					
13					
14					
15					
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20					

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Soil Boring Log

BORING NO.: **P-4**

Project: **Former Borden Chemical**
Location:
Project No.: 31330-01
Date: 1/20/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater:

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	SM - brown to black silty sand, gravel @ surface	
1			0.0	concrete	
	P-4	1-1.5	0.0	FILL - brown to black silty sand	
2			0.0	coal, brick, cinders	
			0.0		
3			0.0	SM - brown to moderate brown silty sand (f-m)	
			0.0		
4			0.0		
			0.0		
5			0.0	SM - brown to orange brown silty sand (f-m)	
			0.0	gravel @~7-7.5'	
6			0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0		
10			0.0		
11				end of boring	
12					
13					
14					
15					
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Soil Boring Log

BORING NO.: **P-5**

Project: **Former Borden Chemical**
Location:
Project No.: 31330-01
Date: 1/25/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: not encountered

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	SM - brown to orange brown silty sand (f-m)	
			0.0		
2			0.0	FILL - brown to black silty sand	
	P-5	2-2.5	0.0	coal, brick, cinders	
3			0.0		
			0.0		
4			0.0		
			0.0	SM - brown to orange brown silty sand (f-m)	
5			0.0		
				end of boring	
6					
7					
8					
9					
10					
11					
12					
13					
14					
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Soil Boring Log

BORING NO.: **S-4**

Project: **Former Borden Chemical**
Location: AOC P
Project No.: 31330-01
Date: 3/17/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: R. Lake
Depth to Groundwater: Not encountered

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	FILL - brown to black silty sand coal, brick, cinders, ash	
1			0.0		
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
	S-4B	4-4.5	0.0	SM - orange brown silty sand (f-m)	
5			0.0		
				end of boring	
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
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Soil Boring Log

BORING NO.: **T-5**

Project: **Former Borden Chemical**
Location: AOC P
Project No.: 31330-01
Date: 3/17/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: R. Lake
Depth to Groundwater: Not encountered

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	FILL - dark brown silty sand with gravel	
1			0.0		
			0.0		
2			0.0	FILL - ash and slag	
			0.0	FILL - Drak grey to black silty sand	
3	T-5B	2.5-3	0.0	SM - brown silty sand (f-m)	
			0.0		
4			0.0		
			0.0		
5			0.0		
				end of boring	
6					
7					
8					
9					
10					
11					
12					
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14					
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Soil Boring Log

BORING NO.: **T-8**

Project: **Former Borden Chemical**
Location: AOC P
Project No.: 31330-01
Date: 3/17/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: R. Lake
Depth to Groundwater: Not encountered

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	Gravel	
1			0.0		
			0.0		
2	T-8B	1.5-2	0.0		
			0.0		
3			0.0		
			0.0	SM - dark brown silty sand (f-m)	
4			0.0	trace clay	
			0.0	with brick, concrete, cobbles, cinders	
5	T-8C	4.5-5	0.0		
			0.0		
6			0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0		
10			0.0		
				end of boring	
11					
12					
13					
14					
15					
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APPENDIX D

GROUNDWATER SAMPLING DATA SHEETS

Groundwater Sampling Data

Project: Former Borden Chemical Project #: 31330-01

Date: 1/21/2011 Sampled By: E. Snee

Well ID		K2-4GW		D2-2GW		A2-GW	
Well Diameter (inches)		1"		1"		1"	
Depth to Water From TOC feet (before purging)		7.29		8.03		8.06	
Depth to Water From TOC feet (after purging)		8.64		8.16			
Depth to Water From TOC feet (before sampling)		8.36		8.08			
Depth to Bottom From TOC feet		~15'		~15'		~15'	
PID Reading from Well Casing (ppm)		0		0			
pH before Purge		7.37		6.11			
Temp. before Purge (C)		12.21		12.67			
Diss. Oxygen before Purge (ppm)		11.19		13.93			
Cond. before Purge (umhos/cm)		613		1200			
Water Volume in Well (gal)		~1.26		~1.14			
Purge Method	Peristaltic Pump						
Purge Start Time		1550		1453			
Purge End Time		1601		1508			
Purge Rate (gpm)		0.45		0.33			
Volume Purged (gal)		5		5		4	
pH after Purge		6.04		6.45			
Temp. after Purge (C)		13.54		13.56			
Diss. Oxygen after Purge (ppm)		1.88		3.38			
Cond. after Purge (umhos/cm)		501		1130			
pH after Sampling		5.93		6.68			
Temp. after Sampling (C)		13.09		13.2			
Diss. Oxygen after Sampling (ppm)		2.36		6.27			
Cond. after Sampling (umhos/cm)		467		1120			
Sampling Method	Bailer						
Time of Sampling		1606		1514		1650	

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Groundwater Sampling Data

Project: Former Borden Chemical Project #: 31330-01

Date: 2/4/2011 Sampled By: E. Snee

Well ID	MW-1	MW-2	MW-3	MW-4	MW-5			
Well Diameter (inches)	2"	2"	2"	2"	2"			
Depth to Water From TOC feet (before purging)	7.11	6.73	6.52	6.7	6.87			
Depth to Water From TOC feet (after purging)	7.41	6.81	6.64	6.84	6.93			
Depth to Water From TOC feet (before sampling)	7.05	6.62	6.46	6.64	6.79			
Depth to Bottom From TOC feet	14.75	14.72	14.47	14.71	15.36			
PID Reading from Well Casing (ppm)	0.1	0	0	8.2	0			
pH before Purge	6.41	6.61	6.13	5.87	6.54			
Temp. before Purge (C)	10.21	10.33	10.58	10.72	9.33			
Diss. Oxygen before Purge (ppm)	1.62	1.38	1.67	2.38	2.12			
ORP before Purge	147	101	30	172	173			
Turbidity (NTU)	34.3	25.2	27.2	13.6	4.9			
Cond. before Purge (umhos/cm)	465	345	815	709	561			
Water Volume in Well (gal)	1.25	1.32	1.3	1.31	1.4			
Purge Method	Peristaltic Pump							
Purge Start Time	1317	1256	1223	1349	1415			
Purge End Time	1327	1306	1232	1359	1426			
Purge Rate (gpm)	0.50	0.50	0.44	0.50	0.45			
Volume Purged (gal)	5	5	4	5	5			
pH after Purge	6.37	6.09	6.49	5.61	6.66			
Temp. after Purge (C)	12.02	12.76	12.81	12.97	10.4			
Diss. Oxygen after Purge (ppm)	0.36	0.46	0.47	0.92	1.05			
ORP after Purge	87	159	10	224	129			
Turbidity (NTU)	14.2	94.9	16.4	12.6	32.3			
Cond. after Purge (umhos/cm)	460	337	781	711	567			
pH after Sampling	6.67	6.9	6.57	5.95	6.64			
Temp. after Sampling (C)	11.25	11.49	11.84	11.69	9.89			
Diss. Oxygen after Sampling (ppm)	2.14	2.55	1.4	2.22	2.39			
ORP after Sampling	116	90	-3	167	164			
Turbidity (NTU)	626	0	800+	800+	0			
Cond. after Sampling (umhos/cm)	459	349	782	722	567			
Sampling Method	Bailer							
Time of Sampling	1550	1530	1455	1615	1635			

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APPENDIX E

MONITORING WELL DOCUMENTATION

Soil Boring Log

BORING NO.: **L1-3/MW-1**

Project: **Former Borden Chemical**
Location: AOC L1
Project No.: 31330-01
Date: 1/18/11

Driller: ECDI
Drilling Method: HSA
Logged by: E. Snee
Depth to Groundwater: ~7.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	FILL - brown to black silty sand	
			0.0	little slag; trace brick	
2			0.0		
			0.0		
3			0.0		
			0.0	SM - moderate brown to orange brown silty sand (f)	
4	L1-3		0.0		
			0.0		
5			0.0		
			0.0	SM - orange brown silty sand (f)	
6			0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0	SM - brown to olive brown silty sand	
9			0.0	(f-c) @ 8-12'	
			0.0	little gravel @~11-12'	
10			0.0	(f) @ 12-13	
			0.0		
11			0.0		
			0.0		
12			0.0		
			0.0		
13			0.0		
			0.0	SM - brown to orange brown silty sand (f-m)	
14			0.0		
			0.0		
15			0.0		
				end of boring	
16					
17					
18					
19					
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Soil Boring Log

BORING NO.: **MW-2**

Project: **Former Borden Chemical**
Location: AOC K2
Project No.: 31330-01
Date: 1/20/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	SM - brown silty sand (f-m)	~3" concrete
1			0.0	little orange brown	@ surface
			0.0	brown clay and sand @ base (~3")	
2			0.0		
			0.0		
3			0.0		
			0.0	FILL - brown to black silty sand	
4			0.0	SM - brown to orange brown silty sand (f-m)	
			0.0		
5			0.0		
	K2-GS	~4-6'	0.0		
6			0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0	SM - brown to olive brown silty sand (f-m)	
10			0.0	some orange brown	
			0.0	SM - brown to olive brown silty sand (f-c)	
11			0.0	some gravel; trace cobbles	
			0.0		
12			0.0	SM - light to dark orange brown silty sand (f-m)	
			0.0	little clay	
13			0.0		
			0.0	SM - brown silty sand; little clay	
14			0.0	(f-m) @ 13-14'	
			0.0	(f-c) @ 14-15' ; trace gravel	
15			0.0		
				end of boring	
16					
17					
18					
19					
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Soil Boring Log

BORING NO.: **MW-3**

Project: **Former Borden Chemical**
Location: AOCs C & K1
Project No.: 31330-01
Date: 1/20/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	FILL - brown to black silty sand	
1			0.0	gravel @ surface; concrete @~2-2.1'	
			0.0	coal, brick, cinders, slag, glass fragments	
2			0.0		
			0.0		0-5': ~3.5' recovery
3			0.0		
			0.0		
4			0.0		
			0.0	SM - brown to moderate brown silty sand (f-m)	
5			0.0		
			0.0	SM - orange brown silty sand	
6			0.0		
			0.0		5-10': ~2' recovery
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0	SM - brown to olive brown silty sand (f-c)	
10			0.0		
			0.0		
11			0.0		
			0.0		10-15': ~4' recovery
12			0.0	SM - brown silty sand (f-m)	
			0.0	little clay	
13			0.0		
			0.0		
14			0.0		
			0.0	SM - brown to brownish grey silty sand (f-c)	
15			0.0	little gravel; some light brown @ base	
				end of boring	
16					
17					
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19					
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Soil Boring Log

BORING NO.: **MW-4**

Project: **Former Borden Chemical**
Location: AOC K3
Project No.: 31330-01
Date: 1/19/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	SM - brown to moderate brown silty sand (f-m)	
			0.0	trace brick	
2			0.0	Fill @~2-2.5'	
			0.0		
3			0.0		
			0.0		
4			0.0		
			0.0	SM - light to dark orange brown silty sand (f-m)	
5			0.0	trace clay	
			0.0		
6			0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0		
10			0.0	SM - brown to orange brown silty sand (f-c); gravel @ base	
			0.0	SM - grey to dark grey silty sand (f-m)	
11			0.0		
			0.0	SM - brown to olive brown silty sand (f-m)	
12			0.0		
			0.0		
13			0.0	SM - light to dark orange brown silty sand (f-m)	
			0.0	some brown	
14			0.0	some gravel @ top	
			0.0	SM - brown to light brown silty sand (f-m)	
15			0.0	little gravel @ base	
				end of boring	
16					
17					
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Soil Boring Log

BORING NO.: **MW-5**

Project: **Former Borden Chemical**
Location: AOC A1
Project No.: 31330-01
Date: 1/19/11

Driller: ECDI
Drilling Method: HSA
Logged by: E. Snee
Depth to Groundwater: ~9'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	FILL - brown to black silty sand	~4" concrete
1			0.0	SM - light to dark orange brown silty sand (f-m)	@ surface
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
			0.0		
5			0.0		
			0.0		
6			0.0		
			0.0		
7			0.0		
			0.0	SM - brown to light brown silty sand (f-m)	
8			0.0		
			0.0	SM - brown to olive brown silty sand (f-c)	
9			0.0		
			0.0	SM - light to dark orange brown silty sand (f-c) and gravel	
10			0.0		
			0.0		
11			0.0		
			0.0	SM - brown to orange brown silty sand (f-m)	
12			0.0		
			0.0	SM - greyish brown to grey sand and silt	
13			0.0		
			0.0		
14			0.0		
			0.0	SM - grey and brown silty sand (f-c)	
15			0.0		
				end of boring	
16					
17					
18					
19					
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New Jersey State Department of Environmental Protection
Bureau of Water Systems and Well Permitting
PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number
E201100543

WELL PERMIT

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

Certifying Driller: JAMES W DUFFY, MASTER LICENSE # 0001581

Permit Issued to: EAST COAST DRILLING, INC.

Company Address: 1256 N CHURCH ST MOORESTOWN, NJ 08057

PROPERTY OWNER

Name: JAMES HARVESON

Organization: City of Camden

Address: City Hall

City: Camden State: New Jersey Zip Code: 08101

PROPOSED WELL LOCATION

Facility Name: Former Borden Chemical

Address: 1625 Federal Street

County: Camden Municipality: Camden City Lot: 5 Block: 1184

Easting (X): 323792 Northing (Y): 405441
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: MW-1

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: MONITORING

Diameter (in.): 2

Depth (ft.): 25

Pump Capacity (gpm): 0

Drilling Method: Hollow Stem Augers

Attachments:

Other Use(s):

Regulatory Program Requiring Wells/Borings:

Case ID Number:

Deviation Requested: N

SPECIFIC CONDITIONS/REQUIREMENTS

Approval Date: January 13, 2011
Expiration Date: January 13, 2012

Approved by the authority of:
Bob Martin
Commissioner

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

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

Well Permit Number
E201100543

MONITORING WELL RECORD

PROPERTY OWNER: JAMES HARVESON

Company/Organization: City of Camden

Address: City Hall Camden, New Jersey 08101

WELL LOCATION: Former Borden Chemical

Address: 1625 Federal Street

County: Camden Municipality: Camden City Lot: 5 Block: 1184

Easting (X): 323475 Northing (Y): 405489
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: January 18, 2011

DATE WELL COMPLETED: January 18, 2011

WELL USE: MONITORING

Other Use(s):

Local ID: MW-1

WELL CONSTRUCTION

Total Depth Drilled (ft.): 15 Finished Well Depth (ft.): 15 Well Surface: Flush Mount

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	15	8		
Casing	0	5	2	PVC	40
Screen	5	15	2	PVC	.010

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	4	8	2	5	94	8
Gravel Pack	4	15	8	2	0		

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

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 7 ft. below land surface
Water Level Measure Tool: Tape
Well Development Period: .5 hrs.
Method of Development: Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: DT6610
Health and Safety Plan Submitted? Yes

ATTACHMENTS:

GEOLOGIC LOG
0 - 4: Brown OT - Other Fill
4 - 15: Light Brown/Orange GW - Well-graded gravels and gravel-sand mixtures, little or no fines

ADDITIONAL INFORMATION:

Driller of Record: Steven Moylan, JOURNEYMAN LICENSE # 0022215 Company: EAST COAST DRILLING, INC.

MONITORING WELL CERTIFICATION - FORM A - AS-BUILT CERTIFICATION

(One form must be completed for each well)

Name of Permittee: James Harveson
Name of Facility: Former Borden Chemical
Location: 1625 Federal Street, Camden City, Camden County, New Jersey 08101
NJDES Permit No: _____

CERTIFICATION

Well Permit Number (As assigned by NJDEP's Bureau of Water Allocation):	E 2 0 1 1 0 0 5 4 3
Owner's Well Number (As shown on the application or plans):	MW-1
Well Completion Date:	1-18-11
Distance from Top of Casing (cap off) to ground surface (One-hundredth of a foot):	0.00
Total Depth of Well to the nearest ½ foot:	15.00
Depth to Top of Screen From Top of Casing (or depth to open hole) To the nearest ½ foot:	5.00
Screen Length (pr length of open hole) in feet:	10'
Screen or Slot Size:	.010
Screen or Slot Material:	Sch 40 PVC
Casing Material: (PVC, Steel or Other-Specify):	Sch 40 PVC
Casing Diameter (inches):	2"
Static Water Level from Top of Casing at the Time of Installation (One-hundredth of a foot):	7.00
Yield (gallons per minutes):	1.00
Length of Time Well is Developed/Pumped or Bailed:	0 Hours 30 Minutes
Lithologic Log:	Attach

AUTHENTICATION

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

James W. Duffy
Name (Type or Print)

James W Duffy
Signature

M1224
Certification or License No.

Seal

Certification by Executive Officer or Duly Authorized Representative

Name (Type or Print)

Signature

Title

Date

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: City of Camden, c/o Camden Redevelopment Agency, Jim Harveson

Name of Facility: Former Borden Chemical Printing Facility

Location: 1625 Federal Street, Camden, NJ 08105

Case Number(s): NJDEP Case # 99-07-16-0034-09, PI # G000003602 **(UST #, ISRA #, Incident #, or EPA #)**

LAND SURVEYOR'S CERTIFICATION

Well Permit Number: E201100543
(This number must be permanently affixed to the well casing.)

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

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

Longitude: West 75 ° 06' 01".61" **Latitude:** North 39 ° 56' 42.06"

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

North 405,454 East 323,783

Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 8.31

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

NAVD 1988 Datum

Significant observations and notes:

AUTHENTICATION

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

SEAL

Patrick S. Vitarelli
PROFESSIONAL LAND SURVEYOR'S SIGNATURE

2-08-11
DATE

Patrick S. Vitarelli License No. 27895
PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER
(Please print or type)

525 Fellowship Road, Suite 300, Mt. Laurel, NJ 08054-3415 TEL 856-235-7170
PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

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

Well Permit Number
E201100544

WELL PERMIT

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

Certifying Driller: JAMES W DUFFY, MASTER LICENSE # 0001581

Permit Issued to: EAST COAST DRILLING, INC.

Company Address: 1256 N CHURCH ST MOORESTOWN, NJ 08057

PROPERTY OWNER

Name: JAMES HARVESON

Organization: City of Camden

Address: City Hall

City: Camden State: New Jersey Zip Code: 08101

PROPOSED WELL LOCATION

Facility Name: Former Borden Chemical

Address: 1625 Federal Street

County: Camden Municipality: Camden City Lot: 5 Block: 1184

Easting (X): 323635 Northing (Y): 405403
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: MW-2

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: MONITORING

Other Use(s):

Regulatory Program Requiring Wells/Borings:

Diameter (in.): 2

Case ID Number:

Depth (ft.): 25

Deviation Requested: N

Pump Capacity (gpm): 0

Drilling Method: Hollow Stem Augers

Attachments:

SPECIFIC CONDITIONS/REQUIREMENTS

Approval Date: January 13, 2011
Expiration Date: January 13, 2012

Approved by the authority of:
Bob Martin
Commissioner

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

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

Well Permit Number
E201100544

MONITORING WELL RECORD

PROPERTY OWNER: JAMES HARVESON

Company/Organization: City of Camden

Address: City Hall Camden, New Jersey 08101

WELL LOCATION: Former Borden Chemical

Address: 1625 Federal Street

County: Camden Municipality: Camden City Lot: 5 Block: 1184

Easting (X): 323627 Northing (Y): 405535
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: January 19, 2011

DATE WELL COMPLETED: January 19, 2011

WELL USE: MONITORING

Other Use(s):

Local ID: MW-2

WELL CONSTRUCTION

Total Depth Drilled (ft.): 15 Finished Well Depth (ft.): 15 Well Surface: Flush Mount

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	15	8		
Casing	0	5	2	PVC	40
Screen	5	15	2	PVC	.010

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	4	8	2	5	94	8
Gravel Pack	4	15	8	2	0		

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

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 7 ft. below land surface
Water Level Measure Tool: Tape
Well Development Period: .5 hrs.
Method of Development: Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: DT6610
Health and Safety Plan Submitted? Yes

ATTACHMENTS:

GEOLOGIC LOG
0 - 4: Brown OT - Other Fill
4 - 15: Light Brown/Orange GW - Well-graded gravels and gravel-sand mixtures, little or no fines

ADDITIONAL INFORMATION:

Driller of Record: Steven Moylan, JOURNEYMAN LICENSE # 0022215 Company: EAST COAST DRILLING, INC.

MONITORING WELL CERTIFICATION - FORM A - AS-BUILT CERTIFICATION

(One form must be completed for each well)

Name of Permittee: James Harveson
Name of Facility: Former Borden Chemical
Location: 1625 Federal Street, Camden City, Camden County, New Jersey 08101
NJDES Permit No: _____

CERTIFICATION

Well Permit Number (As assigned by NJDEP's Bureau of Water Allocation):	E 2 0 1 1 0 0 5 4 4
Owner's Well Number (As shown on the application or plans):	MW-2
Well Completion Date:	1-19-11
Distance from Top of Casing (cap off) to ground surface (One-hundredth of a foot):	0.00
Total Depth of Well to the nearest ½ foot:	15.00
Depth to Top of Screen From Top of Casing (or depth to open hole) To the nearest ½ foot:	5.00
Screen Length (pr length of open hole) in feet:	10'
Screen or Slot Size:	.010
Screen or Slot Material:	Sch 40 PVC
Casing Material: (PVC, Steel or Other-Specify):	Sch 40 PVC
Casing Diameter (inches):	2"
Static Water Level from Top of Casing at the Time of Installation (One-hundredth of a foot):	7.00
Yield (gallons per minutes):	1.00
Length of Time Well is Developed/Pumped or Bailed:	0 Hours 30 Minutes
Lithologic Log:	Attach

AUTHENTICATION

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

James W. Duffy
Name (Type or Print)

James W Duffy
Signature

M1224
Certification or License No.

Seal

Certification by Executive Officer or Duly Authorized Representative

Name (Type or Print)

Signature

Title

Date

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: City of Camden, c/o Camden Redevelopment Agency, Jim Harveson

Name of Facility: Former Borden Chemical Printing Facility

Location: 1625 Federal Street, Camden, NJ 08105

Case Number(s): NJDEP Case # 99-07-16-0034-09, PI # G000003602 **(UST #, ISRA #, Incident #, or EPA #)**

LAND SURVEYOR'S CERTIFICATION

Well Permit Number: E201100544
(This number must be permanently affixed to the well casing.)

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

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

Longitude: West 75 ° 06' 03.55" **Latitude:** North 39 ° 56'41.59"

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

North 405,407 East 323,632

Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 8.02

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

NAVD 1988 Datum

Significant observations and notes:

AUTHENTICATION

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

SEAL

Patrick S. Vitarelli
PROFESSIONAL LAND SURVEYOR'S SIGNATURE

2-08-11
DATE

Patrick S. Vitarelli License No. 27895
PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER
(Please print or type)

525 Fellowship Road, Suite 300, Mt. Laurel, NJ 08054-3415 TEL 856-235-7170
PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

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

Well Permit Number
E201100545

WELL PERMIT

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

Certifying Driller: JAMES W DUFFY, MASTER LICENSE # 0001581

Permit Issued to: EAST COAST DRILLING, INC.

Company Address: 1256 N CHURCH ST MOORESTOWN, NJ 08057

PROPERTY OWNER

Name: JAMES HARVESON

Organization: City of Camden

Address: City Hall

City: Camden State: New Jersey Zip Code: 08101

PROPOSED WELL LOCATION

Facility Name: Former Borden Chemical

Address: 1625 Federal Street

County: Camden Municipality: Camden City Lot: 5 Block: 1184

Easting (X): 323522 Northing (Y): 405406
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: MW-3

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: MONITORING

Other Use(s):

Diameter (in.): 2

Regulatory Program Requiring Wells/Borings:

Depth (ft.): 25

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Hollow Stem Augers

Attachments:

SPECIFIC CONDITIONS/REQUIREMENTS

Approval Date: January 13, 2011
Expiration Date: January 13, 2012

Approved by the authority of:
Bob Martin
Commissioner

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

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

Well Permit Number
E201100545

MONITORING WELL RECORD

PROPERTY OWNER: JAMES HARVESON

Company/Organization: City of Camden

Address: City Hall Camden, New Jersey 08101

WELL LOCATION: Former Borden Chemical

Address: 1625 Federal Street

County: Camden Municipality: Camden City Lot: 5 Block: 1184

Easting (X): 323741 Northing (Y): 405527
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: January 20, 2011

DATE WELL COMPLETED: January 20, 2011

WELL USE: MONITORING

Other Use(s):

Local ID: MW-3

WELL CONSTRUCTION

Total Depth Drilled (ft.): 15 Finished Well Depth (ft.): 15 Well Surface: Flush Mount

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	15	8		
Casing	0	5	2	PVC	40
Screen	5	15	2	PVC	.010

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	4	8	2	5	94	8
Gravel Pack	4	15	8	2	0		

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

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 7 ft. below land surface
Water Level Measure Tool: Tape
Well Development Period: .5 hrs.
Method of Development: Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: DT6610
Health and Safety Plan Submitted? Yes

ATTACHMENTS:

GEOLOGIC LOG
0 - 4: Brown OT - Other Fill
4 - 15: Light Brown/Orange GW - Well-graded gravels and gravel-sand mixtures, little or no fines

ADDITIONAL INFORMATION:

Driller of Record: Steven Moylan, JOURNEYMAN LICENSE # 0022215 Company: EAST COAST DRILLING, INC.

MONITORING WELL CERTIFICATION - FORM A - AS-BUILT CERTIFICATION

(One form must be completed for each well)

Name of Permittee: James Harveson
Name of Facility: Former Borden Chemical
Location: 1625 Federal Street, Camden City, Camden County, New Jersey 08101
NJDES Permit No: _____

CERTIFICATION

Well Permit Number (As assigned by NJDEP's Bureau of Water Allocation):	E 2 0 1 1 0 0 5 4 5
Owner's Well Number (As shown on the application or plans):	MW-3
Well Completion Date:	1-20-11
Distance from Top of Casing (cap off) to ground surface (One-hundredth of a foot):	0.00
Total Depth of Well to the nearest ½ foot:	15.00
Depth to Top of Screen From Top of Casing (or depth to open hole) To the nearest ½ foot:	5.00
Screen Length (pr length of open hole) in feet:	10'
Screen or Slot Size:	.010
Screen or Slot Material:	Sch 40 PVC
Casing Material: (PVC, Steel or Other-Specify):	Sch 40 PVC
Casing Diameter (inches):	2"
Static Water Level from Top of Casing at the Time of Installation (One-hundredth of a foot):	7.00
Yield (gallons per minutes):	1.00
Length of Time Well is Developed/Pumped or Bailed:	0 Hours 30 Minutes
Lithologic Log:	Attach

AUTHENTICATION

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

James W. Duffy
Name (Type or Print)

James W Duffy
Signature

M1224
Certification or License No.

Seal

Certification by Executive Officer or Duly Authorized Representative

Name (Type or Print)

Signature

Title

Date

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: City of Camden, c/o Camden Redevelopment Agency, Jim Harveson

Name of Facility: Former Borden Chemical Printing Facility

Location: 1625 Federal Street, Camden, NJ 08105

Case Number(s): NJDEP Case # 99-07-16-0034-09, PI # G000003602 (UST #, ISRA #, Incident #, or EPA #)

LAND SURVEYOR'S CERTIFICATION

Well Permit Number: E201100545
(This number must be permanently affixed to the well casing.)

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

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

Longitude: West 75 ° 06' 05.01" **Latitude:** North 39 ° 56' 41.67"

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

North 405,416 East 323,518

Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 7.93

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

NAVD 1988 Datum

Significant observations and notes:

AUTHENTICATION

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

SEAL

Patrick S. Vitarelli
PROFESSIONAL LAND SURVEYOR'S SIGNATURE

2-08-11
DATE

Patrick S. Vitarelli License No. 27895
PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER
(Please print or type)

525 Fellowship Road, Suite 300, Mt. Laurel, NJ 08054-3415 TEL 856-235-7170
PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

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

Well Permit Number
E201100546

WELL PERMIT

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

Certifying Driller: JAMES W DUFFY, MASTER LICENSE # 0001581

Permit Issued to: EAST COAST DRILLING, INC.

Company Address: 1256 N CHURCH ST MOORESTOWN, NJ 08057

PROPERTY OWNER

Name: JAMES HARVESON

Organization: City of Camden

Address: City Hall

City: Camden State: New Jersey Zip Code: 08101

PROPOSED WELL LOCATION

Facility Name: Former Borden Chemical

Address: 1625 Federal Street

County: Camden Municipality: Camden City Lot: 5 Block: 1184

Easting (X): 323579 Northing (Y): 405514
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: MW-4

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: MONITORING

Other Use(s):

Regulatory Program Requiring Wells/Borings:

Diameter (in.): 2

Depth (ft.): 25

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Hollow Stem Augers

Attachments:

SPECIFIC CONDITIONS/REQUIREMENTS

Approval Date: January 13, 2011
Expiration Date: January 13, 2012

Approved by the authority of:
Bob Martin
Commissioner

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

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

Well Permit Number
E201100546

MONITORING WELL RECORD

PROPERTY OWNER: JAMES HARVESON

Company/Organization: City of Camden

Address: City Hall Camden, New Jersey 08101

WELL LOCATION: Former Borden Chemical

Address: 1625 Federal Street

County: Camden Municipality: Camden City Lot: 5 Block: 1184

Easting (X): 323654 Northing (Y): 405424
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: January 21, 2011

DATE WELL COMPLETED: January 21, 2011

WELL USE: MONITORING

Other Use(s):

Local ID: MW-4

WELL CONSTRUCTION

Total Depth Drilled (ft.): 15 Finished Well Depth (ft.): 15 Well Surface: Flush Mount

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	15.5	8		
Casing	0	5	2	PVC	40
Screen	5	15	2	PVC	.010

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	4	8	2	5	94	8
Gravel Pack	4	15	8	2	0		

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

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 7 ft. below land surface
Water Level Measure Tool: Tape
Well Development Period: .5 hrs.
Method of Development: Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: DT6610
Health and Safety Plan Submitted? Yes

ATTACHMENTS:

GEOLOGIC LOG

0 - 4: Brown OT - Other Fill

4 - 15: Light Brown/Orange GW - Well-graded gravels and gravel-sand mixtures, little or no fines

ADDITIONAL INFORMATION:

Driller of Record: Steven Moylan, JOURNEYMAN LICENSE # 0022215 Company: EAST COAST DRILLING, INC.

MONITORING WELL CERTIFICATION - FORM A - AS-BUILT CERTIFICATION

(One form must be completed for each well)

Name of Permittee: James Harveson
Name of Facility: Former Borden Chemical
Location: 1625 Federal Street, Camden City, Camden County, New Jersey 08101
NJDES Permit No:

CERTIFICATION

Well Permit Number (As assigned by NJDEP's Bureau of Water Allocation):	E 2 0 1 1 0 0 5 4 6
Owner's Well Number (As shown on the application or plans):	MW-4
Well Completion Date:	1-21-11
Distance from Top of Casing (cap off) to ground surface (One-hundredth of a foot):	0.00
Total Depth of Well to the nearest ½ foot:	15.00
Depth to Top of Screen From Top of Casing (or depth to open hole) To the nearest ½ foot:	5.00
Screen Length (pr length of open hole) in feet:	10'
Screen or Slot Size:	.010
Screen or Slot Material:	Sch 40 PVC
Casing Material: (PVC, Steel or Other-Specify):	Sch 40 PVC
Casing Diameter (inches):	2"
Static Water Level from Top of Casing at the Time of Installation (One-hundredth of a foot):	7.00
Yield (gallons per minutes):	1.00
Length of Time Well is Developed/Pumped or Bailed:	0 Hours 30 Minutes
Lithologic Log:	Attach

AUTHENTICATION

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

James W. Duffy
Name (Type or Print)

James W Duffy
Signature

M1224
Certification or License No.

Seal

Certification by Executive Officer or Duly Authorized Representative

Name (Type or Print)

Signature

Title

Date

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: City of Camden, c/o Camden Redevelopment Agency, Jim Harveson

Name of Facility: Former Borden Chemical Printing Facility

Location: 1625 Federal Street, Camden, NJ 08105

Case Number(s): NJDEP Case # 99-07-16-0034-09, PI # G000003602 **(UST #, ISRA #, Incident #, or EPA #)**

LAND SURVEYOR'S CERTIFICATION

Well Permit Number: E201100546
(This number must be permanently affixed to the well casing.)

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

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

Longitude: West 75 ° 06' 03.91" **Latitude:** North 39 ° 56' 42.69"

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

North 405,519 East 323,605

Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 8.05

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)
NAVD 1988 Datum

Significant observations and notes:

AUTHENTICATION

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

SEAL

Patrick S. Vitarelli
PROFESSIONAL LAND SURVEYOR'S SIGNATURE

2-08-11
DATE

Patrick S. Vitarelli License No. 27895
PROFESSIONAL LAND SURVEYOR'S NAME AND LICENSE NUMBER
(Please print or type)

525 Fellowship Road, Suite 300, Mt. Laurel, NJ 08054-3415 TEL 856-235-7170
PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

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

Well Permit Number
E201100547

WELL PERMIT

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

Certifying Driller: JAMES W DUFFY, MASTER LICENSE # 0001581

Permit Issued to: EAST COAST DRILLING, INC.

Company Address: 1256 N CHURCH ST MOORESTOWN, NJ 08057

PROPERTY OWNER

Name: JAMES HARVESON

Organization: City of Camden

Address: City Hall

City: Camden State: New Jersey Zip Code: 08101

PROPOSED WELL LOCATION

Facility Name: Former Borden Chemical

Address: 1625 Federal Street

County: Camden Municipality: Camden City Lot: 5 Block: 1184

Easting (X): 323621 Northing (Y): 405613
Coordinate System: NJ State Plane (NAD83) - USFEET

Local ID: MW-5

SITE CHARACTERISTICS

PROPOSED CONSTRUCTION

WELL USE: MONITORING

Other Use(s):

Diameter (in.): 2

Regulatory Program Requiring Wells/Borings:

Depth (ft.): 25

Case ID Number:

Pump Capacity (gpm): 0

Deviation Requested: N

Drilling Method: Hollow Stem Augers

Attachments:

SPECIFIC CONDITIONS/REQUIREMENTS

Approval Date: January 13, 2011
Expiration Date: January 13, 2012

Approved by the authority of:
Bob Martin
Commissioner

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

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

Well Permit Number
E201100547

MONITORING WELL RECORD

PROPERTY OWNER: JAMES HARVESON

Company/Organization: City of Camden

Address: City Hall Camden, New Jersey 08101

WELL LOCATION: Former Borden Chemical

Address: 1625 Federal Street

County: Camden Municipality: Camden City Lot: 5 Block: 1184

Easting (X): 323599 Northing (Y): 405332
Coordinate System: NJ State Plane (NAD83) - USFEET

DATE WELL STARTED: January 21, 2011

DATE WELL COMPLETED: January 21, 2011

WELL USE: MONITORING

Other Use(s):

Local ID: MW-5

WELL CONSTRUCTION

Total Depth Drilled (ft.): 15 Finished Well Depth (ft.): 15 Well Surface: Flush Mount

	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt/Rating/Screen # Used (lbs/ch no.)
Borehole	0	15	8		
Casing	0	5	2	PVC	40
Screen	5	15	2	PVC	.010

	Depth to Top (ft.)	Depth to Bottom (ft.)	Outer Diameter (in.)	Inner Diameter (in)	Material		
					Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Grout	0	4	8	2	5	94	8
Gravel Pack	4	15	8	2	0		

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

ADDITIONAL INFORMATION

Protective Casing: Yes
Static Water Level: 7 ft. below land surface
Water Level Measure Tool: Tape
Well Development Period: .5 hrs.
Method of Development: Pump
Pump Type:

Pump Capacity: _ gpm
Total Design Head: _ ft.
Drilling Fluid:
Drill Rig: DT6610
Health and Safety Plan Submitted? Yes

ATTACHMENTS:

GEOLOGIC LOG
0 - 4: Brown OT - Other Fill
4 - 15: Light Brown/Orange GW - Well-graded gravels and gravel-sand mixtures, little or no fines

ADDITIONAL INFORMATION:

Driller of Record: Steven Moylan, JOURNEYMAN LICENSE # 0022215 Company: EAST COAST DRILLING, INC.

MONITORING WELL CERTIFICATION - FORM A - AS-BUILT CERTIFICATION

(One form must be completed for each well)

Name of Permittee: James Harveson
Name of Facility: Former Borden Chemical
Location: 1625 Federal Street, Camden City, Camden County, New Jersey 08101
NJDES Permit No:

CERTIFICATION

Well Permit Number (As assigned by NJDEP's Bureau of Water Allocation):	E 2 0 1 1 0 0 5 4 7
Owner's Well Number (As shown on the application or plans):	MW-5
Well Completion Date:	1-21-11
Distance from Top of Casing (cap off) to ground surface (One-hundredth of a foot):	0.00
Total Depth of Well to the nearest ½ foot:	15.00
Depth to Top of Screen From Top of Casing (or depth to open hole) To the nearest ½ foot:	5.00
Screen Length (pr length of open hole) in feet:	10'
Screen or Slot Size:	.010
Screen or Slot Material:	Sch 40 PVC
Casing Material: (PVC, Steel or Other-Specify):	Sch 40 PVC
Casing Diameter (inches):	2"
Static Water Level from Top of Casing at the Time of Installation (One-hundredth of a foot):	7.00
Yield (gallons per minutes):	1.00
Length of Time Well is Developed/Pumped or Bailed:	0 Hours 30 Minutes
Lithologic Log:	Attach

AUTHENTICATION

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

James W. Duffy
Name (Type or Print)

James W Duffy
Signature

M1224
Certification or License No.

Seal

Certification by Executive Officer or Duly Authorized Representative

Name (Type or Print)

Signature

Title

Date

MONITORING WELL CERTIFICATION FORM B - LOCATION CERTIFICATION

Name of Owner: City of Camden, c/o Camden Redevelopment Agency, Jim Harveson

Name of Facility: Former Borden Chemical Printing Facility

Location: 1625 Federal Street, Camden, NJ 08105

Case Number(s): NJDEP Case # 99-07-16-0034-09, PI # G000003602 **(UST #, ISRA #, Incident #, or EPA #)**

LAND SURVEYOR'S CERTIFICATION

Well Permit Number: E201100547
(This number must be permanently affixed to the well casing.)

Owners Well Number (As shown on application or plans): MW-5

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

Longitude: West 75 ° 06' 03.21" **Latitude:** North 39 ° 56' 43.61"

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

North 405,611 East 323,659

Elevation of Top of Inner Casing (cap off) at reference mark (nearest 0.01'): 8.18

Source of elevation datum (benchmark, number/description and elevation/datum. If an on-site datum is used, identify here, assume datum of 100', and give approximated actual elevation.)
NAVD 1988 Datum

Significant observations and notes:

AUTHENTICATION

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

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525 Fellowship Road, Suite 300, Mt. Laurel, NJ 08054-3415 TEL 856-235-7170
PROFESSIONAL LAND SURVEYOR'S ADDRESS AND PHONE NUMBER

APPENDIX F

UST CLOSURE DOCUMENTATION

Photo 1: Unearthed UST

Photo 2: Removed UST

Photo 3: UST excavation

Hanson
HEIDELBERGCEMENT Group

Hanson Aggregates BMC, Inc.
Berlin Plant
127 Williamstown Rd
Berlin, NJ 08009
Phone (856) 767-3100
Fax (856) 767-4794

May 31, 2011

Oxford Engineering
Attn: Bob
336 Point St
Camden, NJ

Re: Environmentally Clean Material

Project Site: Former Borden Chemical Property
Camden, NJ

Dear Bob:

Hanson Aggregates BMC, Inc hereby certifies that the Certified Clean Fill being supplied to your project located in Camden, New Jersey is from a Virgin Source and is free of any hazardous waste and/or contaminants. This material is shipped from our mining operation in Berlin, N. J.

Information Requested:

Name of Supplier and Source:
Hanson Aggregates BMC, Inc
Berlin Plant

Street, Town, Lot and Block, County, State:
127 Williamstown Rd
Berlin, NJ 08009
Winslow Township
Block 1701, Lots12, 16, 17, 18, 19, 20, 21
Camden County
New Jersey

Brief History of Site of Fill Source:

The Hanson Aggregate BMC Berlin Plant is a sand and gravel plant opened in the late 1920's and operated continuously to present. The operation has maintained State and Local permit requirements.

Hanson Aggregates BMC certifies that the Berlin site produces Virgin material and that no chemicals or additives are used in producing the product.

Should there be any questions or need for additional information concerning this material, please contact me.

Sincerely,

Hanson Aggregates BMC.

David Hergert
Technical Sales Representative

DEH:kg

Hanson

HANSON AGGREGATES BMC, INC.
7660 Imperial Way
Allentown, PA 18195

4

TICKET NO. 049991

GROSS WEIGHT ACKNOWLEDGED
TRUCKERS SIGNATURE

SEE PRODUCT WARNING ON REVERSE

BUYER AGREES TO PAY ALL COSTS OF COLLECTIONS FOR THIS TICKET, INCLUDING ANY REASONABLE ATTORNEYS' FEES

RECEIVERS INITIALS

*CURB DELIVERY ONLY. NOT RESPONSIBLE FOR ANY DAMAGE BEYOND CURB.

(888) 252-7772

CUSTOMER NUMBER
SALES ORDER NUMBER
PRODUCT NO. DESCRIPTION
DATE
TIME
JOB/ITEM #

SOLD TO
S.O. DESC
S.O. INFO
JOB LOC

LOAD #

WGR ASSOCIATES

WEIGHTS

	LBS	KILO
GROSS		
TARE		
NET		
TONS		

TONS TODAY
TONS TO DATE
TONNES TODAY
TONNES TO DATE

CASH SALE ONLY

MATERIAL — PER TONS
TAX
HAUL — PER TONS
TOTAL

TRUCKING INFO.

HAUL / TRUCK NUMBER
HAULER NAME
TRUCK NAME
MGW

TICKET NO

WEIGHTMASTER LICENSE NUMBER

WEIGHTMASTER SIGNATURE

R-63-J REV. 9/08

AN EQUAL OPPORTUNITY EMPLOYER M/F

Hanson

HANSON AGGREGATES BMC, INC.
7660 Imperial Way
Allentown, PA 18195

4

TICKET NO. 049998

GROSS WEIGHT ACKNOWLEDGED
TRUCKERS SIGNATURE

SEE PRODUCT WARNING ON REVERSE

BUYER AGREES TO PAY ALL COSTS OF COLLECTIONS FOR THIS TICKET, INCLUDING ANY REASONABLE ATTORNEYS' FEES

RECEIVERS INITIALS

*CURB DELIVERY ONLY. NOT RESPONSIBLE FOR ANY DAMAGE BEYOND CURB.

(888) 252-7772

CUSTOMER NUMBER
SALES ORDER NUMBER
PRODUCT NO. DESCRIPTION
DATE
TIME
JOB/ITEM #

SOLD TO
S.O. DESC
S.O. INFO
JOB LOC

LOAD #

WGR ASSOCIATES

WEIGHTS

	LBS	KILO
GROSS		
TARE		
NET		
TONS		

TONS TODAY
TONS TO DATE
TONNES TODAY
TONNES TO DATE

CASH SALE ONLY

MATERIAL — PER TONS
TAX
HAUL — PER TONS
TOTAL

TRUCKING INFO.

HAUL / TRUCK NUMBER
HAULER NAME
TRUCK NAME
MGW

TICKET NO

WEIGHTMASTER LICENSE NUMBER

WEIGHTMASTER SIGNATURE

R-63-J REV. 9/08

AN EQUAL OPPORTUNITY EMPLOYER M/F

Giordano's Recycling

PAYMENT STUB

Ticket No. 481355

Date: 1/20/11 2:12 pm

Item	Gross	Tare	Net
	Price		Total
Lite Iron			
	15,880.0	14,840.0	1,040.0

ROM BARCODE

ATM BARCODE

Monarch Environmental Services

108 East Lake Road
P.O. Box 330
Woodstown, NJ 08098

MON 219437

BILL OF LADING

Generator's EPA ID Number	Client

Generator's Name and Mailing Address	Site Address
Generator's Phone ( )	

Transporter 1 Company Name	US EPA ID Number	Transporter's Phone
Monarch Environmental, Inc.	NJR000040667	856-769-9022
Transporter 2 Company Name	US EPA ID Number	Transporter's Phone

Designated Facility Name and Site Address	US EPA ID Number	Facility's Phone
Monarch Environmental Recycling 108 East Lake Road Woodstown, NJ 08098	NJD011881174	856-769-9022

US DOT Description (*Including Proper Shipping Name, Hazard Class or Division, ID Number and Packing Group*)	Containers No.	Containers Type	Total Quantity	Unit Wt/Vol	Waste No.

Additional Descriptions for Materials Listed Above	

Additional Information

ERG#

24 Hr Emergency Phone: (856) 769-9022

GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations and are non-hazardous by US EPA & applicable state regulations

PLACARDS REQUIRED

PLACARDS SUPPLIED ☐ YES ☐ NO-FURNISHED BY CARRIER

Printed/Typed Name	Signature	Month Day Year

TRANS

Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day Year

FACILITY

Discrepancy Indication Space

Facility Owner or Operator: Certification of Receipt of Above Listed Materials

Printed/Typed Name	Signature	Month Day Year

Loading Information		Unloading Information		Bill To
Start Time				
Arrival Time	8:45	Arrival Time		
Departure Time	9:15	Departure Time		
Finish Time				
				PO#

Special Instructions

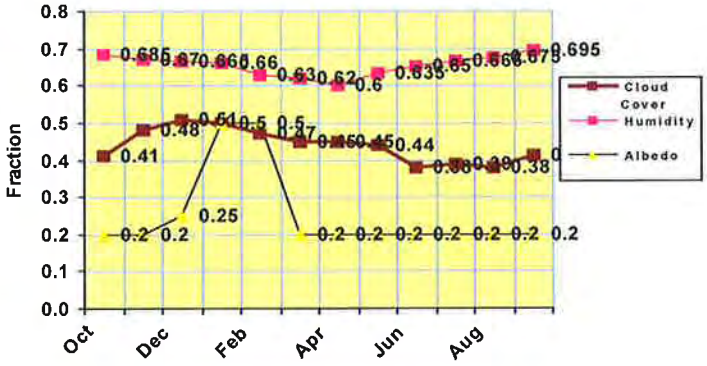
APPENDIX G

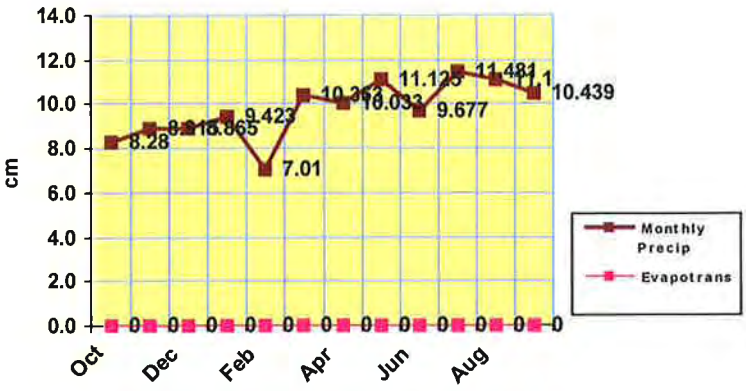
IGWSRS DOCUMENTATION

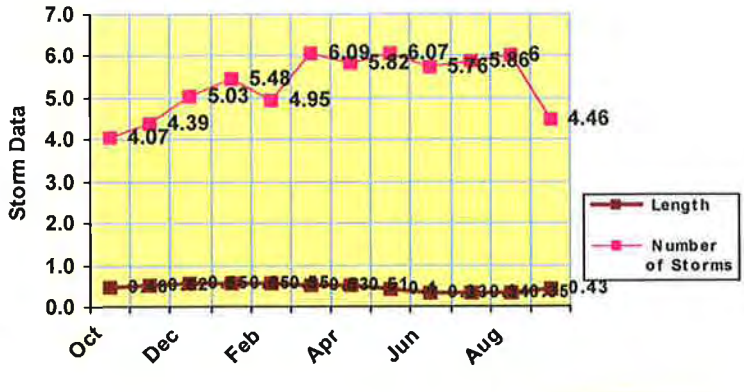
Climate Report

Location Description: CAMDEN
Climatic Input File: C:\SEVIEW63\CAMDEN.CLM

Month	Temperature		Precipitation		Evapotranspiration Rate		Storms		Cloud Cover	Albedo	Humidity
Units	°C	°F	cm	Inches	cm	Inches	# per Month	Length Days	Fraction	Fraction	Fraction
October	13.89	57.00	8.280	3.26	0.00	0.00	4.07	0.480	0.410	0.200	0.685
November	8.33	46.99	8.915	3.51	0.00	0.00	4.39	0.520	0.480	0.200	0.670
December	3.33	37.99	8.865	3.49	0.00	0.00	5.03	0.550	0.510	0.250	0.665
January	0.56	33.01	9.423	3.71	0.00	0.00	5.48	0.550	0.500	0.500	0.660
February	2.22	36.00	7.010	2.76	0.00	0.00	4.95	0.550	0.470	0.500	0.630
March	6.67	44.01	10.363	4.08	0.00	0.00	6.09	0.530	0.450	0.200	0.620
April	11.67	53.01	10.033	3.95	0.00	0.00	5.82	0.510	0.450	0.200	0.600
May	17.22	63.00	11.125	4.38	0.00	0.00	6.07	0.400	0.440	0.200	0.635
June	22.22	72.00	9.677	3.81	0.00	0.00	5.76	0.330	0.380	0.200	0.650
July	25.00	77.00	11.481	4.52	0.00	0.00	5.86	0.340	0.390	0.200	0.665
August	23.89	75.00	11.100	4.37	0.00	0.00	6.00	0.350	0.380	0.200	0.675
September	20.00	68.00	10.439	4.11	0.00	0.00	4.46	0.430	0.410	0.200	0.695
Total			116.71	45.95	0.00	0.00					



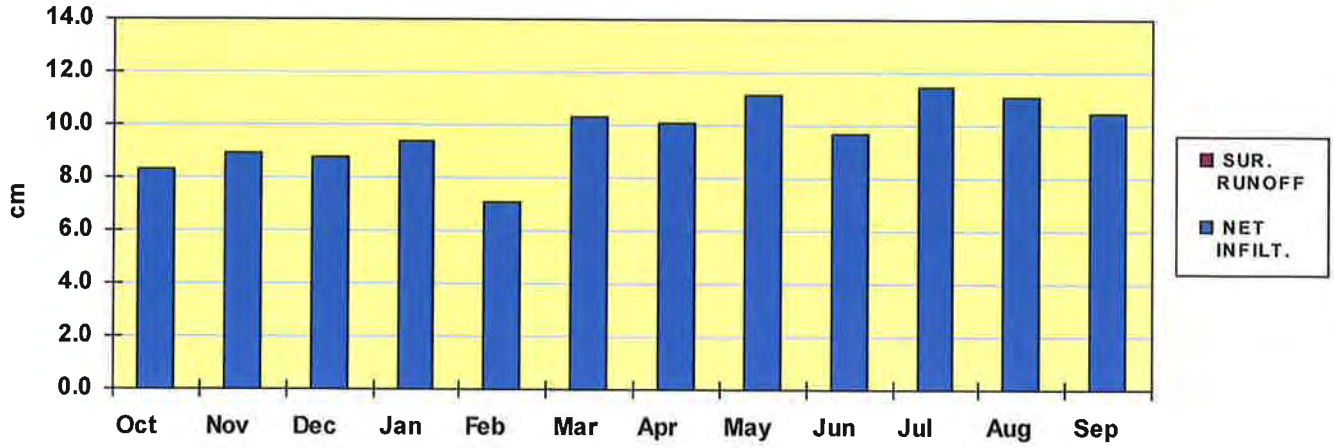


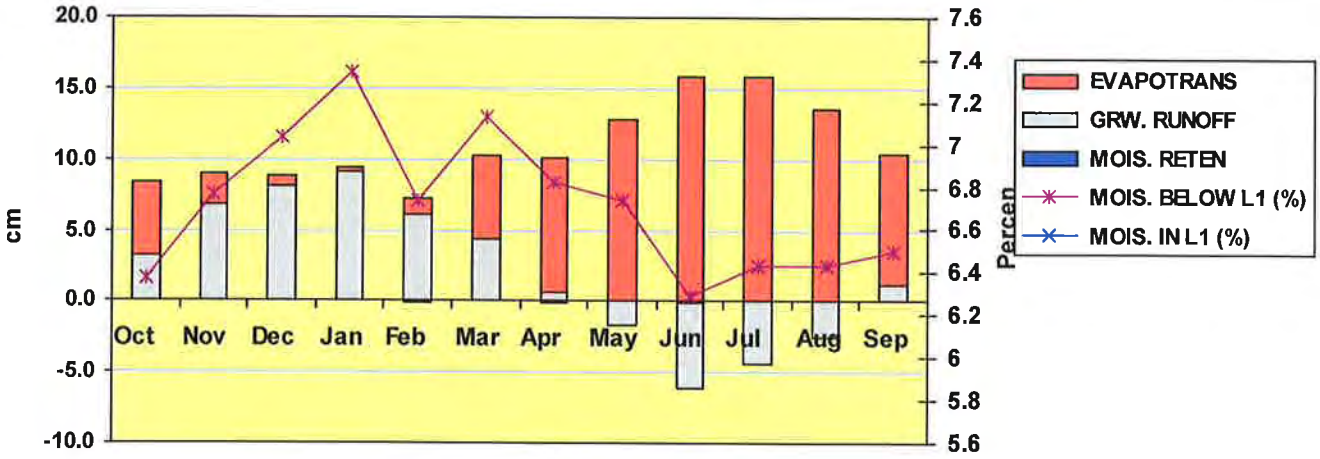


SESOIL Hydrologic Cycle Report

Scenario Description: 15ppm TCA HF, 0.6 @4-6, 0@6-7

SESOIL Output File: C:\SEVIEW63\31330S2C.OUT





	Surface Water Runoff		Net Infiltration		Evapotranspiration		Soil Moisture Retention		Groundwater Runoff (Recharge)		Soil Moisture	
											Layer 1	Below Layer 1
Units	cm	Inches	cm	Inches	cm	Inches	cm	Inches	cm	Inches	Percent	Percent
October	0.00	0.00	8.29	3.26	5.14	2.02	-0.02	-0.01	3.17	1.25	6.38	6.38
November	0.00	0.00	8.90	3.50	2.13	0.84	0.07	0.03	6.70	2.64	6.77	6.77
December	0.00	0.00	8.78	3.46	0.74	0.29	0.05	0.02	7.99	3.15	7.04	7.04
January	0.00	0.00	9.36	3.69	0.30	0.12	0.05	0.02	9.00	3.54	7.34	7.34
February	0.00	0.00	7.06	2.78	1.04	0.41	-0.11	-0.04	6.12	2.41	6.74	6.74
March	0.00	0.00	10.29	4.05	5.98	2.35	0.07	0.03	4.25	1.67	7.13	7.13
April	0.00	0.00	10.05	3.96	9.47	3.73	-0.05	-0.02	0.63	0.25	6.83	6.83
May	0.00	0.00	11.12	4.38	12.76	5.02	-0.02	-0.01	-1.62	-0.64	6.74	6.74
June	0.00	0.00	9.72	3.83	15.80	6.22	-0.08	-0.03	-6.00	-2.36	6.29	6.29
July	0.00	0.00	11.44	4.50	15.86	6.24	0.03	0.01	-4.45	-1.75	6.44	6.44
August	0.00	0.00	11.09	4.37	13.56	5.34	0.00	0.00	-2.47	-0.97	6.44	6.44
September	0.00	0.00	10.45	4.11	9.20	3.62	0.01	0.00	1.24	0.49	6.50	6.50
Total	0.00	0.00	116.55	45.88	91.97	36.21	0.00	0.00	24.58	9.68		

SESOIL Profile and Load Report

Layer No.	Number of Sub-Layers	Thickness		Intrinsic Permeability	Organic Carbon Content	Adsorption Coefficient	Cation Exchange Capacity	Freundlich Exponent	Solid Phase Degradation Rate	Liquid Phase Degradation Rate	Soil pH
		cm	feet	cm^2	percent	µg/g / µg/mL	mEq / 100 g soil	unitless	1/day	1/day	pH
1	4	120.0	3.94	1.00E-8	0.20	0.00	0.00	1.00	0.00E+00	0.00E+00	7.00
2	3	90.0	2.95	1.00E-8	0.20	0.00	0.00	1.00	0.00E+00	0.00E+00	7.00
3		0.0	0.00	1.00E-8	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00
4		0.0	0.00	1.00E-8	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00

Soil Parameters

Bulk Density (g/cm^3)	1.50
Effective Porosity (fraction)	0.30
Soil Pore Disconnectedness	3.70

Application Parameters

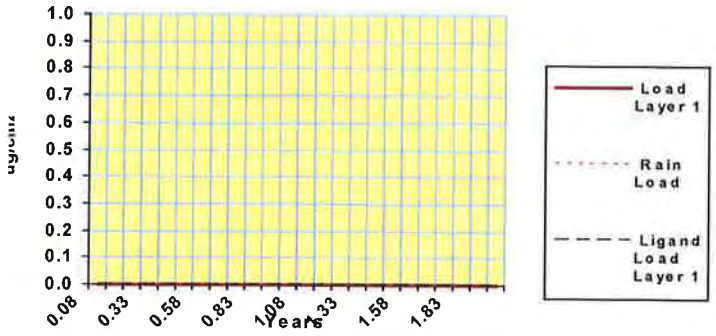
Area	cm^2	8.40E+5
	ft^2	904.17
Latitude	degrees	39.9
Spill Index		1

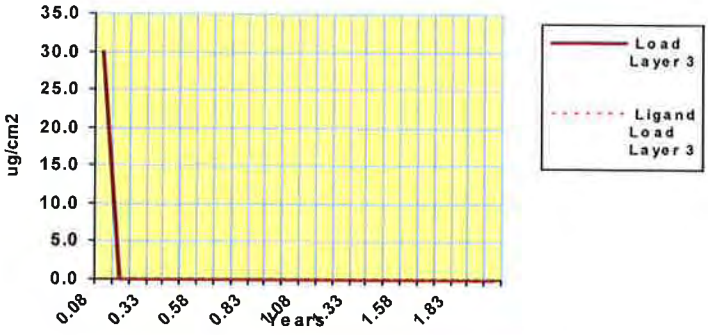
Chemical Parameters

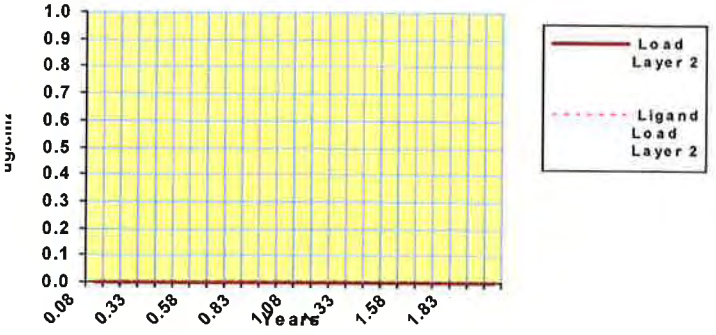
Water Solubility (µg/mL)	1.10E+3	**Moles Ligand / Moles Chemical**	0.00
Henry's Law (M^3-atm/mol)	1.03E-2	**Ligand Molecular Weight** (g/mol)	0.00
K_{oc} (µg/g)/(µg/mL)	166.00	**Base Hydrolysis Rate** (L/mol/day)	0.00
Valance (g/mole)	0.00	**Ligand Dissociation Constant**	0.00
Air Diffusion Coefficient (cm^2/sec)	7.90E-2	**Neutral Hydrolysis Rate** (L/mol/day)	0.00
Water Diffusion Coefficient (cm^2/sec)	9.10E-6	**Acid Hydrolysis Rate** (L/mol/day)	0.00
Molecular Weight (g/mol)	131.00		

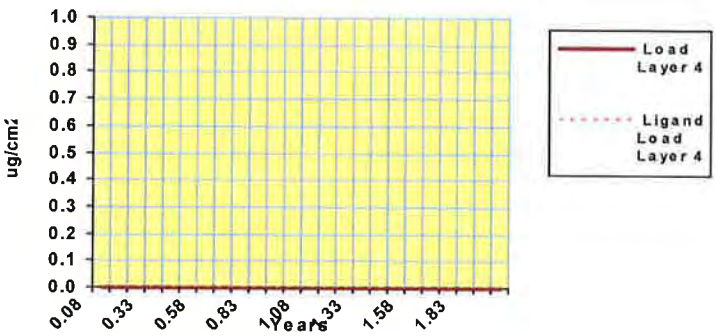
Output File: TCE 10@0-4, 0@4
C:\SEVIEW63\31330TC1.OUT
Chemical File: TCE, NJDEP
C:\SEVIEW63\TCENJDEP.CHM
Soil File: Sand, Perm = 1.00E-3 cm/sec
C:\SEVIEW63\SANDNJ.SOI
Application File: SEVIEW Default Application Parameters
C:\SEVIEW63\31330A.APL

Sublayer Loads	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Layer 1 (ug/g)	1.00E+01	1.00E+01	1.00E+01	1.00E+01						
Layer 2 (ug/g)										
Layer 3 (ug/g)										
Layer 4 (ug/g)										









SESOIL Pollutant Cycle Report

Scenario Description: TCE 10@0-4, 0@4

SESOIL Output File: C:\SEVIEW63\31330TC1.OUT

SESOIL Process	Pollutant Mass (µg)	Percent of Total
Volatilized	1.512E+09	100.00
In Soil Air	1.313E-01	0.00
Sur. Runoff	0.000E+00	0.00
In Washld	0.000E+00	0.00
Ads On Soil	6.651E-01	0.00
Hydrol Soil	0.000E+00	0.00
Degrad Soil	0.000E+00	0.00
Pure Phase	0.000E+00	0.00
Complexed	0.000E+00	0.00
Immobile CEC	0.000E+00	0.00
Hydrol CEC	0.000E+00	0.00
In Soil Moi	9.028E-02	0.00
Hydrol Mois	0.000E+00	0.00
Degrad Mois	0.000E+00	0.00
Other Trans	0.000E+00	0.00
Other Sinks	0.000E+00	0.00
Gwr. Runoff	2.646E+03	0.00
Total Output	1.512E+09	100.00
Total Input	1.512E+09	
Input - Output	-6.560E+04	

Maximum leachate concentration: 1.518E-04 **mg/l**

Climate File: CAMDEN
C:\SEVIEW63\CAMDEN.CLM

Chemical File: TCE, NJDEP
C:\SEVIEW63\TCENJDEP.CHM

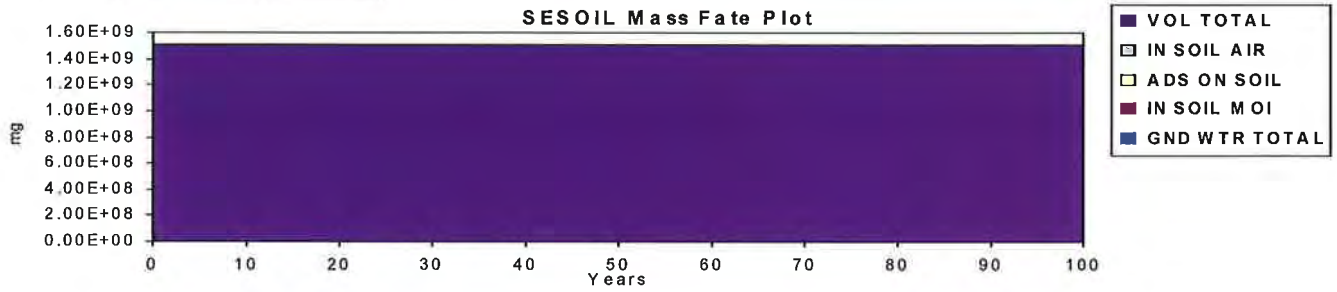
Soil File: Sand, Perm = 1.00E-3 cm/sec
C:\SEVIEW63\SANDNJ.SOI

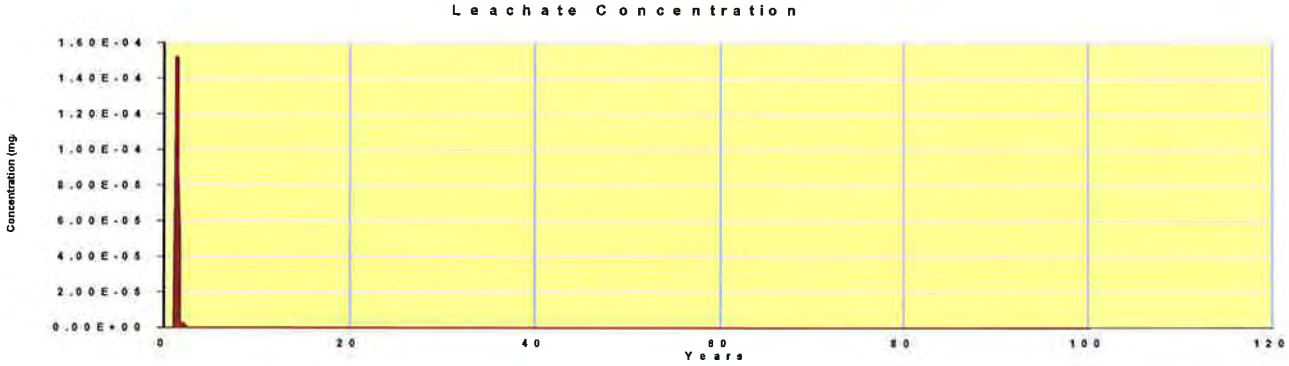
Application File: SEVIEW Default Application Parameters
C:\SEVIEW63\31330A.APL

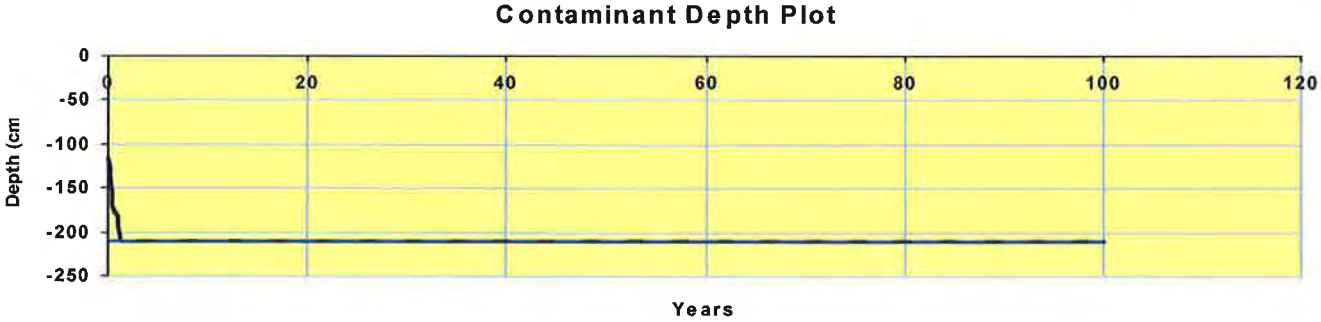
Starting Depth: 115.30 **cm**

Ending Depth: 210.00 **cm**

Total Depth: 210.00 **cm**







SESOIL Profile and Load Report

Layer No.	Number of Sub-Layers	Thickness		Intrinsic Permeability	Organic Carbon Content	Adsorption Coefficient	Cation Exchange Capacity	Freundlich Exponent	Solid Phase Degradation Rate	Liquid Phase Degradation Rate	Soil pH
		cm	feet	cm^2	percent	$\frac{\mu g/g}{\mu g/mL}$	$\frac{mEq}{100\ g\ soil}$	unitless	1/day	1/day	pH
1	4	120.0	3.94	1.00E-8	0.20	0.00	0.00	1.00	0.00E+00	0.00E+00	7.00
2	2	60.0	1.97	1.00E-8	0.20	0.00	0.00	1.00	0.00E+00	0.00E+00	7.00
3	1	30.0	0.98	1.00E-8	0.20	0.00	0.00	1.00	0.00E+00	0.00E+00	7.00
4		0.0	0.00	1.00E-8	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00

Soil Parameters

Bulk Density (g/cm^3)	1.50
Effective Porosity (fraction)	0.30
Soil Pore Disconnectedness	3.70

Application Parameters

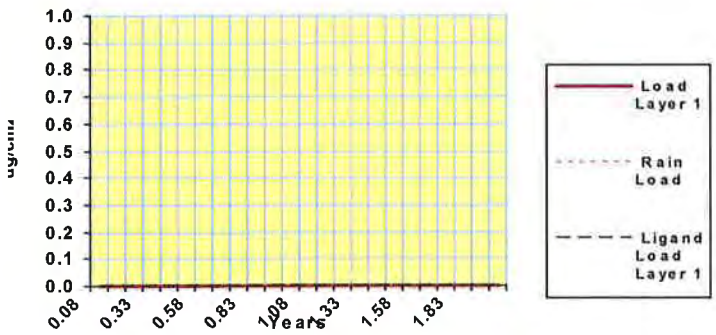
Area	cm^2	8.40E+5
	ft^2	904.17
Latitude	degrees	39.9
Spill Index		1

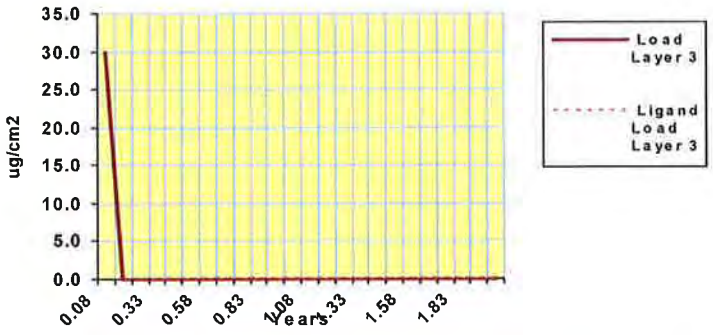
Chemical Parameters

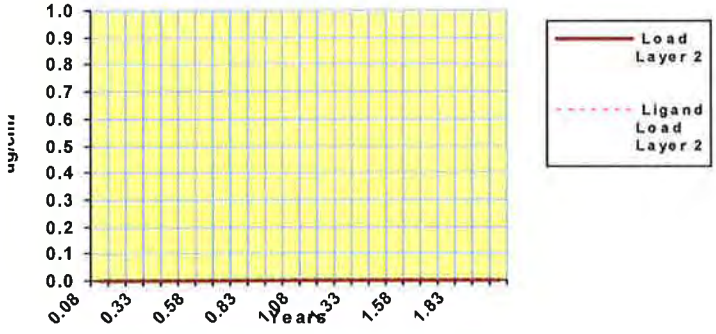
Water Solubility	(µg/mL)	1.10E+3	Moles Ligand / Moles Chemical	0.00
Henry's Law	(M^3atm/mol)	1.03E-2	Ligand Molecular Weight (g/mol)	0.00
K_{oc}	(µg/g)/(µg/mL)	166.00	Base Hydrolysis Rate(L/mol/day)	0.00
Valance	(g/mole)	0.00	Ligand Dissociation Constant	0.00
Air Diffusion Coefficient	(cm^2/sec)	7.90E-2	Neutral Hydrolysis Rate (L/mol/day)	0.00
Water Diffusion Coefficient	(cm^2/sec)	9.10E-6	Acid Hydrolysis Rate (L/mol/day)	0.00
Molecular Weight	(g/mol)	131.00		

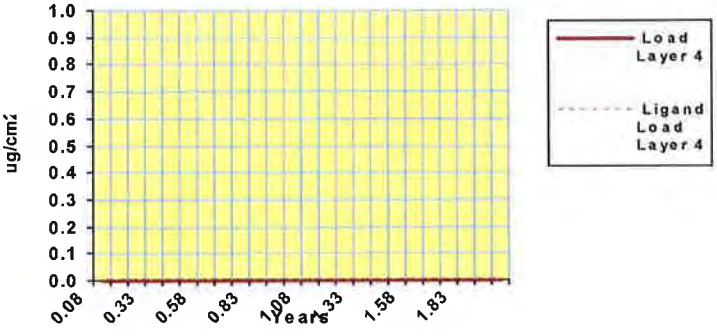
Output File: TCE 0.3@0-4, 0.01@4-6, 0@6-7
C:\SEVIEW63\31330TC6.OUT
Chemical File: TCE, NJDEP
C:\SEVIEW63\TCENJDEP.CHM
Soil File: Sand, Perm = 1.00E-3 cm/sec
C:\SEVIEW63\SANDNJ.SOI
Application File: SEVIEW Default Application Parameters
C:\SEVIEW63\31330A.APL

Sublayer Loads	1	2	3	4	5	6	7	8	9	10
Layer 1 (ug/g)	3.00E-01	3.00E-01	3.00E-01	3.00E-01						
Layer 2 (ug/g)	1.00E-02	1.00E-02								
Layer 3 (ug/g)										
Layer 4 (ug/g)										









SESOIL Pollutant Cycle Report

Scenario Description: TCE 0.3@0-4, 0.01@4-6, 0@6-7

SESOIL Output File: C:\SEVIEW63\31330TC6.OUT

SESOIL Process	Pollutant Mass (µg)	Percent of Total
Volatilized	4.600E+07	99.75
In Soil Air	1.313E-01	0.00
Sur. Runoff	0.000E+00	0.00
In Washld	0.000E+00	0.00
Ads On Soil	6.651E-01	0.00
Hydrol Soil	0.000E+00	0.00
Degrad Soil	0.000E+00	0.00
Pure Phase	0.000E+00	0.00
Complexed	0.000E+00	0.00
Immobile CEC	0.000E+00	0.00
Hydrol CEC	0.000E+00	0.00
In Soil Moi	9.028E-02	0.00
Hydrol Mois	0.000E+00	0.00
Degrad Mois	0.000E+00	0.00
Other Trans	0.000E+00	0.00
Other Sinks	0.000E+00	0.00
Gwr. Runoff	1.071E+05	0.23
Total Output	4.611E+07	99.98
Total Input	4.612E+07	
Input - Output	6.992E+03	

Maximum leachate concentration: 1.278E-02 **mg/l**

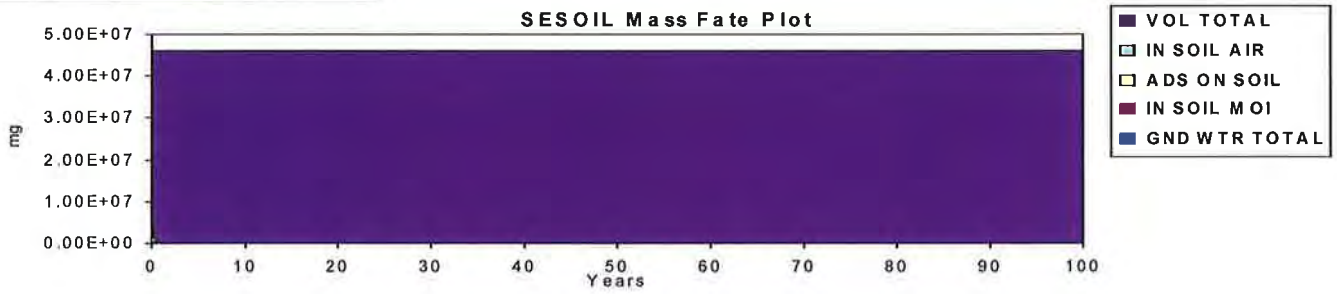
Climate File: CAMDEN
C:\SEVIEW63\CAMDEN.CLM

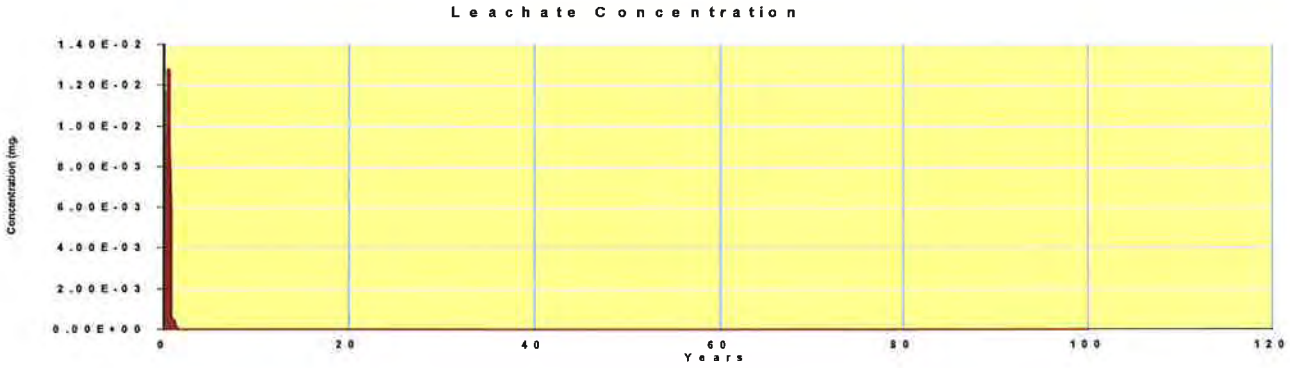
Chemical File: TCE, NJDEP
C:\SEVIEW63\TCENJDEP.CHM

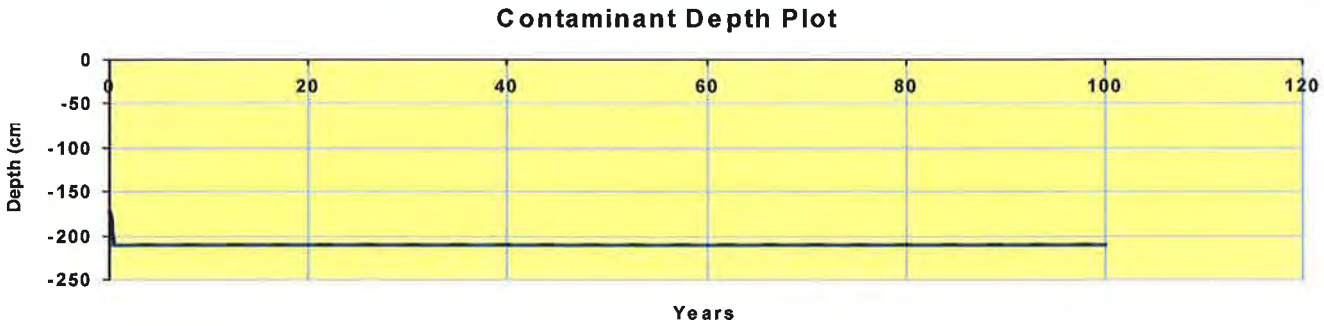
Soil File: Sand, Perm = 1.00E-3 cm/sec
C:\SEVIEW63\SANDNJ.SOI

Application File: SEVIEW Default Application Parameters
C:\SEVIEW63\31330A.APL

Starting Depth: 172.10 **cm**
Ending Depth: 210.00 **cm**
Total Depth: 210.00 **cm**







SESOIL Profile and Load Report

Layer No.	Number of Sub-Layers	Thickness		Intrinsic Permeability	Organic Carbon Content	Adsorption Coefficient	Cation Exchange Capacity	Freundlich Exponent	Solid Phase Degradation Rate	Liquid Phase Degradation Rate	Soil pH
		cm	feet	cm^2	percent	µg/g / µg/mL	mEq / 100 g soil	unitless	1/day	1/day	pH
1	5	150.0	4.92	1.00E-8	0.20	0.00	0.00	1.00	0.00E+00	0.00E+00	7.00
2	2	60.0	1.97	1.00E-8	0.20	0.00	0.00	1.00	0.00E+00	0.00E+00	7.00
3		0.0	0.00	1.00E-8	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00
4		0.0	0.00	1.00E-8	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00

Soil Parameters

Bulk Density (g/cm^3)	1.50
Effective Porosity (fraction)	0.30
Soil Pore Disconnectedness	3.70

Application Parameters

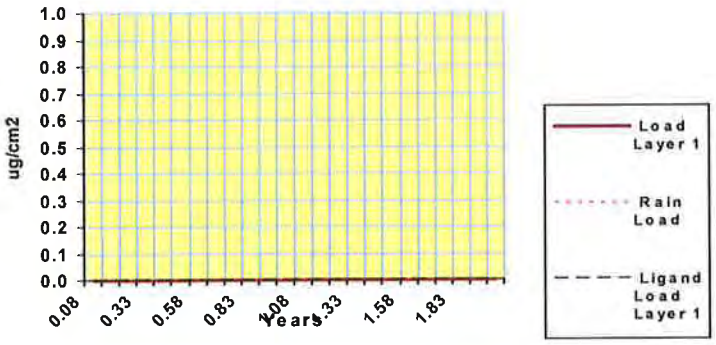
Area	cm^2	8.40E+5
	ft^2	904.17
Latitude	degrees	39.9
Spill Index		1

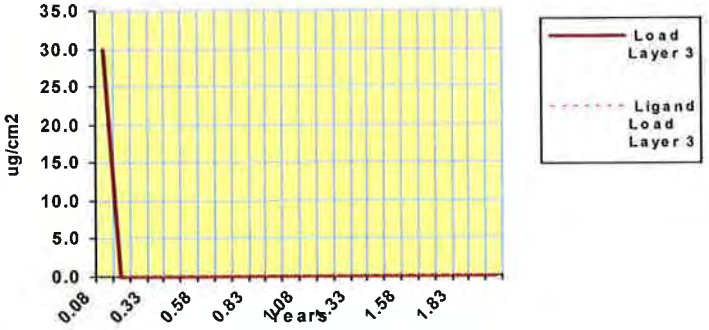
Chemical Parameters

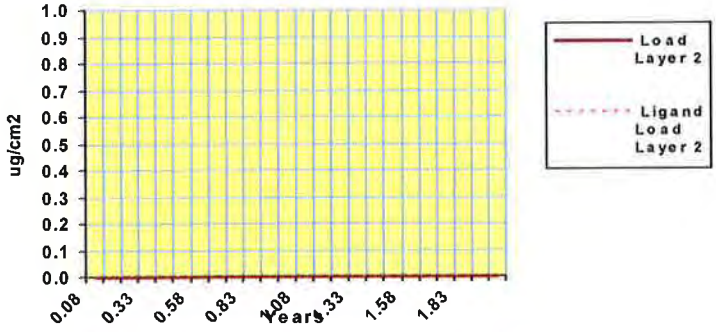
Water Solubility	(µg/mL)	2.25E+3	**Moles Ligand / Moles Chemical**	0.00
Henry's Law	(M^3atm/mol)	2.61E-2	**Ligand Molecular Weight**	(g/mol) 0.00
K_{oc}	(µg/g)/(µg/mL)	58.90	**Base Hydrolysis Rate**	(L/mol/day) 0.00
Valance	(g/mole)	0.00	**Ligand Dissociation Constant**	0.00
Air Diffusion Coefficient	(cm^2/sec)	9.00E-2	**Neutral Hydrolysis Rate**	(L/mol/day) 0.00
Water Diffusion Coefficient	(cm^2/sec)	1.04E-5	**Acid Hydrolysis Rate**	(L/mol/day) 0.00
Molecular Weight	(g/mol)	96.90		

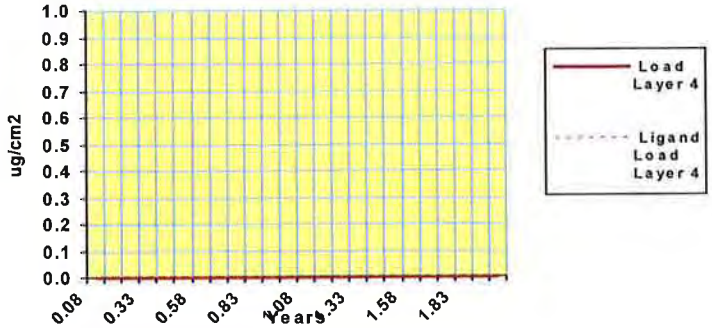
Output File: Borden DCE 0.1 ppm 0-5'
C:\SEVIEW63\BR26.OUT
Chemical File: 1,1-Dichloroethene, NJDEP
C:\SEVIEW63\11DICHLO.CHM
Soil File: Sandnj
C:\SEVIEW63\SANDNJ.SOI
Application File: SEVIEW Default Application Parameters
C:\SEVIEW63\DEFAULT.APL

Sublayer Loads	1	2	3	4	5	6	7	8	9	10
Layer 1 (ug/g)	1.00E-01	1.00E-01	1.00E-01	1.00E-01	1.00E-01					
Layer 2 (ug/g)										
Layer 3 (ug/g)										
Layer 4 (ug/g)										









SESOIL Pollutant Cycle Report

Scenario Description: Borden DCE 0.1 ppm 0-5'

SESOIL Output File: C:\SEVIEW63\BR26.OUT

SESOIL Process	Pollutant Mass (µg)	Percent of Total
Volatilized	1.890E+07	100.03
In Soil Air	4.398E-03	0.00
Sur. Runoff	0.000E+00	0.00
In Washld	0.000E+00	0.00
Ads On Soil	3.117E-03	0.00
Hydrol Soil	0.000E+00	0.00
Degrad Soil	0.000E+00	0.00
Pure Phase	0.000E+00	0.00
Complexed	0.000E+00	0.00
Immobile CEC	0.000E+00	0.00
Hydrol CEC	0.000E+00	0.00
In Soil Moi	1.192E-03	0.00
Hydrol Mois	0.000E+00	0.00
Degrad Mois	0.000E+00	0.00
Other Trans	0.000E+00	0.00
Other Sinks	0.000E+00	0.00
Gwr. Runoff	3.435E+00	0.00
Total Output	1.890E+07	100.03
Total Input	1.890E+07	
Input - Output	-4.896E+03	

Maximum leachate concentration: 8.234E-07 **mg/l**

Climate File: CAMDEN
C:\SEVIEW63\CAMDEN.CLM

Chemical File: 1,1-Dichloroethene, NJDEP
C:\SEVIEW63\11DICHLO.CHM

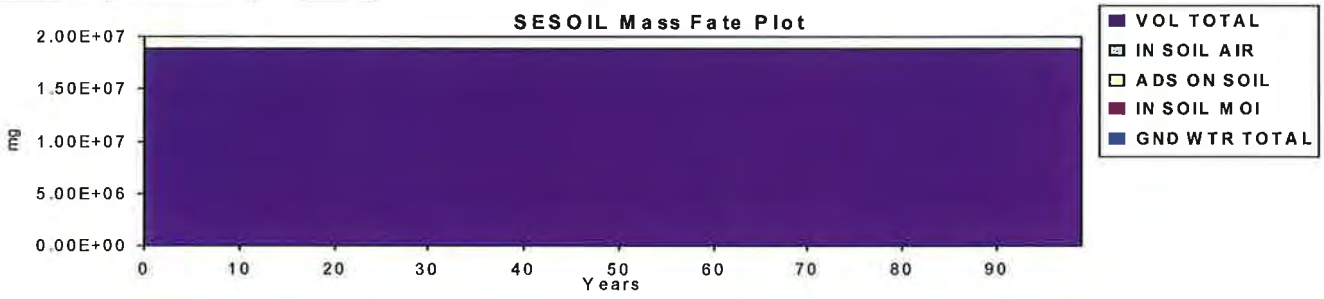
Soil File: Sandnj
C:\SEVIEW63\SANDNJ.SOI

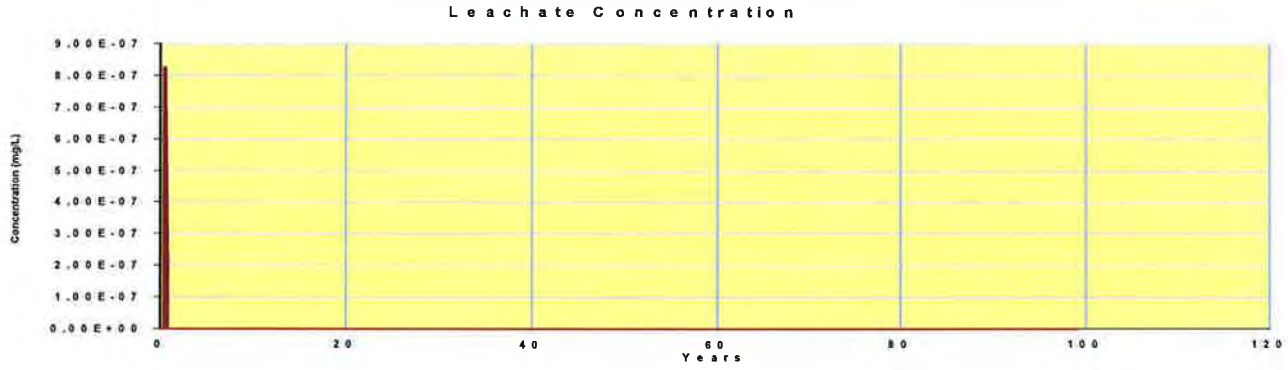
Application File: SEVIEW Default Application Parameters
C:\SEVIEW63\DEFAULT.APL

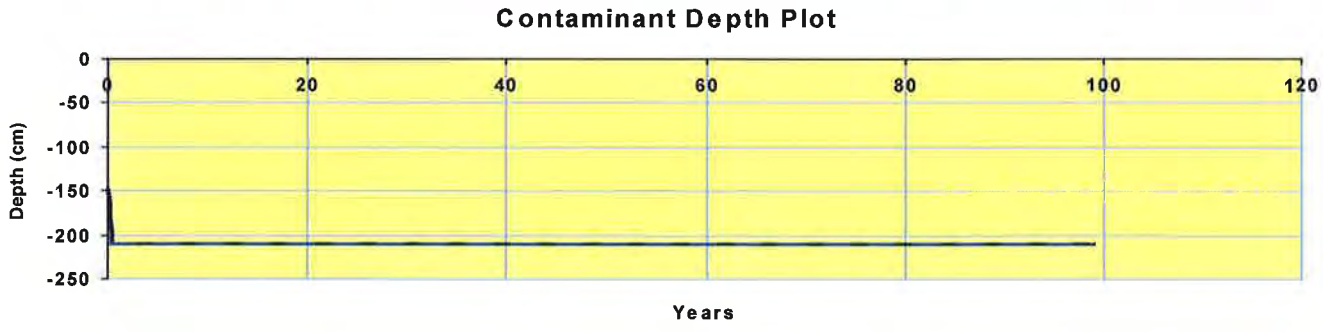
Starting Depth: 148.00 **cm**

Ending Depth: 210.00 **cm**

Total Depth: 210.00 **cm**







SESOIL Profile and Load Report

Layer No.	Number of Sub-Layers	Thickness		Intrinsic Permeability	Organic Carbon Content	Adsorption Coefficient	Cation Exchange Capacity	Freundlich Exponent	Solid Phase Degradation Rate	Liquid Phase Degradation Rate	Soil pH
		cm	feet	cm^2	percent	$\frac{\mu g/g}{\mu g/mL}$	$\frac{mEq}{100\ g\ soil}$	unitless	1/day	1/day	pH
1	4	120.0	3.94	1.00E-8	0.20	0.00	0.00	1.00	0.00E+00	0.00E+00	7.00
2	3	90.0	2.95	1.00E-8	0.20	0.00	0.00	1.00	0.00E+00	0.00E+00	7.00
3		0.0	0.00	1.00E-8	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00
4		0.0	0.00	1.00E-8	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00

Soil Parameters

Bulk Density (g/cm^3)	1.50
Effective Porosity (fraction)	0.30
Soil Pore Disconnectedness	3.70

Application Parameters

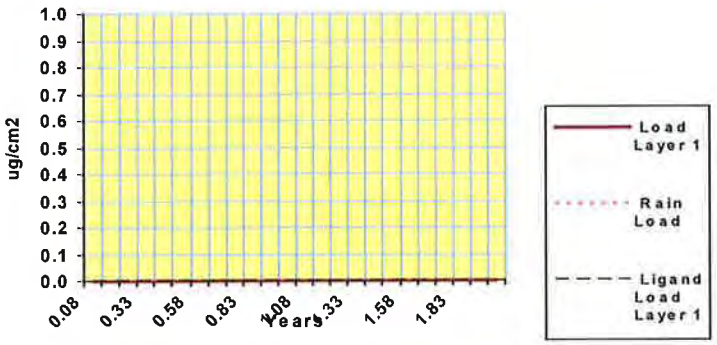
Area	cm^2	8.40E+5
	ft^2	904.17
Latitude	degrees	39.9
Spill Index		1

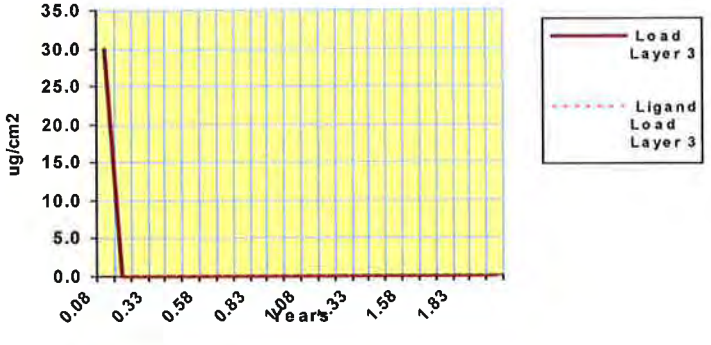
Chemical Parameters

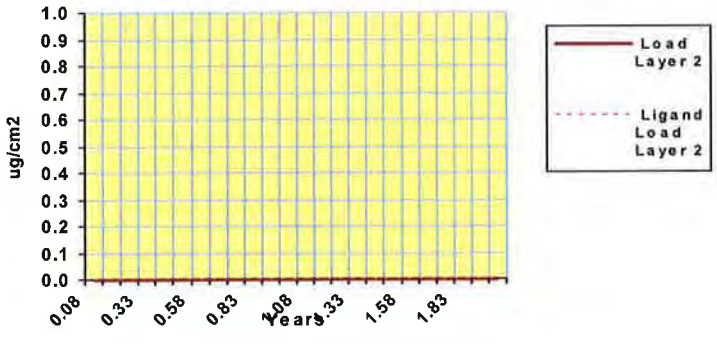
Water Solubility	(µg/mL)	200.0	**Moles Ligand / Moles Chemical**	0.00
Henry's Law	(M^3atm/mol)	1.84E-2	**Ligand Molecular Weight** (g/mol)	0.00
K_{OC}	(µg/g)/(µg/mL)	155.00	**Base Hydrolysis Rate** (L/mol/day)	0.00
Valance	(g/mole)	0.00	**Ligand Dissociation Constant**	0.00
Air Diffusion Coefficient	(cm^2/sec)	7.20E-2	**Neutral Hydrolysis Rate** (L/mol/day)	0.00
Water Diffusion Coefficient	(cm^2/sec)	8.20E-6	**Acid Hydrolysis Rate** (L/mol/day)	0.00
Molecular Weight	(g/mol)	166.00		

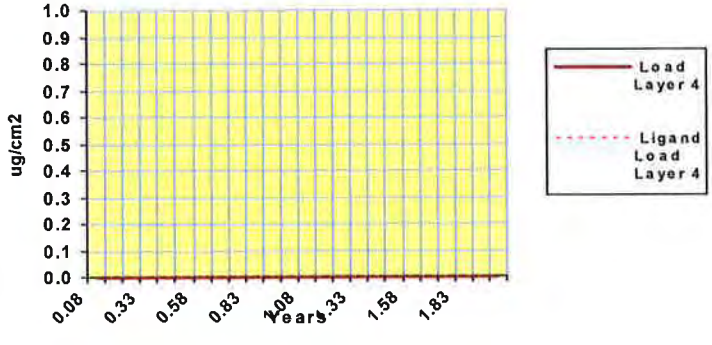
Output File: Borden PCE 0.1 ppm 0-4'
C:\SEVIEW63\BR27.OUT
Chemical File: Tetrachloroethene, NJDEP
C:\SEVIEW63\TETRACHL.CHM
Soil File: Sandnj
C:\SEVIEW63\SANDNJ.SOI
Application File: SEVIEW Default Application Parameters
C:\SEVIEW63\DEFAULT.APL

Sublayer Loads	1	2	3	4	5	6	7	8	9	10
Layer 1 (ug/g)	1.00E-01	1.00E-01	1.00E-01	1.00E-01						
Layer 2 (ug/g)										
Layer 3 (ug/g)										
Layer 4 (ug/g)										









SESOIL Pollutant Cycle Report

Scenario Description: Borden PCE 0.1 ppm 0-4'

SESOIL Output File: C:\SEVIEW63\BR27.OUT

SESOIL Process	Pollutant Mass (µg)	Percent of Total
Volatilized	1.511E+07	99.98
In Soil Air	3.100E-03	0.00
Sur. Runoff	0.000E+00	0.00
In Washld	0.000E+00	0.00
Ads On Soil	8.204E-03	0.00
Hydrol Soil	0.000E+00	0.00
Degrad Soil	0.000E+00	0.00
Pure Phase	0.000E+00	0.00
Complexed	0.000E+00	0.00
Immobile CEC	0.000E+00	0.00
Hydrol CEC	0.000E+00	0.00
In Soil Moi	1.192E-03	0.00
Hydrol Mois	0.000E+00	0.00
Degrad Mois	0.000E+00	0.00
Other Trans	0.000E+00	0.00
Other Sinks	0.000E+00	0.00
Gwr. Runoff	3.217E-01	0.00
Total Output	1.511E+07	99.98
Total Input	1.512E+07	
Input - Output	2.926E+03	

Maximum leachate concentration: 1.000E-10 **mg/l**

Climate File: CAMDEN
C:\SEVIEW63\CAMDEN.CLM

Chemical File: Tetrachloroethene, NJDEP
C:\SEVIEW63\TETRACHL.CHM

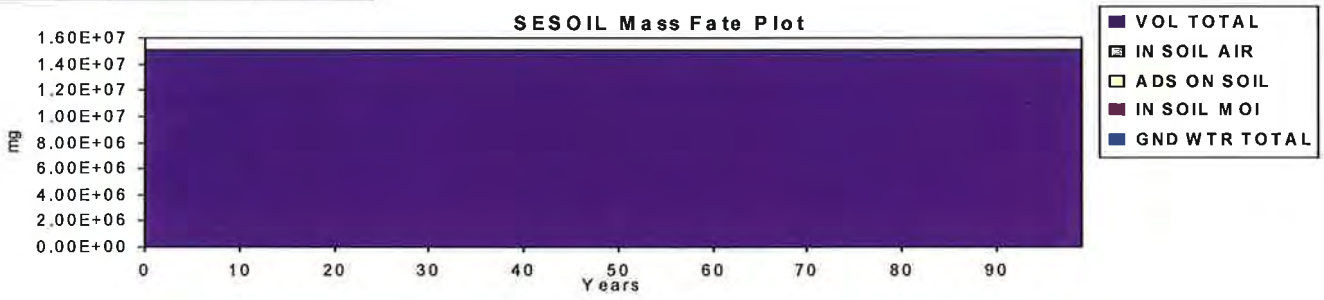
Soil File: Sandnj
C:\SEVIEW63\SANDNJ.SOI

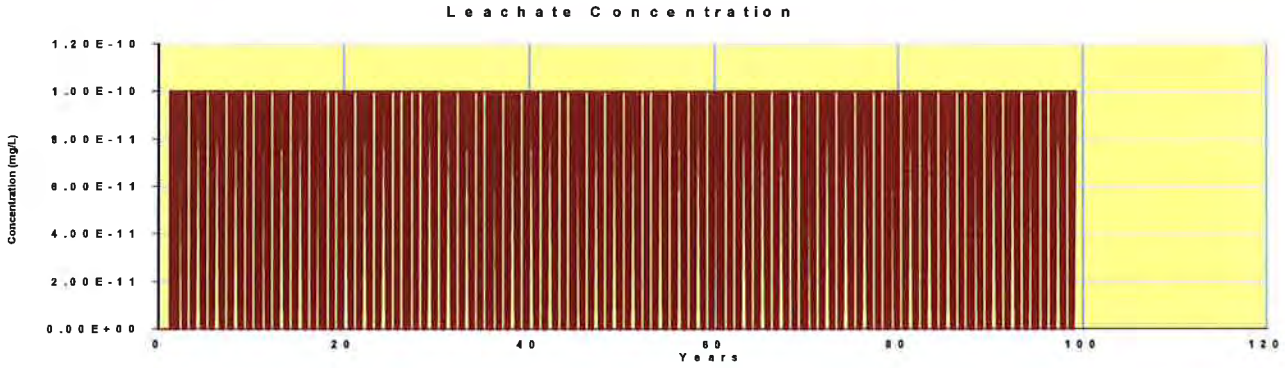
Application File: SEVIEW Default Application Parameters
C:\SEVIEW63\DEFAULT.APL

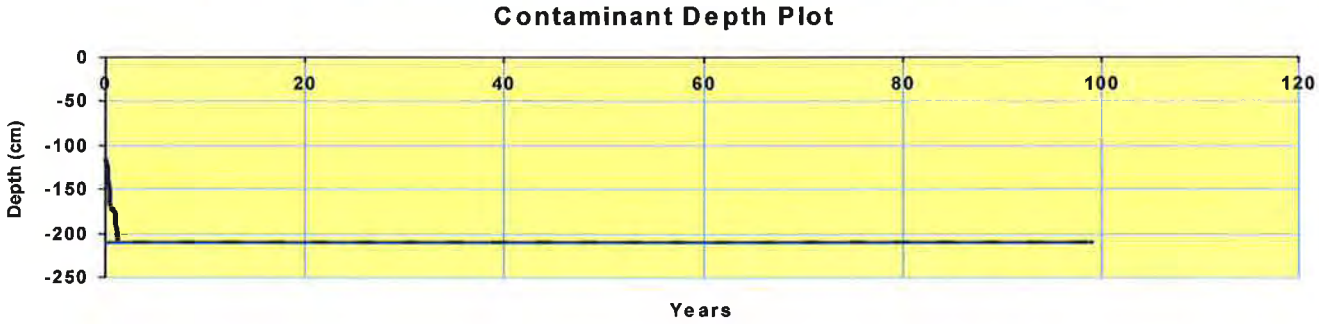
Starting Depth: 114.70 **cm**

Ending Depth: 210.00 **cm**

Total Depth: 210.00 **cm**







SESOIL Profile and Load Report

Layer No.	Number of Sub-Layers	Thickness		Intrinsic Permeability	Organic Carbon Content	Adsorption Coefficient	Cation Exchange Capacity	Freundlich Exponent	Solid Phase Degradation Rate	Liquid Phase Degradation Rate	Soil pH
		cm	feet	cm^2	percent	$\frac{\mu g/g}{\mu g/mL}$	$\frac{mEq}{100\ g\ soil}$	unitless	1/day	1/day	pH
1	4	120.0	3.94	1.00E-8	0.20	0.00	0.00	1.00	0.00E+00	0.00E+00	7.00
2	3	90.0	2.95	1.00E-8	0.20	0.00	0.00	1.00	0.00E+00	0.00E+00	7.00
3		0.0	0.00	1.00E-8	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00
4		0.0	0.00	1.00E-8	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00

Soil Parameters

Bulk Density (g/cm^3)	1.50
Effective Porosity (fraction)	0.30
Soil Pore Disconnectedness	3.70

Application Parameters

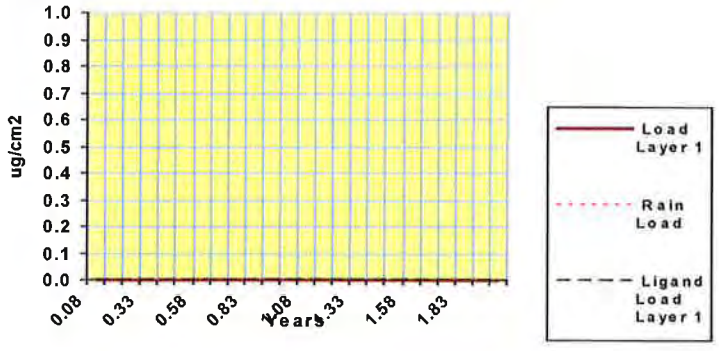
Area	cm^2	8.40E+5
	ft^2	904.17
Latitude	degrees	39.9
Spill Index		1

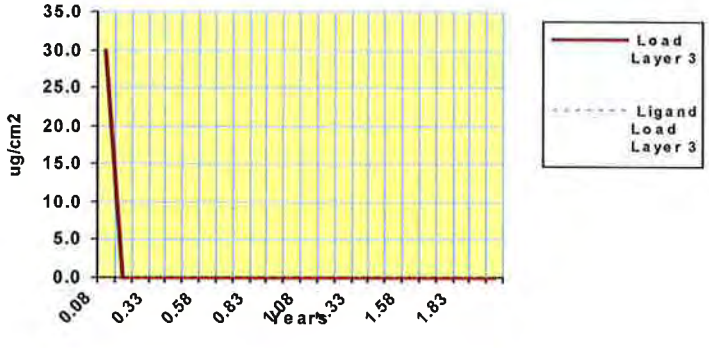
Chemical Parameters

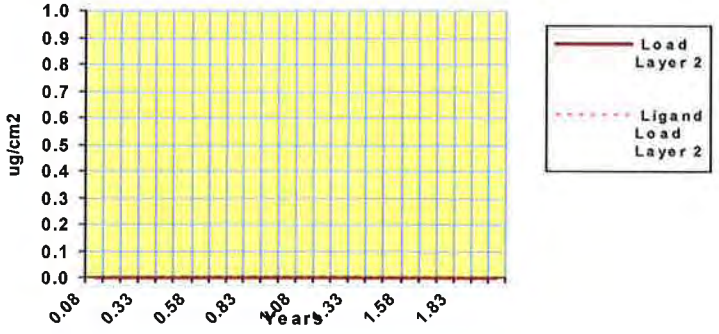
Water Solubility	(µg/mL)	1.75E+3	Moles Ligand / Moles Chemical	0.00
Henry's Law	(M^3atm/mol)	5.55E-3	Ligand Molecular Weight (g/mol)	0.00
K_{oc}	(µg/g)/(µg/mL)	58.90	Base Hydrolysis Rate (L/mol/day)	0.00
Valance	(g/mole)	0.00	Ligand Dissociation Constant	0.00
Air Diffusion Coefficient	(cm^2/sec)	8.80E-2	Neutral Hydrolysis Rate (L/mol/day)	0.00
Water Diffusion Coefficient	(cm^2/sec)	9.80E-6	Acid Hydrolysis Rate (L/mol/day)	0.00
Molecular Weight	(g/mol)	78.10		

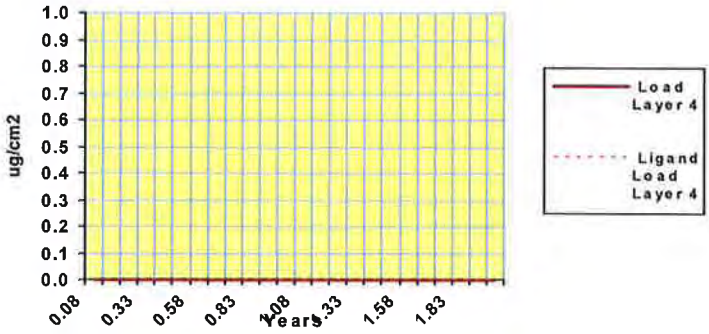
Output File: Borden Benzene 0.1 ppm 0-4'
C:\SEVIEW63\BR28.OUT
Chemical File: Benzene, NJDEP
C:\SEVIEW63\BENZENEN.CHM
Soil File: Sandnj
C:\SEVIEW63\SANDNJ.SOI
Application File: SEVIEW Default Application Parameters
C:\SEVIEW63\DEFAULT.APL

Sublayer Loads	1	2	3	4	5	6	7	8	9	10
Layer 1 (ug/g)	1.00E-01	1.00E-01	1.00E-01	1.00E-01						
Layer 2 (ug/g)										
Layer 3 (ug/g)										
Layer 4 (ug/g)										









SESOIL Pollutant Cycle Report

Scenario Description: Borden Benzene 0.1 ppm 0-4'

SESOIL Output File: C:\SEVIEW63\BR28.OUT

SESOIL Process	Pollutant Mass (µg)	Percent of Total
Volatilized	1.510E+07	99.90
In Soil Air	9.352E-03	0.00
Sur. Runoff	0.000E+00	0.00
In Washld	0.000E+00	0.00
Ads On Soil	3.117E-02	0.00
Hydrol Soil	0.000E+00	0.00
Degrad Soil	0.000E+00	0.00
Pure Phase	0.000E+00	0.00
Complexed	0.000E+00	0.00
Immobile CEC	0.000E+00	0.00
Hydrol CEC	0.000E+00	0.00
In Soil Moi	1.192E-02	0.00
Hydrol Mois	0.000E+00	0.00
Degrad Mois	0.000E+00	0.00
Other Trans	0.000E+00	0.00
Other Sinks	0.000E+00	0.00
Gwr. Runoff	1.440E+04	0.10
Total Output	1.511E+07	100.00
Total Input	1.512E+07	
Input - Output	6.383E+02	

Maximum leachate concentration: 1.842E-03 **mg/l**

Climate File: CAMDEN
C:\SEVIEW63\CAMDEN.CLM

Chemical File: Benzene, NJDEP
C:\SEVIEW63\BENZENEN.CHM

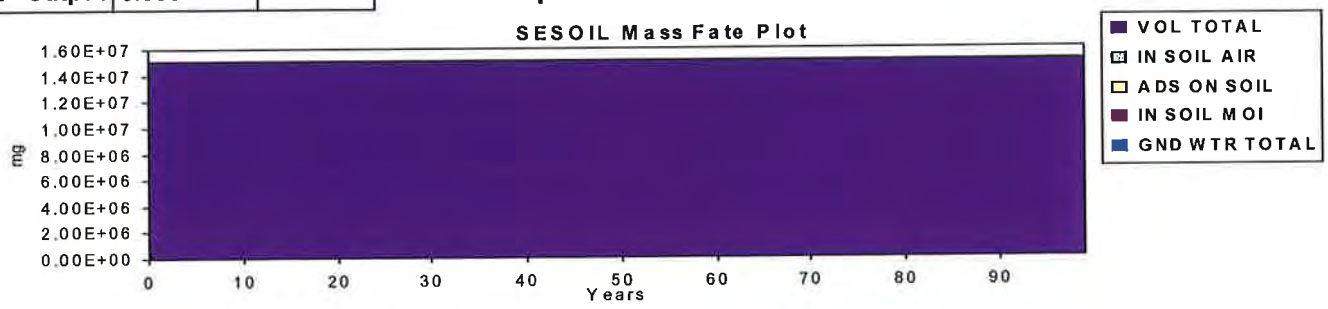
Soil File: Sandnj
C:\SEVIEW63\SANDNJ.SOI

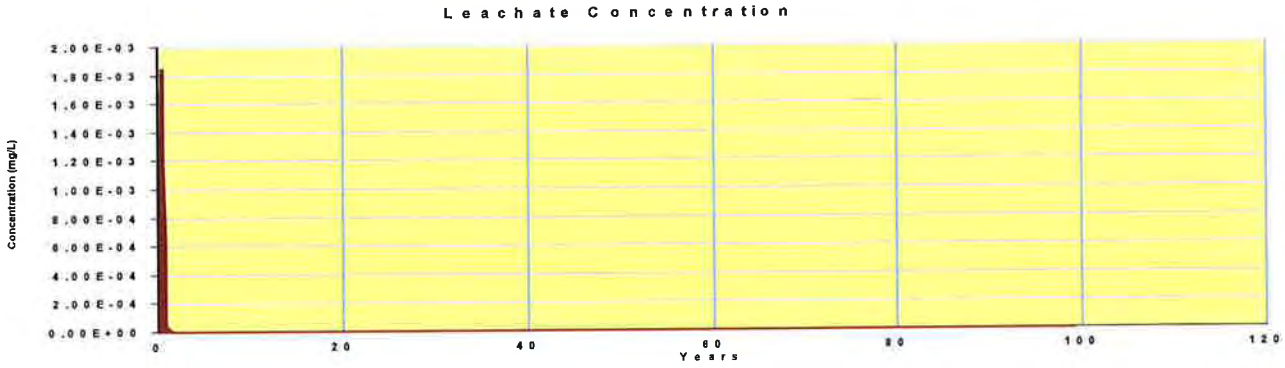
Application File: SEVIEW Default Application Parameters
C:\SEVIEW63\DEFAULT.APL

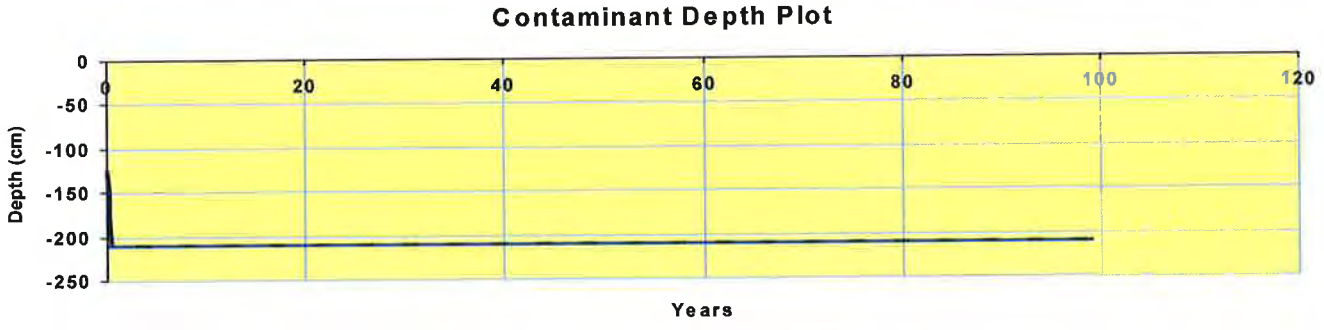
Starting Depth: 125.30 **cm**

Ending Depth: 210.00 **cm**

Total Depth: 210.00 **cm**







SESOIL Profile and Load Report

Layer No.	Number of Sub-Layers	Thickness		Intrinsic Permeability	Organic Carbon Content	Adsorption Coefficient	Cation Exchange Capacity	Freundlich Exponent	Solid Phase Degradation Rate	Liquid Phase Degradation Rate	Soil pH
		cm	feet	cm^2	percent	µg/g / µg/mL	mEq / 100 g soil	unitless	1/day	1/day	pH
1	3	90.0	2.95	1.00E-8	0.20	0.00	0.00	1.00	0.00E+00	0.00E+00	7.00
2	4	120.0	3.94	1.00E-8	0.20	0.00	0.00	1.00	0.00E+00	0.00E+00	7.00
3		0.0	0.00	1.00E-8	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00
4		0.0	0.00	1.00E-8	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00

Soil Parameters

Bulk Density (g/cm^3)	1.50
Effective Porosity (fraction)	0.30
Soil Pore Disconnectedness	3.70

Application Parameters

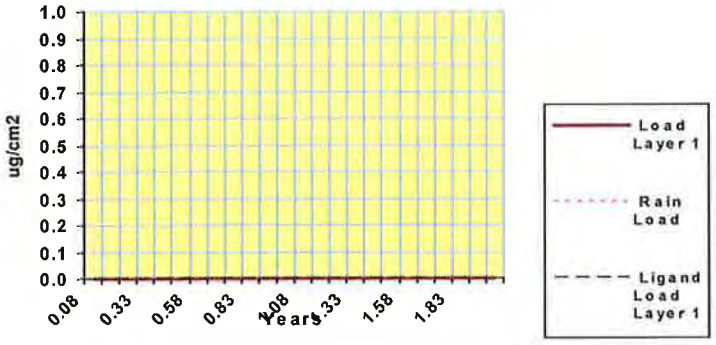
Area	cm^2	8.40E+5
	ft^2	904.17
Latitude	degrees	39.9
Spill Index		1

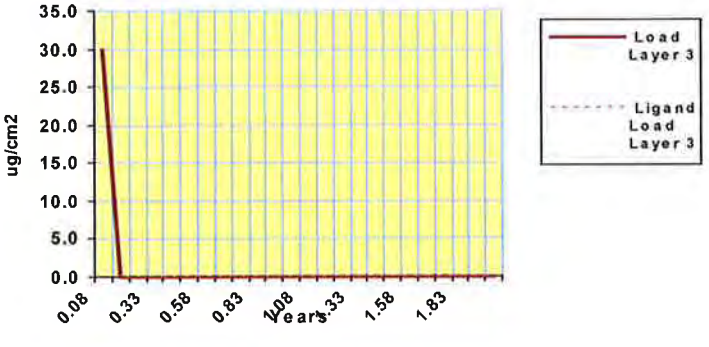
Chemical Parameters

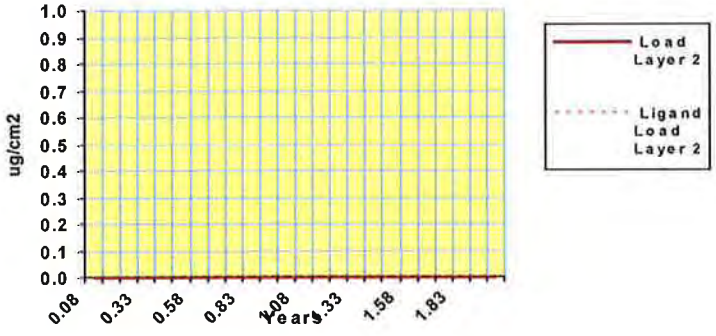
Water Solubility (µg/mL)	1.75E+3	Moles Ligand / Moles Chemical	0.00
Henry's Law (M^3atm/mol)	5.55E-3	Ligand Molecular Weight (g/mol)	0.00
K_{OC} (µg/g)/(µg/mL)	58.90	Base Hydrolysis Rate (L/mol/day)	0.00
Valance (g/mole)	0.00	Ligand Dissociation Constant	0.00
Air Diffusion Coefficient (cm^2/sec)	8.80E-2	Neutral Hydrolysis Rate (L/mol/day)	0.00
Water Diffusion Coefficient (cm^2/sec)	9.80E-6	Acid Hydrolysis Rate (L/mol/day)	0.00
Molecular Weight (g/mol)	78.10		

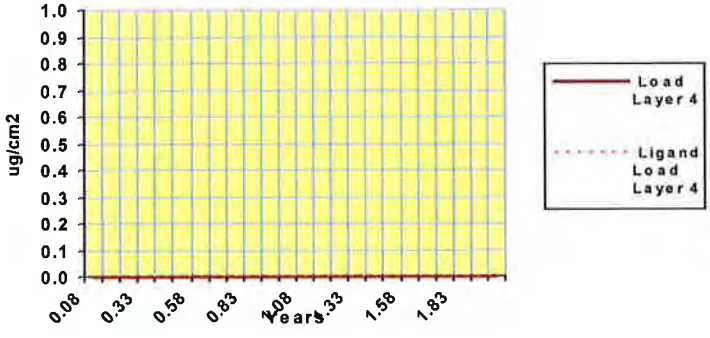
Output File: Borden Benzene 0.8 ppm 0-3'
C:\SEVIEW63\BR29.OUT
Chemical File: Benzene, NJDEP
C:\SEVIEW63\BENZENEN.CHM
Soil File: Sandnj
C:\SEVIEW63\SANDNJ.SOI
Application File: SEVIEW Default Application Parameters
C:\SEVIEW63\DEFAULT.APL

Sublayer Loads	1	2	3	4	5	6	7	8	9	10
Layer 1 (ug/g)	8.00E-01	8.00E-01	8.00E-01							
Layer 2 (ug/g)										
Layer 3 (ug/g)										
Layer 4 (ug/g)										









SESOIL Pollutant Cycle Report

Scenario Description: Borden Benzene 0.8 ppm 0-3'

SESOIL Output File: C:\SEVIEW63\BR29.OUT

SESOIL Process	Pollutant Mass (µg)	Percent of Total
Volatilized	9.071E+07	100.00
In Soil Air	9.352E-03	0.00
Sur. Runoff	0.000E+00	0.00
In Washld	0.000E+00	0.00
Ads On Soil	3.117E-02	0.00
Hydrol Soil	0.000E+00	0.00
Degrad Soil	0.000E+00	0.00
Pure Phase	0.000E+00	0.00
Complexed	0.000E+00	0.00
Immobile CEC	0.000E+00	0.00
Hydrol CEC	0.000E+00	0.00
In Soil Moi	1.192E-02	0.00
Hydrol Mois	0.000E+00	0.00
Degrad Mois	0.000E+00	0.00
Other Trans	0.000E+00	0.00
Other Sinks	0.000E+00	0.00
Gwr. Runoff	1.467E+03	0.00
Total Output	9.072E+07	100.00
Total Input	9.072E+07	
Input - Output	-5.280E+02	

Maximum leachate concentration: 4.539E-04 **mg/l**

Climate File: CAMDEN
C:\SEVIEW63\CAMDEN.CLM

Chemical File: Benzene, NJDEP
C:\SEVIEW63\BENZENEN.CHM

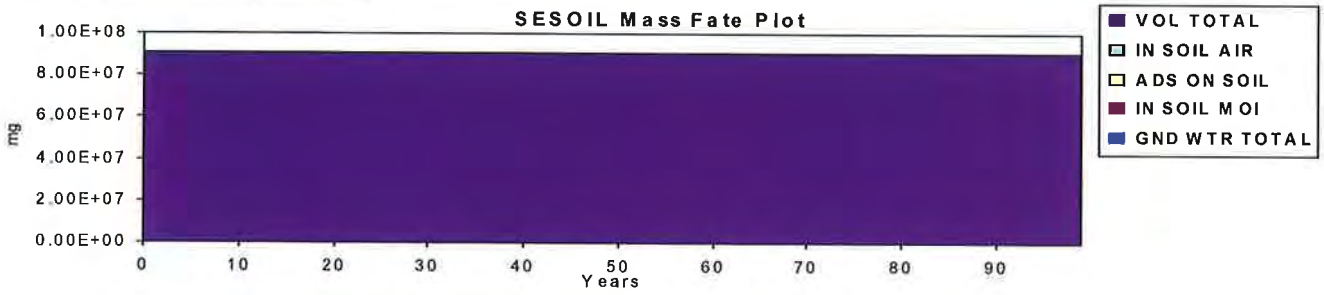
Soil File: Sandnj
C:\SEVIEW63\SANDNJ.SOI

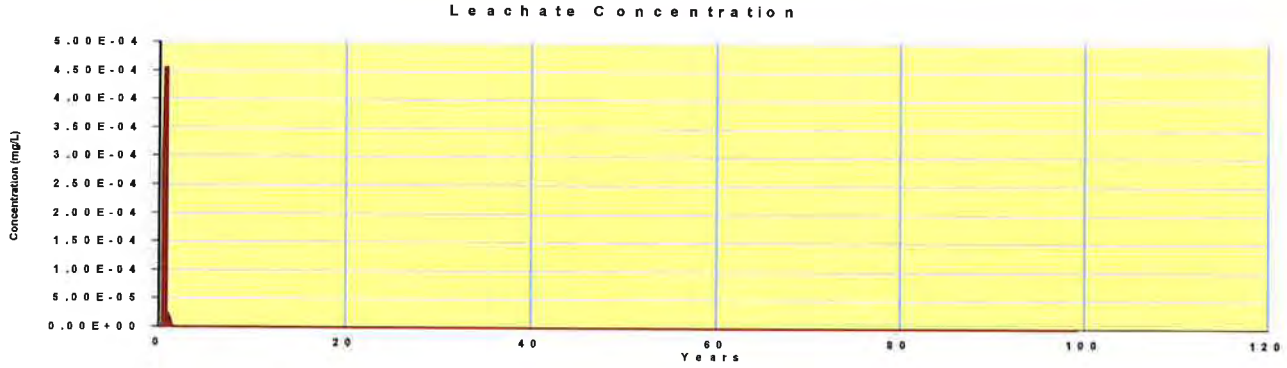
Application File: SEVIEW Default Application Parameters
C:\SEVIEW63\DEFAULT.APL

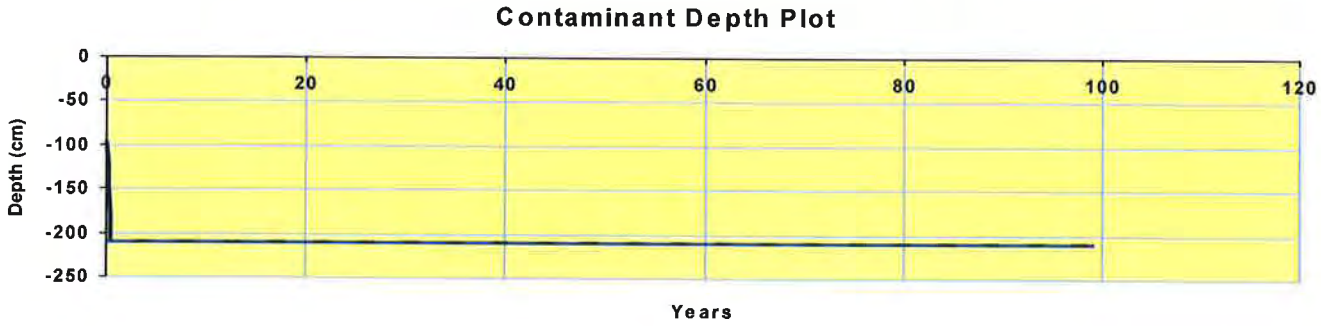
Starting Depth: 96.22 **cm**

Ending Depth: 210.00 **cm**

Total Depth: 210.00 **cm**







SESOIL Profile and Load Report

Layer No.	Number of Sub-Layers	Thickness		Intrinsic Permeability	Organic Carbon Content	Adsorption Coefficient	Cation Exchange Capacity	Freundlich Exponent	Solid Phase Degradation Rate	Liquid Phase Degradation Rate	Soil pH
		cm	feet	cm^2	percent	$\frac{\mu g/g}{\mu g/mL}$	$\frac{mEq}{100\ g\ soil}$	unitless	1/day	1/day	pH
1	6	180.0	5.91	1.00E-8	0.20	0.00	0.00	1.00	0.00E+00	0.00E+00	7.00
2	1	30.0	0.98	1.00E-8	0.20	0.00	0.00	1.00	0.00E+00	0.00E+00	7.00
3		0.0	0.00	1.00E-8	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00
4		0.0	0.00	1.00E-8	0.00	0.00	0.00	0.00	0.00E+00	0.00E+00	0.00

Soil Parameters

Bulk Density (g/cm^3)	1.50
Effective Porosity (fraction)	0.30
Soil Pore Disconnectedness	3.70

Application Parameters

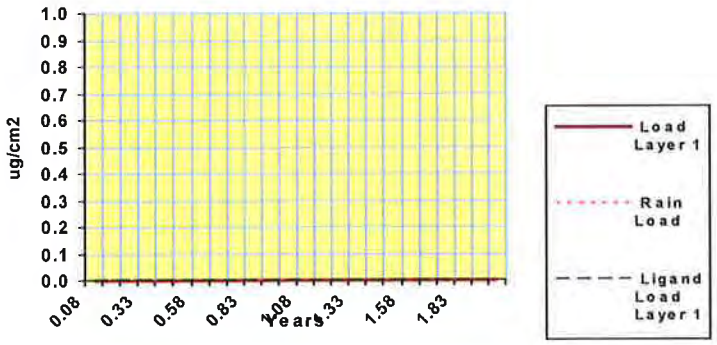
Area	cm^2	8.40E+5
	ft^2	904.17
Latitude	degrees	39.9
Spill Index		1

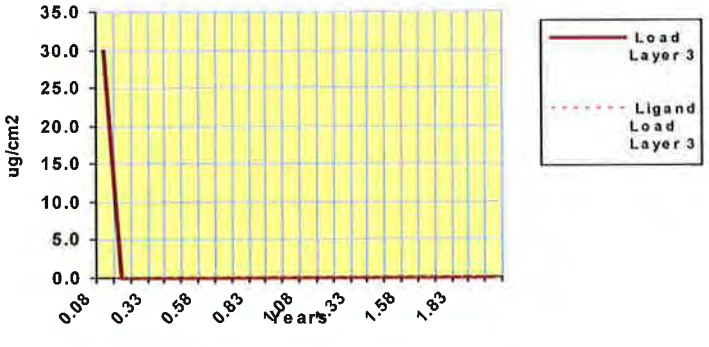
Chemical Parameters

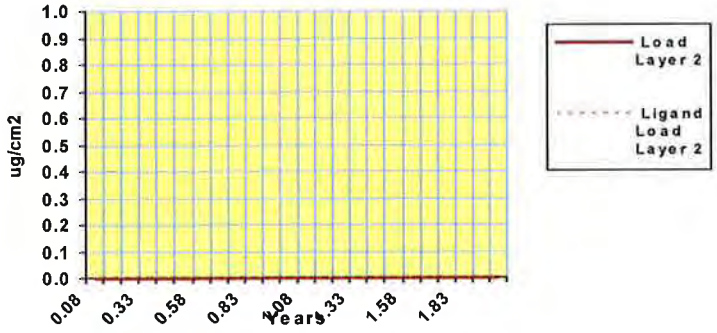
Water Solubility	(µg/mL)	1.33E+3	**Moles Ligand / Moles Chemical**	0.00
Henry's Law	(M^3atm/mol)	1.72E-2	**Ligand Molecular Weight**	(g/mol) 0.00
K_{oc}	(µg/g)/(µg/mL)	110.00	**Base Hydrolysis Rate**	(L/mol/day) 0.00
Valance	(g/mole)	0.00	**Ligand Dissociation Constant**	0.00
Air Diffusion Coefficient	(cm^2/sec)	7.80E-2	**Neutral Hydrolysis Rate**	(L/mol/day) 0.00
Water Diffusion Coefficient	(cm^2/sec)	8.80E-6	**Acid Hydrolysis Rate**	(L/mol/day) 0.00
Molecular Weight	(g/mol)	133.00		

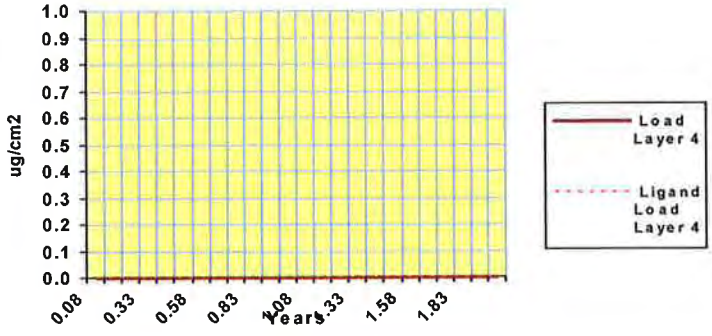
Output File: Borden TCA 10 ppm 0-6'
C:\SEVIEW63\BR31.OUT
Chemical File: 1,1,1-Trichloroethane, NJDEP
C:\SEVIEW63\111TRICH.CHM
Soil File: Sandnj
C:\SEVIEW63\SANDNJ.SOI
Application File: SEVIEW Default Application Parameters
C:\SEVIEW63\DEFAULT.APL

Sublayer Loads	1	2	3	4	5	6	7	8	9	10
Layer 1 (ug/g)	1.40E+01	1.40E+01	1.40E+01	1.40E+01	1.40E+01	1.40E+01				
Layer 2 (ug/g)										
Layer 3 (ug/g)										
Layer 4 (ug/g)										









SESOIL Pollutant Cycle Report

Scenario Description: Borden TCA 10 ppm 0-6'

SESOIL Output File: C:\SEVIEW63\BR31.OUT

SESOIL Process	Pollutant Mass (µg)	Percent of Total
Volatilized	3.169E+09	99.83
In Soil Air	2.898E-03	0.00
Sur. Runoff	0.000E+00	0.00
In Washld	0.000E+00	0.00
Ads On Soil	5.821E-03	0.00
Hydrol Soil	0.000E+00	0.00
Degrad Soil	0.000E+00	0.00
Pure Phase	0.000E+00	0.00
Complexed	0.000E+00	0.00
Immobile CEC	0.000E+00	0.00
Hydrol CEC	0.000E+00	0.00
In Soil Moi	1.192E-03	0.00
Hydrol Mois	0.000E+00	0.00
Degrad Mois	0.000E+00	0.00
Other Trans	0.000E+00	0.00
Other Sinks	0.000E+00	0.00
Gwr. Runoff	4.964E+06	0.16
Total Output	3.174E+09	99.99
Total Input	3.175E+09	
Input - Output	2.924E+05	

Maximum leachate concentration: 3.790E-01 **mg/l**

Climate File: CAMDEN
C:\SEVIEW63\CAMDEN.CLM

Chemical File: 1,1,1-Trichloroethane, NJDEP
C:\SEVIEW63\111TRICH.CHM

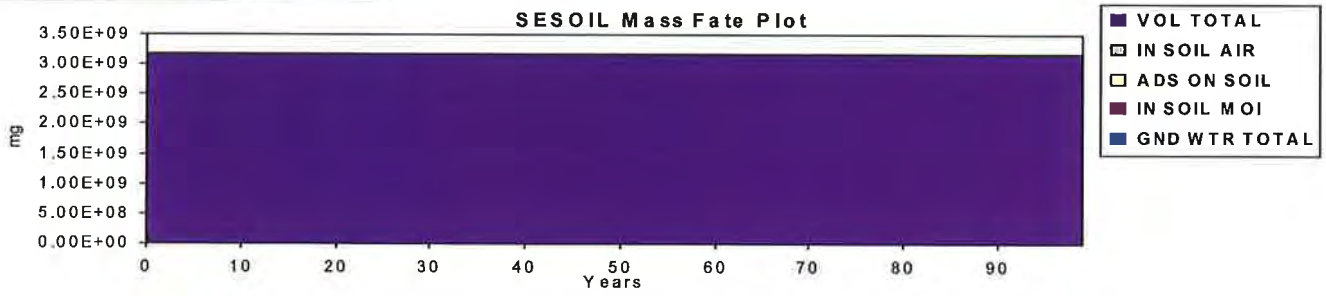
Soil File: Sandnj
C:\SEVIEW63\SANDNJ.SOI

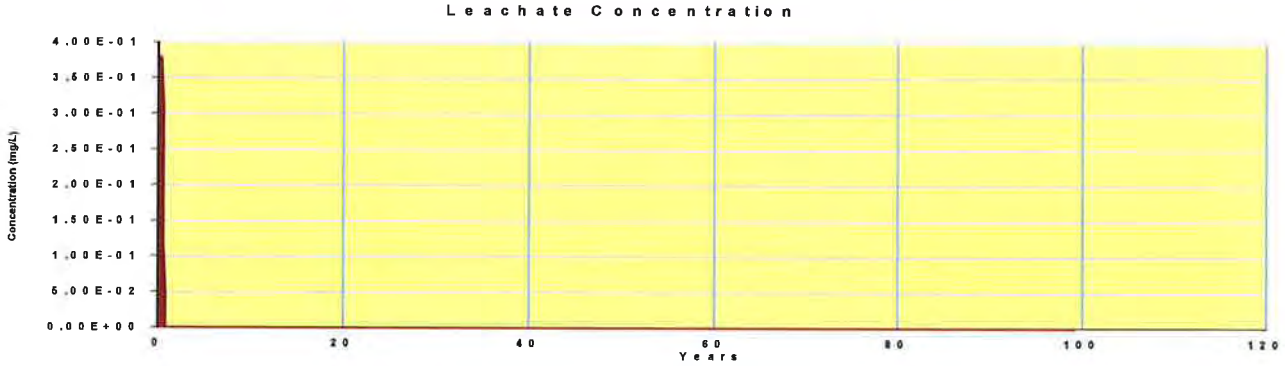
Application File: SEVIEW Default Application Parameters
C:\SEVIEW63\DEFAULT.APL

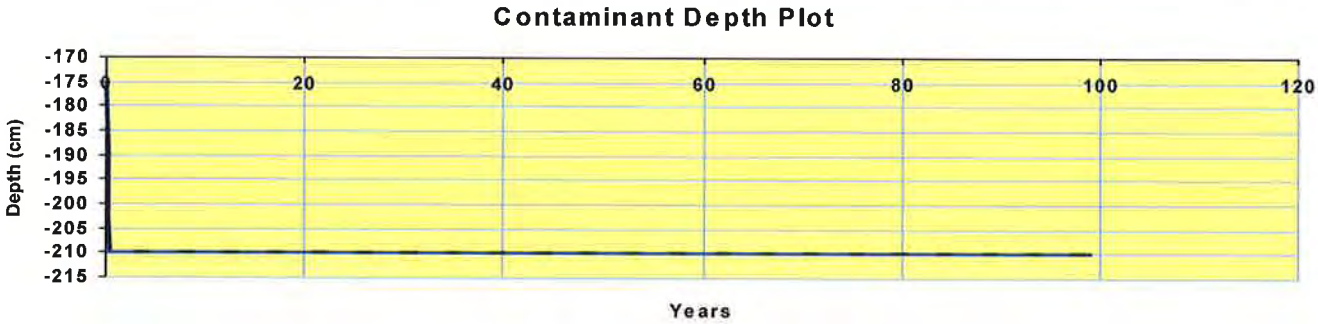
Starting Depth: 175.90 **cm**

Ending Depth: 210.00 **cm**

Total Depth: 210.00 **cm**







Paul Sanders Paul.Sanders@dep.state.nj.us Feb 28

Marc,
The above is not an LSRP case, therefore I would normally respond to the case manager. However, in an effort to speed things up, I am providing the following initial comments to both of you pertaining to the above site regarding SESOIL-generated impact to ground water alternative remediation standards.
1. It looks like you have calculated theoretical alternative remediation standards, based on assumed contaminant concentrations, rather than running the concentrations that are actually present at the site, correct? If so, then the goal would be to remediate to the proposed concentration distribution or demonstrate that actual site concentrations conform to the calculated standards.
2. You have VOLF turned on with a soil texture of sand, which is why almost all of the contamination volatilizes instead of reaching ground water. This is OK assuming that a) the area is not or is not going to be capped, and b) the soil texture is actually sand. The text discusses soil texture sampling but no supporting info is presented. Please submit the soil texture information and include a discussion. As per guidance, sand may be used, and the VOLF factor turned on, if at least 50% of the soil vertical profile is sand.
3. A water table of 7 feet is assumed and generally seems supported by the various boring logs submitted, but this should be discussed in the text. It should be made clear what depth to ground water exists underneath the contaminated area(s).
Thank you

Paul F. Sanders, Ph.D.
Research Scientist

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William H. Kirchner, PE, CME, VP

Joseph R. Hirsh, PE, CME, CPWM
Thomas J. Miller, PE, CME, PP
Joseph P. Orsino, CET
Marc H. Selover, LSRP, PG

Stacey E. Arcari, PE, PP, CME, PTOE
Rakesh R. Darji, PE, CME, PP, CFM
G. Jeffrey Hanson, PE, CME
Timothy Kaluhiokalani, LLA, PP
John L. Scott, Jr., PLS
Christopher M. Trebisky, PE, CME, PLS, PP, LEED AP
Patrick S. Vitarelli, PLS, PP
Charles L. Walton, Jr., PE & LS, PP

July 27, 2012

#31330-01

Paul F. Sanders, Ph.D.
Bureau of Environmental Evaluation and Risk Assessment
Division of Publicly Funded Site Remediation
New Jersey Dept. of Environmental Protection
Mail Code 401-04M
PO Box 420
Trenton, NJ 08625-0420

Re: Former Borden Chemical Printing Facility
1625 Federal Street
Block 1184, Lot 5
City of Camden, Camden County
NJDEP PI #G000003602

Dear Dr. Sanders:

Environmental Resolutions, Inc. (ERI) has prepared this letter to respond to your February 28, 2012 email concerning the Alternative Soil Remediation Standards (ASRS) proposed for the above referenced site and to document our recent conversations and emails. ASRS have been proposed for the impact to groundwater pathway for benzene, trichloroethene, tetrachloroethene, 1,1-dichloroethene, and 1,1,1-trichloroethene. The SESOIL model was used to develop the proposed site specific Impact to Groundwater Soil Remediation Standards IGWSRS. Replies to your comments are provided below.

1. ERI has calculated theoretical ASRS distributions that will be used as remedial goals. The objective will be to remediate to the proposed concentration distributions.

2. As per the Department's SESOIL model, VOLF was turned on because the soil texture had been determined. Soil texture results are attached with the corresponding borings logs. Based on the soil texture results and the soil logs, ERI has concluded that greater than 50% of the vertical soil profile is sand.

   ERI understands that the SESOIL model simulated pervious conditions that may not be applicable if the areas of contamination are capped. To resolve this concern, ERI proposes to revise the Remedial Action Workplan to indicate the proposed ASRS will used in areas that are under previous surfaces or under buildings where sub-slab vapor intrusion mitigation systems have been installed.

3. Groundwater has been encountered at depths greater than 7 feet throughout the site including underneath the contaminated areas where the proposed ARSR will be used.

Please call if you have any further questions regarding this project.

Sincerely,
Environmental Resolutions, Inc.

Marc H. Selover

Marc H. Selover, P.G.

Attachments: Soil Texture Results

cc: James Harveson, AICP, Director of Economic Development, Camden Redevelopment Agency (via email)
Kevin McAllister, P.G., Brownfield Redevelopment Solutions, Inc. (via email)
Christopher Dwyer, NJDEP (via email)

Soil Boring Log

BORING NO.: **MW-2**

Project: **Former Borden Chemical**
Location: AOC K2
Project No.: 31330-01
Date: 1/20/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	SM - brown silty sand (f-m)	~3" concrete
1			0.0	little orange brown	@ surface
			0.0	brown clay and sand @ base (~3")	
2			0.0		
			0.0		
3			0.0		
			0.0	FILL - brown to black silty sand	
4			0.0	SM - brown to orange brown silty sand (f-m)	
			0.0		
5			0.0		
	K2-GS	~4-6'	0.0		
6			0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0	SM - brown to olive brown silty sand (f-m)	
10			0.0	some orange brown	
			0.0	SM - brown to olive brown silty sand (f-c)	
11			0.0	some gravel; trace cobbles	
			0.0		
12			0.0	SM - light to dark orange brown silty sand (f-m)	
			0.0	little clay	
13			0.0		
			0.0	SM - brown silty sand; little clay	
14			0.0	(f-m) @ 13-14'	
			0.0	(f-c) @ 14-15' ; trace gravel	
15			0.0		
				end of boring	
16					
17					
18					
19					
20					

ENVIRONMENTAL RESOLUTIONS, INC.
ENGINEERS, SCIENTISTS & PLANNERS
525 Fellowship Road, Suite 300
Mt. Laurel, New Jersey 08054

Client: Environmental Resolutions Inc

Job Number: 460-22335-1

Client Sample ID: K2-GS

Lab Sample ID: 460-22335-13
Client Matrix: Solid

Date Sampled: 01/20/2011 1520
Date Received: 01/21/2011 1900

D422 Grain Size

Method: D422
Preparation: N/A
Dilution: 1.0
Date Analyzed: 01/27/2011 0034
Date Prepared:

Analysis Batch: 200-12914

Instrument ID: D422_import
Lab File ID: 460-22335-A-13.txt
Initial Weight/Volume: 248.77 g
Final Weight/Volume:

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		100.0			
Sieve Size #4 - Percent Finer		100.0			
Sieve Size #10 - Percent Finer		99.9			
Sieve Size #20 - Percent Finer		98.8			
Sieve Size #40 - Percent Finer		93.4			
Sieve Size #60 - Percent Finer		68.4			
Sieve Size #80 - Percent Finer		45.7			
Sieve Size #100 - Percent Finer		35.7			
Sieve Size #200 - Percent Finer		12.4			
Hydrometer Reading 1 - Percent Finer		9.3			
Hydrometer Reading 2 - Percent Finer		9.0			
Hydrometer Reading 3 - Percent Finer		8.3			
Hydrometer Reading 4 - Percent Finer		7.6			
Hydrometer Reading 5 - Percent Finer		6.8			
Hydrometer Reading 6 - Percent Finer		6.1			
Hydrometer Reading 7 - Percent Finer		4.7			

Client: Environmental Resolutions Inc

Job Number: 460-22335-1

Client Sample ID: K2-GS

Lab Sample ID: 460-22335-13
Client Matrix: Solid

Date Sampled: 01/20/2011 1520
Date Received: 01/21/2011 1900

D422 Grain Size

Method: D422
Preparation: N/A
Dilution: 1.0
Date Analyzed: 01/27/2011 0034
Date Prepared:

Analysis Batch: 200-12914

Instrument ID: D422_import
Lab File ID: 460-22335-A-13.txt
Initial Weight/Volume: 248.77 g
Final Weight/Volume:

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		0.0			
Sand		87.6			
Coarse Sand		0.1			
Medium Sand		6.5			
Fine Sand		81.0			
Silt		5.6			
Clay		6.8			

Particle Size of Soils by ASTM D422

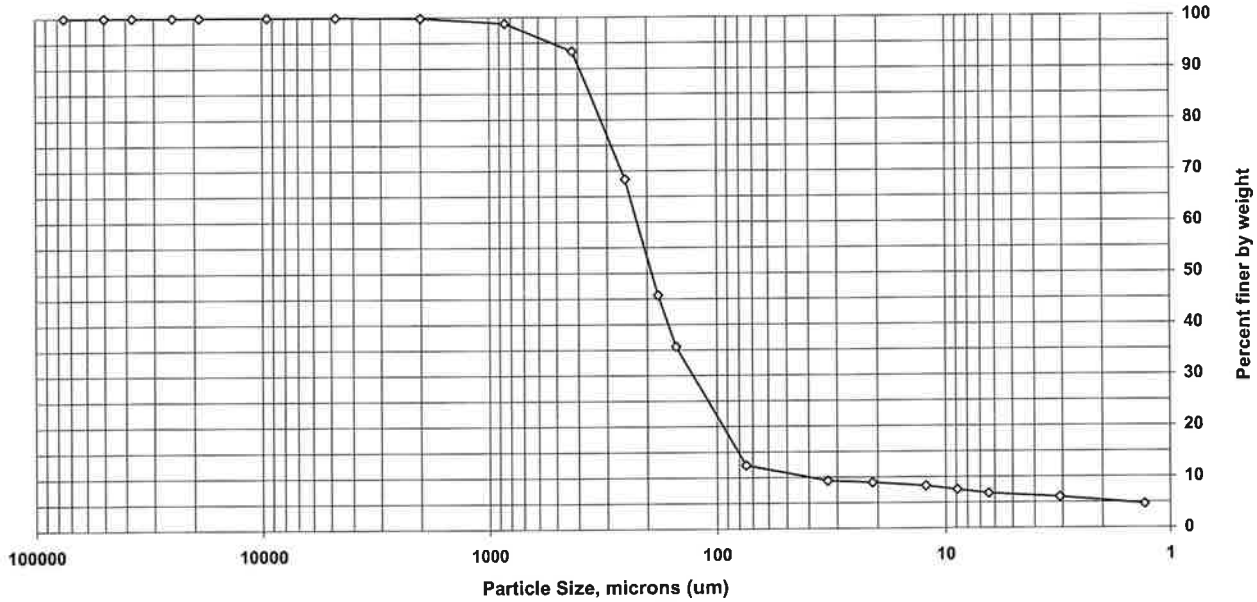
Sample ID: K2-GS
Lab ID: 460-22335-A-13

Percent Solids: 90.5%
Specific Gravity: 2.650

Date Received: 01/21/11
Start Date: 01/27/11
End Date: 01/31/11

Shape (> #10): subrounded

Non-soil material: plant
Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	99.9	0.1
#20	850	98.8	1.1
#40	425	93.4	5.4
#60	250	68.4	25.0
#80	180	45.7	22.7
#100	150	35.7	10.0
#200	75	12.4	23.3
Hyd1	33.1	9.3	3.1
Hyd2	21.1	9.0	0.4
Hyd3	12.3	8.3	0.7
Hyd4	8.9	7.6	0.7
Hyd5	6.4	6.8	0.8
Hyd6	3.1	6.1	0.7
Hyd7	1.3	4.7	1.4

Soil Classification	Percent of sample
Gravel	0.0
Sand	87.6
Coarse Sand	0.1
Medium Sand	6.5
Fine Sand	81.0
Silt	5.6
Clay	6.8

Sediment Grain Size - D422

Client	
Client Sample ID	K2-GS
Lab Sample ID	460-22335-A-13

Date Received	01/21/11
Start Date	01/27/2011 0:34
End Date	01/31/2011 9:01

Dry Weight Determination

Tin Weight	1.02 g
Wet Sample + Tin	34.25 g
Dry Sample + Tin	31.10 g
% Moisture	9.48 %

Non-soil material:	plant
Shape (> #10):	subrounded
Hardness (> #10):	hard

Date/Time in oven	01/27/2011 0:34
Date/Time out of oven	01/28/2011 6:16

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		248.77	248.77
Sample Weight (Oven Dried)			225

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			0.21
Sample <#10			225
% Passing #10			90.4

Hydrometer Data

Serial Number	341356
Calib. Date (mm/dd/yyyy)	05/06/2010
Low Temp (C)	17.0
Reading at Low Temp	1.0040
High Temp (C)	23.0
Reading at High Temp	1.0030
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.006833333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample	% Finer	Classification	Sub Class
3 inch	75000			0.00 g	100.0	Gravel	
2 inch	50000			0.00 g	100.0	Gravel	
1.5 inch	37500			0.00 g	100.0	Gravel	
1 inch	25000			0.00 g	100.0	Gravel	
3/4 inch	19000			0.00 g	100.0	Gravel	
3/8 inch	9500			0.00 g	100.0	Gravel	
#4	4750			0.00 g	100.0	Gravel	
#10	2000	462.91	463.12	0.21 g	99.9	Sand	Coarse
#20	850	390.77	393.22	2.45 g	98.8	Sand	Medium
#40	425	355.43	367.68	12.25 g	93.4	Sand	Medium
#60	250	323.19	379.35	56.16 g	68.4	Sand	Fine
#80	180	313.09	364.08	50.99 g	45.7	Sand	Fine
#100	150	329.48	351.90	22.42 g	35.7	Sand	Fine
#200	75	321.02	373.43	52.41 g	12.4	Sand	Fine
				0.00 g	12.4		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	225

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0165	20.5	33.1	9.34	Silt	
5	5	1.0160	20.5	21.1	8.98	Silt	
15	15	1.0150	20.5	12.3	8.27	Silt	
30	29	1.0140	20.5	8.9	7.55	Silt	
60	58	1.0130	20.0	6.4	6.78	Silt	
250	250	1.0120	20.0	3.1	6.07	Clay	
1440	1434	1.0100	20.5	1.3	4.7	Clay	

Soil Boring Log

BORING NO.: **K3-1**

Project: **Former Borden Chemical**
Location: AOC K3
Project No.: 31330-01
Date: 1/20/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~8'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete	
1			0.0	SM - brown to orange brown silty sand (f-m)	
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
			0.0		
5	K3-1A	4.5-5	0.0		
	K3-GS	~4-6	0.0		
6			0.0		
			0.0		
7			0.0		
			0.0		
8			0.0		
			0.0		
9			0.0		
			0.0	SM - brown to olive brown silty sand (f-c)	
10			0.0	little orange brown, gravel	
				end of boring	
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

ENVIRONMENTAL RESOLUTIONS, INC.
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Client: Environmental Resolutions Inc

Job Number: 460-22335-1

Client Sample ID: K3-GS

Lab Sample ID: 460-22335-14
Client Matrix: Solid

Date Sampled: 01/20/2011 1540
Date Received: 01/21/2011 1900

D422 Grain Size

Method: D422
Preparation: N/A
Dilution: 1.0
Date Analyzed: 01/27/2011 0036
Date Prepared:

Analysis Batch: 200-12914

Instrument ID: D422_import
Lab File ID: 460-22335-A-14.txt
Initial Weight/Volume: 233.38 g
Final Weight/Volume:

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		100.0			
Sieve Size #4 - Percent Finer		100.0			
Sieve Size #10 - Percent Finer		99.9			
Sieve Size #20 - Percent Finer		98.0			
Sieve Size #40 - Percent Finer		90.2			
Sieve Size #60 - Percent Finer		60.6			
Sieve Size #80 - Percent Finer		39.4			
Sieve Size #100 - Percent Finer		30.5			
Sieve Size #200 - Percent Finer		9.8			
Hydrometer Reading 1 - Percent Finer		8.2			
Hydrometer Reading 2 - Percent Finer		7.4			
Hydrometer Reading 3 - Percent Finer		6.3			
Hydrometer Reading 4 - Percent Finer		5.6			
Hydrometer Reading 5 - Percent Finer		4.8			
Hydrometer Reading 6 - Percent Finer		3.7			
Hydrometer Reading 7 - Percent Finer		2.3			

Client: Environmental Resolutions Inc

Job Number: 460-22335-1

Client Sample ID: K3-GS

Lab Sample ID: 460-22335-14
Client Matrix: Solid

Date Sampled: 01/20/2011 1540
Date Received: 01/21/2011 1900

D422 Grain Size

Method: D422
Preparation: N/A
Dilution: 1.0
Date Analyzed: 01/27/2011 0036
Date Prepared:

Analysis Batch: 200-12914

Instrument ID: D422_import
Lab File ID: 460-22335-A-14.txt
Initial Weight/Volume: 233.38 g
Final Weight/Volume:

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		0.0			
Sand		90.2			
Coarse Sand		0.1			
Medium Sand		9.7			
Fine Sand		80.4			
Silt		5.0			
Clay		4.8			

Particle Size of Soils by ASTM D422

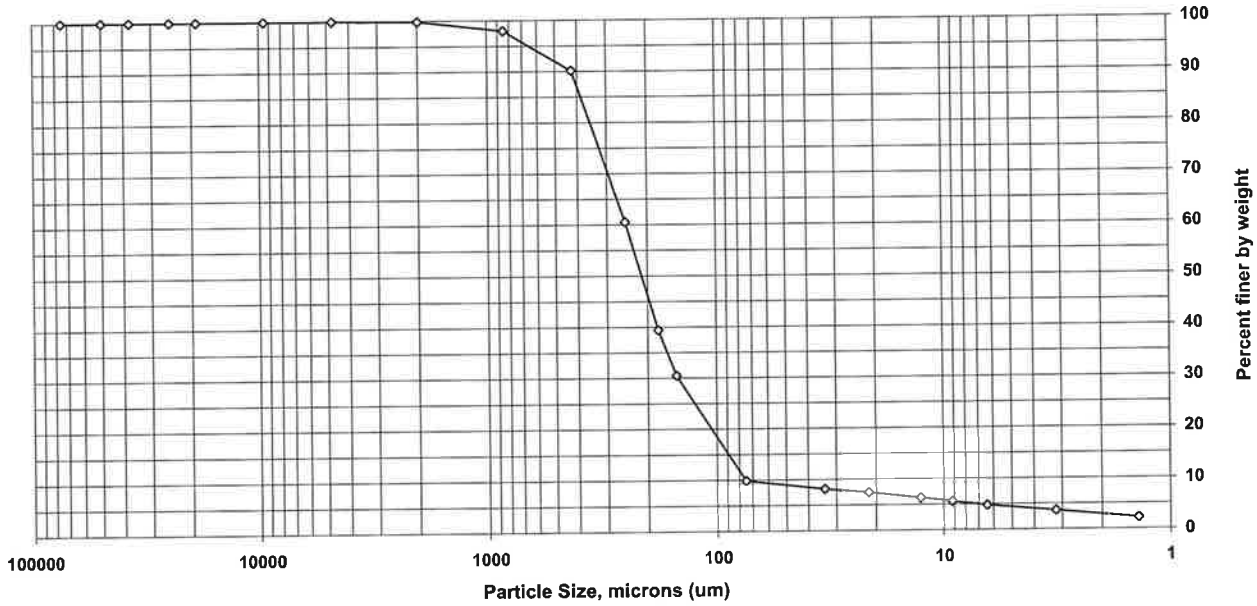
Sample ID: K3-GS
Lab ID: 460-22335-A-14

Percent Solids: 93.5%
Specific Gravity: 2.650

Date Received: 01/21/11
Start Date: 01/27/11
End Date: 01/31/11

Shape (> #10): subrounded

Non-soil material: plant
Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	99.9	0.1
#20	850	98.0	1.9
#40	425	90.2	7.8
#60	250	60.6	29.6
#80	180	39.4	21.2
#100	150	30.5	8.9
#200	75	9.8	20.7
Hyd1	33.9	8.2	1.7
Hyd2	21.6	7.4	0.7
Hyd3	12.7	6.3	1.1
Hyd4	9.2	5.6	0.7
Hyd5	6.4	4.8	0.8
Hyd6	3.2	3.7	1.1
Hyd7	1.4	2.3	1.4

Soil Classification	Percent of sample
Gravel	0.0
Sand	90.2
Coarse Sand	0.1
Medium Sand	9.7
Fine Sand	80.4
Silt	5.0
Clay	4.8

Sediment Grain Size - D422

Client	
Client Sample ID	K3-GS
Lab Sample ID	460-22335-A-14

Date Received	01/21/11
Start Date	01/27/2011 0:36
End Date	01/31/2011 9:28

Dry Weight Determination

Tin Weight	1.00 g
Wet Sample + Tin	34.41 g
Dry Sample + Tin	32.24 g
% Moisture	6.50 %

Non-soil material:	plant
Shape (> #10):	subrounded
Hardness (> #10):	hard

Date/Time in oven	01/27/2011 0:34
Date/Time out of oven	01/28/2011 6:16

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		233.38	233.38
Sample Weight (Oven Dried)			218

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			0.31
Sample <#10			218
% Passing #10			93.4

Hydrometer Data

Serial Number	341356
Calib. Date (mm/dd/yyyy)	05/06/2010
Low Temp (C)	17.0
Reading at Low Temp	1.0040
High Temp (C)	23.0
Reading at High Temp	1.0030
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.006833333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample	% Finer	Classification	Sub Class
3 inch	75000			0.00 g	100.0	Gravel	
2 inch	50000			0.00 g	100.0	Gravel	
1.5 inch	37500			0.00 g	100.0	Gravel	
1 inch	25000			0.00 g	100.0	Gravel	
3/4 inch	19000			0.00 g	100.0	Gravel	
3/8 inch	9500			0.00 g	100.0	Gravel	
#4	4750			0.00 g	100.0	Gravel	
#10	2000	462.91	463.22	0.31 g	99.9	Sand	Coarse
#20	850	390.77	394.91	4.14 g	98.0	Sand	Medium
#40	425	355.43	372.54	17.11 g	90.2	Sand	Medium
#60	250	323.19	387.82	64.63 g	60.6	Sand	Fine
#80	180	313.09	359.34	46.25 g	39.4	Sand	Fine
#100	150	329.48	348.99	19.51 g	30.5	Sand	Fine
#200	75	321.02	366.09	45.07 g	9.8	Sand	Fine
				0.00 g	9.8		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	218

Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0145	20.5	33.9	8.17	Silt	
5	5	1.0135	20.5	21.6	7.43	Silt	
15	15	1.0120	20.5	12.7	6.32	Silt	
30	29	1.0110	20.5	9.2	5.59	Silt	
60	63	1.0100	20.0	6.4	4.79	Silt	
250	250	1.0085	20.0	3.2	3.68	Clay	
1440	1434	1.0065	20.5	1.4	2.27	Clay	

Soil Boring Log

BORING NO.: **L1-1**

Project: **Former Borden Chemical**
Location: AOC L1
Project No.: 31330-01
Date: 1/25/11

Driller: ECDI
Drilling Method: Geoprobe
Logged by: E. Snee
Depth to Groundwater: ~7.5'

Depth (feet)	SAMPLE NO.	SAMPLE DEPTH	PID (ppmv)	DESCRIPTION	REMARKS
			0.0	concrete (~9")	
1			0.0	FILL - brown to moderate brown silty sand	
			0.0	some black silty sand, gravel	
2			0.0	coal, brick, slag, cinders, glass	
			0.0	little fill @ 4-5'	
3			4.9		
			0.0		
4			0.0		
			0.0		
5			0.0		
			0.0	SM - light brown to orange brown silty sand (f-m)	
6	L1-GS	~5-7	0.0	trace clay @ ~7.5-8.5'	
			0.0		
7			0.0		
	L1-1A	7-7.5	0.0		
8			0.0		
			0.0		
9			0.0		
			0.0	SM - brown to orange brown silty sand (f-c)	
10			0.0	trace clay	
				end of boring	
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

ENVIRONMENTAL RESOLUTIONS, INC.
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Client: Environmental Resolutions Inc

Job Number: 460-22477-1

Client Sample ID: L1-GS

Lab Sample ID: 460-22477-15
Client Matrix: Solid

Date Sampled: 01/25/2011 1020
Date Received: 01/26/2011 2000

D422 Grain Size

Method: D422
Preparation: N/A
Dilution: 1.0
Date Analyzed: 02/03/2011 1526
Date Prepared:

Analysis Batch: 200-13303

Instrument ID: D422_import
Lab File ID: 460-22477-A-15.txt
Initial Weight/Volume: 152.42 g
Final Weight/Volume:

Analyte	DryWt Corrected: N	Result (% Passing)	Qualifier	NONE	NONE
Sieve Size 3 inch - Percent Finer		100.0			
Sieve Size 2 inch - Percent Finer		100.0			
Sieve Size 1.5 inch - Percent Finer		100.0			
Sieve Size 1 inch - Percent Finer		100.0			
Sieve Size 0.75 inch - Percent Finer		100.0			
Sieve Size 0.375 inch - Percent Finer		100.0			
Sieve Size #4 - Percent Finer		100.0			
Sieve Size #10 - Percent Finer		99.7			
Sieve Size #20 - Percent Finer		97.4			
Sieve Size #40 - Percent Finer		89.3			
Sieve Size #60 - Percent Finer		63.1			
Sieve Size #80 - Percent Finer		42.3			
Sieve Size #100 - Percent Finer		32.5			
Sieve Size #200 - Percent Finer		10.1			
Hydrometer Reading 1 - Percent Finer		7.3			
Hydrometer Reading 2 - Percent Finer		6.2			
Hydrometer Reading 3 - Percent Finer		6.3			
Hydrometer Reading 4 - Percent Finer		5.1			
Hydrometer Reading 5 - Percent Finer		4.5			
Hydrometer Reading 6 - Percent Finer		2.9			
Hydrometer Reading 7 - Percent Finer		2.9			

Client: Environmental Resolutions Inc

Job Number: 460-22477-1

Client Sample ID: L1-GS

Lab Sample ID: 460-22477-15
Client Matrix: Solid

Date Sampled: 01/25/2011 1020
Date Received: 01/26/2011 2000

D422 Grain Size

Method: D422
Preparation: N/A
Dilution: 1.0
Date Analyzed: 02/03/2011 1526
Date Prepared:

Analysis Batch: 200-13303

Instrument ID: D422_import
Lab File ID: 460-22477-A-15.txt
Initial Weight/Volume: 152.42 g
Final Weight/Volume:

Analyte	DryWt Corrected: N	Result (%)	Qualifier	NONE	NONE
Gravel		0.0			
Sand		89.9			
Coarse Sand		0.3			
Medium Sand		10.4			
Fine Sand		79.2			
Silt		5.6			
Clay		4.5			

Particle Size of Soils by ASTM D422

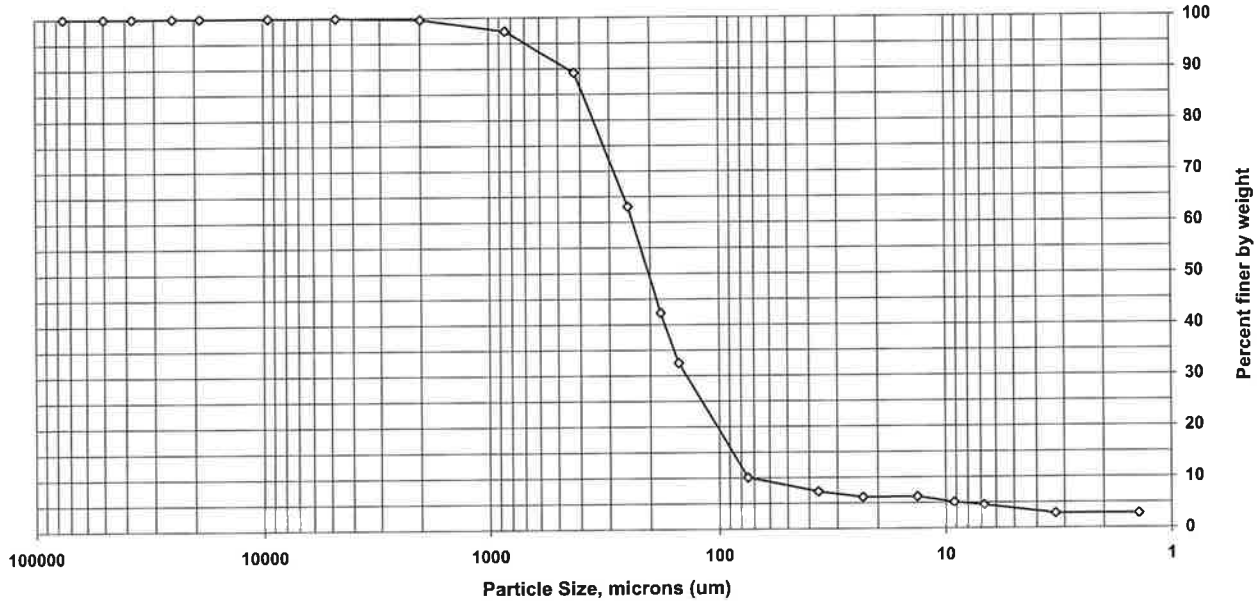
Sample ID: L1-GS
Lab ID: 460-22477-A-15

Percent Solids: 91.4%
Specific Gravity: 2.650

Date Received: 01/26/11
Start Date: 02/03/11
End Date: 02/08/11

Shape (> #10): angular

Non-soil material: na
Hardness (> #10): hard



Sieve size	Particle size, um	Percent finer	Incremental percent
3 inch	75000	100.0	0.0
2 inch	50000	100.0	0.0
1.5 inch	37500	100.0	0.0
1 inch	25000	100.0	0.0
3/4 inch	19000	100.0	0.0
3/8 inch	9500	100.0	0.0
#4	4750	100.0	0.0
#10	2000	99.7	0.3
#20	850	97.4	2.3
#40	425	89.3	8.1
#60	250	63.1	26.2
#80	180	42.3	20.8
#100	150	32.5	9.8
#200	75	10.1	22.4
Hyd1	36.5	7.3	2.8
Hyd2	23.3	6.2	1.2
Hyd3	13.4	6.3	-0.1
Hyd4	9.2	5.1	1.2
Hyd5	6.8	4.5	0.6
Hyd6	3.3	2.9	1.6
Hyd7	1.4	2.9	0.0

Soil Classification	Percent of sample
Gravel	0.0
Sand	89.9
Coarse Sand	0.3
Medium Sand	10.4
Fine Sand	79.2
Silt	5.6
Clay	4.5

Sediment Grain Size - D422

Client	
Client Sample ID	L1-GS
Lab Sample ID	460-22477-A-15

Date Received	01/26/11
Start Date	02/03/2011 15:26
End Date	02/08/2011 6:26

Dry Weight Determination

Tin Weight	1.01 g
Wet Sample + Tin	19.49 g
Dry Sample + Tin	17.90 g
% Moisture	8.60 %

Non-soil material:	na
Shape (> #10):	angular
Hardness (> #10):	hard

Date/Time in oven	02/03/2011 15:28
Date/Time out of oven	02/04/2011 7:45

Sample Weights	Tare (g)	Pan+Samp (g)	Samp (g)
Sample Weight (Wet)		152.42	152.42
Sample Weight (Oven Dried)			139

Sample Split (oven dried)	Tare (g)	Pan+Samp (g)	Samp (g)
Sample >=#10			0.42
Sample <#10			139
% Passing #10			91.2

Hydrometer Data

Serial Number	741409
Calib. Date (mm/dd/yyyy)	12/21/2010
Low Temp (C)	17.0
Reading at Low Temp	1.0030
High Temp (C)	23.0
Reading at High Temp	1.0020
Hydrometer Cal Slope	-0.000166667
Hydrometer Cal Intercept	1.005833333
Default Soil Gravity	2.6500

Gravel/Sand Fraction (Sieves)

Sample Fraction	Size (um)	Pan Tare (g)	Pan+Sample (g)	Sample	% Finer	Classification	Sub Class
3 inch	75000			0.00 g	100.0	Gravel	
2 inch	50000			0.00 g	100.0	Gravel	
1.5 inch	37500			0.00 g	100.0	Gravel	
1 inch	25000			0.00 g	100.0	Gravel	
3/4 inch	19000			0.00 g	100.0	Gravel	
3/8 inch	9500			0.00 g	100.0	Gravel	
#4	4750			0.00 g	100.0	Gravel	
#10	2000	462.88	463.30	0.42 g	99.7	Sand	Coarse
#20	850	390.76	393.92	3.16 g	97.4	Sand	Medium
#40	425	355.41	366.64	11.23 g	89.3	Sand	Medium
#60	250	323.20	359.65	36.45 g	63.1	Sand	Fine
#80	180	313.08	341.93	28.85 g	42.3	Sand	Fine
#100	150	329.46	343.11	13.65 g	32.5	Sand	Fine
#200	75	321.00	352.11	31.11 g	10.1	Sand	Fine
				0.00 g	10.1		

Adjusted Hydrometer Sample Mass

Hydrometer Sample Mass (g)	139

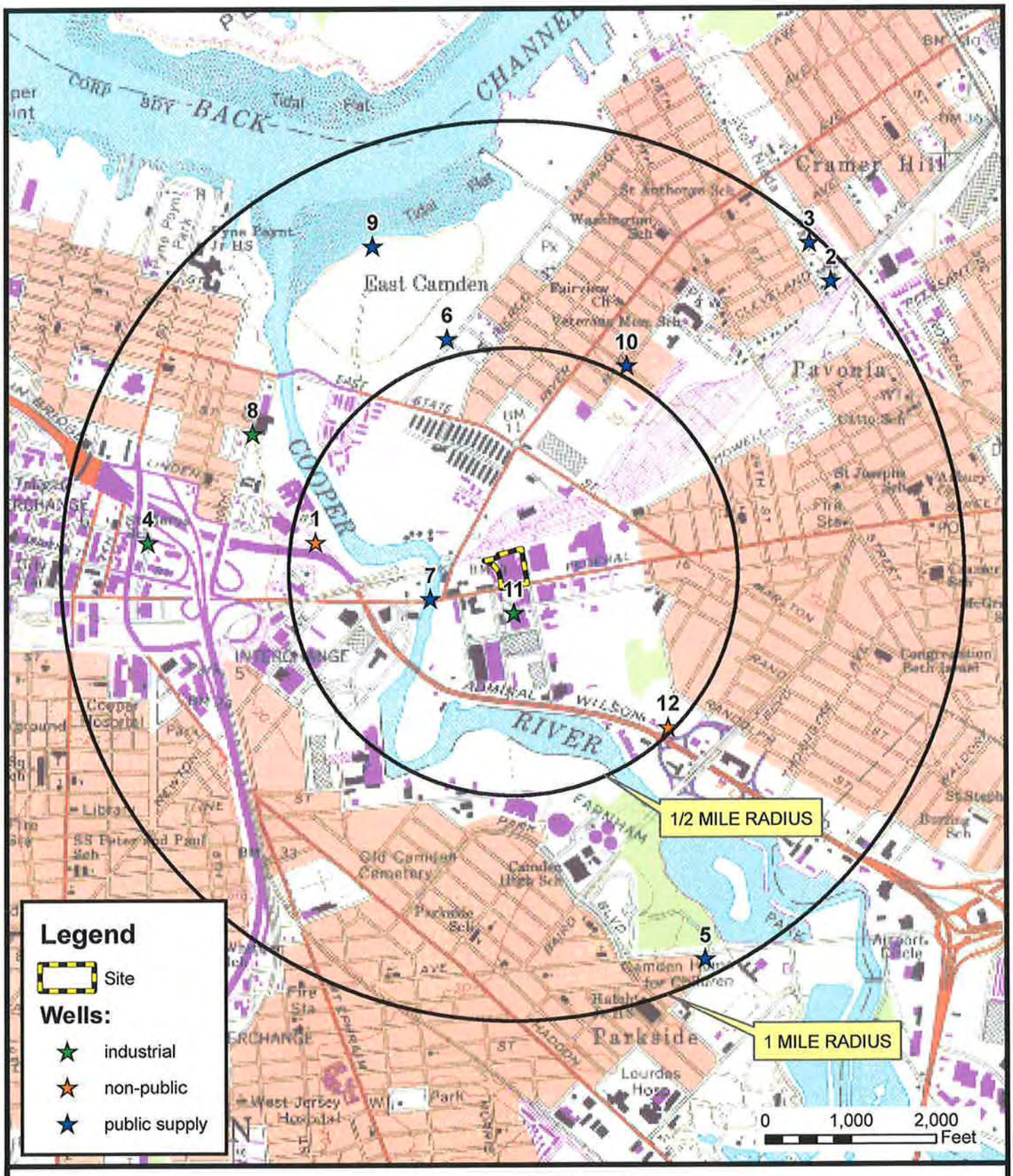
Silt/Clay Fraction (Hydrometer Test)

Hydrometer Test Time (min)	Actual	Spec. Gravity	Temp C	Particle Size (Micron)	% Finer	Classification	Sub Class
2	2	1.0090	19.0	36.5	7.32	Silt	
5	5	1.0080	19.0	23.3	6.16	Silt	
15	15	1.0080	19.5	13.4	6.26	Silt	
30	32	1.0070	19.5	9.2	5.1	Silt	
60	60	1.0065	19.5	6.8	4.53	Silt	
250	259	1.0050	20.0	3.3	2.89	Clay	
1440	1406	1.0050	20.0	1.4	2.89	Clay	

APPENDIX H

WELL SEARCH

MAP ID	WELL_PERMIT_NUM	WELL_TYPE	LOCATION_ADDRESS	COUNTY	MUNICIPALITY	COMU	BLOCK	LOT	X	Y	COORD_METHOD	FINISHED	OPEN_INTER	STATIC_LEVE	STATUS
1	3100000020	non-public	Admiral Wilson Blvd	Camden	Camden City	0408			321366	405819	DRILLER'S DRAWING	157	147-157	59	
1	3100000400	non-public	Admiral Wilson Blvd	Camden	Camden City	0408			321366	405819	DRILLER'S DRAWING	160	unknown	unknown	
2	3100000125	public supply	Cleveland Ave Pumping Sta	Camden	Camden City	0408			327374	408856	DRILLER'S DRAWING	185	155-185	37	
2	3100000132	public supply	Cleveland Ave Pumping Sta	Camden	Camden City	0408			327374	408856	DRILLER'S DRAWING	172	142-172	35	
2	3100000490	public supply	Not reported	Camden	Camden City	0408			327374	408856	ATLAS GRID	166	126-166	11	
2	3100001123	public supply	Cleveland Ave Stockton Sta	Camden	Camden City	0408			327374	408856	DRILLER'S DRAWING	175	169-175	38	
2	3100001871	public supply	Cleveland Ave	Camden	Camden City	0408			327374	408856	ADDRESS MATCH	169	137-169	45	
2	3100004847	public supply	Cleveland Ave	Camden	Camden City	0408			327374	408856	OTHER STATE COORD	198	147-198	61	Active
3	3100000162	public supply	Cleveland Ave Pumping Sta	Camden	Camden City	0408			327124	409307	DRILLER'S DRAWING	178	148-178	35	
4	3100000189	industrial	840 Cooper Street	Camden	Camden City	0408			319413	405819	ADDRESS MATCH	180	unknown	unknown	
5	3100000904	public supply	Kaighn Ave. & Euclid Ave.	Camden	Camden City	0408			325877	400945	OTHER STATE COORD	224	185-224	unknown	Active
6	3100000905	public supply	Harrison Ave. & 17th Street	Camden	Camden City	0408			322901	408189	DRILLER'S DRAWING	150	110-150	35	
7	3100000940	public supply	Federal St. & Cooper River	Camden	Camden City	0408			322701	405151	ADDRESS MATCH	175	140-175	42	
8	3100000948	industrial	602 N. Tenth Street	Camden	Camden City	0408			320632	407087	ADDRESS MATCH	141	131-141	48	
9	3100001248	public supply	Not reported	Camden	Camden City	0408			322034	409274	ATLAS GRID	136	116-136	37	
10	3100001249	public supply	Hayes Ave. & 22nd St.	Camden	Camden City	0408			324987	407872	DRILLER'S DRAWING	179	149-179	50	
11	3100004687	industrial	1632 Carman St	Camden	Camden City	0408			323669	404985	ADDRESS MATCH	166	150-166	45	
12	3100016426	non-public	Admiral Wilson Blvd	Camden	Camden City	0408	1662	27B	325455	403649	DRILLER'S DRAWING	160	150-160	unknown	



WELL SEARCH MAP

BASEMAP SOURCE:
NJDEP-BWA WELL RECORDS

N
W E
S

SCALE: 1 INCH EQUALS 1,500 FT

ENVIRONMENTAL RESOLUTIONS, INC.

FORMER BORDEN CHEMICAL
PRINTING FACILITY
1625 FEDERAL STREET
BLOCK 1184, LOT 5
CITY OF CAMDEN
CAMDEN COUNTY, NEW JERSEY

Form 99—5M—8-47

File in Triplicate
Sign all copies

4

(Do not fill in) Application No. 31-20

County Camden

Location 31.1.6.6.7 ☐

STATE OF NEW JERSEY
DEPARTMENT OF CONSERVATION
Division of Water Policy and Supply
28 West State Street
Trenton 8, New Jersey

APPLICATION FOR PERMIT TO DRILL WELL

An application must be submitted and permit received before drilling a well 100 feet or more in depth.

print or type

Owner Sun Oil co Driller EDWARD ROBBINS Sr.

Address Admiral Wilson Blvd & PRR Address HADDON AVE

Camden n.j. GIBBSBORO N.J.

In compliance with the provisions of Chapter 377, P.L. 1947, application is hereby made for permit to drill a artesian type well in Camden - Camden Co: N.J. municipality and county

*Quantity of Water Needed (G.P.M.) 25 gal min **Use of Well drinking purpose.

Proposed Diameter of Well 6 in. Proposed Depth of Well 157 ft.

Method of Drilling to be Used Driller machine

As a part of this application, and in consideration of the granting of a permit, applicant assumes full responsibility for plugging or sealing said well in a manner satisfactory to the Division, in the event it should become a menace to public health or safety.

Date 12-1-47

Sun Oil Co per
C. H. Bowker
Owner's Signature

* Quantities in excess of 100,000 gallons per day may require special application for right to divert water.

** Well used for public and potable purposes will require application and permit for right to divert water.

Location of Well (See other side)

PERMIT TO DRILL WELL

(Not to be filled in by Applicant)

The applicant is hereby granted a permit to drill this well subject to the conditions stipulated on the application and as set forth below.

Samples of Cuttings Required by Department { Yes / No ✓ } *Special Conditions*

Permit Required to Divert Water { Yes / No ✓ } PERMIT IS VALID FOR ONE YEAR FROM DATE HEREOF

Owner has Permit to Divert Water { Yes / No }

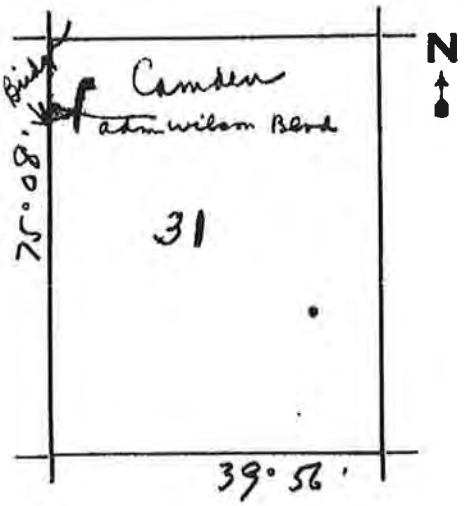
Date 1/29/48

H. T. Critchlows
Chief Engineer

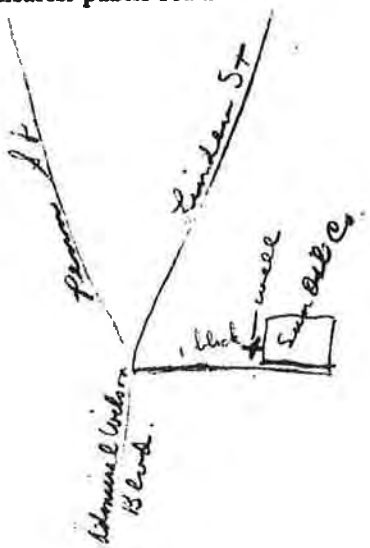
WELPMT 033 2106

Location of Well

1. **Location Overlay for State Topographic Map, Scale 1" = 1 Mile.**



2. **Sketch of premises in immediate vicinity showing relation of well to buildings, and distance and relations to nearest public road.**



WELPMT 033 2107

31-1-667 \

Form 87—5M-1-48

DEPARTMENT OF CONSERVATION
Division of Water Policy and Supply

Permit No. 31-20
Application No.
County CAMDEN
31-01-667

WELL RECORD

1. OWNER SUNOIL CO ADDRESS CAMDEN
Owner's Well No. 76 SURFACE ELEVATION +10± Feet (Above mean sea level)
2. LOCATION 31 1 667 D
3. DATE COMPLETED 12-647 DRILLER EDWARD ROBBINS SR NJ
4. DIAMETER: Top 6 Inches Bottom 6 Inches TOTAL DEPTH 157 Feet
5. CASING: Type WELL CASSING Diameter Inches Length 147 Feet
6. SCREEN: Type COOK Size of Opening 5 5/16 Diameter Inches Length Feet
Range in Depth {Top 6 - 147 Feet Bottom 10 FT 5 5/8 ST Feet Geologic Formation 140 FT CLAY 17 FT SAND
Tail piece: Diameter NON Inches Length Feet
7. WELL FLOWS NATURALLY NO Gallons per Minute at 25 Feet above surface
Water rises to 59 Feet above surface
8. RECORD OF TEST: Date 12-1547 Yield 100 Gallons per minute
Static water level before pumping 59 59 Feet below surface
Pumping level 60 feet below surface after 60 8 hours pumping
Drawdown 1 FT Feet Specific Capacity 25 Gals. per min. per ft. of drawdown
How Pumped AIR How measured DRUM
Observed effect on nearby wells NO
9. PERMANENT PUMPING EQUIPMENT:
Type GOULD PUMP Capacity Gallons per minute
How Driven ELC MTOR Horse Power 1/2 R.P.M.
Depth of pump in well 80 Feet Depth of foot piece in well 80 Feet
10. USED FOR OFFIC AMOUNT {Average 200 Gallons Daily Maximum 400 Gallons Daily
11. QUALITY OF WATER SOME IRON Sample: Yes + No.
Taste NO Odor NO Color IRON Temperature 54 °F
12. LOG No chg 07 sand Are samples available?
(Give details on back of sheet or on separate sheet)
13. SOURCE OF DATA
14. DATA OBTAINED BY Edward Robbins Sr DATE 12-15-47

RECEIVED APR 22 1949 Department of Conservation Div. of P. W. & S.

(Note:—Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements, etc.)

Form 99—5M—8-47

File in Triplicate
Sign all copies

(Do not fill in) Application No. 31-125

4

County Camden

Location 31.2.4.5.1

STATE OF NEW JERSEY
DEPARTMENT OF CONSERVATION
Division of Water Policy and Supply
28 West State Street
Trenton 8, New Jersey

APPLICATION FOR PERMIT TO DRILL WELL

An application must be submitted and permit received before drilling a well 100 feet or more in depth.

print or type

Owner N.J. WATER CO.

Address 27th & Westfield Ave.
Camden, N.J.

Driller A. C. SCHULTES AND SONS

Address 501 MANTUA AVE.
WOODBURY, NJ

#44

In compliance with the provisions of Chapter 377, P.L. 1947, application is hereby made for permit to drill a Artesian (type) well in City of Camden, (municipality) Camden County, (county) NJ

*Quantity of Water Needed (G.P.M.) 700

**Use of Well Public Water Supply

Proposed Diameter of Well 12"

Proposed Depth of Well 180'

Method of Drilling to be Used Standard Cable

As a part of this application, and in consideration of the granting of a permit, applicant assumes full responsibility for plugging or sealing said well in a manner satisfactory to the Division, in the event it should become a menace to public health or safety.

Date April 4, 1950

NEW JERSEY WATER COMPANY

X

Owner's Signature Vice-President

* Quantities in excess of 100,000 gallons per day may require special application for right to divert water.

** Well used for public and potable purposes will require application and permit for right to divert water.

Location of Well (See other side)

PERMIT TO DRILL WELL

(Not to be filled in by Applicant)

The applicant is hereby granted a permit to drill this well subject to the conditions stipulated on the application and as set forth below.

Samples of Cuttings Required by Department: Yes / No ✓

Permit Required to Divert Water: Yes ✓ / No

Owner has Permit to Divert Water: Yes ✓ / No

Special Conditions

1. Permit is valid for one year from date hereof.
2. This well is approved as a replacement for certain wells which have been retired and involves no increase in diversion rights.

Note: Diversion grant approved July 10, 1924 under Appl. No. 166

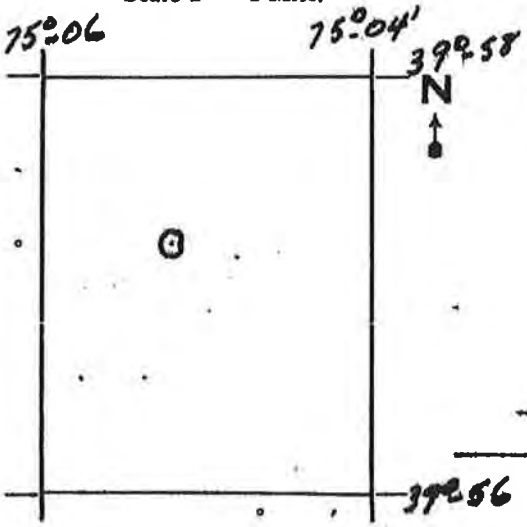
Date APR 18 '50

Chief Engineer

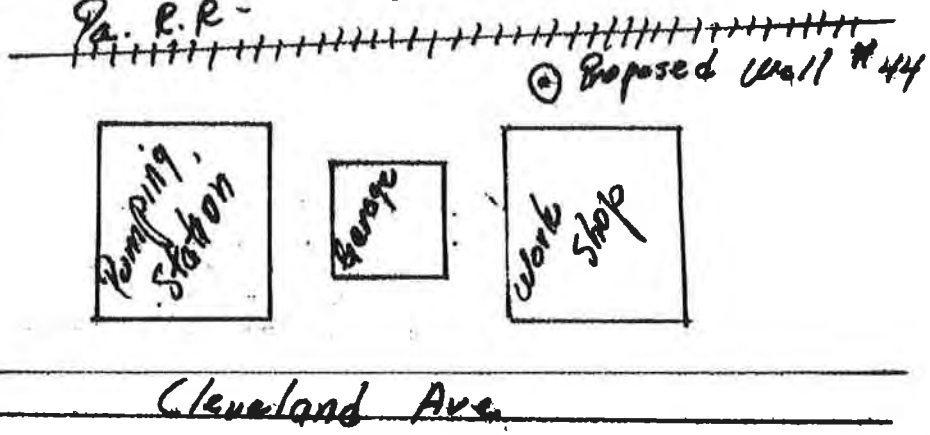
WELPMT 033 2322

Location of Well

1. Location Overlay for State Topographic Map, Scale 1" = 1 Mile.



2. Sketch of premises in immediate vicinity showing relation of well to buildings, and distance and relations to nearest public road.



31.02.443

Form 87-5M-4-49

RECEIVED
AUG 3 1950
Department of Conservation & Economic Development
Geologic & Top. Survey

DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
Division of Water Policy & Supply

WELL RECORD

Permit No. 31-125
Application No. 166
County Camden
31.02.443

1. OWNER NEW JERSEY WATER CO. ADDRESS
Owner's Well No. 44 SURFACE ELEVATION 10 ± Feet (Above mean sea level)
2. LOCATION CLEVELAND AVE. PUMPING STATION, CAMDEN, N.J.
3. DATE COMPLETED MAY 15, 1950 DRILLER A. C. SCHULTES & SONS
4. DIAMETER: Top 12" Inches Bottom 12" Inches TOTAL DEPTH 185' 8" Feet
5. CASING: Type Black Steel Diameter 12" Inches Length 155'8" Feet
6. SCREEN: Type A.D Cook Size of Opening .100 Diameter 11½ O.d. Inches Length 31' 10" Feet
Range in Depth {Top 154' Feet Bottom 185' 8" Feet Geologic Formation Raritan
Tail piece: Diameter None Inches Length Feet
7. WELL FLOWS NATURALLY No Gallons per Minute at X Feet above surface
Water rises to X Feet above surface
8. RECORD OF TEST: Date May 15, 195[illegible] Yield 1400 Gallons per minute
Static water level before pumping 37 Feet below surface
Pumping level 80 feet below surface after 3 hours pumping
Drawdown 43 Feet Specific Capacity 32 Gals. per min. per ft. of drawdown
How Pumped Turbine Test How measured 8 x 6 Orifice
Observed effect on nearby wells away dropped approx. 2 ft. ected observation well. otr
9. PERMANENT PUMPING EQUIPMENT:
Type Deep well tu Capacity 1200 Gallons per minute
How Driven Electr' Horse Power 50 R.P.M. 1800
Depth of pump in well Feet Depth of foot piece in well 185' Feet
10. USED FOR Pub' or supply AMOUNT {Average X Gallons Daily Maximum X Gallons Daily
11. QUALITY OF WATER Sample: Yes. No.
Taste one Odor None Color clear Temperature 59° °F
12. LOG (Give details on back of sheet or on separate sheet) Are samples available?
13. SOURCE OF DATA Drillers Log
14. DATA OBTAINED BY A. C. SCHULTES, JR. DATE MAY 15, 1950

(Note: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements, etc.)

0	-	2	Fill
2	-	5	Sand
5	-	15	Clay & Sand
15	-	41	Red Clay
41	-	45	Clay & Sand
45	-	55	Gray Clay
55	-	58	Brown Fine Sand
58	-	60	Gravel
60	-	65	Gravel & Clay
65	-	70	Red Clay
70	-	85	White Clay & Sand
85	-	92	White Sand
92	-	95	Yellow Clay
95	-	115	Red Clay
115	-	128	White Sand & Clay
128	-	132	Gravel
132	-	136	Sand & Clay
136	-	139	Gravel
139	-	148	Gravel & Clay
148	-	160	Large Stones
160	-	168	Stones & Gravel
168	-	187	Stones & Gravel

31:02.443
31-125

Camden

31.02.443

Form 87-5M-4-49

DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
Division of Water Policy & Supply

Permit No. 31-132
Application No. 166
County Camden
31.02.443

WELL RECORD

1. OWNER NEW JERSEY WATER CO. ADDRESS HADDON HEIGHTS, N.J.

Owner's Well No. 48 SURFACE ELEVATION +10± Feet (Above mean sea level)

2. LOCATION Cleveland Ave. Pumping Station

3. DATE COMPLETED 8/25/50 DRILLER A. C. SCHULTES AND SONS

4. DIAMETER: Top 12" Inches Bottom 12" Inches TOTAL DEPTH 173' 9" Feet

5. CASING: Type Blk Steel Diameter 12" Inches Length 142' 10" Feet

6. SCREEN: Type A.D. COOK Size of Opening .080 Diameter 12" Inches Length 31' 10" Feet

Range in Depth { Top Feet Bottom 140' 11" Feet Geologic Formation Raritan

Tail piece: Diameter 172' 9" Inches Length Feet.

7. WELL FLOWS NATURALLY None Gallons per Minute at No Feet above surface

Water rises to X Feet above surface

8. RECORD OF TEST: Date 8/22/50 Yield 955 Gallons per minute

Static water level before pumping 352 Feet below surface

Pumping level feet below surface after 6 hours pumping

Drawdown 65' Feet Specific Capacity 32 Gals. per min. per ft. of drawdown

How Pumped 30 How measured Orfice

Observed effect on nearby wells Turbine

9. PERMANENT PUMPING EQUIPMENT None

Type Capacity 700 Gallons per minute

How Driven DEEP WELL TURBINE Horse Power R.P.M. 1800

Depth of pump in ELECTRIC MOTOR Feet Depth of foot piece in well 15 Feet

10. USED FOR 70' PUBLIC SUPPLY AMOUNT { Average Gallons Daily / Maximum Gallons Daily

11. QUALITY OF WATER Sample: Yes No X

Taste Odor GOOD Color Temperature 59° °F

12. LOG NONE (Give details on back of sheet or on separate sheet) CLEAR Are samples available? Yes

13. SOURCE OF DATA Other side

14. DATA OBTAINED BY DRILLERS LOG DATE SEPTEMBER 11, 1950

(Note: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements, etc.) A. C. SCHULTES, JR.

0	-	3	Clay fill
3	-	5	Clay & sand
5	-	19	Clay
19	-	25	Coarse Sand
25	-	27	Clay
27	-	40	Gravel & Clay
40	-	45	Stones & Clay
45	-	52	Yellow Clay & Sand
52	-	84	Red Clay
84	-	100	Yellow Clay
100	-	103	Sandy Clay
103	-	110	Fine Sand
110	-	120	Coarse Sand & Gravel
120	-	125	Stones & Clay
125	-	128	Clay & Sand
128	-	133	Gravel & Clay
133	-	138	Clay & Stones
138	-	145	Clay & Stones
145	-	147	Gravel & Stones
147	-	150	Gravel & Stones
150	-	153	Stones & Clay
153	-	154	Fine Sand
154	-	157	Gravel & Sand
157	-	160	Stones & Gravel
160	-	162	Clay & Stones
162	-	165	Stones & Sand
165	-	167	Brown Gravel & Stones
167	-	173	Clay & Stones

31.02.443
31-132

RECEIVED
SEP 14 1950
Department of Conservation
& Economic Development
Geological & Top. Survey

DEPT. OF CONSERVATION
RECEIVED
SEP 14 1950
DIVISION OF
WATER POLICY & SUPPLY

Form 99—5M—8-47

4

(Do not fill in) Application No. 31-162

File in Triplicate
Sign all copies

County Camden

Location 31·2·4·4·3

31-132

STATE OF NEW JERSEY
DEPARTMENT OF CONSERVATION
Division of Water Policy and Supply
28 West State Street
Trenton 8, New Jersey

APPLICATION FOR PERMIT TO DRILL WELL

An application must be submitted and permit received before drilling a well 100 feet or more in depth.

print or type

Owner New Jersey Water Co., Driller A. C. SCHULTES & SONS

Address Haddon Heights, N.J. Address Woodbury N.J.

#46 In compliance with the provisions of Chapter 377, P.L. 1947, application is hereby made for permit to drill a n Artesian well in The City of Camden, Camden County, New Jersey
type municipality and county

*Quantity of Water Needed (G.P.M.) 1300 **Use of Well Public Supply

Proposed Diameter of Well 12" Proposed Depth of Well 170 ft.

Method of Drilling to be Used Standard Cable

As a part of this application, and in consideration of the granting of a permit, applicant assumes full responsibility for plugging or sealing said well in a manner satisfactory to the Division, in the event it should become a menace to public health or safety.

Date Oct. 25th, 1950

NEW JERSEY WATER COMPANY
C. J. Greco
Owner's Signature VICE-PRES.

* Quantities in excess of 100,000 gallons per day may require special application for right to divert water.
** Well used for public and potable purposes will require application and permit for right to divert water.

Location of Well (See other side)

PERMIT TO DRILL WELL

(Not to be filled in by Applicant)

The applicant is hereby granted a permit to drill this well subject to the conditions stipulated on the application and as set forth below.

Samples of Cuttings Required by Department { Yes ✓ / No

Permit Required to Divert Water { Yes ✓ / No

Owner has Permit to Divert Water { Yes ✓ / No

Special Conditions

1. Permit is valid for one year from date hereof.
2. This well is approved as a replacement for existing wells #41 & #42, which are to be abandoned and sealed in a manner satisfactory to this Division, and involves no increase in diversion rights.

Note: Diversion grant approved July 10, 1924 under Appl. No. 166

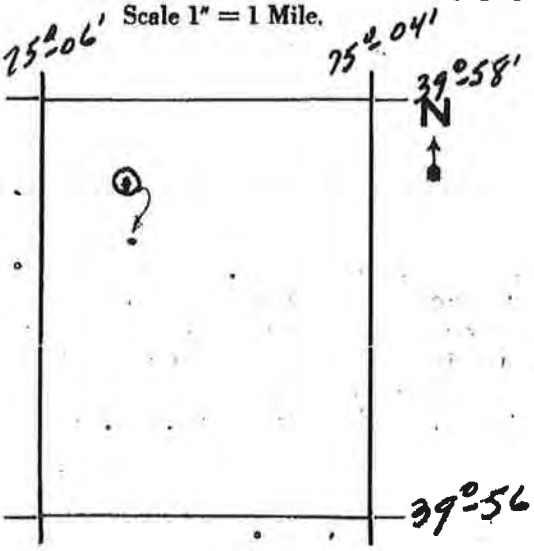
Date NOV -6'50

Chief Engineer

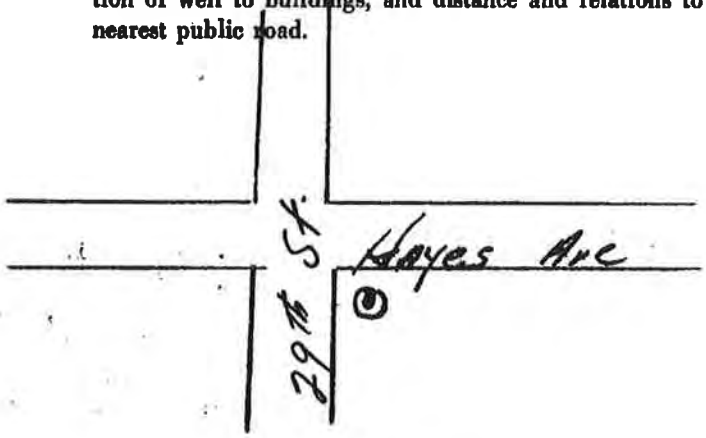
WELPMT 033 2401

Location of Well

1. **Location Overlay for State Topographic Map, Scale 1" = 1 Mile.**



2. **Sketch of premises in immediate vicinity showing relation of well to buildings, and distance and relations to nearest public road.**



WELPMT 033 2402

Form 87-5M-4-49

DEC 14 1950

Department of Conservation & Economic Development Geologic & Top. Survey

Camden

31.02.443

DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
Division of Water Policy & Supply
WELL RECORD

Permit No. 31-162

Application No. 166

County Camden

31.02.443

1. OWNER New Jersey Water Co. ADDRESS Haddon Heights, N.J.

Owner's Well No. 46 SURFACE ELEVATION Approx. 120 Feet (Above mean sea level)

2. LOCATION Cleveland Ave. Pumping Station

3. DATE COMPLETED 11/27/50 DRILLER A. C. Schultes & Sons

4. DIAMETER: Top 12 Inches Bottom 12 Inches TOTAL DEPTH 178'4" Feet

5. CASING: Type Blk. Steel Diameter 12" Inches Length 148 Feet

6. SCREEN: Type Cook Size of Opening 0.010 Diameter 12" Inches Length 31' 10" Feet

Range in Depth { Top 146 Feet / Bottom 178 Feet

Geologic Formation Raritan

Tail piece: Diameter None Inches Length Feet

7. WELL FLOWS NATURALLY No Gallons per Minute at / Feet above surface

Water rises to / Feet above surface

8. RECORD OF TEST: Date 11/27/50 Yield 1400 Gallons per minute

Static water level before pumping 34'8" Feet below surface

Pumping level 90' feet below surface after 7½ hours pumping

Drawdown 54.6 average Feet Specific Capacity 26.2 Gals. per min. per ft. of drawdown

How Pumped Turbine How measured Orifice

Observed effect on nearby wells None

9. PERMANENT PUMPING EQUIPMENT:

Type Deep Well Turbine Capacity 1200 Gallons per minute

How Driven Electric Horse Power 40 R.P.M. 1800

Depth of pump in well 90 Feet Depth of foot piece in well 118 Feet

10. USED FOR Public Supply AMOUNT { Average Gallons Daily / Maximum Gallons Daily

11. QUALITY OF WATER Sample: Yes / No /

Taste None Odor None Color clear Temperature / °F

12. LOG See reverse side Are samples available?

(Driller's log on this sheet or on separate sheet)

13. SOURCE OF DATA Driller's Log

14. DATA OBTAINED BY A. C. Schultes Jr. DATE 12/4/50

(Note: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements, etc.)

LOG OF WELL

0	-	10'	Top soil & Mud
10	-	17'	Very fine brown sand
17	-	25'	Black Sandy Clay
25	-	28'	River Mud & Stones
28	-	35'	Yellow Clay
35	-	42'	Yellow Clay & Pebbles
42	-	50'	Very coarse yellow sand
50	-	55'	Yellow clay
55	-	65'	Yellow clay
65	-	70'	Yellow & Brown Clay
70	-	78'	Yellow Clay & Gravel
78	-	83'	Red Clay
83	-	92'	Reddish Fine Sand
92	-	95'	Brown clay & small stones
95	-	98'	Brown clay & small stones
98	-	107'	Fine sand mixed with clay
107	-	110'	Brown clay & Pebbles
110	-	115'	Coarse sand & pebbles
115	-	120'	Salt & Pepper sand & white clay
120	-	124'	White clay & stones
124	-	128'	White clay - very hard
128	-	132'	Big stones, gravel, white clay
132	-	135'	Big stones, gravel, white clay
135	-	137'	White fine sand, milky color
137	-	142'	Small gravel
142	-	145'	Big stones
145	-	167'	Gravel, big stones
167	-	169'	Gravel, big & small stones
169	-	179'	Gravel, big & small stones

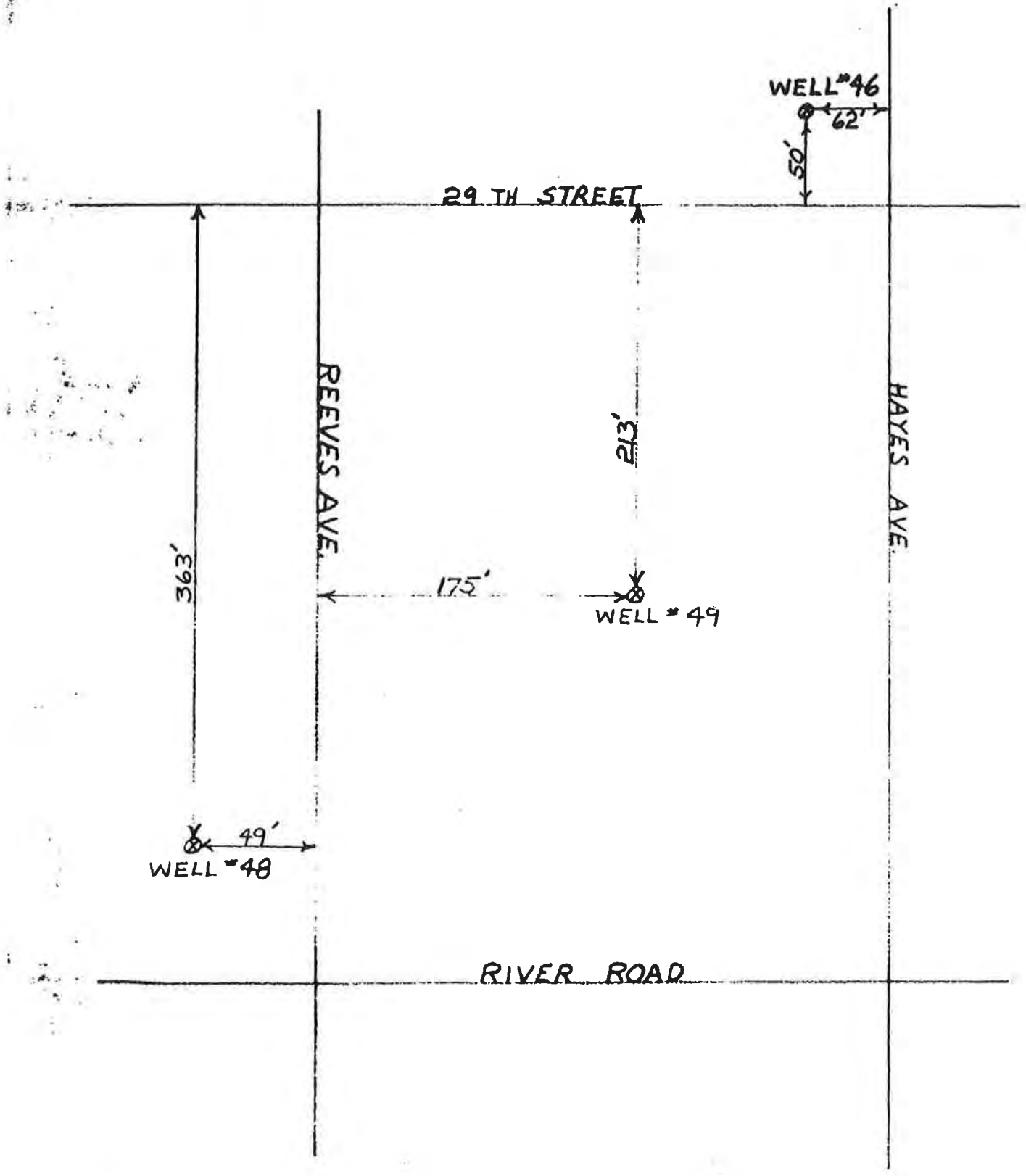
31.02.443
31-162

31-162

31-12-443

31-162

NEW JERSEY WATER CO.
CAMDEN N.J.



Form 99—5M—8-47

File in Triplicate
Sign all copies

(Do not fill in) Application No. 31-189

County Camden

Location 31·1·6·6·6

DEPT. OF CONSERVATION RECEIVED MAR 26 1951 DIVISION OF WATER POLICY & SUPPLY

STATE OF NEW JERSEY
DEPARTMENT OF CONSERVATION
Division of Water Policy and Supply
28 West State Street
Trenton 8, New Jersey

APPLICATION FOR PERMIT TO DRILL WELL

An application must be submitted and permit received before drilling a well 100 feet or more in depth.

print or type

Owner R. M. Hollingshead Corporation Driller Artesian Well Drilling Co.

Address 540 Cooper St., Camden, N.J. Address Arsmingo & Girard Ave., Phila., Pa.

This new well is for replacement of #2 well drilled in 1945, which has been abandoned.
Permit to driller

In compliance with the provisions of Chapter 377, P.L. 1947, application is hereby made for permit to drill a drilled well in Camden County, Camden, N.J.
(type) (municipality and county)

*Quantity of Water Needed (G.P.M.) 450 gal. **Use of Well Industrial

Proposed Diameter of Well 10" Proposed Depth of Well 180-190 ft.

Method of Drilling to be Used Drill and drive

As a part of this application, and in consideration of the granting of a permit, applicant assumes full responsibility for plugging or sealing said well in a manner satisfactory to the Division, in the event it should become a menace to public health or safety.

Date March 21, 1951

R. M. Hollingshead Corporation
J. W. Slank, Plant Mgr
Owner's Signature

* Quantities in excess of 100,000 gallons per day may require special application for right to divert water.
** Well used for public and potable purposes will require application and permit for right to divert water.

Location of Well (See other side)

PERMIT TO DRILL WELL

(Not to be filled in by Applicant)

The applicant is hereby granted a permit to drill this well subject to the conditions stipulated on the application and as set forth below.

Samples of Cuttings Required by Department	Yes / No	*Special Conditions*
Permit Required to Divert Water	Yes / No	1. Permit is valid for one year from date hereof.
Owner has Permit to Divert Water	Yes / No	2. This well is approved as a replacement for Well #2 which has been abandoned and is to be sealed in a manner satisfactory to this Division, and involves no increase in diversion rights.

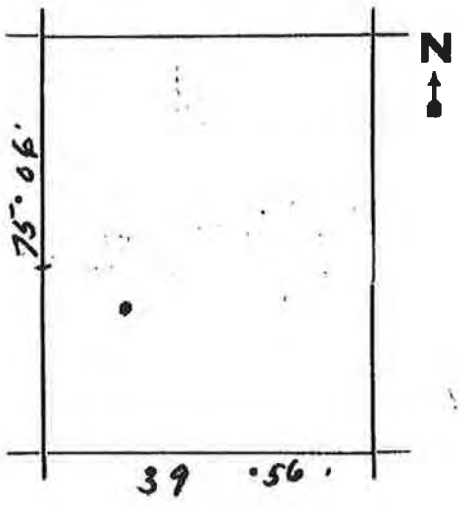
MAR 28'51
Date

Chief Engineer

WELPMT 033 2457

Location of Well

1. **Location Overlay for State Topographic Map, Scale 1″ = 1 Mile.**



2. **Sketch of premises in immediate vicinity showing relation of well to buildings, and distance and relations to nearest public road.**

31.01.666

31-189

520 N. State St.
xxxxxxxxxxxxxxx
x 9

March 26, 1951

Artesian Well Drilling Company
Aramingo and Girard Avenues
Philadelphia 25, Pa.

Re: Well Permit No. 31-189

Gentlemen:

Enclosed herewith is permit for construction of a well for R. M. Hollingshead Corporation, Camden, N. J. to replace their existing Well #2.

Please file at your earliest convenience a map showing the location of this well in relation to the #2 well which has been abandoned.

Yours very truly,

H. T. Critchlow
Director and Chief Engineer

By _____
George R. Shanklin
Asst. Chief Engineer

JCM:MEB
Enc.

PATRICK CONNER

31.01-666

T. CLIFTON MAGEE

ARTESIAN WELL DRILLING CO. 31-189

TEST BORINGS, SOUNDINGS AND PROSPECTING
SUBTERRANEAN WATER SUPPLY

ARAMINGO AND GIRARD AVENUES

BELL PHONE, REGENT 9-1318 PHILADELPHIA 25, PA.

March 22nd, 1951.

State of New Jersey
Dept. of Conservation,
Div. of Water Policy & Supply
28 West State Street,
Trenton, New Jersey,

Gentlemen; ATTENTION; Mr. George R. Shanklin,

Enclosed please find application to drill a 10" well for the R. M. Hollingshead Corp. of 840 Cooper Street, Camden, New Jersey. This well is to replace one that was drilled in 1945 but has been abandoned, we have tried to repair this well but were not able to do so.

Trusting this application will be given your prompt attention, we remain.

Very truly yours,

ARTESIAN WELL DRILLING CO.

BY: T. Clifton Magee

Division of Water Policy & Supply

From	To	Remarks
C	GRS	

Replacement of grandfather rights

31.01.666

PATRICK CONNER

T. CLIFTON MAGEE

ARTESIAN WELL DRILLING CO.

31-189

TEST BORINGS, SOUNDINGS AND PROSPECTING

SUBTERRANEAN WATER SUPPLY

ARAMINGO AND GIRARD AVENUES

BELL PHONE, REGENT 9-1316 PHILADELPHIA 25, PA.

April 19th, 1951.

State Of New Jersey
Dept. of Conservation
And Economic Development,
Div. of Water Policy & Supply,
520 E. State Street,
Trenton, New Jersey.

RE: Well permit No. 31-189
New well for Hollinshead Corp.
Camden N. J. to replace their
2 Well.

Gentlemen; ATTENTION: Mr. George R. Shanklin, Asst. Chief Eng.

Enclosed please find drawing of relative positions of new well we are drilling for the R. M. Hollinshead Corp. of Camden New Jersey and the old well that this is replacing.

We have had the customer weld a steel plate over the top of the old well to seal same from use.

Trusting this is the information you desire, we remain.

Very truly yours,

ARTESIAN WELL DRILLING CO.

BY: Thomas C. Magee Jr.

Division of Water Policy & Supply

From	To	Remarks
C	JCM	

DEPT. OF CONSERVATION & ECONOMIC DEVELOPMENT RECEIVED APR 23 1951 DIVISION OF WATER POLICY & SUPPLY

WELPMT 033 2461

Form 99 (Rev.) 5M—7-51

Fill in and submit 3 copies
(white, blue, pink)

08
07

(Do not fill in) Application No. 31-400

County

Location 31.01.667

STATE OF NEW JERSEY
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY AND SUPPLY
520 EAST STATE STREET
TRENTON 9, N. J.

Mail to
STATE GEOLOGIST
520 East State Street
Trenton 9, N. J.

Make Checks Payable to
DIVISION OF WATER POLICY & SUPPLY

APPLICATION FOR PERMIT TO DRILL WELL

Permit must be obtained **Prior** to the drilling of each well regardless of depth, except a drive-point or hand-dug well. Each application must be accompanied by the legal fee of Three Dollars ($3.00).

(print or type)

Owner Sun Oil Company — Driller R. B. Stafford, Jr.

Address 1608 Walnut St. Phila. 3, Pa. — Address Haddonfield RFD Glendale, N.J.

In compliance with Chapter 377, P. L. 1947, as amended, application is made for a permit to drill a well in Camden (municipality) Camden (county) Use of Well Industrial Service Station (domestic, industrial, public supply, test, etc.)

Quantity of Water Needed 25 G.P.M. Diameter of Well 4 In.

Proposed Depth of Well 160 Ft. Method of Drilling to be Used Cable Tool (cable-tool, rotary, jet, etc.)

Show Location on Back of this Sheet Only.

In accepting a permit for this well, the **Owner** agrees to abide by the following **General and Special Conditions:**

GENERAL CONDITIONS

1. The issuance of a permit to drill this well will **Not** convey any **Rights**, either expressed or implied, to **Divert Water.**

2. In the event this well is abandoned, the **Owner** will assume full responsibility for plugging or sealing it in a manner satisfactory to the Division, in accordance with the provisions of Chapter 193, Laws of 1951.

3. A permit to drill this well will be valid for one year from date of approval.

Date 10/28/51 Sun Oil Co. for Land & Dev.
Owner's Signature

(Not to be filled in by Applicant)

SPECIAL CONDITIONS

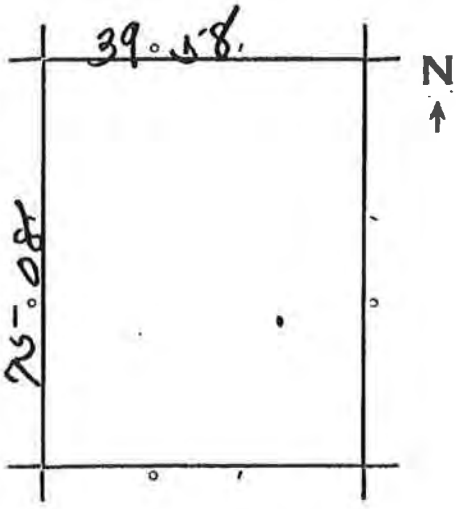
Samples of Cuttings Required by State Geologist: Yes / No ✓

WELL PERMIT
APPROVED
OCT 30 1951
N. T. Critchlow
DIRECTOR
DIV. OF WATER POLICY & SUPPLY

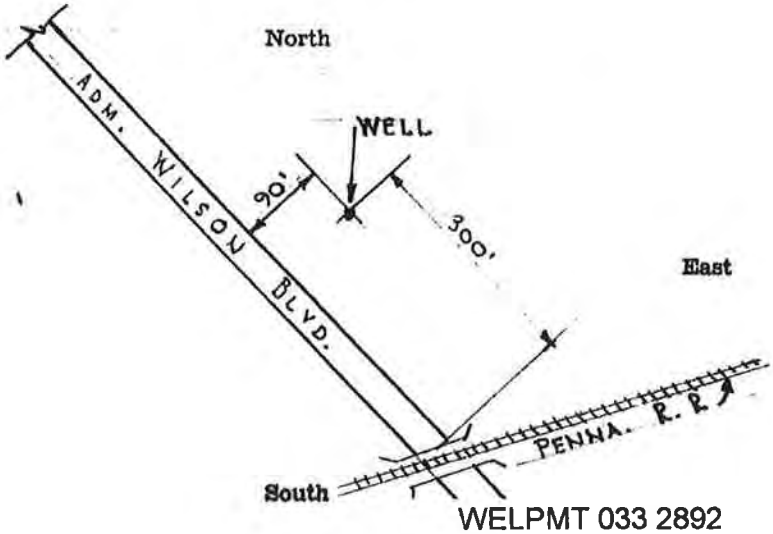
WELPMT 033 2891

LOCATION OF WELL Admiral Wilson Blvd. Nr. 12th St. Camden, New Jersey

State Atlas Map No. 31



Draw sketch showing distances and relations of well site to nearest public roads, streets, etc.



COPY

31-2-451

WELL RECORD

No. 38 Well

31.02.451

Application No. 490

OWNER NEW JERSEY WATER COMPANY ADDRESS HADDON HEIGHTS, N. J.

Owner's Well No. 38

31-2-451

2 LOCATION CAMDEN, NEW JERSEY Pump Base Elev. -6.71 U.S.C.Datum Ft.A.S.L.

3 DATE COMPLETED April 20, 1933 DRILLER Artesian Well Drilling Company

4 DIAMETER: Top 10 Ins. Bottom 10 Ins. TOTAL DEPTH 166 Ft.

5 CASING: Type Wrought Iron Pipe Diam. 10 Ins. Length 126 Ft.

6 SCREEN: Type Cook Red Brass Diam. 10 Ins. Length 36 Ft.

Range in depth 126 to 162 Ft. Geologic formation ---

Tail piece: Diam. 8 Ins. Length 4 Ft.

7 WELL FLOWS NATURALLY -- Gals. per min. at - Feet above surface.

Water rises to - Feet above surface.

8 RECORD OF TEST: Date 4-26-33 Yield 846 Gals. per min.

Water level: Before pumping (Static) 10.5 Feet below surface.

After 6 Hours pumping 48 Feet below surface.

Draw down 33.5 Ft. Specific capacity 25.2 Gals. per min. per ft. of draw down.

How pumped Air Lift How measured Weir Box

Observed effect on nearby wells None

9 PERMANENT PUMPING EQUIPMENT: Byron-Jackson, Type OX - installed October 16, 1940

Type 4 stage deep well pump Capacity 900 Gals. per min.

How driven Electric Motor Horse power 15 R.P.M. 1725

Depth of pump in well 60.94 Ft. Depth of foot piece in well None Ft.

10 USED FOR ... AMOUNT: Average ... Gals. daily.

Max. ... Gals. daily.

11 QUALITY OF WATER ... Sample: Yes ... No. X

Taste ... Oder ... Color ... Temp. ... °F.

12 LOG See reverse side Are samples available? No

13 SOURCE OF DATA Well driller, observation of C. D. Moon, construction blue prints, and specifications

14 DATA OBTAINED BY C. D. Moon Date May 18, 1933

(Note:- Use other side of this sheet for additional information.)

31.02.451

490

LOG

31.02.451

0 - 10'	Meadow Mud	Recent
10 - 30'	Yellow sand & clay	Plein.?
30 - 43'	Brown sand and clay	
43 - 54'	Yellow sand and clay	
54 - 81'	Red Clay	
81 - 98'	Sandy clay	
98 - 105'	Fine muddy sand	
105 - 111'	Coarse sand	
111 - 121'	Sand, gravel and clay balls	Raritan
121 - 126'	Sandy clay	
126 - 130'	Sand and gravel	
130 - 146'	Large gravel and sand	
146 - 158'	Coarse white sand	
158 - 162'	Coarse brown sand	
162 - 166'	White clay	

Form 90 (Rev.) 534--7-51

08
07

(Do not fill in) Application No. 31-904

Fill in and submit 3 copies (white, blue, pink)

County ?

Location 31.2.7.1.2 B

City Well #15
Kaighn Ave. and Euclid St.

Mail to: STATE GEOLOGIST [illegible] Trenton 8, N. J.

STATE OF NEW JERSEY
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY AND SUPPLY
520 EAST STATE STREET
TRENTON 8, N. J.

Make Checks Payable to DIVISION OF WATER POLICY & SUPPLY

APPLICATION FOR PERMIT TO DRILL WELL

Permit must be obtained Prior to the drilling of each well regardless of depth, except a drive-point or hand-dug well. Each application must be accompanied by the legal fee of Three Dollars ($3.00).

(print or type)

Owner City of Camden, N.J. Driller Layne-New York Co.

Address Camden, N.J. Address 431 Market St.
Camden, N.J.

In compliance with Chapter 377, P. L. 1947, as amended, application is made for a permit to drill a well in

Camden (municipality) Camden (county) Use of Well public supply (domestic, industrial, public supply, test, etc.)

Quantity of Water Needed 1000 G.P.M. Diameter of Well 24" x 18" In.

Proposed Depth of Well 225' approx Ft. Method of Drilling to be Used rotary (cable-tool, rotary, jet, etc.)

Show Location on Back of this Sheet Only.

In accepting a permit for this well, the Owner agrees to abide by the following General and Special Conditions:

GENERAL CONDITIONS

1. The issuance of a permit to drill this well will Not convey any Rights, either expressed or implied, to Divert Water.

2. In the event this well is abandoned, the Owner will assume full responsibility for plugging or sealing it in a manner satisfactory to the Division, in accordance with the provisions of Chapter 198, Laws of 1951.

3. A permit to drill this well will be valid for one year from date of approval.

Date 3/30/53 [signature] Owner's Signature

(Not to be filled in by Applicant)

SPECIAL CONDITIONS

Samples of Cuttings Required by State Geologist: Yes / No ✓

Note: Diversion grant approved March 16, 1953 under Appl. No. 758.

WELL PERMIT APPROVED
APR 7 1953
N. T. Critchlow
DIRECTOR
DIV. OF WATER POLICY & SUPPLY

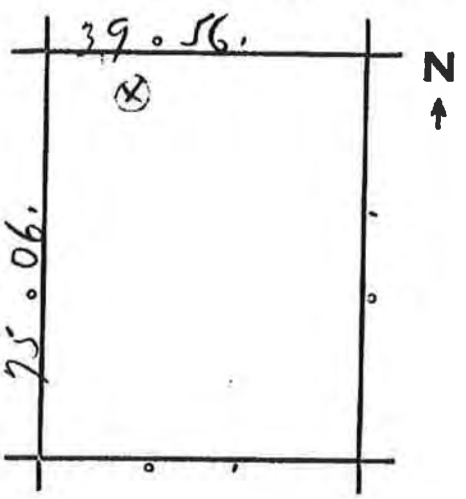
WELPMT 034 0209

325877
400945

~~325889~~
~~400979~~

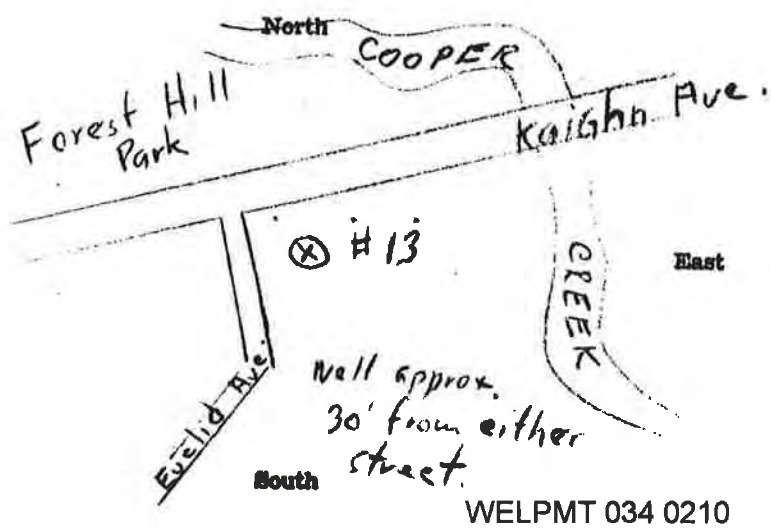
RECEIVED
MAR 21 1953
Dept. of Conservation & Economic Development
Mining & Topo. Survey

State Atlas Map No. 31



LOCATION OF WELL

Draw sketch showing distances and relations of well site to nearest public roads, streets, etc.



WELPMT 034 0210

Form 90 (Rev.) 526—7-51

Sealed

WELL SEALED ~~[illegible]~~ 1973

(Do not fill in) Application No. 31-905

County 08 07

Location 31-1.6.6.5

Fill in and submit 3 copies (white, blue, pink)

DEPT. CONS. & ECON. DEV. RECEIVED MAR 31 1953 DIVISION OF WATER POLICY & SUPPLY

City Well #14
Harrison Ave. and 17th. St. edge of Morro Phillips Tract

Mail to STATE [illegible] 520 East State Street Trenton [illegible]

STATE OF NEW JERSEY
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY AND SUPPLY
520 EAST STATE STREET
TRENTON 9, N. J.

Make Checks Payable to DIVISION OF WATER POLICY & SUPPLY

APPLICATION FOR PERMIT TO DRILL WELL

Permit must be obtained Prior to the drilling of each well regardless of depth, except a drive-point or hand-dug well. Each application must be accompanied by the legal fee of Three Dollars ($3.00).

(print or type)

Owner: City of Camden, N.J. Driller: Layne-New York Co.

Address: Camden, N.J. Address: 431 Market St.
Camden, N.J.

In compliance with Chapter 377, P. L. 1947, as amended, application is made for a permit to drill a well in Camden (municipality) Camden (county) Use of Well: Public supply (domestic, industrial, public supply, test, etc.)

Quantity of Water Needed: 1000 G.P.M. Diameter of Well: 24" x 18" In.

Proposed Depth of Well: 150' Ft. Method of Drilling to be Used: rotary (cable-tool, rotary, jet, etc.)

Show Location on Back of this Sheet Only.

In accepting a permit for this well, the Owner agrees to abide by the following General and Special Conditions:

GENERAL CONDITIONS

1. The issuance of a permit to drill this well will Not convey any Rights, either expressed or implied, to Divert Water.
2. In the event this well is abandoned, the Owner will assume full responsibility for plugging or sealing it in a manner satisfactory to the Division, in accordance with the provisions of Chapter 199, Laws of 1951.
3. A permit to drill this well will be valid for one year from date of approval.

Date: 3/30/53 [illegible signature] Owner's Signature

(Not to be filled in by Applicant)

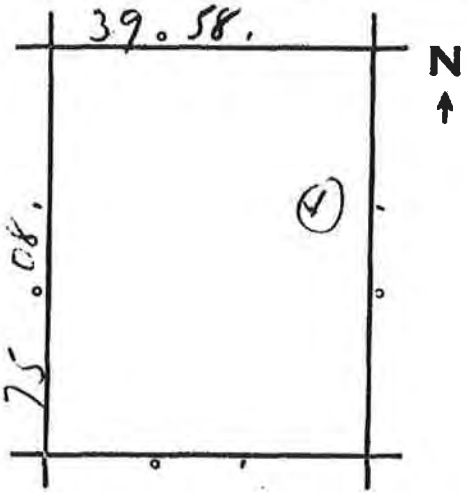
SPECIAL CONDITIONS

Samples of Cuttings Required by State Geologist: Yes / No ✓

Note: Diversion grant approved March 16, 1953 under Appn. No. 757.

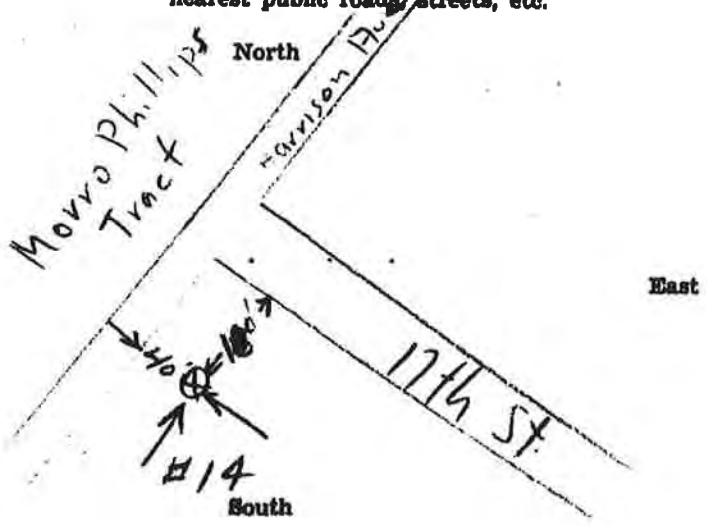
WELL PERMIT APPROVED APR 7 1953 H. T. Critchlow DIRECTOR DIV. OF WATER POLICY & SUPPLY

State Atlas Map No. 31



LOCATION OF WELL

Draw sketch showing distances and relations of well site to nearest public roads, streets, etc.



WELPMT 034 0212

31.1.6.6.5

Form 87-5M

DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
Division of Water Policy & Supply

Permit No. 31-205
Application No. 757
County _____
31-01-665

WELL SEALED 12/27/73

WELL RECORD

LAYNE WELL NO. 14

1. OWNER CITY OF CAMDEN ADDRESS CAMDEN, NEW JERSEY
   Owner's Well No. _____ SURFACE ELEVATION _____ Feet (Above mean sea level)
2. LOCATION HARRISON AVE. & 17TH ST., EDGE OF MORRO PHILLIPS TRACT, CAMDEN, N. J.
3. DATE COMPLETED 6-1-53 DRILLER LAYNE NEW YORK CO., INC.
4. DIAMETER: Top 18 Inches Bottom 18 Inches TOTAL DEPTH 150 Feet
5. CASING: Type STEEL Diameter 30,24&18 Inches Length 36,100&105 Feet
6. SCREEN: Type LAYNE Size of Opening SHUTTER Diameter 18 Inches Length 40 Feet
   Range in Depth { Top 105 Feet / Bottom 145 Feet } Geologic Formation SAND, BOULDERS & STREAKS OF CLAY
   Tail piece. Diameter 18 Inches Length 5 Feet
7. WELL FLOWS NATURALLY _____ Gallons per Minute at _____ Feet above surface
   Water rises to _____ Feet above surface
8. RECORD OF TEST: Date 6-1-53 Yield 1,000 Gallons per minute
   Static water level before pumping 35 Feet below surface
   Pumping level 87 feet below surface after 8 hours pumping
   Drawdown 52 Feet Specific Capacity 1000/52 G.P.M. per min. per ft. of drawdown
   How Pumped ELEC How measured ORIFICE
   Observed effect on nearby wells _____
9. PERMANENT PUMPING EQUIPMENT:
   Type TURBINE Capacity 1000 Gallons per minute
   How Driven ELEC. Horse Power 75 R.P.M. 1800
   Depth of pump in well 105 Feet Depth of Foot piece in well 115 Feet
   Depth of Air Line in well 115 Feet Type of Meter on Pump _____
10. USED FOR PUBLIC SUPPLY AMOUNT { Average _____ Gallons Daily / Maximum _____ Gallons Daily }
11. QUALITY OF WATER _____ Sample: Yes _____ No. _____
    Taste _____ Odor _____ Color _____ Temperature _____ °F
12. LOG SEE REVERSE SIDE (Give details on back of sheet or on separate sheet) Are samples available? _____
13. SOURCE OF DATA LAYNE NEW YORK CO., INC.
    DATA OBTAINED BY LAYNE NEW YORK CO., INC. DATE SEPTEMBER 9, 1954

Note: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water; sketch map, sketch of special casing arrangements, etc.)

WELREC 118 0616

31-905
31-01-665

EACH STRATUM	DEPTH OF STRATA	FORMATION
9'	9'	Fill
12'	21'	River Mud
30'	51'	Gravel, Sand, Streaks of Clay
15'	66'	Clay with Streaks of Sand
20'	86'	Red and White Clay
10'	96'	Soft Clay
22'	118'	Sand and Streaks of Clay
2'	120'	Clay
10'	130'	Coarse Sand
5'	135'	Clay
10'	145'	Sand and Boulders
19'	164'	Clay and Mica Rock

31-905
31-01-665

Form 30 (Rev.) 5M—7-51

Fill in and submit 3 copies (white, blue, pink)

31.1.6.6.4

Replacement well for #1 City Well which was built in 1932.

(Do not fill in) Application No. 31-980

County

Location

W.S. 253

STATE OF NEW JERSEY

DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY AND SUPPLY
520 EAST STATE STREET
TRENTON 8, N. J.

Make Checks Payable to
DIVISION OF WATER POLICY & SUPPLY

APPLICATION FOR PERMIT TO DRILL WELL

Permit required prior to the drilling of each well regardless of depth, except a drive-point or hand-dug well. Each application must be accompanied by the legal fee of Three Dollars ($3.00).

(print or type)

Owner City of Camden, N.J. Driller Layne-New York Co. Inc.

Address Camden, N.J. Address 431 Market St.

Camden, N.J.

In compliance with Chapter 377, P. L. 1947, as amended, application is made for a permit to drill a well in

Camden (municipality) Camden (county) Use of Well Public supply (domestic, industrial, public supply, test, etc.)

Quantity of Water Needed 1000 G.P.M. Diameter of Well 24" x 18" In.

Proposed Depth of Well 185' Ft. Method of Drilling to be Used Rotary (cable-tool, rotary, jet, etc.)

Show Location on Back of this Sheet Only.

In accepting a permit for this well, the Owner agrees to abide by the following General and Special Conditions:

GENERAL CONDITIONS

1. The issuance of a permit to drill this well will Not convey any Rights, either expressed or implied, to Divert Water.

2. In the event this well is abandoned, the Owner will assume full responsibility for plugging or sealing it in a manner satisfactory to the Division, in accordance with the provisions of Chapter 198, Laws of 1951.

3. A permit to drill this well will be valid for one year from date of approval.

Date 4/16/53 Owner's Signature

(Not to be filled in by Applicant)

SPECIAL CONDITIONS

Samples of Cuttings Required by State Geologist: Yes / No ✓

This well is approved as a replacement for City Well #1 which is to be abandoned and involves no increase in diversion rights. Present well, when abandoned, shall be sealed in a manner satisfactory to the Division of Water Policy and Supply.

WELL PERMIT APPROVED
APR 21 1953
N. T. Critchlow
DIRECTOR
DIV. OF WATER POLICY & SUPPLY

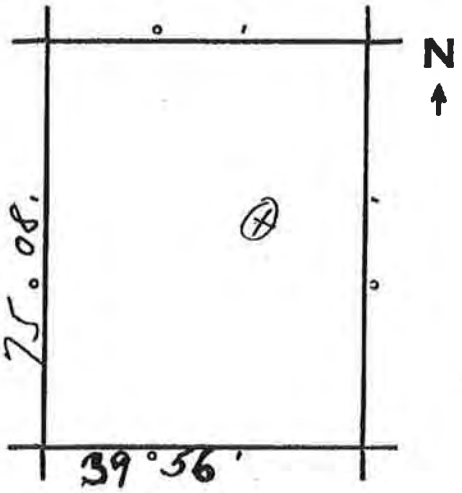
WELPMT 034 0280

31.1.6.6.4

LOCATION OF WELL

State Atlas Map No. 31

Draw sketch showing distances and relations of well site to nearest public roads, streets, etc.



North

50' to 75' from site of #1 well at warehouse, Federal St. and Coopers Creek.

West

East

32270
40515

South

RECEIVED

WELPMT 034 0281

31.1.6.6.4

Form 67-5M

DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
Division of Water Policy & Supply

WELL RECORD
LAYNE WELL #1-A

Permit No. 31-940
Application No. 253
County _____

31.01.664

1. OWNER Camden Water Department ADDRESS Camden, New Jersey
   Owner's Well No. City Well #1-A SURFACE ELEVATION _____ Feet (Above mean sea level)
2. LOCATION Camden, New Jersey
3. DATE COMPLETED 12/17/53 DRILLER Layne-New York Co., Inc.
4. DIAMETER: Top 18 Inches Bottom 18 Inches TOTAL DEPTH 175 Feet
5. CASING: Type Steel Diameter 30 - 24 & 18" Inches Length 90, 130 & 135 Feet
6. SCREEN: Type Layne Size of Opening Shutter Diameter 18 Inches Length 35 Feet
   Range in Depth { Top 135 Feet / Bottom 170 Feet } Geologic Formation Sand, Gravel & Boulders
   Tail piece. Diameter 18 Inches Length 5 Feet
7. WELL FLOWS NATURALLY _____ Gallons per Minute at _____ Feet above surface
   Water rises to _____ Feet above surface
8. RECORD OF TEST: Date 12/17/53 Yield 1,000 Gallons per minute
   Static water level before pumping 42' Feet below surface
   Pumping level 96 feet below surface after 8 hours pumping
   Drawdown 54 Feet Specific Capacity $\frac{1000}{54}$ Gals. per min. per ft. of drawdown
   How Pumped Elec. How measured Orifice
   Observed effect on nearby wells _____
9. PERMANENT PUMPING EQUIPMENT:
   Type Turbine Capacity 1,000 Gallons per minute
   How Driven Electric Horse Power 75 R.P.M. 1,800
   Depth of pump in well 125 Feet Depth of Foot piece in well 135 Feet
   Depth of Air Line in well 135 Feet Type of Meter on Pump _____
10. USED FOR Public Supply AMOUNT { Average _____ Gallons Daily / Maximum _____ Gallons Daily }
11. QUALITY OF WATER _____ Sample: Yes _____ No. _____
    Taste _____ Odor _____ Color _____ Temperature _____ °F
12. LOG See Reverse Side (Give details on back of sheet or on separate sheet) Are samples available? _____
13. SOURCE OF DATA Layne-New York Company, Inc.
14. DATA OBTAINED BY Layne-New York Co., Inc. DATE September 22, 1954

(Note: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements, etc.)

EACH STRATUM	DEPTH OF STRATA	FORMATION
10'	10'	Cinders
30'	40'	Muddy Sand
6'	46'	Clay
18'	64'	Coarse Sand
18'	82'	Yellow Clay
4'	86'	Fine Sand
30'	116'	Red Clay
12'	128'	Blue Clay
48'	176'	Coarse Sand, Gravel & Boulders
4'	180'	Blue Clay, Mica Rock

31.01.644
31-940

Form 99 (Rev.) 5M—7-51

Fill in and submit 3 copies (white, blue, pink)

06
07

(Do not fill in) Application No. 31-988

County

Location 31.1.6.5-6 ±

STATE OF NEW JERSEY
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY AND SUPPLY
520 EAST STATE STREET
TRENTON 9, N. J.

Mail to
STATE GEOLOGIST
520 East State Street
Trenton 9, N. J.

Make Checks Payable to
DIVISION OF WATER POLICY & SUPPLY

APPLICATION FOR PERMIT TO DRILL WELL

Permit must be obtained **Prior** to the drilling of each well regardless of depth, except a drive-point or hand-dug well. Each application must be accompanied by the legal fee of Three Dollars ($3.00).

(print or type)

Owner U. S. Gasket — Driller A. C. Schultes & Sons

Address 602 N. Tenth St. — Address 501 Mantua Avenue

Camden, N. J. — Woodbury, New Jersey

In compliance with Chapter 377, P. L. 1947, as amended, application is made for a permit to drill a well in

Camden (municipality) Camden (county) Use of Well Industrial (domestic, industrial, public supply, test, etc.)

Quantity of Water Needed 65 G.P.M. Diameter of Well 6" In.

Proposed Depth of Well 135 Ft. Method of Drilling to be Used Cable-Tool (cable-tool, rotary, jet, etc.)

Show Location on Back of this Sheet Only.

In accepting a permit for this well, the **Owner** agrees to abide by the following **General and Special Conditions:**

GENERAL CONDITIONS

1. The issuance of a permit to drill this well will **Not** convey any **Rights**, either expressed or implied, to **Divert Water.**

2. In the event this well is abandoned, the **Owner** will assume full responsibility for plugging or sealing it in a manner satisfactory to the Division, in accordance with the provisions of Chapter 193, Laws of 1951.

3. A permit to drill this well will be valid for one year from date of approval.

Date April 21, 1953 — Owner's Signature W. B. Campbell Proj. Eng.

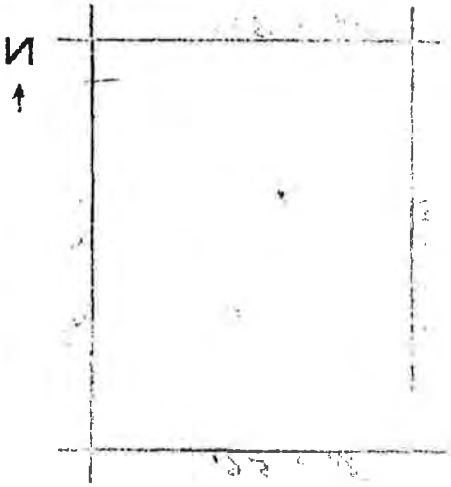
(Not to be filled in by Applicant)

SPECIAL CONDITIONS

Samples of Cuttings Required by State Geologist } Yes / No ✓

WELL PERMIT APPROVED
APR 23 1953
N. T. Critchlow DIRECTOR
DIV. OF WATER POLICY & SUPPLY

320632
407087



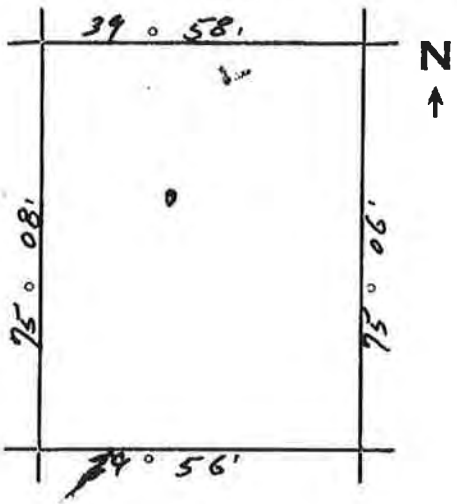
WELPMT 034 0296

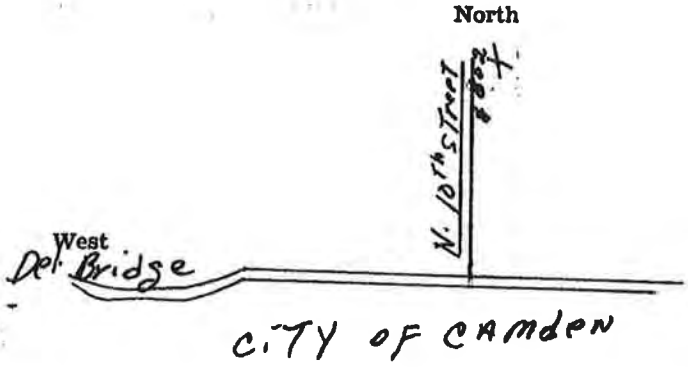
RECEIVED
APR 23 1953
Department of Conservation & Economic Development
Geology & Topo. Survey

State Atlas Map No. 21

LOCATION OF WELL

Draw sketch showing distances and relations of well site to nearest public roads, streets, etc.





WELPMT 034 0297

FORM 87-5M

DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
Division of Water Policy & Supply
WELL RECORD

Permit No. 31-948
Application No. _____
County 31.16.5.1

1. OWNER U. S. Gasket Company ADDRESS 602 N. 10th St. - Camden, N. J.
Owner's Well No. 1 SURFACE ELEVATION _____ Feet (Above mean sea level)
2. LOCATION 602 N. 10th St. - Camden, New Jersey
3. DATE COMPLETED 8/28/53 DRILLER A. C. Schultes & Sons
4. DIAMETER: Top 6" Inches Bottom 4½" Inches TOTAL DEPTH 141 Feet
5. CASING: Type Steel Diameter 6 Inches Length 131' 4" Feet
6. SCREEN: Type Cook Size of Opening .040 Diameter 4½" Inches Length 11' 1" Feet
Range in Depth { Top 129' 11" Feet Bottom 141 Feet Geologic Formation Gravel & Stones
Tail piece. Diameter _____ Inches Length _____ Feet
7. WELL FLOWS NATURALLY No Gallons per Minute at _____ Feet above surface
Water rises to _____ Feet above surface
8. RECORD OF TEST: Date 8/11/53 Yield 100 Gallons per minute
Static water level before pumping 48 Feet below surface
Pumping level Approx. 75 feet below surface after 6 hours pumping
Drawdown Approx. 27 Feet Specific Capacity Approx. gals. per min. per ft. of drawdown
How Pumped Air Compressor How measured 55 gal. drum
Observed effect on nearby wells _____
9. PERMANENT PUMPING EQUIPMENT:
Type Vertical Turbine Pump Capacity 50 Gallons per minute
How Driven Electric Motor Horse Power 10 R.P.M. 1800
Depth of pump in well 80 Feet Depth of Foot piece in well None Feet
Depth of Air Line in well None Feet Type of Meter on Pump None
10. USED FOR Process AMOUNT { Average 50,000 Gallons Daily Maximum 60,000 Gallons Daily
11. QUALITY OF WATER 52.8 p/m of iron Sample: Yes ✓ No. _____
Taste Irony Odor None Color Clear Temperature 57 °F
12. LOG _____ (Give details on back of sheet or on separate sheet) Are samples available? Picked Up
13. SOURCE OF DATA Drillers Log
14. DATA OBTAINED BY A.C. Schultes & Sons DATE 10/1/53

(Note: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements, etc.)

WELL LOG

0' - 4'	Fill
4' - 16'	Yellow clay and sand
16' - 19'	Reddish sand and stones
19' - 27'	Sand and stones
Water at 19'	
27' - 32'	White and yellow clay - stones
32' - 54'	River mud
54' - 57'	White clay and sand
57' - 68'	Brown clay
68' - 73'	Gray clay and sand
73' - 76'	Sand, gravel and stones
76' - 87'	White gravel, stones
87' - 93'	Yellow gravel, stones
93' - 98'	Red clay and gravel
98' - 107'	Gravel and sand
107' - 112'	Stones
112' - 116'	White clay and stones
116' - 119'	White gravel, sand and stones
119' - 123'	Yellow sand, gravel and stones
123' - 125'	White gravel and stones
125' - 127'	White clay
127' - 133'	Yellow sand, gravel and stones
133' - 138'	Yellow gravel and stones
138' - 141'	White gravel and stones
141' - 141½'	Iron rock
141½'	Weather rock

Raritan

31.01.651
31-948

~~31.1.656~~ L?

31.01.651

U. S. Gasket
602 North Tenth Street
Camden, New Jersey

Drilled by A. C. Schultes & Sons

Completed 8/23/52

~~31.1.655~~ L?

* 31-948 31.01.651

Cape May	0-4'	Fill (Cinders etc.)
	4-16'	Grayish orange micaceous clayey fine-grained sand.
	16-19'	Pale yellowish brown gravelly sand composed of quartz. The grains are sub-angular to round in shape and are poorly sorted.
	19-27'	Gravel with light brown quartz sand matrix. The gravel is composed of quartz, brick, chert, and sandstone glauconite occurs in the sand.
Cape May & Raritan	27-32'	Yellowish gray sandy clay. The sand is fine grained in size and is composed of quartz.
Raritan	32-52'	Light olive gray micaceous clay. Six inch layer (41-41 1/2') of pebbles, composed of quartz, quartzite, ironstone, and brick.
	54-57'	Yellowish gray clayey silt and very fine grained sand.
	57-68'	Light olive gray micaceous clay.
	68-73'	Yellowish gray clayey silt and very fine grained sand.
	73-76'	Light olive gray micaceous gravelly sand. The gravel is up to 2 inches in diameter. The sand grains are sub-angular in shape.
	76-87'	Coarse gravel with a sand matrix. The gravel is up to 2 1/2 inches in diameter and is composed of quartz, quartzite, chert, and sandstone.
	87-93'	Moderate yellowish brown sub-angular gravelly sand composed of quartz, chert, and ironstone mainly.
	93-99'	Moderate reddish orange clayey sand. The sand is composed of quartz.
	98-107'	Moderate reddish orange sub-angular quartz gravelly sand.
	107-112'	Coarse gravel composed of chert, quartz, sandstone and quartzite.

112-116' Yellowish gray gravelly sand with a clay matrix. Pebbles and sand composed of quartzite, quartz, etc. Pebbles well rounded, sand sub-angular

116-119' Very light brown gravelly sand composed of quartz. The pebbles are up to 3 inches in diameter.

119-127' Coarse quart gravel with a very light brown sand matrix.

127-129' Dull white gravelly and sandy clay. The gravel and sand are composed of quartz.

129-138' Very light brown gravelly quartz sand. The gravel grains are coarse.

138-141' Angular quartz gravel.

Wissahicken (weathered) 141-153' Ivory colored sandy micaeous clay.

(Log prepared by William T. Black, Jr. on 10/1/53)

Form 99 (Rev.) 5M—

Fill in and submit 3 copies
(white, blue, pink)

08 hand
07

(Do not fill in) Application No. 31-1123

County Camden

Location 31·2·4·5·1

Mail to
STATE GEOLOGIST
520 East State Street
Trenton 9, N. J.

STATE OF NEW JERSEY
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY AND SUPPLY
520 EAST STATE STREET
TRENTON 9, N. J.

Make Checks Payable to
DIVISION OF WATER POLICY & SUPPLY

APPLICATION FOR PERMIT TO DRILL WELL

Permit must be obtained Prior to the drilling of each well regardless of depth, except a drive-point or hand-dug well. Each application must be accompanied by the legal fee of Three Dollars ($3.00).

(print or type)

Owner New Jersey Water Co. Driller A. C. Schultes & Sons

Address 610 Station Avenue Address 501 Mantua Avenue

Haddon Heights, New Jersey Woodbury, New Jersey

In compliance with Chapter 377, P. L. 1947, as amended, application is made for a permit to drill a well in Camden ~~Haddon Heights~~ (municipality) Camden (county) Use of Well Public Supply (domestic, industrial, public supply, test, etc.)

Quantity of Water Needed 1000 G.P.M. Diameter of Well 12" In.

Proposed Depth of Well 185 Ft. Method of Drilling to be Used Cable Tool (cable-tool, rotary, jet, etc.)

Show Location on Back of this Sheet Only.

In accepting a permit for this well, the Owner agrees to abide by the following General and Special Conditions:

GENERAL CONDITIONS

1. The issuance of a permit to drill this well will Not convey any Rights, either expressed or implied, to Divert Water.

2. In the event this well is abandoned, the Owner will assume full responsibility for plugging or sealing it in a manner satisfactory to the Division, in accordance with the provisions of Chapter 193, Laws of 1951.

3. A permit to drill this well will be valid for one year from date of approval.

Date August 25, 1953 Owner's Signature

(Not to be filled in by Applicant)

SPECIAL CONDITIONS

Samples of Cuttings Required by State Geologist } Yes / No ✓

This well is approved as a replacement for existing well No. 40, diversion grant for which was approved July 10, 1924 under Appl. No. 166.

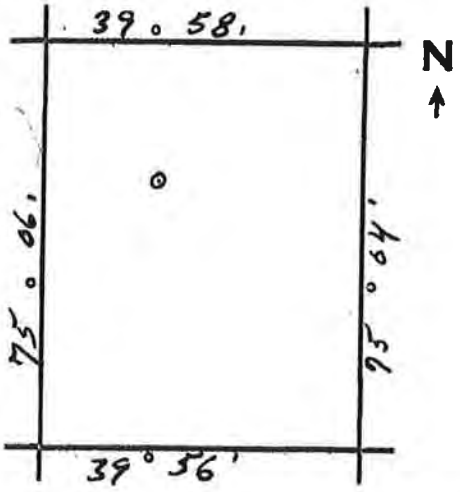
E. Camden
Pavonia
Stockton Sts.

WELL PERMIT
APPROVED
SEP 10 1953
N. T. Criteklow
DIRECTOR
DIV. OF WATER POLICY & SUPPLY

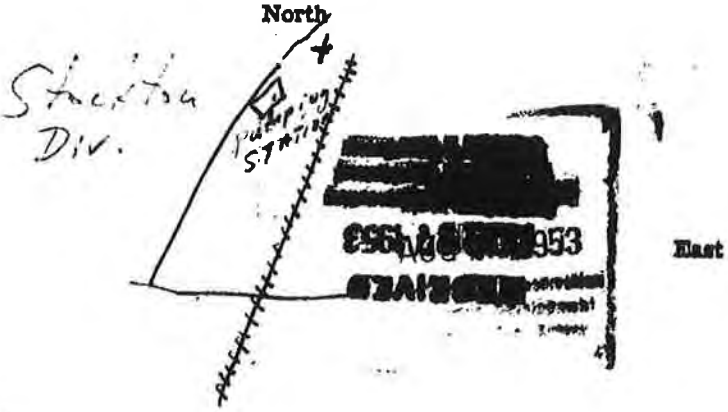
WELPMT 034 0645

LOCATION OF WELL

State Atlas Map No. 31



Draw sketch showing distances and relations of well site to nearest public roads, streets, etc.



WELPMT 034 0646

31.2.4.5.1 ☐

Form 87-5M

DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
Division of Water Policy & Supply
WELL RECORD

Permit No. 31-1123
Application No. 166
County _____
31.02.451

1. OWNER New Jersey Water Co., ADDRESS 610 Station Ave., Haddon Heights, N.J.
Owner's Well No. 47 SURFACE ELEVATION Approx. 40 Feet (Above mean sea level)

2. LOCATION Cleveland Ave., Camden, N.J.

3. DATE COMPLETED 9/23/53 DRILLER A. C. Schultes & Sons Woodbury N.J.

4. DIAMETER: Top 12 Inches Bottom 12 Inches TOTAL DEPTH 174'10" Feet

5. CASING: Type Black Steel Diameter 12 Inches Length 162 Feet

6. SCREEN: Type Stainless Steel Size of Opening .125 Diameter 12 Inches Length XX 16 Feet
Range in Depth { Top 159 Feet Bottom 174'10" Feet Geologic Formation Stones & Gravel
Tail piece. Diameter _____ Inches Length _____ Feet

7. WELL FLOWS NATURALLY No Gallons per Minute at _____ Feet above surface
Water rises to _____ Feet above surface

8. RECORD OF TEST: Date 9/21/53 Yield 1012 Gallons per minute
Static water level before pumping 38 Feet below surface
Pumping level 83 feet below surface after 4 hours pumping
Drawdown 45 Feet Specific Capacity 22.5 Gals. per min. per ft. of drawdown
How Pumped Vertical Turbine Pump How measured Orifice
Observed effect on nearby wells _____

9. PERMANENT PUMPING EQUIPMENT:
Type _____ Capacity _____ Gallons per minute
How Driven _____ Horse Power _____ R.P.M. _____
Depth of pump in well _____ Feet Depth of Foot piece in well _____ Feet
Depth of Air Line in well _____ Feet Type of Meter on Pump _____

10. USED FOR Public Supply AMOUNT { Average _____ Gallons Daily; Maximum _____ Gallons Daily

11. QUALITY OF WATER Good Sample: Yes ✓ No. _____
Taste None Odor None Color None Temperature 57 °F

12. LOG See Back (Give details on back of sheet or on separate sheet) Are samples available? picked up

13. SOURCE OF DATA Driller's Log

14. DATA OBTAINED BY A. C. Schultes Jr. DATE 9/23/53

(Note: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements, etc.)

LOG OF WELL

0'	-	2'	Fine Sand
2'	-	6'	Gravel
6'	-	10'	Mud
10'	-	13'	Sand
13'	-	20'	Gravel & Stones
20'	-	45'	White Clay
45'	-	54'	Stones and Gravel
54'	-	75'	Red Clay
75'	-	98'	Brown Clay
98'	-	109'	Yellow Clay
109'	-	116'	Gravel
116'	-	118'	Sand & Clay
118'	-	119'	White Clay
119'	-	128'	Clay & Gravel
128'	-	130'	White Clay
130'	-	133'	Sand, Clay, gravel
133'	-	135'	White Clay
135'	-	138'	Stones & Clay
138'	-	141'	White Clay
141'	-	145'	Stones
145'	-	151'	Stones & Clay
151'	-	159'	Stones & Gravel
159'	-	168'	Stones
168'	-	170'	Sand & Stones
170'	-	175'	Stones
175'	-	177'	White Clay

...el well

31.02.451
31-1123

31-1123 31.02.451

New Jersey Water Company
Stockton Station
Camden, New Jersey

31-2-451 31.02.451
Drilled by A. C. Schultes & Sons
Completed 31-1123

Cape May

0-4'	Fill
4-25'	Grayish orange sandy fine-grained gravel composed mainly of quartz but with some weathered gneiss and shot pellets. The quartz grains are sub-angular to well rounded.
25-28'	Ironstone conglamerate with quartz pebbles up to 2" in diameter.
Raritan 28-50'	Whitish and pale yellow orange micaceous clayey silt and fine sand.
50-54'	White kaolinitic clay.
54-75'	Moderate reddish orange and white varigated clay.
75-98'	Medium light gray clay.
98-109'	White kaolinitic clay.
109-116'	Very pale orange gravelly sand composed mainly of sub-angular to rounded quartz plus some mica.
116-118'	Simialr to 109-116 except coarser gravel with largest pebbles up to 1" in diameter (chert and quartzite)
118-119'	White kaolinitic clay with sand pockets.
136-138'	Very coarse gravel with pebbles up to 2" in diameter. The gravel has a sand matrix and is composed of quartz, quartzite, chert, and sandstone.
138-141'	White kaolinitic clay with sand pockets.
141-168'	Similar to 136-138 but with pebbles up to 2 1/2" in diameter.
168-175'	Very pale orange fine grain gravel with coarse gravel pebbles. Quartz is the main constituent of the gravel.
175-177'	White micaceous kaolinitic clay.

(Log prepared by William T. Black, Jr. on 10/22/53)

31.1.6.6.2

Form 99 (Rev.) 5M—

Proposed well #15

08
07

(Do not fill in) Application No. 31-1248

County

Location

Fill in and submit 3 copies (white, blue, pink)

Mail to
STATE GEOLOGIST
520 East State Street
Trenton 9, N. J.

STATE OF NEW JERSEY
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY AND SUPPLY
520 EAST STATE STREET
TRENTON 9, N. J.

Make Checks Payable to
DIVISION OF WATER POLICY & SUPPLY

APPLICATION FOR PERMIT TO DRILL WELL

Permit must be obtained **Prior** to the drilling of each well regardless of depth, except a drive-point or hand-dug well. Each application must be accompanied by the legal fee of Three Dollars ($3.00).

(print or type)

Owner City of Camden, N.J. Driller Layne-New York Co. Inc.

Address Camden, N.J. Address 431 Market St.

Camden, N.J.

In compliance with Chapter 377, P. L. 1947, as amended, application is made for a permit to drill a well in

Camden, N. J. (municipality) (county) Use of Well Public Supply (domestic, industrial, public supply, test, etc.)

Quantity of Water Needed 1000 G.P.M. Diameter of Well 24" x 18" In.

Proposed Depth of Well Approx. 140' Ft. Method of Drilling to be Used rotary (cable-tool, rotary, jet, etc.)

Show Location on Back of this Sheet Only.

In accepting a permit for this well, the Owner agrees to abide by the following **General and Special Conditions:**

GENERAL CONDITIONS

1. The issuance of a permit to drill this well will **Not** convey any **Rights**, either expressed or implied, to **Divert Water.**

2. In the event this well is abandoned, the **Owner** will assume full responsibility for plugging or sealing it in a manner satisfactory to the Division, in accordance with the provisions of Chapter 193, Laws of 1951.

3. A permit to drill this well will be valid for one year from date of approval.

Date January 19, 1954

Frank A. Abbott
Owner's Signature
Director of Public Works

(Not to be filled in by Applicant)

SPECIAL CONDITIONS

Samples of Cuttings Required by State Geologist } Yes / No

Diversion grant approved January 18, 1954
under Appn. No. 787.

WELL PERMIT
APPROVED
JAN 20 1954
N. T. Critchlow
DIRECTOR
DIV. OF WATER POLICY & SUPPLY

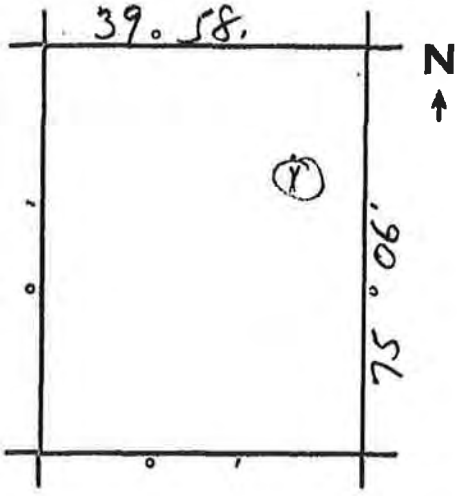
JCH.

WELPMT 034 0898

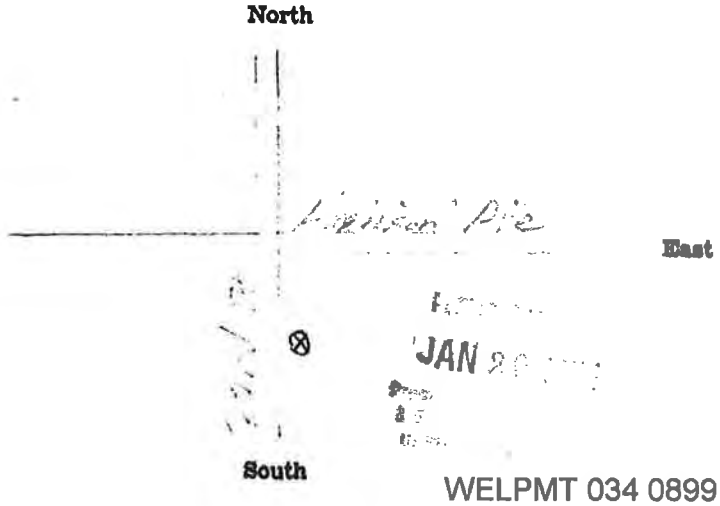
32067
409257

LOCATION OF WELL

State Atlas Map No. 31



Draw sketch showing distances and relations of well site to nearest public roads, streets, etc.



WELPMT 034 0899

31.1.66.2

Form 87-3M

DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
Division of Water Policy & Supply

Permit No. 31-1248
Application No. 787
County _____

WELL RECORD

LAYNE WELL NO. 15

31.01.662

1. OWNER City of Camden ADDRESS Camden, New Jersey
   Owner's Well No. _____ SURFACE ELEVATION _____ Feet (Above mean sea level)
2. LOCATION Camden, New Jersey
3. DATE COMPLETED 3/16/54 DRILLER Layne-New York Company, Inc.
4. DIAMETER: Top 18 Inches Bottom 18 Inches TOTAL DEPTH 141 Feet
5. CASING: Type Steel Diameter 30, 24 & 18 Inches Length 43,112,116 Feet
6. SCREEN: Type Layne Size of Opening Shutter Diameter 18 Inches Length 20 Feet
   Range in Depth { Top 116 Feet / Bottom 136 Feet } Geologic Formation Sand, Gravel, clay Streaks Raritan
   Tail piece. Diameter 18 Inches Length 5 Feet
7. WELL FLOWS NATURALLY _____ Gallons per Minute at _____ Feet above surface
   Water rises to _____ Feet above surface
8. RECORD OF TEST: Date 3/16/54 Yield 1,000 Gallons per minute
   Static water level before pumping 37 Feet below surface
   Pumping level 107 feet below surface after 8 hours pumping
   Drawdown 70 Feet Specific Capacity 1000/70 Gals. per min. per ft. of drawdown
   How Pumped Electric How measured Orifice
   Observed effect on nearby wells /
9. PERMANENT PUMPING EQUIPMENT:
   Type Turbine Capacity 1,000 Gallons per minute
   How Driven Electric Horse Power 75 R.P.M. 1,800
   Depth of pump in well 115 Feet Depth of Foot piece in well 125 Feet
   Depth of Air Line in well 124 Feet Type of Meter on Pump _____
10. USED FOR Public Supply AMOUNT { Average _____ Gallons Daily / Maximum _____ Gallons Daily }
11. QUALITY OF WATER _____ Sample: Yes _____ No. _____
    Taste _____ Odor _____ Color _____ Temperature _____ °F
12. LOG See Reverse Side (Give details on back of sheet or on separate sheet) Are samples available? _____
13. SOURCE OF DATA Layne-New York Company, Inc.
14. DATA OBTAINED BY Layne-New York Co., Inc. DATE Sept. 22, 1954

(Note: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements, etc.)

EACH STRATUM	DEPTH OF STRATA	FORMATION
86'	86'	Sand, Gravel, Boulders & Clay
5'	91'	Sand and Gravel
4'	95'	Clay
11'	106'	Fine White Sand and Clay
2'	108'	Clay
11'	119'	Sand and Gravel, Clay Streaks
10'	129'	Sand, Gravel and Boulders
2'	131'	Clay
7'	138'	Gravel and Boulders
10'	148'	Clay
7'	155'	Mica Rock

31.01.662
31-1248

Form 99 (Rev.) 5M--

08

07

31.2.4~~0~~44

Fill in and submit 3 copies (white, blue, pink)

Proposed well #16

(Do not fill in) Application No. 31-1249

County

Location

DEPT. CONS. & ECON. DEV. RECEIVED JAN 20 1954 WATER DIVISION OF POLICY & SUPPLY

Mail to:
STATE GEOLOGIST
520 East State Street
Trenton 9, N. J.

STATE OF NEW JERSEY
DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY AND SUPPLY
520 EAST STATE STREET
TRENTON 9, N. J.

Make Checks Payable to
DIVISION OF WATER POLICY & SUPPLY

APPLICATION FOR PERMIT TO DRILL WELL

Permit must be obtained **Prior** to the drilling of each well regardless of depth, except a drive-point or hand-dug well. Each application must be accompanied by the legal fee of Three Dollars ($3.00).

(print or type)

Owner City of Camden, N.J. Driller Layne-New York Co. Inc.

Address Camden, N.J. Address 431 Market St. Camden, N.J.

In compliance with Chapter 377, P. L. 1947, as amended, application is made for a permit to drill a well in

Camden (municipality) Camden (county) Use of Well Public Supply (domestic, industrial, public supply, test, etc.)

Quantity of Water Needed 1000 G.P.M. Diameter of Well 24" x 18" In.

Proposed Depth of Well Approx 140' Ft. Method of Drilling to be Used rotary (cable-tool, rotary, jet, etc.)

Show Location on Back of this Sheet Only.

In accepting a permit for this well, the Owner agrees to abide by the following **General and Special Conditions:**

GENERAL CONDITIONS

1. The issuance of a permit to drill this well will **Not** convey any **Rights**, either expressed or implied, to **Divert Water.**
2. In the event this well is abandoned, the Owner will assume full responsibility for plugging or sealing it in a manner satisfactory to the Division, in accordance with the provisions of Chapter 193, Laws of 1951.
3. A permit to drill this well will be valid for one year from date of approval.

Date January 19, 1954 Frank G. Abbott

Owner's Signature
Director of Public Works

(Not to be filled in by Applicant)

SPECIAL CONDITIONS

Samples of Cuttings Required by State Geologist } Yes / No ✓

#16

Diversion grant approved January 18, 1954
under Appn. No. 785.

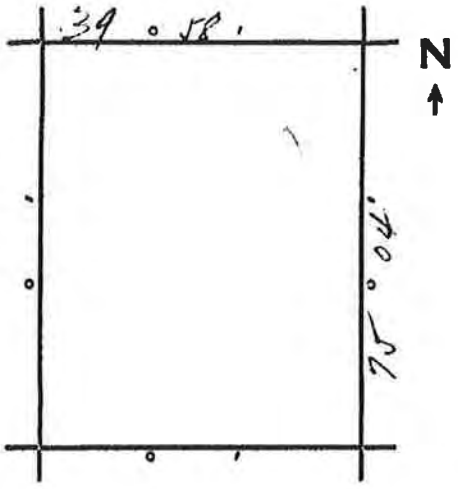
WELL PERMIT APPROVED
JAN 20 1954
H. T. Critchlow
DIRECTOR
DIV. OF WATER POLICY & SUPPLY

JCW

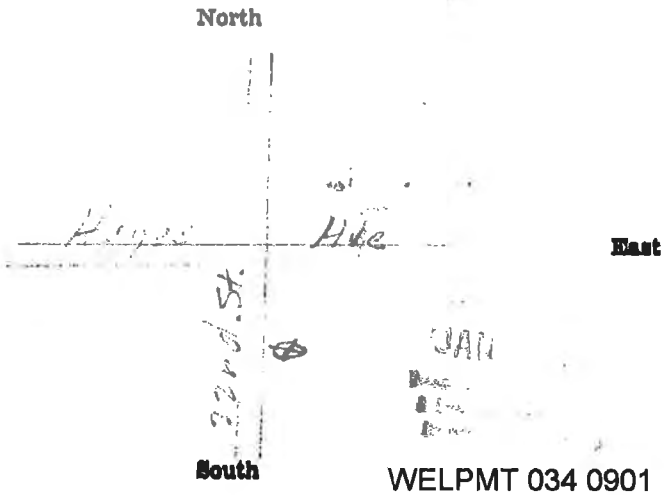
WELPMT 034 0900

LOCATION OF WELL

State Atlas Map No. 31



Draw sketch showing distances and relations of well site to nearest public roads, streets, etc.



WELPMT 034 0901

31.02.444

Form 87-5M

DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
Division of Water Policy & Supply

WELL RECORD

LAYNE WELL NO. 16

Permit No. 31-1249
Application No. 785
County _____

31.02.444

1. OWNER City of Camden ADDRESS Camden, N. J.
   Owner's Well No. #16 SURFACE ELEVATION ~25 Feet (Above mean sea level)
2. LOCATION Camden, New Jersey
3. DATE COMPLETED 5/3/54 DRILLER Layne-New York Co., Inc.
4. DIAMETER: Top 18 Inches Bottom 18 Inches TOTAL DEPTH 180 Feet
5. CASING: Type Steel Diameter 30,24 & 18 Inches Length 40,140, 149 Feet
6. SCREEN: Type Layne Size of Opening Shutter Diameter 18 Inches Length 30 Feet
   Range in Depth { Top 149 Feet Bottom 179 Feet } Geologic Formation Sand, Gravel & Boulders
   Tail piece. Diameter _____ Inches Length _____ Feet
7. WELL FLOWS NATURALLY _____ Gallons per Minute at _____ Feet above surface
   Water rises to _____ Feet above surface
8. RECORD OF TEST: Date 5/3/54 Yield 1,000 Gallons per minute
   Static water level before pumping 50 Feet below surface
   Pumping level 103 feet below surface after 8 hours pumping
   Drawdown 53 Feet Specific Capacity 1000/53 Gals. per min. per ft. of drawdown
   How Pumped Elec. How measured Orifice
   Observed effect on nearby wells _____
9. PERMANENT PUMPING EQUIPMENT:
   Type Turbine Capacity 1000 Gallons per minute
   How Driven Elec. Horse Power 75 R.P.M. 1800
   Depth of pump in well 135 Feet Depth of Foot piece in well 145 Feet
   Depth of Air Line in well 145 Feet Type of Meter on Pump _____
10. USED FOR Public Supply AMOUNT { Average _____ Gallons Daily; Maximum _____ Gallons Daily }
11. QUALITY OF WATER _____ Sample: Yes _____ No. _____
    Taste _____ Odor _____ Color _____ Temperature _____ °F
12. LOG SEE REVERSE SIDE (Give details on back of sheet or on separate sheet) Are samples available? _____
13. SOURCE OF DATA Layne-New York Company, Inc.
14. DATA OBTAINED BY Layne-New York Company, Inc. DATE September 14, 1954

(Note: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements, etc.)

EACH STRATUM	DEPTH OF STRATA	FORMATION
5'	5'	Brown Clay, Gravel, Boulders
15'	20'	Coarse BrownSand, Gravel & Boulders
15'	35'	White Sandy Clay and Gravel
19'	54'	Fine BrownSand, Streaks of Clay
11'	65'	Medium Sand, Streaks of White Clay
11'	76'	Coarse BrownSand
22'	98'	Tough Red and White Clay, Streaks of Soft Blue Clay
8'	106'	Sandy Clay
25'	131'	Tough Red Clay
13'	144'	Coarse Sand & Gravel
37'	181	Sand, Gravel and Boulders Mica Clay

31-1249
31.02.444

31.02.444
31-1249

Camden Co.
Elev. ±.
31-1249

CAMDEN WATER DEPARTMENT
CITY WELL #16
21ST. & HAYES AVE.
CAMDEN, N. J.

Total depth - 187'

Driller: Layne New York

31.02.444

Rotary samples

0	- 5'	Sand, medium to 10 mm., mostly coarse to pebbly, dirty and poorly sorted. Color is near a pale yellowish orange 10 YR 8/6 on rock color chart. Grains are predominately subangular and stained with limonitic material. Quartz (95%), unweathered chert, and a black vitreous non-magnetic mineral were noted.
5	- 20'	Gravel, sandy (coarse to very coarse) up to 10 mm., mostly 2 - 7 mm. in size, slightly iron stained, and poorly sorted. Color is near a pale yellowish orange 10 YR 8/6 on rock color chart. Grains are predominately subangular. Quartz (95%), and a black vitreous non-magnetic mineral were seen.
20	- 35'	Clay, yellowish white and gravel (2 - 30 mm.). Pebbles are subangular predominately quartz (95%), and poorly sorted.
35	- 54'	Sand, medium to 10 mm., mostly coarse to 3 mm., poorly sorted, and pretty clean. Color is near a pale yellowish orange 10 YR 8/6 on rock color chart. Grains are predominately subangular. Quartz (95%), mica, and a black vitreous non-magnetic mineral were seen.
54	- 65'	Sand, medium to 5 mm., mostly coarse to 2 mm., poorly sorted, and clean. Color is near a yellowish gray 5 Y 8/1 on rock color chart. Grains are predominately subangular. Quartz (90%), pyrite, chert, and a black vitreous non-magnetic mineral were noted.
65	- 76'	Gravel, sandy (fine to very coarse) up to 8 mm. poorly sorted and pretty clean. Color is near a pale yellowish orange 10 YR 8/6 on rock color chart. Grains are predominately subangular. Quartz (90%), chert (?), and a black vitreous non-magnetic mineral were seen.

31.02.444
31-1249

31.2.4.4.1 ☐
Camden Co.
Sample No. 31-1249
31.02.444

CAMDEN WATER DEPARTMENT
CITY WELL #16
21ST. & HAYES AVE.
CAMDEN, N. J.

Total depth - 187'

Driller: Layne New York

Rotary samples

76	- 98'	Gravel, sand, and clay mixed. Gravel and sand are poorly sorted, clay coated, and range up to 15 mm. in size. All grains are subangular and predominately quartz in composition. Color is nearest to a pale yellowish orange 10 YR 8/6 on rock color chart although clay shows some reddish and white shades.
98	- 106'	Gravel, sand, and clay mixed. Same as 76-98' sample except for more whitish clays and scarce mica being noted.
106	- 131'	Sand, clayey to pebbly, and clay mixed with some pebbles up to 10 mm. in size. Sample similar otherwise to 98-106' except that reddish and white clays were noted.
131	- 144'	Gravel, with some sand and white clay globules. Grains range in size from medium to 15 mm., mostly from 3 - 10 mm. Sample is poorly sorted and clean. No definite color as predominate quartz grains range in color from white to orange to red to gray. Quartz (90%), mica, Chert, and a black vitreous non-magnetic mineral were seen in the sand and gravel phase. Sandstone pebbles were quite abundant.
At	144'	Gravel, with some sand and white clay globules. Pebbles range from 2 - 20 mm. in size -- more coarse than previous sample. Otherwise this sample like 131-144'. Quartz and sandstone pebbles abundant.
At	164'	Gravel, with some sand and white clay globules. Pebbles range from 2 - 20 mm. in size -- abundant quarts and sandstone pebbles. Like 144' sample otherwise.
169	- 181'	Gravel, with some sand, 5 - 20 mm. grain size is predominate with abundant quartz and sandstone pebbles. Tourmaline present as crystals in quartz pebbles.

Form 87-5M

0408002

DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
Division of Water Policy & Supply

WELL RECORD

Permit No. 13-1871
Application No. _____
County _____

1. OWNER New Jersey Water Co. ADDRESS 610 Station Ave. - Haddon Hts. N.J.
Owner's Well No. 49 SURFACE ELEVATION Approx. 25 Feet (Above mean sea level)
2. LOCATION Cleveland Avenue - Camden, New Jersey
3. DATE COMPLETED 5/55 DRILLER A. C. Schultes & Sons
4. DIAMETER: Top 12 Inches Bottom 12 Inches TOTAL DEPTH 169 Feet
5. CASING: Type Steel Diameter 12 Inches Length 140 Feet
6. SCREEN: Type Johnson Size of Opening 100 Diameter "12" Inches Length 32 Feet
Range in Depth { Top 137 Feet / Bottom 169 Feet Geologic Formation Raritan
Tail piece. Diameter _____ Inches Length _____ Feet
7. WELL FLOWS NATURALLY No Gallons per Minute at _____ Feet above surface
Water rises to _____ Feet above surface
8. RECORD OF TEST: Date 5/55 Yield 1400 Gallons per minute
Static water level before pumping 45' Feet below surface
Pumping level 85 feet below surface after 8 hours pumping
Drawdown 40 Feet Specific Capacity 34.6 Gals. per min. per ft. of drawdown
How Pumped Vertical Turbine Pump How measured Orifice
Observed effect on nearby wells _____
9. PERMANENT PUMPING EQUIPMENT:
Type Vertical Turbine Pump Capacity 1200 Gallons per minute
How Driven Electric Motor Horse Power 40 R.P.M. 1770
Depth of pump in well 100 Feet Depth of Foot piece in well 112 Feet
Depth of Air Line in well _____ Feet Type of Meter on Pump _____
10. USED FOR Public Supply AMOUNT { Average _____ Gallons Daily / Maximum _____ Gallons Daily
11. QUALITY OF WATER Good Sample: Yes ✓ No. _____
Taste None Odor None Color Clear Temperature _____ °F
12. LOG See reverse side (Give details on back of sheet or on separate sheet) Are samples available? _____
13. SOURCE OF DATA Driller's log
14. DATA OBTAINED BY A. C. Schultes & Sons DATE 2/10/56

(Note: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements, etc.)

31-1871
31.02.418

WELL LOG

0' - 1'	Top soil
1' - 2'	Yellow clay
2' - 11'	Blue silt
11' - 20'	Blue clay
20' - 25'	Vegatation
25' - 30'	Brown sand, stones, gravel
30' - 36'	Brown sand, gravel
36' - 48'	White sand, stones, gravel
48' - 50'	Yellow, red, white clay
50' - 59'	Red sand, clay
59' - 78'	Yellow clay
78' - 99'	Brown sand - gravel
99' - 103'	White clay, sand
103' - 114'	White sand, clay, gravel
114' - 124'	White sand, clay, stones
124' - 169'	White sand, gravel, large stones
169' - 175'	Clay balls, weathered rock

31-1871
31.02.418
No.

Well Completion Report

A. C. SCHULTES & SONS *Contractors*

ESTABLISHED 1921

TEST HOLES - WATER FOR ALL PURPOSES
ARTESIAN WELLS

501 MANTUA AVENUE - WOODBURY, NEW JERSEY
Bell Phone: Woodbury 2-2450

Deep Well Turbine Pumps

Horizontal Centrifugal Pumps

1' above ground level
ground level

31-01871

TOTAL DEPTH — FT. 169'
PUMPING LEVEL 44'-2"
STATIC HEAD 21'
140'-
12"
CASING
32'-0"
STRAINER

WELL LOG	FEET FROM GROUND SURFACE
Top Soil	0 TO 1'
yellow clay	1'-2'
Blue silt	2'-11'
Blue clay	11'-20'
Vegatation	20'-25'
Brown Sand, stones, Gravel	25'-30'
Brown Sand, Gravel	30'-36'
White Sand, stone, gravel	36'-48'
yellow Peo, White Clay	48'-50'
Red Sand, clay	50'-59'
yellow clay	59'-78'
Brown Sand Gravel	78'-99'
White clay, Sand	99'-103'
White Sand Clay, gravel	103'-114'
White, Sand Clay stones	114'-124'
White Sand, clay, gravel Large stones	124'-169'
Clay balls	
Weatherrock	169-175

Name of Owner N.J. WATER
Permit No. 13-1871
Location CLEVLAND AVE.
Well No. 49

PUMPING TEST
Hrs. Pumped
Capacity G.P.M.
Static Level 44'2"
Pumping Level
Specific Capacity
Diameter of Well (12")
Depth of Well 169'
Size of Casing (12")
Length of Casing 140 GROUND
Distance to Top of Packer 137'-0" GROUND
Type Screen Johnson
Size of Screen 12"
10-6"/10-6"/11 Length of Screen 32'-0"
Screen Fittings lead packer / brass bowl
Slot Size 100"

REMARKS
Drilling Machine No. 24 W
Well Completed May 5, 1955
Date May 5, 1955
Well Driller Signature J. Nissa

JCM

Form 90 (Rev. 4-56)

46/7

31-01-669 ☐ ✓

Application No. 31-4687

Mail to
STATE GEOLOGIST
520 EAST STATE STREET
TRENTON 25, N. J.

STATE OF NEW JERSEY

DEPARTMENT OF CONSERVATION & ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY AND SUPPLY
520 East State Street
Trenton 25, N. J.

Make Checks Payable to
DIVISION OF WATER POLICY & SUPPLY

APPLICATION FOR PERMIT TO DRILL WELL

Permit must be obtained **prior** to the drilling of each well regardless of depth, except a drive-point or hand-dug well. Each application must be accompanied by the legal fee of three dollars ($3.00).

(Print or Type)

Owner Paris Produce Company Driller A. C. Schultes & Sons, Inc.

Address 1632 Carman St., Camden, N. J. Address 501 Mantua Ave.
(Original Owner - Bell & Evans) Woodbury, N. J.

In compliance with R. S. 58:4A-14, application is made for a permit to drill a well in

Camden (municipality) Camden (county) Use of well Industrial Replacement Well (domestic, industrial, public supply, test, etc.)

Diameter of Well 6 inches Proposed Depth of Well 150 Feet

Proposed Capacity of Pump 65 G.P.M. Method of Drilling Cable Tool (cable-tool, rotary, jet, etc.)

Show Location on Back of this Sheet.

Date Feb. 13, 1964 Signature of Owner PARIS PRODUCE Co. [signature]

In accepting a permit for this well, the Owner agrees to abide by the following **General** and **Special Conditions:**

GENERAL CONDITIONS

1. The issuance of a permit to drill this well conveys no rights, either expressed or implied, to divert water.
2. **If the pump capacity applied for is less than 70 gpm, no subsequent increase to 70 gpm or more shall be made without prior approval of the Division.**
3. In the event this well is abandoned, the Owner will assume full responsibility for plugging or sealing it in the manner satisfactory to the Division, in accordance with provisions of R. S. 58:4A-4.1.
4. A permit to drill this well will be valid for one year from date of approval.

SPECIAL CONDITIONS

WELL PERMIT
APPROVED
FEB 27 1964
DEPT. OF CONS. AND ECOM. DEV.
G. R. SHANKLIN
CHIEF ENGINEER
DIV. OF WATER POLICY & SUPPLY

☐ Samples of cuttings required every _____

☐ No samples of cuttings required

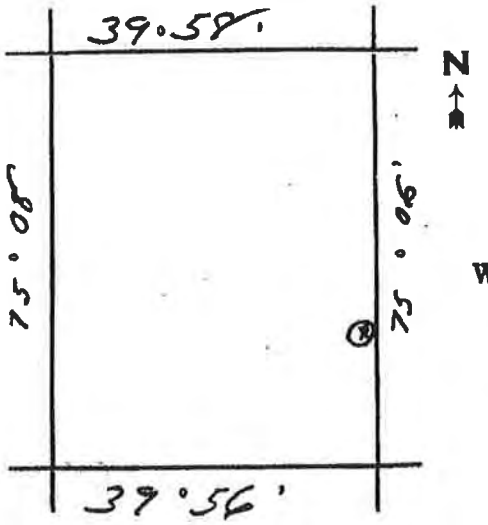
WELPMT 035 2584

RECEIVED
MAR 2 1981

LOCATION OF WELL

Draw sketch showing distance and relations of well site to nearest public roads, streets, etc.

State Atlas Map No. 31



North

West

East

South

RECEIVED
FEB 20 1981

WELPMT 035 2585

Form 87

31-01-669

DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY & SUPPLY

WELL RECORD

Permit No. ~~31-4687~~
Application No. 31-4687
County ______

31-01-669

1. OWNER Paris Produce Co. ADDRESS 1632 Carman St., Camden, N. J.
   Owner's Well No. Replacement Well SURFACE ELEVATION - - Feet (Above mean sea level)
2. LOCATION 1632 Carman St., Camden, N. J.
3. DATE COMPLETED 3/6/64 DRILLER A. C. Schultes & Sons, Inc.
4. DIAMETER: top 6 inches Bottom 6 inches TOTAL DEPTH ~~[illegible]~~ 166 Feet
5. CASING: Type Steel Diameter 6 inches Length 152'10" Feet
6. SCREEN: Type Johnson St. St. Size of Opening .030 Diameter 6 inches Length 15'9" Feet
   Range in Depth { Top 150'3" Feet / Bottom 166' Feet } Geologic Formation - - Kmr
   Tail piece: Diameter - - inches Length - - Feet
7. WELL FLOWS NATURALLY No Gallons per Minute at - - Feet above surface
   Water rises to - - Feet above surface
8. RECORD OF TEST: Date 3/6/64 Yield 100 Gallons per minute
   Static water level before pumping 45' Feet below surface
   Pumping level ______ feet below surface after ______ hours pumping
   Drawdown ______ Feet Specific Capacity ______ Gals. per min. per ft. of drawdown
   How Pumped Blow Well with Air Compressor How measured ______
   Observed effect on nearby wells ______
9. PERMANENT PUMPING EQUIPMENT:
   Type Vertical Turbine Pump Mfrs. Name Worthington
   Capacity 80 G.P.M. How Driven Electric H.P. 5 R.P.M. 1800
   Depth of Pump in well 87 Feet Depth of Footpiece in well ______ Feet
   Depth of Air Line in well 81 Feet Type of Meter on Pump ______ Size ___ inches

USED FOR Industrial AMOUNT { Average ______ Gallons Daily / Maximum ______ Gallons Daily }

QUALITY OF WATER Good Sample: Yes ___ No. ___

Taste None Odor None Color Clear Temp. ______ °F

12. LOG See Reverse Are samples available? ______
    (Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy)
13. SOURCE OF DATA Drillers Log
14. DATA OBTAINED BY A. C. Schultes & Sons, Inc. Date March 9, 1964

(NOTE: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements etc.)

BL 1196 [illegible]

WELREC 118 0624

Well Log	Ft. from Ground Surface
Cinders	0 - 1'
Brown Sand & Clay	1 - 18'
Black Clay	18 - 31'
White Clay	31 - 39'
Red & White Clay	39 - 60'
Coarse Sand & Gravel, lumps of Clay	60 - 82'
Gray Clay	82 - 101'
Red Clay	101 - 128'
Gray & Red Clay	128 - 139'
Coarse Sand & Gravel	139 - 146'
White Clay	146 - 149'
White-Clay Sand, Gravel, Stones	149 - 167'
Stopped in Stones	

31-01-669
31-4687

31-2-457 [illegible]

Form 99 (Rev. 4-56).

Application No. 31-4547

Mail to
STATE GEOLOGIST
P.O. BOX 1889
TRENTON, N.J. 08625

STATE OF NEW JERSEY
DEPARTMENT OF CONSERVATION & ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY AND SUPPLY

Trenton N. J.

Make Checks Payable to
DIVISION OF WATER POLICY & SUPPLY

APPLICATION FOR PERMIT TO DRILL WELL

Permit must be obtained **prior** to the drilling of each well regardless of depth, except a **drive-point** or hand-dug well. Each application must be accompanied by the legal fee of three dollars (**$3.00**).

(Print or Type)

Owner NEW JERSEY WATER COMPANY Driller A. C. SCHULTES & SONS, INC.

Address 214 W. Atlantic Avenue Address 664 S. Evergreen Avenue

Haddon Heights, New Jersey Woodbury, New Jersey

In compliance with R. S. 58:4A-14, application is made for a permit to drill a well in

Camden (municipality) Camden (county) Use of well Public Supply (domestic, industrial public supply, test, etc.)

Diameter of Well 20" X 16" inches Proposed Depth of Well 195 Feet

Proposed Capacity of Pump 1000 G.P.M. Method of Drilling Rotary (cable-tool, rotary, jet, etc.)

Show Location on Back of this Sheet.

Date 5-28-65 Signature of Owner NEW JERSEY WATER COMPANY [signature]

In accepting a permit for this well, the Owner agrees to abide by the following **General** and **Special Conditions:**

GENERAL CONDITIONS

1. The issuance of a permit to drill this well conveys no rights, either expressed or implied, to divert water.
2. **If the pump capacity applied for is less than 70 gpm, no subsequent increase to 70 gpm or more shall be made without prior approval of the Division.**
3. In the event this well is abandoned, the Owner will assume full responsibility for plugging or sealing it in the manner satisfactory to the Division, in accordance with provisions of R. S. 58:4A-4.1.
4. A permit to drill this well will be valid for one year from date of approval.

SPECIAL CONDITIONS

Diversion authorized by the approval of July 16, 1964
of Water Supply Application No. 1022

WELL PERMIT
APPROVED
JUN 8 1965
DEPT. OF CONS. AND ECOM. DEV.
G. R. SHANKLIN
CHIEF ENGINEER
DIV. OF WATER POLICY & SUPPLY

☐ Samples of cuttings required
every ....

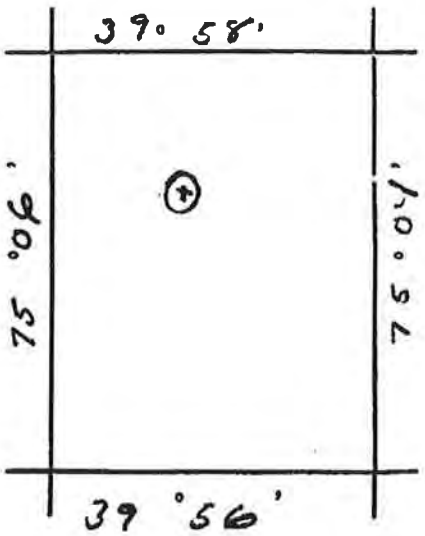
☐ No samples of cuttings required

WELPMT 035 2907

LOCATION OF WELL

Draw sketch showing distance and relations of well site to nearest public roads, streets, etc.

State Atlas Map No. 31



North

East

South

31-2-45 D

DEPARTMENT OF CONSERVATION
AND ECONOMIC DEVELOPMENT
DIVISION OF WATER POLICY & SUPPLY

red #

Permit No. 31-4847
Application No. 1022
County _____

31-02-45

WELL RECORD

OWNER NEW JERSEY WATER COMPANY ADDRESS 214 W. Atlantic Avenue Haddon Heights, New Jersey

Owner's Well No. 52 SURFACE ELEVATION _____ Feet (Above mean sea level)

2. LOCATION Camden Station

3. DATE COMPLETED July 12, 1965 DRILLER A. C. Schultes & Sons, Inc.

4. DIAMETER: top 20x16 Inches Bottom 16 Inches TOTAL DEPTH 198'2" Feet

5. CASING: Type Steel Diameter 20x16 Inches Length 198'2" Feet 20"-125'10"

6. SCREEN: Type Johnson Stainless S. Size of Opening 100 Diameter 16 Inches Length _____ Feet

Range in Depth { Top 147'2" Feet / Bottom 198'2" Feet } Geologic Formation _____

Tail piece: Diameter _____ Inches Length _____ Feet

7. WELL FLOWS NATURALLY No Gallons per Minute at _____ Feet above surface

Water rises to _____ Feet above surface

8. RECORD OF TEST: Date July 12, 1965 Yield 1404 Gallons per minute

Static water level before pumping 61'2" Feet below surface

Pumping level 86'8" feet below surface after five hours pumping

Drawdown 25'6" Feet Specific Capacity 55 Gals. per min. per ft. of drawdown

How Pumped Vertical Turbine Test (Pump) How measured Orifice 10" x 8"

Observed effect on nearby wells _____

9. PERMANENT PUMPING EQUIPMENT: NONE ON THIS CONTRACT

Type _____ Mfrs. Name _____

Capacity _____ G.P.M. How Driven _____ H.P. _____ R.P.M. _____

Depth of Pump in well _____ Feet Depth of Footpiece in well _____ Feet

Depth of Air Line in well _____ Feet Type of Meter on Pump _____ Size _____ Inches

10. USED FOR Public Supply AMOUNT { Average _____ Gallons Daily / Maximum _____ Gallons Daily }

11. QUALITY OF WATER Good Sample: Yes _____ No. _____

Taste None Odor None Color Clear Temp. _____ °F

12. LOG See Reverse Are samples available? _____
(Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy)

13. SOURCE OF DATA Driller's Log

14. DATA OBTAINED BY A. C. Schultes & Sons, Inc. Date July 13, 1965

(NOTE: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements etc.)

Sand & Stones	0 - 7'
Clay	7 - 10'
Yellow Clay	10 - 12'
Gray Clay	12 - 13'
Medium to coarse sand	13 - 19'
White Yellow sandy clay	19 - 28'
Coarse sand & Gravel	28 - 33'
Fine yellow sand & Stones	33 - 41'
Coarse sand - white clay	41 - 50'
Fine yellow sand & Stones	50 - 63'
Red, white clay streaks fine sand	63 - 72'
Hard red & white clay	72 - 90'
Sand, some clay balls	90 - 101'
Red, yellow white clay	101 - 107'
White clay, sand and gravel	109 - 117'
White, red clay	117 - 119'
White clay	119 - 122'
Gravel	122 - 144'
White Clay - mixed gravel	144 - 147'
Gravelstones	147 - 156'
Clay - stones	156 - 175'
Large stones - rocks	175 - 180'
/Stones, gravel, rocks	180 - 192'
Yellow white gray stones	192 - 193'
White red clay and stones	193 = 195'
Coarse sand & stones	195 - 200'
Weathered Rock	200 - 206'

31.02.451
31-4847

Mail to
STATE GEOLOGIST
P.O. BOX 1390
TRENTON, N.J. 08625

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF THE COMMISSIONER
TRENTON, N.J.

31-16426
Permit No. 31-02-475

PERMIT TO DRILL WELL **VALID ONLY AFTER APPROVAL BY THE D.E.P.**

Owner Admiral Wilson Corp.(Texaco Station) Driller Robbins Bros.

Address Admiral Wilson Blvd. Address 36 Lakeview Dr.

Camden, N.J. Gibbsboro, N.J.

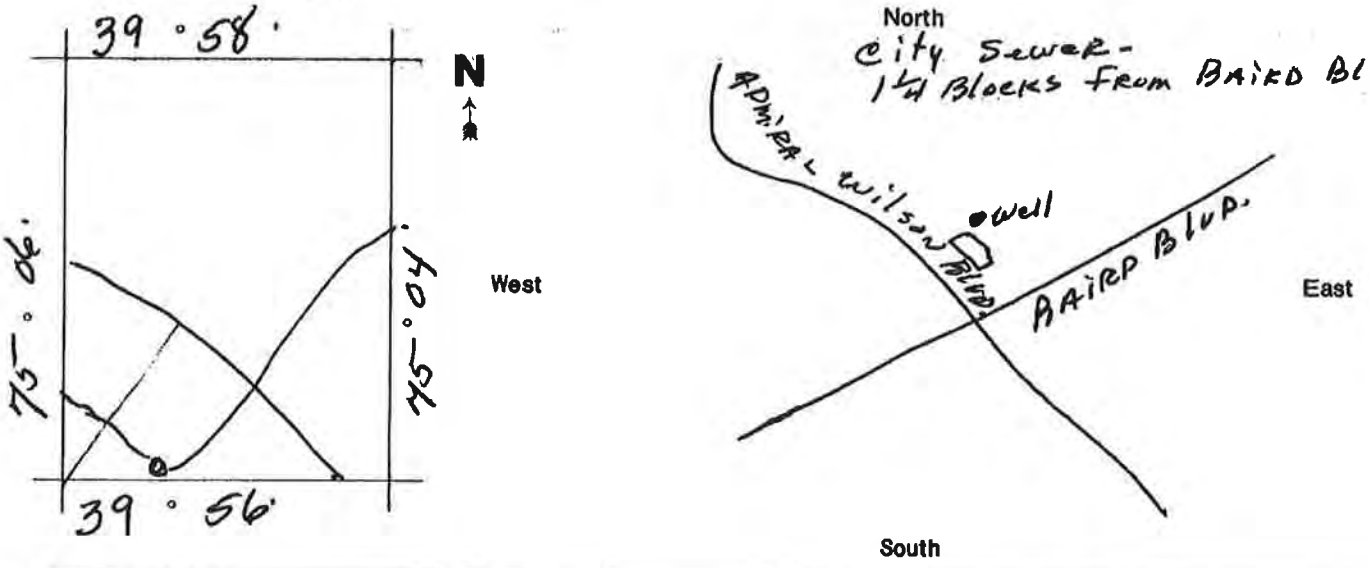
diameter of well	proposed depth of well	proposed capacity of pump
4 inches	100 feet	Domestic 15 G.P.M.
	method of drilling: C-T (cable-tool, rotary, jet, etc.)	use of well: Domestic (semi-public, domestic, industrial, public-supply, test, etc.)

LOCATION OF WELL

lot #	block #	municipality	county
27B	1662	Camden	Camden

Draw sketch showing distance and relations of well site to nearest public roads, streets, septic systems, etc.

State Atlas Map No. 31



SEE REVERSE SIDE for IMPORTANT PROVISIONS AND REGULATIONS pertaining to this permit. APPROVAL of this permit is made SUBJECT TO acceptance of and compliance with the following ADDITIONAL CONDITIONS:

- ☐ Permit issued in accordance with provisions of letter of transmittal dated _____.
- ☐ It is necessary that Geophysical Logs of this well be made by the Division of Water Resources. The owner shall require the driller to notify the Division by PHONE (609-292-2232) when drilling is completed. Permanent pumping equipment SHALL NOT be installed until such logs are made.
- ☐ Samples of cuttings required every _____ feet.
- ☐ _____

This space for Approval Stamp

WELL PERMIT
APPROVED
NOV 20 1979
DEPT. ENV. PROTECTION
OFF. OF THE COMM.
KEMBLE WIDMER
STATE GEOLOGIST

In compliance with R. S. 58:4A-14, application is made for a permit to drill a well as described above.

Date 11/13/79 Signature of Owner [signature]

BUREAU OF GEOLOGY COPY

CLEAR WELPMT 039 2370

Form 87 — 11/20/79

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Permit No. 31-16426
Application No. _____
County _____

WELL RECORD 31-16426 31-02-475

1. OWNER Admiral Wilson Corp ADDRESS Camden N.J.
   Owner's Well No. _____ SURFACE ELEVATION _____ Feet (Above mean sea level)
2. LOCATION Admiral Wilson Blvd.
3. DATE COMPLETED ~~12/26/79~~ 12/26/79 DRILLER Rabbins Bros.
4. DIAMETER: top 4 Inches Bottom _____ Inches TOTAL DEPTH 160 Feet
5. CASING: Type Steel Diameter 4 Inches Length 150 Feet
6. SCREEN: Type Brass Size of Opening 20 Diameter 4 Inches Length 10 Feet
   Range in Depth { Top _____ Feet / Bottom _____ Feet Geologic Formation Cohansey
   Tail piece: Diameter _____ Inches Length _____ Feet
7. WELL FLOWS NATURALLY 10 Gallons per Minute at _____ Feet above surface
   Water rises to _____ Feet above surface
8. RECORD OF TEST: Date 12/26/79 Yield 10 Gallons per minute
   Static water level before pumping _____ Feet below surface
   Pumping level _____ feet below surface after _____ hours pumping
   Drawdown _____ Feet Specific Capacity _____ Gals. per min. per ft. of drawdown
   How Pumped Air Compressor How measured Meter
   Observed effect on nearby wells None
9. PERMANENT PUMPING EQUIPMENT:
   Type Centrifugal Mfrs. Name Sta Rite
   Capacity 10 G.P.M. How Driven Motor H.P. 1 R.P.M. _____
   Depth of Pump in well _____ Feet Depth of Footpiece in well _____ Feet
   Depth of Air Line in well _____ Feet Type of Meter on Pump _____ Size _____ Inches
10. USED FOR Domestic AMOUNT { Average _____ Gallons Daily / Maximum _____ Gallons Daily
11. QUALITY OF WATER Good Sample: Yes _____ No. 1
    Taste 0 Odor 0 Color Clear Temp. 54 °F
12. LOG _____ Are samples available? _____
    (Give details on back of sheet or on separate sheet. If electric log was made, please furnish copy)
13. SOURCE OF DATA Henry Rabbins
14. DATA OBTAINED BY _____ Date 3/28/80

(NOTE: Use other side of this sheet for additional information such as log of materials penetrated, analysis of the water, sketch map, sketch of special casing arrangements etc.)

WELREC 119 0251