# Remedial Investigation Work Plan for the Former Akzo Nobel Pilot Plant 1 Lawrence Street Ardsley, New York

## NYSDEC Project No. C360146

## July 21, 2017

**Prepared for:** Ardsley, LLC
1650 Des Peres Road, Suite 303
St. Louis, MO 63131

**Prepared by:** First Environment, Inc.
91 Fulton Street
Boonton, New Jersey 07005

FIRST ENVIRONMENT

TABLE OF CONTENTS

## TABLES



## FIGURES



## APPENDICES

# CERTIFICATIONS

I Bernard T. Delaney, Ph.D., P.E., BCEE certify that I am currently a NYS registered professional engineer, I had primary direct responsibility for the implementation of the subject construction program, and I certify that the Remedial Investigation Work Plan (RIWP) was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, Tod Delaney of First Environment, Inc., 91 Fulton Street, Boonton, New Jersey, am certifying as Owner's Designated Site Representative for the site.

| 060784-1 | July 21, 2017 | |
|---|---|---|
| NYS P.E. Number | Date | Signature |

STATE OF NEW YORK
BERNARD T. DELANEY
060784-1
LICENSED PROFESSIONAL ENGINEER

# 1.0 Introduction

First Environment, Inc. (First Environment), on behalf of Ardsley, LLC, has prepared this Remedial Investigation Work Plan (RIWP) for the Former Akzo Nobel Pilot Plant located at 1 Lawrence Street, Village of Ardsley, Westchester County, New York (the Site). The Site has previously been assigned Case Number C360146 by the New York State Department of Environmental Conservation (NYSDEC), prior to acquisition of the Site by Ardsley, LLC on May 25$^{th}$ of this year. This document is being submitted to complete the Remedial Investigation Work Plan (RIWP) in accordance with the requirements of the *DER-10/Technical Guidance for Site Investigation and Remediation (DER-10)* and *6 NYCRR Part 375: Environmental Remediation Programs* dated December 14, 2006. The RIWP presents the planned approach to conduct on-site remedial investigation activities at the Site.

# 2.0 Site History and Physical Setting

## 2.1 Site Description

The Former Akzo Nobel Pilot Plant property is located on Lawrence Street in the Village of Ardsley, New York. The property is located in the Saw Mill River valley and situated between the Saw Mill River Parkway to the west and a branch of the Saw Mill River to the east. Lawrence Street borders the property to the south and undeveloped land borders the property to the north. A branch of the Saw Mill River, a tributary of the Hudson River, flows in a general easterly direction in the northern portion of the Site and then in a southerly direction along the Site's eastern boundary. A Site Location Map is included as Figure 1. A Site Plan depicting site attributes is provided as Figure 2.

The Site is 9.62 acres in area and formerly contained seven freestanding structures and a guard house, which were demolished in 2008-2009. Most of the property is covered by impervious surfaces (i.e., remnants of building slabs and asphalt pavement) with the exception of an area of undeveloped land to the north of the main parking lot, which is located at the northern portion of the property. The remainder of the Site is covered by asphalt parking areas, landscaped areas, and clean brick and concrete rubble, which was used to grade the Site following demolition activities. No current operations are active as the Site awaits opportunities for redevelopment.

## 2.2 Site History

The following information regarding Site history was presented in the November 2009 Site Investigation Report prepared by Sovereign Consulting, Inc.

"The property was initially developed by Stauffer Chemical Company (Stauffer) in the 1920s. Stauffer manufactured citric acid (not manufactured in the Pilot Plant portion of the property) from the 1920s to the 1940s, potash from the 1930s to 1973, and carbon disulfide and insoluble sulfur from the 1930s through the 1950s. A variety of biocides and pesticides were produced at the site through 1984, when chemical manufacturing at the facility was ceased entirely. Research and development (R&D) operations began in the 1950s and continued after cessation of the manufacturing activities. In the mid-1980s a Phase I Site Assessment was completed for Stauffer at the subject property. The Phase I Assessment identified two significant issues:

- A former plant manager indicated that approximately fifteen tons of insoluble sulfur was landfilled at the site between 1950 and 1969. This claim was investigated via a test-pitting operation conducted in October 2006 and no indications of landfilling operations were observed.
- Laboratory analysis conducted on the plant's effluent to the Saw Mill River in October 1983 revealed elevated concentrations of 1, 1, 1-trichloroethane (TCA). The elevated TCA effluent concentration was traced to groundwater from a deep well (approximately 1,200 feet in depth) on the property which was utilized as a the plant’s source of non-contact cooling water. As Stauffer did not use or produce TCA, the source of the groundwater impact was unknown. The NYSDEC required Stauffer to cease discharge of contaminated effluent to the Saw Mill River and the deep well was subsequently sealed.

In a NYSDEC memorandum dated November 30, 1983 (from Richard Bissonette, Division of Water, Region 3, White Plains to Peter Doshna, Division of Water, Region 3, White Plains) about a Stauffer Chemical Company Inspection, Mr. Bissonnette clarifies that the Stauffer facility does not use or manufacture TCA. It further states that the well contamination problem in Armonk and Bedford that was publicized in the newspapers in 1983 may be a starting point in determining the source of this problem in Ardsley.

Akzo Nobel acquired Stauffer in 1987 and initially continued Stauffer's R&D operations. Eventually, Akzo Nobel converted the R&D operations away from the Stauffer processes towards Akzo's process products. Changes to the pilot systems during the conversion generally involved modifications of equipment to facilitate R&D and pilot scale production of various chemical products. The R&D operations continued at the site until January 2006, at which time all site operations ceased.

During the fall of 2008 through to the spring of 2009, demolition activities were conducted at the property. Prior to demolition, electrical equipment (i.e. fluorescent light ballasts, transformers, switches, thermostats, etc.) potentially containing polychlorinated biphenyls (PCBs) and/or mercury, were removed intact, isolated, and packed properly for off-site disposal in a careful manner to prevent impacts to the site. Prior to demolition activities, all asbestos containing materials were removed properly in accordance with OSHA requirements. On September 24, 2008, following the demolition activities, the demolition contractor collected representative samples of building materials for laboratory analysis for lead and other contaminants. The building materials were found to be free of potential contaminants; therefore, some of the building material (bricks, concrete, etc.) was used to grade the property following demolition. The remaining building materials were handled and disposed of offsite by a licensed contractor.

Due to the extensive use of the site as a chemical manufacturing and R&D facility, a complete list of raw materials used at the facility is not known. However, information obtained from historical documents and Akzo Nobel personnel indicate that some of the raw materials used at the Pilot Plant facility included carbon disulfide, monomethylamines, bromomethane, dimethyl sulfoxide, biocides, sulfur, organophosphorous compounds, oroganomettalics, fatty amines, ethylene oxide, methyl chloride, and ammonia."

## 2.3 Regional Geology and Hydrogeology

The Site is located in the New England Upland Physiographic Province of New York, which is also known as the New York/New Jersey Highlands. The New England Upland Province runs Northeast-Southwest in a broad band that parallels the coast of New England. It has been described as an upraised peneplain with isolated hills or mountains cut by narrow valleys. The topography is hilly with local elevations ranging in elevation from 100 feet to 2,000 feet above mean seal level.

The surficial geology is plotted as glacial till on the *Surficial Geologic Map of New York Lower Hudson Sheet.* The till is described as ranging from approximately three feet to 150 in thickness with a varying texture consisting of poorly sorted clay, silty clay, with cobbles and boulders. The clasts vary from well-rounded in valley tills to angular or subangular in the upland tills. The Site is underlain by the Early Cambrian – Lower Ordovician aged Inwood Marble which consists of a white to gray dolomitic marble overlain by a calcite marble. The formation also contains granulite and quartzite. The thickness of the Inwood Marble varies from 75 to 300 feet. It grades into the underlying Lowerre Quartzite.

## 2.4 Site Geology and Hydrogeology

The shallow subsurface consists of fine-grained sand with gravel above bedrock. Groundwater was encountered in the overburden water-bearing zone at depths ranging from approximately 4.79 to 12.03 feet below ground surface (bgs) during the site investigation activities conducted in May 2009. Based on the groundwater elevation data collected during the June 29, 2009 groundwater monitoring event, groundwater flows in a southerly direction at the Site. The *Potential Yields of Wells in Unconsolidated Aquifers in Upstate New York – Lower Hudson*

*Sheet* indicates that the Site is underlain by an unconfined sandy aquifer with a saturated layer less than 10 feet thick capable of producing 10 to 100 gallons per minute. No potable or industrial wells are currently located at the Site, and it is envisioned that any future development would be serviced by public water.

## 2.5 Topography and Drainage

Topography in the plant area slopes gently toward the east from the former main pilot plant building to a branch of the Saw Mill River. The elevation of the property ranges from approximately 118 feet near the western bank of the Saw Mill River to approximately 132 feet near the southwest comer of the main Pilot Plant building. On the eastern side of the Saw Mill River (i.e., across from the developed portion of the property), topography rises to approximately 126 feet near the eastern property boundary.

## 2.6 Surface Water Bodies

The Saw Mill River bends eastward just north of the Site before turning southward along the Site's eastern boundary. Sprain Brook is located approximately 3,950 feet east of the Site and the Hudson River is located approximately 1.5 miles to the west.

# 3.0 Work Plan Objectives and Scope

This RIWP has been prepared in accordance with Chapter 3 of the DER-10 dated May 2010. The following sections of this work plan outlines remedial investigation activities to address data gaps regarding the local extent of previously identified contaminants of concern in soil and groundwater to support remedial design efforts. A summary of the previous site investigation and remediation investigation activities conducted at the Site are provided below in Section 3.1 and Section 3.2, respectively.

## 3.1 Summary of Site Investigation Activities

From October 2006 through June 2009, Sovereign Consulting, Inc. (Sovereign) of Cherry Hill, New Jersey conducted a site investigation at the Site. The objective of the site investigation was to identify areas of concern (AOCs) and evaluate potential impacts to soil and groundwater quality at each AOC, as well as assess sediment and surface water quality in the Saw Mill Creek, which flows along the eastern property boundary. Preliminary investigative tasks to identify AOCs included a walkthrough inspection of the Site and a geophysical survey. The geophysical survey included ground penetrating radar and an electro-magnetic survey to identify buried objects (e.g., debris, drums, and underground storage tanks (USTs)). The investigation identified and addressed 15 AOCs, which included the following:

- Pilot Plant Sumps, Drains, and Underground Piping;
- Waste Water Treatment Pits;
- White House Building/Carbon Disulfide Vaults;
- UST Areas;
- Hazardous Waste Storage Pad (operated by a large quantity generator);
- 90-day Storage Area and Solvent Sheds;
- Former Potash Plant;
- Former Railcar Loading Area;
- Former Septic System;
- Pre-Sanitary Sewer Collection Pit;
- Former Coal Storage Areas;
- Outdoor Equipment Storage Pad;
- Debris Pile;
- Other Magnetic Anomalies;
- Historic Fill/Background Metals.

Sovereign advanced 87 soil borings, 9 test pits, and installed 3 permanent monitoring wells, while collecting a sediment sample and a surface water sample from the northern extent of the Saw Mill River. Analytical parameters were selected based on the nature of the AOC being investigated. Laboratory tests included volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs), pesticides, polychlorinated biphenyls (PCBs), and priority pollutant metals (PP Metals). The results of these analyses are discussed in the remainder of this section.

### *3.1.1 Soil Samples*

PAHs were observed at concentrations exceeding the NYSDEC Soil Cleanup Objectives in approximately 23 of the samples analyzed during the site investigation. PAH exceedances were observed within both the shallow and deep sampling zones in the developed/plant portion of the Site. Elevated PAH concentrations found in soils impacted by UST discharges were remediated through excavation and off-site disposal. The overall distribution of PAHs at similar low-level concentrations throughout the rest of the Site suggests that most of the reported PAH concentrations are representative of fill material used to grade the Site during development.

PP Metals in soil samples collected from the plant area and background/undeveloped areas of the Site were detected at concentrations slightly exceeding the NYSDEC Soil Cleanup Objectives. Sovereign advanced one boring, SB-76, in the wooded area to the north and upgradient of the developed portion of the Site to determine if the observed metals concentrations were the result of naturally occurring background. Chromium, copper, lead, nickel, and zinc were detected in both the shallow and deep samples collected from SB-76. The concentrations of chromium, nickel, and zinc exceeded the NYSDEC Soil Cleanup Objectives. The metals concentrations fall within or slightly above the "Eastern USA Background" ranges provided on TAGM 44046 - Table 4. Additionally, Sovereign determined that lead in samples SB-22, SB23, SB-63, and TP-6 is more likely attributable to historic fill.

The VOC analysis of shallow soil samples (collected between 0 and 4.0 feet bgs) detected tetrachloroethene (PCE) in one sample from the location of SB-16 at a concentration of 98.8 parts per million (ppm), which exceeds the NYSDEC Soil Cleanup Objective for Residential land use but is below the SCO for Commercial (150 ppm) and Industrial (300 ppm) land uses. Similarly, VOC concentrations in six deep soil samples that were collected at a depth greater than 5.0 feet bgs exceeded certain NYSDEC Soil Cleanup Objectives.

Pesticide and PCB impacts appeared to be localized around SB-10 (MiniLab sump) and SB-74 (Former RCRA Shed), respectively.

### *3.1.2 Sediment/Surface Water*

Upstream sediment and surface water samples were collected to establish baseline concentrations for these strata. Laboratory analytical results indicated that benzo(a)anthracene was detected at a concentration exceeding the NYSDEC Benthic Aquatic Life Chronic Toxicity Sediment Criteria and anthracene was detected at a concentration exceeding the Benthic Aquatic Life Acute Toxicity Sediment Criteria. In addition, copper, lead, mercury, nickel, and zinc were detected at concentrations exceeding the NYSDEC Sediment Criteria for Metals - Lowest Effect Levels for these compounds in the sediment sample. No targeted compounds were detected in the upstream surface water sample at concentrations exceeding the applicable NYSDEC standards. Sovereign concluded that the reported concentrations of PAHs and metals in this sample were the result of nonpoint source pollution and not contaminant migration from the Site. Based on an evaluation of the data, First Environment concurs with the conclusion that the presence of PAHs and metals detected in sediment at the upstream property boundary are representative of nonpoint, off-site sources.

### *3.1.3 Groundwater*

Monitoring wells MW-1, MW-2, and MW-3 were sampled and analyzed for priority pollutant analyte list with a library search (PP+40). A set of filtered groundwater samples were analyzed for priority pollutant metals only. The unfiltered sample from MW-3 contained several metals (arsenic, chromium, and lead) at concentrations slightly above the NYSDEC Ambient Water Quality Standards and Guidance Values (AWQSGV); however, PP metals were not detected in the filtered groundwater samples (including MW-3) at concentrations exceeding the NYSDEC AWQSGV.

Monitoring wells MW-2 and MW-3 were found to contain VOCs at concentrations that exceeded the NYSDEC AWQSGV. Specifically, tetrachloroethene (PCE) in MW-2 and cis-1, 2 dichloroethene, vinyl chloride, and bis(2-ethylhexyl)phthalate in MW-3 were detected at concentrations slightly above their respective NYSDEC AWQSGV. These wells are located in the southern portion of the Site, downgradient of historic site structures and operations. Sovereign concluded that the VOC impacts (i.e., PCE and its daughter compounds cis-1, 2 dichloroethene and vinyl chloride) in groundwater may be attributable to the PCE soil impacts observed at upgradient borings SB-16, SB-38, and SB-49. Bis(2-ethylhexyl)phthalate was not detected in soil at concentrations above the NYSDEC Soil Cleanup Objectives (SCOs); therefore, the source of the concentration (29 ug/L) of this compound in groundwater at MW-3 is most likely attributable to field sampling equipment (i.e., tubing or gloves) and/or well construction materials (i.e., PVC). The locations of the monitoring wells are depicted on Figure 2.

## 3.2 Summary of Remedial Investigation Activities

The Vertex Companies (Vertex), on behalf of the prior property owner (TDI Real Estate, Inc.), mobilized to the Site in April 2014 to conduct further remedial investigation (RI) activities. The initial RI was conducted to further evaluate subsurface conditions with respect to the following specific AOCs:

- former Solvent Shed,
- former RCRA Shed,
- former Carbon Disulfide UST Vault,
- former White House Building Vault.

RI activities consisted of the installation of soil borings and/or temporary monitoring wells and collection of representative samples for laboratory analysis in order to further characterize the nature and extent of contaminants previously detected adjacent to the aforementioned AOCs. Additional RI activities included the collection of soil samples adjacent to soil borings SB-10 and SB-63 in order to delineate the extent of pesticides detected above the NYSDEC SCOs, and collection of surface water and sediment samples from the Saw Mill Creek. A summary of the RI findings for each AOC is presented in Section 3.6 (Soil Investigation Work Plan).

The investigation will be conducted in accordance with Chapter 3 of the NYSDEC DER-10 document, including sampling to delineate the extent of contamination, and provide a basis for the evaluation of remedial alternatives. A summary of the proposed samples and corresponding analysis is presented in Table 1.

## 3.3 Standards, Criteria, and Guidance (SCGs)

Numerous standards, criteria, and guidance (SCGs) are applicable, or potentially applicable, to this project. Given the project involves additional remedial investigation, the extensive list of

SCGs anticipated to be applicable is provided in Appendix A. This list is based on the lists of SCGs for all constituents and as provided in Section 3.2, 3.5, 3.6, 3.7, and 3.11 of the DER-10.

The most applicable and relevant SCGs for this project are:

1. 6 NYCRR Part 375 - Protection of Groundwater Standards for VOCs. As part of this remedial investigation, soil samples will be collected to identify soils impacted by VOCs. The Protection of Groundwater Standards, specifically for VOCs, will be the soil cleanup objective used to assess the post-excavation soil samples to determine the adequacy of the excavations.
2. 6 NYCRR Part 375 - Protection of Public Health Restricted-Commercial Soil Cleanup Objectives (SCOs). Given the intended use of the Site for commercial development, any surface soil to be left in place needs to meet the Protection of Public Health Restricted-Commercial soil cleanup objectives. Such soils will be sampled for VOCs, PCBs, pesticides, and lead, the contaminants of concern for these soils, at an appropriate frequency and assessed against the Protection of Public Health Restricted-Commercial soil cleanup objectives.
3. TOGS 1.1.1 - Ambient Water Quality Standards & Guidance Values. As part of the remedial investigation, the groundwater will be sampled to evaluate concentrations of VOCs that were previously present in groundwater. The analytical results will be compared to the TOGS 1.1.1 criteria to determine the adequacy of the groundwater treatment program.

## 3.4 Soil Investigation Work Plan

Approximately 18 soil borings shall be installed and sampled throughout the Site using a Geoprobe drilling rig to further evaluate the soil conditions at the Site. Soil samples will be screened for total volatile organics using a photoionization detector (PID) and logged by a First Environment geologist using the Unified Soil Classification System (USCS). Soil description, groundwater level, visual and olfactory observations will also be recorded. Subsequent to soil boring installation activities, a properly calibrated Trimble® GeoXH global positioning system (GPS) unit will be utilized to survey each location to acquire the horizontal geographic location (i.e., coordinates).

The primary goal of the soil investigation is to characterize subsurface conditions and further delineate the extent of soil contaminants previously detected at select AOCs. The actual number and locations of the soil borings will be determined based on field observations and biased towards identifying the areas and depths of contamination. Additionally, soil samples from selected locations and depths at the discretion of field observations may be held and only analyzed on a contingency basis after initial results are reported. The soil investigation and sampling activities at the Site shall be conducted in accordance with the DER-10, specifically Chapter 3, and the NYSDEC Sampling Guidelines and Protocols (SGP) manual. A summary of previous RI activities performed by Vertex in April 2014, and the rationale supporting the proposed RI approach for each remaining AOC, is provided below.

### *3.4.1 Former Solvent Shed*

#### 3.4.1.1 Summary of RI Findings – April 2014

PCE was previously detected in soil boring SB-16 (2.5-4.0) and SB-16 (13.0-13.5) at concentrations of 98.4 parts per million (ppm) and 1.3 ppm, respectively. Vertex installed soil borings VB-6 and VB-12 to the west and east of SB-16, respectively, to delineate the extent of PCE-impacted soil. Soil samples were collected at 2.5 to 4.0 feet bgs and submitted for analysis for VOCs. The analytical results revealed no detectable concentrations of VOCs.

An additional soil boring, VES-1, was installed directly adjacent to SB-16 in order to confirm existing soil conditions. Soil samples VES-1A and VES-1B were collected at depths of 2.5 to 4.0 feet bgs and 13.0 to 13.5 feet bgs, respectively, and submitted for analysis for VOCs. The analytical results revealed PCE at concentrations above the Protection of Groundwater Standard (POGS) of 1.3 ppm in VES-1A (100 ppm) and VES-1B (4.6 ppm). Both concentrations remained below the Restricted-Commercial SCO of 150 ppm.

#### 3.4.1.2 Proposed RI Activities

Based on a review of the data collected to date, delineation of PCE adjacent to SB-16/VES-1 (2.0 to 4.0 feet bgs) meets applicable cleanup objectives to the north (SB-15), west (VB-6), and east (SB-64). First Environment will install the following borings adjacent to SB-16/VES-1, two borings to the south (FE-SB-1 and FE-SB-2); one boring to the north (FE-SB-3); and one boring to the west (FE-SB-4), to further delineate the horizontal extent of PCE impact and refine the area that will require remediation. An additional boring (FE-SB-5) will be installed to the east of VB-12. If the results for FE-SB-1, which will be installed at a closer distance to VES-1, reveal PCE at a concentration above the NYSDEC POGS, FE-SB-2 will be activated to confirm delineation. All samples will be collected at a depth of 2.5 to 3.0 feet bgs, or bias to the depth interval exhibiting the greatest potential for impact, based on field observations (i.e., visual, odor, and PID readings).

Furthermore, PCE was previously detected in VES-1 at a concentration of 4.6 ppm at a depth of 13.0 to13.5 feet bgs. One soil boring will be installed directly adjacent to VES-1 to further evaluate the vertical extent of PCE impact. Following installation, at least two vertical samples, the depth intervals of which will be based on field observations, will be collected with the deeper sample placed on hold and activated only if PCE is detected at a concentration above the NYSDEC Commercial SCO.

All samples will be submitted to a NYSDOH-certified laboratory for analysis for VOCs using USEPA Methods 8260. The prior and proposed soil boring locations are depicted on Figure 3.

### *3.4.2 Former RCRA Shed*

#### <u>3.4.2.1 Summary of RI Findings – April 2014</u>

PCBs were detected in soil sample SB-74 (0.0 to 2.0 feet bgs) at a concentration of 3.44 ppm during the SI activities, which exceeds the NYSDEC Restricted-Commercial SCO of 1 ppm. Vertex returned to the Site in April 2014 to characterize the nature and extent of PCBs previously detected in SB-74. Specifically, borings were installed to the west (VB-8 and VB-18), south (VB-11 and VB-13), and east (VB-10 and VB-19) to delineate the horizontal extent of PCB impact. All samples were collected from the ground surface (0.0 feet to a depth of 2.0 feet bgs). An additional soil boring, SB-74A, was installed directly adjacent to SB-74 in an effort to vertically delineate the extent of PCB impact. Samples were collected from SB-74A at depths of 3.5 to 4.0 feet bgs and 5.5 to 6.0 feet bgs. PCBs were detected in SB-74A (3.5-4.0) and SB-74A (5.5-6.0) at concentrations of 3.18 ppm and 2.57 ppm, respectively. Both concentrations exceed the NYSDEC Restricted-Commercial SCO of 1 ppm.

#### <u>3.4.2.2 Proposed RI Activities</u>

Based on a review of the SI and RI data, PCB impacts are horizontally delineated to the NYSDEC Restricted-Commercial SCO by soil samples SB-75 (north), VB-8 (west), VB-19 (east), and SB-63 (south). Although horizontal delineation to the Commercial SCO has been achieved, First Environment will install one boring (FE-SB-6) in between borings SB-74 and B-75 in order to refine the area that may require active remediation. Soil samples will be collected at 0.0 to 0.5 feet bgs and 1.5 to 2.0 feet bgs and submitted for analysis for PCBs using USEPA Method 8082. In addition, one soil boring, SB-74C, will be installed directly adjacent to SB-74/SB-74A for the purpose of collecting vertical delineation samples. Two samples will be collected at depths of 7.5 to 8.0 feet bgs and 9.5 to 10.0 feet bgs and submitted for analysis for PCB using USEPA Method 8082. The deeper sample will be placed on hold, pending results of the shallower sample.

The prior and proposed soil boring locations are depicted on Figure 4.

### *3.4.3 Pesticide-Impacted Soil – Soil Sample Location SB-10*

#### 3.4.3.1 Summary of SI Findings – 2009

Dieldrin was detected in SB-10 (7.0 to 8.0 feet bgs) at a concentration of 6.47 ppm during the SI activities, which is above the NYSDEC Restricted-Commercial SCO of 1.4 ppm. The analytical results for an additional soil sample collected from SB-10 at a depth of 12.0 to 12.5 feet bgs revealed dieldrin at a concentration of 0.0035 ppm, confirming the vertical extent of dieldrin. Furthermore, the horizontal extent of dieldrin was defined by samples SB-77 through SB-80.

#### 3.4.3.2 Proposed RI Activities

One boring will be installed adjacent to SB-10 in order to further evaluate the vertical extent of pesticides impact. Specifically, soil samples will be collected at depths of 4.0 to 4.5 feet bgs and 10.0-10.5 feet bgs and submitted for analysis for Pesticides using USEPA Method 8081A. The sample results will serve to better define the volume of soil that may require removal.

The prior and proposed soil boring locations are depicted on Figure 5.

### *3.4.4 Former Carbon Disulfide UST Vault*

#### 3.4.4.1 Summary of SI Findings – 2009

Soil sample TP-6 was collected during the SI activities at 8.0 to 8.5 feet bgs from a test pit excavated within a former carbon disulfide UST vault, which is located in the southeastern portion of the Site adjacent to the former maintenance building. Lead was detected in soil sample TP-6 at a concentration of 10,200 ppm, which exceeds the NYSDEC Restricted Commercial SCO of 1,000 ppm. While the presence of lead may be entirely attributable to historic fill, further investigation is required to determine whether prior operations contributed to lead impact for this portion of the Site.

#### 3.4.4.2 Proposed RI Activities

First Environment will install one soil boring in each cardinal direction around TP-6 (FE-SB-7 through FE-SB-10) to horizontally delineate the extent of elevated lead concentrations. All samples will be collected at a depth of 8.0 to 8.5 feet bgs. An additional boring (FE-SB-11) will be installed directly adjacent to TP-6 in order to facilitate the collection of vertical delineation samples, which will be collected at 10.5 to 11.0 feet bgs and 14.5 to 15.0 feet bgs. The occurrence of saturated soil and/or groundwater will be noted in the field. The deeper sample will be placed on hold pending contingent analysis for the shallower sample. All samples will be submitted to a NYSDOH-certified laboratory using USEPA Method 6010B.

The prior and proposed soil boring locations are depicted on Figure 6.

### *3.4.5 Former White House Building Vault*

#### 3.4.5.1 Summary of SI Findings – 2009

Benzene (1.46 ppm) and PCE (23.9 ppm) were detected during the SI activities in soil sample SB-49B (5.0 to 5.5 feet bgs), which was installed within a vault located below the Former White House Building. Based on a review of the SI data, the extent of impact is delineated horizontally to the NYSDEC SCOs by soil samples SB-43, SB-44, SB-48, SB-55, and SB-56 (shown on the SIR Deep VOC Soil Sample Location Map).

#### 3.4.5.2 Proposed RI Activities

Although delineation has been achieved with respect to the extent of benzene and PCE adjacent to and below the former vault, First Environment shall install borings to the north and east of SB-49 to further refine the area that will require remediation. Specifically, two soil borings, FE-SB-12 and FE-SB-14, will be installed 10 feet and 20 feet to the north of SB-49B, respectively. Analysis of FE-SB-14 will be held as a contingency and only activated should contaminants of concern be identified in FE-SB-12 at concentrations above the applicable NYSDEC standard. Soil boring FE-SB-13 will be installed approximately 10 feet to the east of SB-49B. An additional boring, SB-49C, will be installed directly adjacent to SB-49B in order to facilitate the collection of a vertical delineation sample. Soil samples will be collected at 7.5 to 8.0 feet bgs and 9.5 to 10.0 feet bgs, with the deeper sample activated on a contingent basis. If impacts are observed (i.e., staining, odors, etc.) at 10.0 feet bgs, the boring will be extended in order to achieve vertical delineation. All samples will be submitted to a NYSDOH-certified laboratory for VOCs using USEPA Method 8082.

The prior and proposed soil boring locations are depicted on Figure 7.

## 3.5 Groundwater Investigation Work Plan

### *3.5.1 Summary of Prior Groundwater Investigations*

Three permanent monitoring wells, MW-1 through MW-3, were previously installed at the Site. The monitoring well locations are illustrated on Figure 2. The findings of the initial groundwater investigation revealed VOCs at concentrations above the NYSDEC AWQSGV in monitoring wells MW-2 and MW-3.

Vertex sampled five temporary monitoring wells, VES-1 GW through VES-5 GW, at the Site on March 1, 2014 to further evaluate groundwater conditions. Construction specifications for the temporary monitoring wells were not provided by Vertex; however, it is reasonable to conclude that groundwater samples were collected from within the shallow overburden water-bearing zone. One sample was collected from each temporary monitoring well and submitted to a NYSDOH-certified laboratory for analysis for VOCs and SVOCs. Analysis for SVOCs was not completed for VES-1 GW and VES-3 GW.

The temporary monitoring well locations are illustrated on Figure 8. A summary of the analytical results for the temporary monitoring wells is provided in Appendix B. The findings of the groundwater investigation revealed the following:

VES-1 GW - PCE (2,000 parts per billion (ppb)), benzene (10 ppb), and carbon disulfide (680 ppb) were detected at concentrations above their respective AWQSGV. All other VOCs were non-detect or detected at concentrations below their respective AWQSGV.

VES-2 GW – PCE (12 ppb), benzene (270 ppb), chlorobenzene (24 ppb), Trichlorofluoromethane (5.6 ppb), vinyl chloride (9.4 ppb), trichloroethene (TCE) (5.0 ppb), and carbon disulfide (640 ppb) were detected at concentrations above their respective AWQSGV. All other VOCs were non-detect or detected at concentrations below their respective AWQSGV. In addition, select SVOCs, including naphthalene (340 ppb), were detected at concentrations above their respective AWQSGV.

VES-3 GW – Trichlorofluoromethane was detected at a concentration of 22 ppb, which is above the AWQSGV of 5 ppb. All other VOCs were non-detect or detected at concentrations below their respective AWQSGV.

VES-4 GW – Carbon disulfide was detected at a concentration of 2,600 ppb, which is above the AWQSGV of 60 ppb. Phenol was detected at a concentration of 5.0 ppb, which is above the AWQSGV of 1.0 ppb. All other VOCs and SVOCs were non-detect or detected at concentrations below their respective AWQSGV.

VES-5 GW – No detectable concentrations of VOCs and SVOCs were identified above the reporting limit.

To further evaluate groundwater conditions, Vertex supervised the installation and sampling of nine temporary monitoring wells (VES-1A GW, VES-9 GW through VES-15 GW, and SB-74 GW) at the Site on April 18, 2014. Construction specifications for the temporary monitoring wells were not provided by Vertex; however, it is reasonable to conclude that groundwater samples, with the exception of VES-1A GW, were collected from within the shallow overburden water-bearing zone. VES-1A GW was collected at a deeper interval in order to delineate the vertical extent of VOCs detected in VES-1 GW. One sample was collected from each temporary monitoring well and submitted to a NYSDOH-certified laboratory for analysis.

The temporary monitoring well locations are illustrated on Figure 8. A summary of the analytical results for the temporary monitoring wells is provided in Appendix B. The findings of the groundwater investigation revealed the following.

VES-1 GWA was installed directly adjacent to VES-1 GW in order to vertically delineate the extent of VOCs identified in VES-1 GW. Cis-1, 2-dichlorothene was detected at a concentration of 17 ppb, which exceeds the AWQSGV of 5 ppb. All other VOCs were non-detect or detected at concentrations below their respective AWQSGV.

VES-9 GW was installed approximately 120 feet to the east of VES-1 GW in order to horizontally delineate the extent of VOCs detected in VES-1. No detectable VOC concentrations were identified in VES-9 GW.

VES-10 GW was installed approximately 180 feet to the southeast of VES-1 GW in order to horizontally delineate the extent of VOCs detected in VES-1. PCE was detected at a concentration of 7.4 ppb, which exceeds the AWQSGV of 5 ppb. All other VOCs were non-detect or detected at concentrations below their respective AWQSGV.

VES-11 GW was installed approximately 240 feet to the south of VES-1 GW in order to horizontally delineate the extent of VOCs detected in VES-1. PCE was detected at a concentration of 13 ppb, which exceeds the AWQSGV of 5 ppb. All other VOCs were non-detect or detected at concentrations below their respective AWQSGV.

VES-12 GW was installed approximately 110 feet to the south of VES-10 GW in order to horizontally delineate the extent of VOCs along the eastern portion of the Site and Saw Mill River. No detectable VOC concentrations were identified in VES-12 GW. The sample was also submitted for analysis for TAL Metals. Iron was detected at a concentration of 6,550 ppb, which exceeds the AWQSGV of 300 ppb. All other metal constituents were non-detect or detected at concentrations below their respective AWQSGV.

VES-13 GW was installed approximately 70 feet to the south of VES-12 GW in order to horizontally delineate the extent of VOCs along the eastern portion of the Site and Saw Mill River. Vinyl chloride was detected at a concentration of 2.3 ppb, which marginally exceeds the AWQSGV of 5 ppb. All other VOCs were non-detect or detected at concentrations below their respective AWQSGV.

VES-14 GW was installed directly adjacent to SB-10/VES-14 in order to characterize groundwater conditions with respect to pesticides previously detected in soil at concentrations above the NYSDEC POGs. The analytical results revealed the following compounds at concentrations above their respective AWQSGV: alpha-BHC (0.023 ppb; AWQSGV is 0.01 ppb); beta-BHC (0.21 ppb; AWQSGV is 0.04 ppb); and dieldrin (5.26 ppb; AWQSGV is 0.004 ppb). All other pesticides were non-detect or detected at concentrations below their respective AWQSGV.

VES-15 GW was installed approximately 100 feet southeast of VES-1 GW. The sample was submitted for TAL Metals only. The analytical results revealed the following metal constituents at concentrations above their respective AWQSGV: iron (351 ppb; AWQSGV is 300 ppb); magnesium (38,200 ppb; AWQSGV is 35,000 ppb); and sodium (27,100 ppb; AWQSGV is

20,000 ppb).  All other metals were non-detect or detected at concentrations below their respective AWQSGV.

### 3.5.2 *Groundwater Monitoring*

The data generated through the prior SI and RI investigation activities provided sufficient data to understand potential source areas and the extent of groundwater impact.  No additional permanent monitoring wells are proposed at this time pending the results of the soil investigation and subsequent implementation of source control measures.

Notwithstanding, an additional on-site groundwater monitoring event of existing wells will be conducted in accordance with the Groundwater Sampling Work Plan (GWSP) provided in Section 8 of this document.  The collection and analysis of samples from the on-site monitoring wells (MW-1, MW-2, and MW-3) will provide a current assessment of on-site groundwater concentrations.  All of the anticipated steps to complete this task are outlined in the GWSP (see Section 8).

### 3.5.3 *Aquifer Characterization*

Slug tests shall be conducted on each well in accordance with DER-10.  The primary objective of the slug tests is to provide data necessary for estimating the hydraulic conductivity of the aquifer.  First Environment will conduct rising head, in-situ hydraulic conductivity tests (slug tests) at each monitoring well.  Falling head aquifer tests will not be conducted as this is not an appropriate test for wells where the screened interval spans the water table in unconfined aquifer conditions such as those present on site.

All downhole equipment (pressure transducer and slug) will be thoroughly decontaminated to prevent potential cross-contamination issues.  The static water level within each well is to be measured and recorded.  A pressure transducer will then be placed into the well to a depth immediately above the base of the well.  The transducer will be allowed to thermally equilibrate and be connected to an In-Situ Hermit data logger for data logging purposes.  One casing volume of groundwater will be removed from the well through the use of a Teflon bailer.  Following removal, the resulting water level rise will be continuously logged via the pressure transducer and data logger.  The water level will be allowed to recover to a minimum of 90 percent of the pre-slug removal water level condition.

Upon recovery of the water level, the test/data logging will be stopped and the in-situ portion of the testing will be deemed complete. The data collected during the aquifer testing will be analyzed using Aqtesolv for Windows Version 3.0 using the Bouwer and Rice Method to calculate the resulting hydraulic conductivity (permeability). The results of the hydraulic conductivity will be provided in the Remedial Investigation Report/Remedial Action Work Plan (RIR/RAWP).

A round of synoptic static water levels shall be obtained to provide a site-specific indication of groundwater flow direction.

Major submittals associated with this track are the slug test time-series analytical data and hydraulic conductivity results, as well as a piezometric map.

## 3.6 Management of Investigative Derived Waste

All investigative derived waste (IDW) shall be managed in accordance with the DER-10. If IDW materials are to be disposed of off site, the transport, storage, and disposal of those materials shall be conducted in accordance with applicable NYSDEC waste management regulations, 6 NYCRR Parts 360, 364, and the 370 series.

## 3.7 Sample Analysis and Reporting Requirements

In accordance with Section 502 of the Public Health Law, data upon which decisions impacting human health are based must be analyzed by an ELAP certified lab and documented by Category B deliverables.

## 3.8 Maintenance

Based on monitoring results, site maintenance (i.e., repairs to well cover, pad, and inner well plug) will be conducted for the groundwater monitoring wells as required. A Site Management Plan shall be submitted that details any maintenance requirements.

# 4.0 Quality Assurance/Quality Control

All Site remediation, sampling, and analysis activities will be conducted in accordance with the DER-10. Site-specific quality assurance and control procedures for all air, groundwater, and soil sampling activities were provided in the Quality Assurance Project Plan (QAPP) submitted as Appendix C of this report. In addition, all analytical data will be submitted to the NYSDEC in electronic data deliverable (EDD) format.

In accordance with Section 502 of the Public Health Law, data upon which decisions impacting human health must be analyzed by an ELAP certified lab and documented by Category B deliverables. Therefore, analytical data packages generated as a result of this Work Plan will be reviewed in order to determine compliance with the NYSDEC requirements.

The locations of the proposed soil borings are depicted on Figures 3 through 7. All historical and proposed soil sampling locations are depicted on Figure 9.

# 5.0 Health and Safety Plan

Because of the intrusive nature of this work, personnel having OSHA HAZWOPER 40-hour and 8-hour refresher training will perform all remedial activities. OSHA training must be current within one year for any person who may come in contact with hazardous waste or material during the course of the remedial activities. First Environment, as well as subcontractors, will strictly comply with all health, safety, and training requirements that are applicable to the Site. The Contractor selected to perform work at the Site will also be required to prepare a site-specific HASP to address their activities and those of their subcontractors. The Contractor shall submit their HASP to First Environment for review prior to the initiation of fieldwork. A copy of First Environment's HASP is provided as Appendix D. This HASP currently addresses projected activities and will be updated when more information is available regarding future activities.

# 6.0 Project Schedule and Submittals

The project activities have been grouped into key project tracks covering different phases of the project. Specifically, the project tracks are soil investigation, groundwater investigation, and data assessment. Upon completion of the RI, a RIR/RAWP that incorporates the information and submittals collected during the investigation shall be prepared in accordance with the DER-10.

| Project Phase | Latest Completion Date |
|---|---|
| Submit RIWP, CPP, and BCP Application to NYSDEC | July 21, 2017 |
| Ardsley, LLC notified of complete application<br>(30 days from submittal of application) | August 20, 2017 |
| NYSDEC Accepts Applicant; Brownfield Cleanup Agreement<br>(45 days after notice of complete application) | October 4, 2017 |
| Brownfield Cleanup Agreement Executed | October 18, 2017 |
| RIR/RAWP Submitted | December 15, 2017 |

A Citizens Participation Plan (CPP) is being provided separately and along with the Brownfields Cleanup Program Application. The CPP proposes how and when information about the project will be distributed to neighboring property owners and occupants, as well as plan opportunities for these stake-holders to hear from and communicate directly with the property owner, NYSDEC, and First Environment.

# 7.0 Community Air Monitoring Plan

The Site Community Air Monitoring Program (CAMP), which ensures the safety of neighboring property owners and occupants, is provided as Appendix E of this report. The CAMP outlines air-monitoring requirements for site activities with the potential to introduce contaminants to the atmosphere, and provides action levels for adjusting or ceasing work practices. In general, air monitoring will be conducted to ensure unacceptable particulate and VOC concentrations do not leave the Site during the investigation activities.

# 8.0 Groundwater Sampling Work Plan

The groundwater sampling work plan provides the procedures to be used for sampling monitoring wells on and off site. An initial round of sampling will be conducted to provide a current assessment of groundwater conditions and additional information relevant to future remediation activities and off-site groundwater investigation, if needed.

## 8.1 Sample Locations

Sample locations include the existing shallow monitoring wells MW-1 through MW-3. The monitoring well locations are illustrated in Figure 2 of this report.

### *8.1.1 Sampling and Analysis*

All samples will be analyzed by a NYSDOH certified Environmental Laboratory Approval Program (ELAP) and Contract Laboratory Program (CLP) laboratory. In addition, data upon which decisions impacting human health are based will be documented by Category B deliverables. All on-site wells will be surveyed and then sampled for chemical constituents in accordance with Part 703 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR 703). The petroleum and halogenated compounds in the groundwater shall be analyzed for VOCs plus TICs and SVOCs plus TICs using Methods 624/8260 and 8270B, respectively.

## 8.2 Water Level Measurements and NAPL Assessment

Immediately after opening the well cover, the vapor space of the well will be screened with a PID and the total VOC vapor concentration recorded. The water level and any free product will be recorded with an oil/water interface probe. If free product is present in the well, the water level and thickness of the product will be measured to within 0.01 feet. Non-Aqueous Phase Liquid (DNAPL) has not been detected nor suspected to be present in the groundwater at the Site. The monitoring wells will be sounded with the interface probe to check for the presence of NAPL. All probes will be decontaminated between use at each well via scrubbing with an Alconox solution or a citrus-based cleaner and rinsing with water.

## 8.3 Well Purging

The preferred method of groundwater purging is low-flow purging using a positive displacement pump. The alternative method is the three to five volume purge method via submersible pump.

The low-flow method minimizes data quality interference from suspended solids by purging groundwater at such a low rate so as not to cause sediment in the well to become suspended. To ensure that pore water and not casing water is sampled upon completion of purging, groundwater is purged until several indicator parameters become stable. This technique is described in detail by Puls and Barcelona ("Low-flow (minimal drawdown) groundwater sampling procedures." EPA/540/S-95/504; April 1996).

Two dedicated disposable tubing lines will be attached to a positive displacement bladder pump and lowered down each well to within the screened interval. At the surface, the end of one tubing line will be attached to a pressurized air source to drive the pump, while the other line will carry the water from the pump up to the top of the well. The pressurized air source will inflate the bladder and drive water up through the dedicated tubing into a flow-through cell. The flow cell will contain a groundwater quality multi-meter, such as a Horiba 22 unit, which will continuously monitor the purged water passing through the flow cell for pH, conductivity, dissolved oxygen, temperature, oxidation/reduction potential, and turbidity. Measurements will be taken every three to five minutes until the water quality has stabilized. Stabilization is achieved when three successive readings are within ± 0.1 for pH, ± 3 percent for conductivity, ± 10 percent for turbidity and DO, and water level drawdown does not exceed 0.1 meters (four inches).

If the low-flow purge technique is not used, then three to five casing volumes of water will be purged from the monitoring wells using a submersible pump, a peristaltic pump, or if necessary, a bottom-filled bailer may be used. All tubing associated with either pump type will be dedicated disposable ASTM drinking water grade polyethylene tubing and any bailers used for purging will likewise be dedicated disposable bailers. If a submersible pump is used, then the pump and power cord will be decontaminated prior to each use using the methods described in the QAPP (see Appendix C). All bladder pump components to be reused at subsequent wells will be decontaminated between each well. Bladders will be disposed of and replaced after each well.

Whenever the three to five volume purge method is used, monitoring well purge data and water quality parameters will be recorded on the field form before purging, after each purge volume, and after sampling for each monitoring well sampled.

All reasonable effort will be made to keep the purging rate low and to avoid pumping the well to dryness. Monitoring well purging rates will not exceed five gpm. In some cases, the evacuation of three casing volumes may not be practical due to slow recovery. If a monitoring well is pumped to near dryness at a rate less than 0.5 gpm, then the monitoring well will be allowed to recover to a volume sufficient for sampling. Sampling will occur within two hours of purging as long as the well has sufficiently recovered. It may be necessary to allow all such monitoring wells to recover sufficiently for sampling. Details of the monitoring well's recovery rate will be noted on the field form.

Given low-flow purging is to be used where practicable, purge volumes are anticipated to be low. All purge water will be assessed for the presence of sheen or product. If no sheen or product is observed and PID readings are below 5 parts per million (ppm), purge water may be returned to the ground in the area of the well. If the purge water exhibits a sheen or a PID reading that exceed 5 ppm, it will either be containerized for later disposal or the water may be pumped through carbon drums to remove any observable sign of a sheen and/or PID readings above 5 ppm prior to discharge to the ground on site.

## 8.4 Sample Collection

Once wells have been properly purged via the low-flow method, groundwater samples will be collected directly from the bladder pump tubing by disconnecting the intake tube from the flow-through cell and then using that tube to discharge the sample directly into containers provided by the laboratory.

If the three to five volume purge method is used, monitoring well sampling will be performed within two hours of purging unless a monitoring well recovers at too slow a rate. Sampling will be performed with a dedicated clean Teflon bailer with a single check valve at the bottom. The bailer will be slowly lowered into the well via dedicated twine until it is submerged, then slowly brought back to the surface after filling. The contents of the bailer will then be slowly poured into the sampling containers provided by the laboratory.

## 8.5 Conclusion

The RI results including analyses of soil and groundwater samples will be used to assess site risks, apply applicable site-specific cleanup objectives for the intended land use, and guide the appropriate remedial track for preparation of the RAWP. The necessity of any additional on-site monitoring wells and/or off-site groundwater investigation activities will be a part of the data evaluation. The next step may also include the implementation of source area control measures.

# TABLES

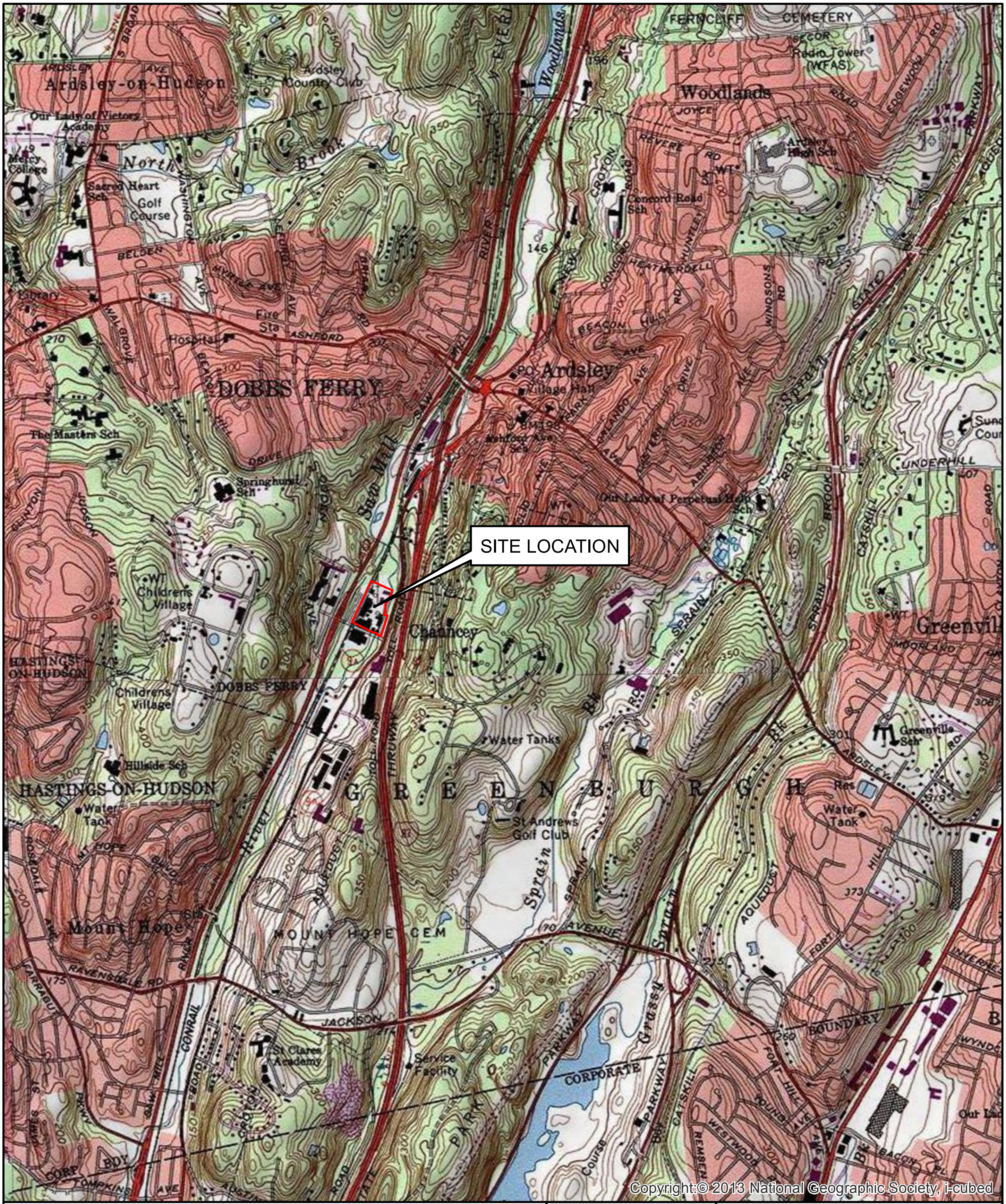
**TABLE 1**
**Proposed Sample Locations Summary**

**Former Akzo Nobel Pilot Plant**
**1 Lawrence Street**
**Ardsely, New York**

| Area of Concern | Sample Location | Matrix | Sample Depth (bgs) | Analytical Parameters | Sampling Method | Minimum Reporting Limits | QA/QC |
|---|---|---|---|---|---|---|---|
| Former Solvent Shed | Sub-surface Soils - Soil Borings (FE-SB-1 through FE-SB-5) | Soil | 2.5 to 3.0 feet | VOCs | **Geoprobe Direct Push** Grab samples based on PID readings | Restricted Commercial & Protection of Groundwater | Duplicates - 5% (1 for every 20 samples/min of 1 dup) Field Blank - 1 per day (for VOC samples only) |
| | Sub-surface Soils - Soil Borings (VES-1) | Soil | >15 feet (TBD*) | | | | |
| Former RCRA Shed | Sub-surface Soils - Soil Borings (FE-SB-6) | Soil | 0.0 to 0.5; 1.5 to 2.0 | PCBs | | Restricted Commercial | |
| | Sub-surface Soils - Soil Borings (SB-74C) | Soil | 7.5 to 8.0; 9.5 to 10.0 | | | | |
| Pesticide Impacted Soil (SB-10) | Sub-surface Soils - Soil Borings (SB-10) | Soil | 4.0 to 4.5; 10.0 to 10.5 | Pesticides | | Restricted Commercial & Protection of Groundwater | |
| Former Carbon Disulfide UST Vault | Sub-surface Soils - Soil Borings (FE-SB-7 through FE-SB-10) | Soil | 8.0 to 8.5 | Lead (Pb) | | Restricted Commercial | |
| | Sub-surface Soils - Soil Borings (FE-SB-11) | Soil | 10.5 to 11.0; 14.5 to 15.0 | | | | |
| Former White House Building Vault | Sub-surface Soils - Soil Borings (FE-SB-12 through FE-SB-14) | Soil | 5.0 to 5.5 | VOCs | | Restricted Commercial & Protection of Groundwater | |
| | Sub-surface Soils - Soil Borings (SB-49C) | Soil | 7.5 to 8.0; 9.5 to 10.0 | VOCs | | | |
| Groundwater | Shallow Monitoring Wells (MW-1, MW-2, and MW-3 | Groundwater | Groundwater Table | VOCs + TICs | **Low-flow purge method** | TOGS 1.1.1. - Ambient Water Quality Standards & Guidance Values | Duplicates - 5% (1 for every 20 samples/min 1 dup) Field Blank - 1 per day (for each analytical parameter) Trip Blank (1 per cooler for groundwater VOC samples) |

*Notes:*
**Sample depths will be determined based on field observations*
*VOC = volatile organic compounds, includes petroleum and halogenated compounds*
*TIC = Tentatively Identified Compounds*
*PCBs = polychlorinated biphenyls*
*min = minimum*
*dup = duplicate*

# FIGURES




N
W E
S

1 inch = 2,000 feet

United States Geological Survey, White Plains & Mount Vernon NY Topographic Quadrangles, 1967, Photorevised 1981

FIRST ENVIRONMENT

91 Fulton Street
Boonton, New Jersey 07005

1 Lawrence Street
Ardsley, Westchester County, NY

FIGURE 1

SITE LOCATION MAP

| Revised | Drawn | Checked | Approved | Date |
|---|---|---|---|---|
| | LS | DDL | DDL | 7/10/17 |


**Legend**

- Monitoring Well
- Site Boundary
- Saw Mill River

N W E S

1 inch = 150 feet

Saw Mill River: USGS National Hydrography Dataset

FIRST ENVIRONMENT

91 Fulton Street
Boonton, New Jersey 07005

1 Lawrence Street
Ardsley, Westchester County, NY

FIGURE 2

SITE PLAN

| Revised | Drawn | Checked | Approved | Date |
|---|---|---|---|---|
| | LS | DDL | DDL | 7/17/17 |


**Legend**

- Proposed Soil Borings
- 2014 Soil Borings (Vertex)
- 2006 Soil Borings (Sovereign)

N W E S

1 inch = 25 feet

FIRST ENVIRONMENT

91 Fulton Street
Boonton, New Jersey 07005

1 Lawrence Street
Ardsley, Westchester County, NY

FIGURE 3

FORMER SOLVENT SHED

| Revised | Drawn | Checked | Approved | Date |
|---|---|---|---|---|
| | LS | DDL | DDL | 7/18/17 |


**Legend**

- Proposed Soil Borings
- 2014 Soil Borings (Vertex)
- 2006 Soil Borings (Sovereign)

N W E S

1 inch = 25 feet

FIRST ENVIRONMENT

91 Fulton Street
Boonton, New Jersey 07005

1 Lawrence Street
Ardsley, Westchester County, NY

FIGURE 4

FORMER RCRA SHED

| Revised | Drawn | Checked | Approved | Date |
|---|---|---|---|---|
| | LS | DDL | DDL | 7/18/17 |


**Legend**

- Proposed Soil Borings
- 2014 Soil Borings (Vertex)
- 2006 Soil Borings (Sovereign)

N W E S

1 inch = 25 feet

FIRST ENVIRONMENT

91 Fulton Street
Boonton, New Jersey 07005

1 Lawrence Street
Ardsley, Westchester County, NY

FIGURE 5

PESTICIDE IMPACTED SOIIL

| Revised | Drawn | Checked | Approved | Date |
| --- | --- | --- | --- | --- |
| | LS | DDL | DDL | 7/18/17 |


**Legend**

- Proposed Soil Borings
- 2006 Soil Borings (Sovereign)

N W E S

1 inch = 25 feet

FIRST ENVIRONMENT

91 Fulton Street
Boonton, New Jersey 07005

1 Lawrence Street
Ardsley, Westchester County, NY

FIGURE 6

FORMER CARBON DISULFIDE UST VAULT

| Revised | Drawn | Checked | Approved | Date |
|---|---|---|---|---|
| | LS | DDL | DDL | 7/18/17 |


**Legend**

- Proposed Soil Borings
- 2006 Soil Borings (Sovereign)

1 inch = 25 feet

FIRST ENVIRONMENT

91 Fulton Street
Boonton, New Jersey 07005

1 Lawrence Street
Ardsley, Westchester County, NY

FIGURE 7

FORMER WHITE HOUSE BUILDING VAULT

| Revised | Drawn | Checked | Approved | Date |
|---|---|---|---|---|
| | LS | DDL | DDL | 7/18/17 |


**Legend**

- Temporary Monitoring Well Locations
- Monitoring Well Locations
- Site Boundary

N W E S

1 inch = 75 feet

FIRST ENVIRONMENT

91 Fulton Street
Boonton, New Jersey 07005

1 Lawrence Street
Ardsley, Westchester County, NY

FIGURE 8
TEMPORARY MONITORING WELL LOCATIONS
MARCH/APRIL 2014

| Revised | Drawn | Checked | Approved | Date |
|---|---|---|---|---|
| | LS | DDL | DDL | 7/19/17 |


**Legend**

- Site Boundary
- Temporary Monitoring Well Locations
- Monitoring Well Locations

**2017 Proposed Sample Locations (First Environment)**

- Soil Sample Locations

**2014 Sample Locations (Vertex)**

- Soil Sample Locations
- Sediment & Surface Water Sample Locations

**2009/2006 Sample Locations (Sovereign)**

- Soil Sample Locations
- Test Pit Locations

Note: Sediment/Surface water sample SED1/SW1 (not shown) was collected from the Saw Mill River at the northern property boundary.

N W E S

1 inch = 25 feet

FIRST ENVIRONMENT

91 Fulton Street
Boonton, New Jersey 07005

1 Lawrence Street
Ardsley, Westchester County, NY

FIGURE 9

HISTORICAL AND PROPOSED SAMPLING LOCATIONS

| Revised | Drawn | Checked | Approved | Date |
|---|---|---|---|---|
| | LS | DDL | DDL | 7/20/17 |

# APPENDIX A

The following standards and criteria are or may be applicable to this project:

| |
|---|
| 6 NYCRR Part 175 - Special Licenses and Permits - Definitions and Uniform Procedures |
| 6 NYCRR Part 257 - Air Quality Standards |
| 6 NYCRR Part 371 - Identification and Listing of Hazardous Wastes (November 1998) |
| 6 NYCRR Part 372 - Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities (November 1998) |
| 6 NYCRR Part 376 - Land Disposal Restrictions |
| 6 NYCRR Part 613 - Handling and Storage of Petroleum (February 1992) |
| 6 NYCRR Part 750 through 758 - Implementation of NPDES Program in NYS ("SPDES Regulations") |
| 6 NYCRR Parts 700-706 - Water Quality Standards (June 1998) |
| 6 NYCRR Subpart 374-1 - Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities (November 1998) |
| 6 NYCRR Subpart 374-2 - Standards for the Management of Used Oil (November 1998) |
| 6 NYCRR Subpart 374-3 - Standards for Universal Waste (November 1998) |
| 10 NYCRR Part 5 of the State Sanitary Code - Drinking Water Supplies (May 1998) |
| 10 NYCRR Part 67 – Lead |
| 12 NYCRR Part 56 - Industrial Code Rule 56 (Asbestos) |
| CP-51 – NYSDEC Policy, Final Commissioner Policy (Soil Cleanup Guidance) |
| 29 CFR Part 1910.120 - Hazardous Waste Operations and Emergency Response |
| 40 CFR Part 280 – Technical Standards and Corrective Action Requirements for Owners Operators of Underground Storage Tanks |

The following guidance are or may be applicable to this project:

| |
|---|
| Air Guide 1 - Guidelines for the Control of Toxic Ambient Air Contaminants |
| Citizen Participation in New York's Hazardous Waste Site Remediation Program: A Guidebook (June 1998) |
| OSWER Directive 9200.4-17 - Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites (November 1997) |
| Permanent Closure of Petroleum Storage Tanks (July 1988) |
| Spill Response Guidance Manual |
| STARS #1 - Petroleum-Contaminated Soil Guidance Policy |
| TAGM 3028 - "Contained In" Criteria for Environmental Media: Soil Action Levels (August 1997) |
| TAGM 4013 - Emergency Hazardous Waste Drum Removal/ Surficial Cleanup Procedures (March 1996) |
| TAGM 4015 - Policy Regarding Alteration of Groundwater Samples Collected for Metals Analysis (Sep 1998) |
| TAGM 4030 - Selection of Remedial Actions at Inactive Hazardous Waste Sites (May 1990) |
| TAGM 4031 - Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites (Oct 1989) |
| TAGM 4032 - Disposal of Drill Cuttings (November 1989) |
| TAGM 4046 - Determination of Soil Cleanup Objectives and Cleanup Levels (January 1994) |
| TAGM 4048 - Interim Remedial Measures - Procedures (December 1992) |
| TAGM 4051 – Early Design Strategy (August 1993) |
| TAGM 4059 - Making Changes To Selected Remedies (May 1998) |
| TOGS 1.1.1 - Ambient Water Quality Standards & Guidance Values and Groundwater Effluent Limitations |

# APPENDIX B

**TDI Real Estate - Ardsley, NY**
**Former Akzo Nobel Pilot Plant Facility**
**Summary of Groundwater Analytical Results**

| LOCATION | | | | VES-4 GW | | VES-1 GW | | VES-3 GW | | VES-2 GW | | VES-5 GW | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE | | | | 3/1/2014 | | 3/1/2014 | | 3/1/2014 | | 3/1/2014 | | 3/1/2014 | |
| LAB SAMPLE ID | NY-AWQS | NY-TOGS-GA | Units | L1404460-01 | Qual | L1404460-02 | Qual | L1404460-03 | Qual | L1404460-04 | Qual | L1404460-05 | Qual |
| **Semivolatile Organics by GC/MS - Westborough Lab** | | | | | | | | | | | | | |
| Acenaphthene | 20 | 20 | ug/l | 2 | U | - | | - | | 80 | | 2.5 | U |
| 3-Methylphenol/4-Methylphenol | | | ug/l | 5 | U | - | | - | | 16 | J | 6.3 | U |
| Bis(2-chloroethyl)ether | 1 | 1 | ug/l | 2 | U | - | | - | | 14 | U | 2.5 | U |
| 2-Chloronaphthalene | 10 | 10 | ug/l | 2 | U | - | | - | | 14 | U | 2.5 | U |
| 2,4-Dinitrotoluene | 5 | 5 | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| 2,6-Dinitrotoluene | 5 | 5 | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| Fluoranthene | 50 | 50 | ug/l | 2 | U | - | | - | | 340 | | 2.5 | U |
| 4-Chlorophenyl phenyl ether | | | ug/l | 2 | U | - | | - | | 14 | U | 2.5 | U |
| Bis(2-chloroisopropyl)ether | 5 | 5 | ug/l | 2 | U | - | | - | | 14 | U | 2.5 | U |
| Bis(2-chloroethoxy)methane | 5 | 5 | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| Hexachlorocyclopentadiene | 5 | 5 | ug/l | 20 | U | - | | - | | 140 | U | 25 | U |
| Hexachloroethane | 5 | 5 | ug/l | 2 | U | - | | - | | 14 | U | 2.5 | U |
| Isophorone | 50 | 50 | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| Naphthalene | 10 | 10 | ug/l | 2 | U | - | | - | | 320 | | 2.5 | U |
| Nitrobenzene | 0.4 | 0.4 | ug/l | 2 | U | - | | - | | 14 | U | 2.5 | U |
| NitrosoDiPhenylAmine(NDPA)/DP | 50 | 50 | ug/l | 2 | U | - | | - | | 14 | U | 2.5 | U |
| n-Nitrosodi-n-propylamine | | | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| Bis(2-Ethylhexyl)phthalate | 5 | 5 | ug/l | 3 | U | - | | - | | 21 | U | 3.8 | U |
| Butyl benzyl phthalate | 50 | 50 | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| Di-n-butylphthalate | 50 | 50 | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| Di-n-octylphthalate | 50 | 50 | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| Diethyl phthalate | 50 | 50 | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| Dimethyl phthalate | 50 | 50 | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| Chrysene | 0.002 | 0.002 | ug/l | 2 | U | - | | - | | 130 | | 2.5 | U |
| Acenaphthylene | | | ug/l | 2 | U | - | | - | | 20 | | 2.5 | U |
| Anthracene | 50 | 50 | ug/l | 2 | U | - | | - | | 120 | | 2.5 | U |
| Benzo(ghi)perylene | | | ug/l | 2 | U | - | | - | | 64 | | 2.5 | U |
| Fluorene | 50 | 50 | ug/l | 2 | U | - | | - | | 92 | | 2.5 | U |
| Phenanthrene | 50 | 50 | ug/l | 2 | U | - | | - | | 420 | | 2.5 | U |
| Pyrene | 50 | 50 | ug/l | 2 | U | - | | - | | 270 | | 2.5 | U |
| 4-Chloroaniline | 5 | 5 | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| 2-Nitroaniline | 5 | 5 | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| 3-Nitroaniline | 5 | 5 | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| 4-Nitroaniline | 5 | 5 | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| Dibenzofuran | | | ug/l | 2 | U | - | | - | | 70 | | 2.5 | U |
| 2-Methylnaphthalene | | | ug/l | 2 | U | - | | - | | 50 | | 2.5 | U |
| 2,4,6-Trichlorophenol | | | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| P-Chloro-M-Cresol | | | ug/l | 2 | U | - | | - | | 14 | U | 2.5 | U |
| 2-Chlorophenol | | | ug/l | 2 | U | - | | - | | 14 | U | 2.5 | U |
| 2,4-Dichlorophenol | 1 | 2 | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| 2,4-Dimethylphenol | 50 | 2 | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| 2-Nitrophenol | | | ug/l | 10 | U | - | | - | | 70 | U | 13 | U |
| 4-Nitrophenol | | | ug/l | 10 | U | - | | - | | 70 | U | 13 | U |
| 2,4-Dinitrophenol | 10 | 2 | ug/l | 20 | U | - | | - | | 140 | U | 25 | U |

**TDI Real Estate - Ardsley, NY**
**Former Akzo Nobel Pilot Plant Facility**
**Summary of Groundwater Analytical Results**

| LOCATION<br>SAMPLING DATE<br>LAB SAMPLE ID | NY-AWQS | NY-TOGS-GA | Units | VES-4 GW<br>3/1/2014<br>L1404460-01 | Qual | VES-1 GW<br>3/1/2014<br>L1404460-02 | Qual | VES-3 GW<br>3/1/2014<br>L1404460-03 | Qual | VES-2 GW<br>3/1/2014<br>L1404460-04 | Qual | VES-5 GW<br>3/1/2014<br>L1404460-05 | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | 1 | 2 | ug/l | 5 | | - | | - | | 35 | U | 6.3 | U |
| 2-Methylphenol | | | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| 2,4,5-Trichlorophenol | | | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| Carbazole | | | ug/l | 2 | U | - | | - | | 52 | | 2.5 | U |
| 4-Bromophenyl phenyl ether | | | ug/l | 2 | U | - | | - | | 14 | U | 2.5 | U |
| 3,3'-Dichlorobenzidine | 5 | 5 | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| Benzaldehyde | | | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| Acetophenone | | | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| Caprolactam | | | ug/l | 4.8 | J | - | | - | | 55 | J | 32 | |
| Biphenyl | | | ug/l | 2 | U | - | | - | | 17 | | 2.5 | U |
| 1,2,4,5-Tetrachlorobenzene | 5 | 5 | ug/l | 10 | U | - | | - | | 70 | U | 13 | U |
| Atrazine | 7.5 | 7.5 | ug/l | 3 | U | - | | - | | 21 | U | 3.8 | U |
| 2,3,4,6-Tetrachlorophenol | | | ug/l | 5 | U | - | | - | | 35 | U | 6.3 | U |
| **Semivolatile Organics by GC/MS-SIM - Westborough Lab** | | | | | | | | | | | | | |
| 4,6-Dinitro-o-cresol | | | ug/l | 5 | U | - | | - | | 5.6 | U | 1.3 | U |
| Benzo(a)anthracene | | | ug/l | 0.5 | U | - | | - | | 51 | | 0.13 | U |
| Benzo(a)pyrene | 0 | 0 | ug/l | 0.5 | U | - | | - | | 48 | | 0.13 | U |
| Benzo(b)fluoranthene | 0.002 | 0.002 | ug/l | 1 | U | - | | - | | 40 | | 0.25 | U |
| Benzo(k)fluoranthene | 0.002 | 0.002 | ug/l | 1 | U | - | | - | | 38 | | 0.25 | U |
| Dibenzo(a,h)anthracene | | | ug/l | 1 | U | - | | - | | 8.2 | | 0.25 | U |
| Indeno(1,2,3-cd)Pyrene | 0.002 | 0.002 | ug/l | 1 | U | - | | - | | 32 | | 0.25 | U |
| Hexachlorobenzene | 0.04 | 0.04 | ug/l | 0.1 | U | - | | - | | 0.11 | U | 0.03 | U |
| Pentachlorophenol | 1 | 2 | ug/l | 1.5 | U | - | | - | | 1.7 | U | 0.38 | U |
| Hexachlorobutadiene | 0.5 | 0.5 | ug/l | 5 | U | - | | - | | 5.6 | U | 1.3 | U |
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | | | | | | | | |
| Methylene chloride | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| 1,1-Dichloroethane | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| Chloroform | 7 | 7 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| Carbon tetrachloride | 5 | 5 | ug/l | 2.5 | U | 25 | U | 0.5 | U | 2.5 | U | 0.5 | U |
| 1,2-Dichloropropane | 1 | 1 | ug/l | 5 | U | 50 | U | 1 | U | 5 | U | 1 | U |
| Dibromochloromethane | 50 | 50 | ug/l | 2.5 | U | 25 | U | 0.5 | U | 2.5 | U | 0.5 | U |
| 1,1,2-Trichloroethane | 1 | 1 | ug/l | 7.5 | U | 75 | U | 1.5 | U | 7.5 | U | 1.5 | U |
| Tetrachloroethene | 5 | 5 | ug/l | 2.5 | U | 2000 | | 3.4 | | 12 | | 0.98 | |
| Chlorobenzene | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 24 | | 2.5 | U |
| Trichlorofluoromethane | 5 | 5 | ug/l | 12 | U | 120 | U | 22 | | 5.6 | J | 2.5 | U |
| 1,2-Dichloroethane | 0.6 | 0.6 | ug/l | 2.5 | U | 25 | U | 0.5 | U | 2.5 | U | 0.5 | U |
| 1,1,1-Trichloroethane | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| Bromodichloromethane | 50 | 50 | ug/l | 2.5 | U | 25 | U | 0.5 | U | 2.5 | U | 0.5 | U |
| trans-1,3-Dichloropropene | 0.4 | 0.4 | ug/l | 2.5 | U | 25 | U | 0.5 | U | 2.5 | U | 0.5 | U |
| cis-1,3-Dichloropropene | 0.4 | 0.4 | ug/l | 2.5 | U | 25 | U | 0.5 | U | 2.5 | U | 0.5 | U |
| 1,3-Dichloropropene, Total | | | ug/l | 2.5 | U | 25 | U | 0.5 | U | 2.5 | U | 0.5 | U |
| Bromoform | 50 | 50 | ug/l | 10 | U | 100 | U | 2 | U | 10 | U | 2 | U |
| 1,1,2,2-Tetrachloroethane | 5 | 5 | ug/l | 2.5 | U | 25 | U | 0.5 | U | 2.5 | U | 0.5 | U |
| Benzene | 1 | 1 | ug/l | 2.5 | U | 10 | J | 0.5 | U | 270 | | 0.5 | U |
| Toluene | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |

**TDI Real Estate - Ardsley, NY**
**Former Akzo Nobel Pilot Plant Facility**
**Summary of Groundwater Analytical Results**

| LOCATION | | | | VES-4 GW | | VES-1 GW | | VES-3 GW | | VES-2 GW | | VES-5 GW | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE | | | | 3/1/2014 | | 3/1/2014 | | 3/1/2014 | | 3/1/2014 | | 3/1/2014 | |
| LAB SAMPLE ID | NY-AWQS | NY-TOGS-GA | Units | L1404460-01 | Qual | L1404460-02 | Qual | L1404460-03 | Qual | L1404460-04 | Qual | L1404460-05 | Qual |
| Ethylbenzene | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| Chloromethane | | | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| Bromomethane | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| Vinyl chloride | 2 | 2 | ug/l | 5 | U | 50 | U | 1 | U | 9.4 | | 1 | U |
| Chloroethane | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| 1,1-Dichloroethene | 5 | 5 | ug/l | 2.5 | U | 25 | U | 0.5 | U | 2.5 | U | 0.5 | U |
| trans-1,2-Dichloroethene | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| Trichloroethene | 5 | 5 | ug/l | 2.5 | U | 25 | U | 0.5 | U | 5 | | 0.5 | U |
| 1,2-Dichlorobenzene | 3 | 3 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| 1,3-Dichlorobenzene | 3 | 3 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| 1,4-Dichlorobenzene | 3 | 3 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| Methyl tert butyl ether | 10 | 10 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| p/m-Xylene | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| o-Xylene | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| Xylenes, Total | | | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| cis-1,2-Dichloroethene | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| Styrene | 5 | 930 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| Dichlorodifluoromethane | 5 | 5 | ug/l | 25 | U | 250 | U | 5 | U | 25 | U | 5 | U |
| Acetone | 50 | 50 | ug/l | 25 | U | 250 | U | 5 | U | 40 | | 5 | U |
| Carbon disulfide | 60 | 60 | ug/l | 2,600 | | 680 | | 15 | | 640 | | 5 | U |
| 2-Butanone | 50 | 50 | ug/l | 25 | U | 250 | U | 5 | U | 25 | U | 5 | U |
| 4-Methyl-2-pentanone | | | ug/l | 25 | U | 250 | U | 5 | U | 25 | U | 5 | U |
| 2-Hexanone | 50 | 50 | ug/l | 25 | U | 250 | U | 5 | U | 25 | U | 5 | U |
| Bromochloromethane | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| 1,2-Dibromoethane | 0.0006 | 0.0006 | ug/l | 10 | U | 100 | U | 2 | U | 10 | U | 2 | U |
| n-Butylbenzene | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| sec-Butylbenzene | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| tert-Butylbenzene | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| 1,2-Dibromo-3-chloropropane | 0.04 | 0.04 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| Isopropylbenzene | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| n-Propylbenzene | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| 1,2,3-Trichlorobenzene | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| 1,2,4-Trichlorobenzene | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| 1,3,5-Trimethylbenzene | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| 1,2,4-Trimethylbenzene | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |
| Methyl Acetate | | | ug/l | 10 | U | 100 | U | 2 | U | 10 | U | 2 | U |
| Cyclohexane | | | ug/l | 50 | U | 500 | U | 10 | U | 50 | U | 10 | U |
| 1,4-Dioxane | | | ug/l | 1200 | U | 12000 | U | 250 | U | 1200 | U | 250 | U |
| Methyl cyclohexane | | | ug/l | 50 | U | 500 | U | 10 | U | 50 | U | 10 | U |
| Freon-113 | 5 | 5 | ug/l | 12 | U | 120 | U | 2.5 | U | 12 | U | 2.5 | U |

TDI Real Estate - Ardsley, NY
Former Akzo Nobel Pilot Plant Facility
Summary of Soil Analytical Results

| LOCATION | | | | | | | VES-5 | | VES-1A | | VES-1B | | | VES-6 | | VES-7 | | VES-8 | | VES-2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE | | | | | | | 3/1/2014 | | 3/1/2014 | | 3/1/2014 | | | 3/1/2014 | | 3/1/2014 | | 3/1/2014 | | 3/1/2014 | |
| LAB SAMPLE ID | | | | | | | L1404461-01 | | L1404461-02 | | L1404461-03 | | | L1404461-04 | | L1404461-05 | | L1404461-06 | | L1404461-07 | |
| SAMPLE TYPE | | | | | | | Soil | | Soil | | Soil | | | Soil | | Soil | | Soil | | Soil | |
| SAMPLE DEPTH (ft.) | | | | | | | 3.25-4 | | 2.5-4 | | 13-13.5 | | | 2-4 | | 2-3 | | 1-2 | | 11-12 | |
| | | Commercial | Residential | Restricted | Unrestricted | | VOC Fraction 5.5-6 | | | | | | | | | VOC Fraction at 10' | | | | | |
| | NY-CP51 | SCOs | SCOs | Residential SCOs | SCOs | Units | | Qual | | Qual | | Qual | Qual | | Qual | | Qual | | Qual | | Qual |
| **General Chemistry - Westborough Lab** | | | | | | | | | | | | | | | | | | | | | |
| Solids, Total | | | | | | % | 94.9 | | 82.3 | | 85.2 | | | 85.4 | | 95.5 | | 92.8 | | 80.9 | |
| Cyanide, Total | | 27 | 27 | 27 | 27 | mg/kg | 1 | U | - | | - | | | - | | 1 | U | - | - | - | - |
| **Pesticides by GC - Westborough Lab** | | | | | | | | | | | | | | | | | | | | | |
| Delta-BHC | | 500 | 100 | 100 | 0.04 | mg/kg | 0.00164 | U | - | | - | | | - | | 0.00162 | U | - | - | - | - |
| Lindane | | 9.2 | 0.28 | 1.3 | 0.1 | mg/kg | 0.00068 | U | - | | - | | | - | | 0.00067 | U | - | - | - | - |
| Alpha-BHC | | 3.4 | 0.097 | 0.48 | 0.02 | mg/kg | 0.00068 | U | - | | - | | | - | | 0.00067 | U | - | - | - | - |
| Beta-BHC | | 3 | 0.072 | 0.36 | 0.036 | mg/kg | 0.00164 | U | - | | - | | | - | | 0.00162 | U | - | - | - | - |
| Heptachlor | | 15 | 0.42 | 2.1 | 0.042 | mg/kg | 0.00082 | U | - | | - | | | - | | 0.0008 | U | - | - | - | - |
| Aldrin | | 0.68 | 0.019 | 0.097 | 0.005 | mg/kg | 0.00164 | U | - | | - | | | - | | 0.00162 | U | - | - | - | - |
| Heptachlor epoxide | | | 0.077 | | | mg/kg | 0.00308 | U | - | | - | | | - | | 0.00303 | U | - | - | - | - |
| Endrin | | 89 | 2.2 | 11 | 0.014 | mg/kg | 0.00068 | U | - | | - | | | - | | 0.00067 | U | - | - | - | - |
| Endrin aldehyde | | | | | | mg/kg | 0.00206 | U | - | | - | | | - | | 0.00202 | U | - | - | - | - |
| Endrin ketone | | | | | | mg/kg | 0.00164 | U | - | | - | | | - | | 0.00162 | U | - | - | - | - |
| Dieldrin | | 1.4 | 0.039 | 0.2 | 0.005 | mg/kg | 0.00103 | U | - | | - | | | - | | 0.00101 | U | - | - | - | - |
| 4,4'-DDE | | 62 | 1.8 | 8.9 | 0.0033 | mg/kg | 0.00164 | U | - | | - | | | - | | 0.00162 | U | - | - | - | - |
| 4,4'-DDD | | 92 | 2.6 | 13 | 0.0033 | mg/kg | 0.00164 | U | - | | - | | | - | | 0.00162 | U | - | - | - | - |
| 4,4'-DDT | | 47 | 1.7 | 7.9 | 0.0033 | mg/kg | 0.00308 | U | - | | - | | | - | | 0.00303 | U | - | - | - | - |
| Endosulfan I | | 200 | 4.8 | 24 | 2.4 | mg/kg | 0.00164 | U | - | | - | | | - | | 0.00162 | U | - | - | - | - |
| Endosulfan II | | 200 | 4.8 | 24 | 2.4 | mg/kg | 0.00164 | U | - | | - | | | - | | 0.00162 | U | - | - | - | - |
| Endosulfan sulfate | | 200 | 4.8 | 24 | 2.4 | mg/kg | 0.00068 | U | - | | - | | | - | | 0.00067 | U | - | - | - | - |
| Methoxychlor | | | 100 | | | mg/kg | 0.00308 | U | - | | - | | | - | | 0.00303 | U | - | - | - | - |
| Toxaphene | | | | | | mg/kg | 0.0308 | U | - | | - | | | - | | 0.0303 | U | - | - | - | - |
| Chlordane | | | | | | mg/kg | 0.0134 | U | - | | - | | | - | | 0.0131 | U | - | - | - | - |
| cis-Chlordane | | 24 | 0.91 | 4.2 | 0.094 | mg/kg | 0.00206 | U | - | | - | | | - | | 0.00202 | U | - | - | - | - |
| trans-Chlordane | | | 0.54 | | | mg/kg | 0.00206 | U | - | | - | | | - | | 0.00202 | U | - | - | - | - |
| **Petroleum Hydrocarbon Quantitation - Westborough Lab** | | | | | | | | | | | | | | | | | | | | | |
| TPH | | | | | | mg/kg | - | | - | | - | | | 132 | | - | | 16.8 | J | 204 | |
| **Polychlorinated Biphenyls by GC - Westborough Lab** | | | | | | | | | | | | | | | | | | | | | |
| Aroclor 1016 | | 1 | 1 | 1 | 0.1 | mg/kg | 0.0335 | U | - | | - | | | 0.0374 | U | 0.0332 | U | 0.0344 | U | - | - |
| Aroclor 1221 | | 1 | 1 | 1 | 0.1 | mg/kg | 0.0335 | U | - | | - | | | 0.0374 | U | 0.0332 | U | 0.0344 | U | - | - |
| Aroclor 1232 | | 1 | 1 | 1 | 0.1 | mg/kg | 0.0335 | U | - | | - | | | 0.0374 | U | 0.0332 | U | 0.0344 | U | - | - |
| Aroclor 1242 | | 1 | 1 | 1 | 0.1 | mg/kg | 0.0335 | U | - | | - | | | 0.0374 | U | 0.0332 | U | 0.0344 | U | - | - |
| Aroclor 1248 | | 1 | 1 | 1 | 0.1 | mg/kg | 0.0335 | U | - | | - | | | 0.0374 | U | 0.00766 | J | 0.0344 | U | - | - |
| Aroclor 1254 | | 1 | 1 | 1 | 0.1 | mg/kg | 0.0335 | U | - | | - | | | 0.0374 | U | 0.0332 | U | 0.0344 | U | - | - |
| Aroclor 1260 | | 1 | 1 | 1 | 0.1 | mg/kg | 0.0335 | U | - | | - | | | 0.0374 | U | 0.0332 | U | 0.0344 | U | - | - |
| Aroclor 1262 | | 1 | 1 | 1 | 0.1 | mg/kg | 0.0335 | U | - | | - | | | 0.0374 | U | 0.0332 | U | 0.0344 | U | - | - |
| Aroclor 1268 | | 1 | 1 | 1 | 0.1 | mg/kg | 0.0335 | U | - | | - | | | 0.0374 | U | 0.0332 | U | 0.0344 | U | - | - |
| PCBs, Total | | | | | | mg/kg | 0.0335 | U | - | | - | | | 0.0374 | U | 0.00766 | J | 0.0344 | U | - | - |
| **Semivolatile Organics by GC/MS - Westborough Lab** | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | 20 | 500 | 100 | 100 | 20 | mg/kg | 0.14 | U | - | | - | | | 0.15 | U | 0.14 | U | 0.14 | U | - | - |
| 2-Chloronaphthalene | | | | | | mg/kg | 0.17 | U | - | | - | | | 0.19 | U | 0.17 | U | 0.18 | U | - | - |
| Fluoranthene | 100 | 500 | 100 | 100 | 100 | mg/kg | 0.11 | | - | | - | | | 0.65 | | 0.1 | U | 0.1 | U | - | - |
| 4-Chlorophenyl phenyl ether | | | | | | mg/kg | 0.17 | U | - | | - | | | 0.19 | U | 0.17 | U | 0.18 | U | - | - |
| Bis(2-chloroisopropyl)ether | | | | | | mg/kg | 0.21 | U | - | | - | | | 0.23 | U | 0.2 | U | 0.21 | U | - | - |
| Bis(2-chloroethoxy)methane | | | | | | mg/kg | 0.18 | U | - | | - | | | 0.2 | U | 0.18 | U | 0.19 | U | - | - |
| Hexachlorocyclopentadiene | | | | | | mg/kg | 0.49 | U | - | | - | | | 0.54 | U | 0.49 | U | 0.5 | U | - | - |
| Naphthalene | 12 | 500 | 100 | 100 | 12 | mg/kg | 0.17 | U | - | | - | | | 0.072 | J | 0.17 | U | 0.18 | U | - | - |
| Bis(2-Ethylhexyl)phthalate | | | 50 | | | mg/kg | 0.17 | U | - | | - | | | 0.19 | U | 0.17 | U | 0.18 | U | - | - |
| Butyl benzyl phthalate | | | 100 | | | mg/kg | 0.17 | U | - | | - | | | 0.19 | U | 0.17 | U | 0.18 | U | - | - |
| Di-n-butylphthalate | | | 100 | | | mg/kg | 0.17 | U | - | | - | | | 0.19 | U | 0.17 | U | 0.18 | U | - | - |
| Di-n-octylphthalate | | | 100 | | | mg/kg | 0.17 | U | - | | - | | | 0.19 | U | 0.17 | U | 0.18 | U | - | - |
| Diethyl phthalate | | | 100 | | | mg/kg | 0.17 | U | - | | - | | | 0.19 | U | 0.17 | U | 0.18 | U | - | - |
| Dimethyl phthalate | | | 100 | | | mg/kg | 0.17 | U | - | | - | | | 0.19 | U | 0.17 | U | 0.18 | U | - | - |
| Chrysene | 1 | 56 | 1 | 3.9 | 1 | mg/kg | 0.057 | J | - | | - | | | 0.31 | | 0.1 | U | 0.1 | U | - | - |
| Acenaphthylene | 100 | 500 | 100 | 100 | 100 | mg/kg | 0.14 | U | - | | - | | | 0.05 | J | 0.14 | U | 0.14 | U | - | - |

TDI Real Estate - Ardsley, NY
Former Akzo Nobel Pilot Plant Facility
Summary of Soil Analytical Results

| LOCATION | | | | | | | VES-5 | | VES-1A | | VES-1B | | | VES-6 | | VES-7 | | VES-8 | | VES-2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE | | | | | | | 3/1/2014 | | 3/1/2014 | | 3/1/2014 | | | 3/1/2014 | | 3/1/2014 | | 3/1/2014 | | 3/1/2014 | |
| LAB SAMPLE ID | | | | | | | L1404461-01 | | L1404461-02 | | L1404461-03 | | | L1404461-04 | | L1404461-05 | | L1404461-06 | | L1404461-07 | |
| SAMPLE TYPE | | | | | | | Soil | | Soil | | Soil | | | Soil | | Soil | | Soil | | Soil | |
| SAMPLE DEPTH (ft.) | | | | | | | 3.25-4 | | 2.5-4 | | 13-13.5 | | | 2-4 | | 2-3 | | 1-2 | | 11-12 | |
| | | Commercial | Residential | Restricted | Unrestricted | | VOC Fraction 5.5-6 | | | | | | | | | VOC Fraction at 10' | | | | | |
| | NY-CP51 | SCOs | SCOs | Residential SCOs | SCOs | Units | | Qual | | Qual | | Qual | Qual | | Qual | | Qual | | Qual | | Qual |
| Anthracene | 100 | 500 | 100 | 100 | 100 | mg/kg | 0.1 | U | - | | - | | | 0.086 | J | 0.1 | U | 0.1 | U | - | - |
| Benzo(ghi)perylene | 100 | 500 | 100 | 100 | 100 | mg/kg | 0.14 | U | - | | - | | | 0.2 | | 0.14 | U | 0.14 | U | - | - |
| Fluorene | 30 | 500 | 100 | 100 | 30 | mg/kg | 0.17 | U | - | | - | | | 0.19 | U | 0.17 | U | 0.18 | U | - | - |
| Phenanthrene | 100 | 500 | 100 | 100 | 100 | mg/kg | 0.075 | J | - | | - | | | 0.44 | | 0.1 | U | 0.1 | U | - | - |
| Pyrene | 100 | 500 | 100 | 100 | 100 | mg/kg | 0.094 | J | - | | - | | | 0.51 | | 0.1 | U | 0.1 | U | - | - |
| 4-Chloroaniline | | | 100 | | | mg/kg | 0.17 | U | - | | - | | | 0.19 | U | 0.17 | U | 0.18 | U | - | - |
| 2-Nitroaniline | | | | | | mg/kg | 0.17 | U | - | | - | | | 0.19 | U | 0.17 | U | 0.18 | U | - | - |
| 3-Nitroaniline | | | | | | mg/kg | 0.17 | U | - | | - | | | 0.19 | U | 0.17 | U | 0.18 | U | - | - |
| 4-Nitroaniline | | | | | | mg/kg | 0.17 | U | - | | - | | | 0.19 | U | 0.17 | U | 0.18 | U | - | - |
| Dibenzofuran | | 350 | 14 | 59 | 7 | mg/kg | 0.17 | U | - | | - | | | 0.19 | U | 0.17 | U | 0.18 | U | - | - |
| 2-Methylnaphthalene | | | 0.41 | | | mg/kg | 0.21 | U | - | | - | | | 0.23 | U | 0.2 | U | 0.21 | U | - | - |
| P-Chloro-M-Cresol | | | | | | mg/kg | 0.17 | U | - | | - | | | 0.19 | U | 0.17 | U | 0.18 | U | - | - |
| 2-Nitrophenol | | | | | | mg/kg | 0.37 | U | - | | - | | | 0.41 | U | 0.37 | U | 0.38 | U | - | - |
| Phenol | | 500 | 100 | 100 | 0.33 | mg/kg | 0.17 | U | - | | - | | | 0.21 | | 0.17 | U | 0.18 | U | - | - |
| 2-Methylphenol | | 500 | 100 | 100 | 0.33 | mg/kg | 0.17 | U | - | | - | | | 0.19 | U | 0.17 | U | 0.18 | U | - | - |
| 3-Methylphenol/4-Methylphenol | | 500 | 34 | 100 | 0.33 | mg/kg | 0.25 | U | - | | - | | | 0.27 | U | 0.24 | U | 0.25 | U | - | - |
| Carbazole | | | | | | mg/kg | 0.17 | U | - | | - | | | 0.19 | U | 0.17 | U | 0.18 | U | - | - |
| 4-Nitrophenol | | | | | | mg/kg | 0.24 | U | - | | - | | | 0.27 | U | 0.24 | U | 0.24 | U | - | - |
| 4-Bromophenyl phenyl ether | | | | | | mg/kg | 0.17 | U | - | | - | | | 0.19 | U | 0.17 | U | 0.18 | U | - | - |
| Benzaldehyde | | | | | | mg/kg | 0.23 | U | - | | - | | | 0.57 | | 0.22 | U | 0.23 | U | - | - |
| Caprolactam | | | | | | mg/kg | 0.17 | U | - | | - | | | 0.19 | U | 0.17 | U | 0.18 | U | - | - |
| Acetophenone | | | | | | mg/kg | 0.17 | U | - | | - | | | 0.44 | | 0.17 | U | 0.18 | U | - | - |
| Biphenyl | | | | | | mg/kg | 0.39 | U | - | | - | | | 0.43 | U | 0.39 | U | 0.4 | U | - | - |
| 1,2,4,5-Tetrachlorobenzene | | | | | | mg/kg | 0.17 | U | - | | - | | | 0.19 | U | 0.17 | U | 0.18 | U | - | - |
| 2,3,4,6-Tetrachlorophenol | | | | | | mg/kg | 0.17 | U | - | | - | | | 0.19 | U | 0.17 | U | 0.18 | U | - | - |
| **Semivolatile Organics by GC/MS-SIM - Westborough Lab** | | | | | | | | | | | | | | | | | | | | | |
| Bis(2-chloroethyl)ether | | | | | | mg/kg | 0.089 | U | - | | - | | | - | | 0.044 | U | 0.045 | U | - | - |
| 2-Chlorophenol | | | 100 | | | mg/kg | 0.22 | U | - | | - | | | - | | 0.11 | U | 0.11 | U | - | - |
| Benzo(a)anthracene | 1 | 5.6 | 1 | 1 | 1 | mg/kg | 0.069 | J | - | | - | | | - | | 0.11 | U | 0.11 | U | - | - |
| n-Nitrosodi-n-propylamine | | | | | | mg/kg | 0.089 | U | - | | - | | | - | | 0.044 | U | 0.045 | U | - | - |
| Isophorone | | | 100 | | | mg/kg | 0.089 | U | - | | - | | | - | | 0.044 | U | 0.045 | U | - | - |
| Nitrobenzene | | 69 | 3.7 | 15 | | mg/kg | 0.089 | U | - | | - | | | - | | 0.044 | U | 0.045 | U | - | - |
| 2,4-Dichlorophenol | | | 100 | | | mg/kg | 0.089 | U | - | | - | | | - | | 0.044 | U | 0.045 | U | - | - |
| 2,4-Dimethylphenol | | | | | | mg/kg | 0.31 | U | - | | - | | | - | | 0.15 | U | 0.16 | U | - | - |
| 2,4,6-Trichlorophenol | | | | | | mg/kg | 0.089 | U | - | | - | | | - | | 0.044 | U | 0.045 | U | - | - |
| 2,4,5-Trichlorophenol | | | 100 | | | mg/kg | 0.089 | U | - | | - | | | - | | 0.044 | U | 0.045 | U | - | - |
| 2,6-Dinitrotoluene | | | 1.03 | | | mg/kg | 0.089 | U | - | | - | | | - | | 0.044 | U | 0.045 | U | - | - |
| 2,4-Dinitrophenol | | | 100 | | | mg/kg | 0.13 | U | - | | - | | | - | | 0.065 | U | 0.067 | U | - | - |
| 2,4-Dinitrotoluene | | | | | | mg/kg | 0.089 | U | - | | - | | | - | | 0.044 | U | 0.045 | U | - | - |
| 4,6-Dinitro-o-cresol | | | | | | mg/kg | 0.13 | U | - | | - | | | - | | 0.065 | U | 0.067 | U | - | - |
| NitrosoDiPhenylAmine(NDPA)/DPA | | | | | | mg/kg | 0.089 | U | - | | - | | | - | | 0.044 | U | 0.045 | U | - | - |
| Atrazine | | | | | | mg/kg | 0.089 | U | - | | - | | | - | | 0.044 | U | 0.045 | U | - | - |
| 3,3'-Dichlorobenzidine | | | | | | mg/kg | 0.089 | U | - | | - | | | - | | 0.044 | U | 0.045 | U | - | - |
| Benzo(a)pyrene | 1 | 1 | 1 | 1 | 1 | mg/kg | 0.079 | J | - | | - | | | - | | 0.044 | U | 0.045 | U | - | - |
| Benzo(b)fluoranthene | 1 | 5.6 | 1 | 1 | 1 | mg/kg | 0.075 | J | - | | - | | | - | | 0.044 | U | 0.045 | U | - | - |
| Benzo(k)fluoranthene | 0.8 | 56 | 1 | 3.9 | 0.8 | mg/kg | 0.08 | J | - | | - | | | - | | 0.044 | U | 0.045 | U | - | - |
| Dibenzo(a,h)anthracene | 0.33 | 0.56 | 0.33 | 0.33 | 0.33 | mg/kg | 0.039 | J | - | | - | | | - | | 0.044 | U | 0.045 | U | - | - |
| Indeno(1,2,3-cd)Pyrene | 0.5 | 5.6 | 0.5 | 0.5 | 0.5 | mg/kg | 0.065 | J | - | | - | | | - | | 0.13 | U | 0.13 | U | - | - |
| Hexachlorobenzene | | 6 | 0.41 | 1.2 | 0.33 | mg/kg | 0.089 | U | - | | - | | | - | | 0.044 | U | 0.045 | U | - | - |
| Pentachlorophenol | | 6.7 | 2.4 | 6.7 | 0.8 | mg/kg | 0.13 | U | - | | - | | | - | | 0.065 | U | 0.067 | U | - | - |
| Hexachlorobutadiene | | | | | | mg/kg | 0.26 | U | - | | - | | | - | | 0.13 | U | 0.13 | U | - | - |
| Hexachloroethane | | | | | | mg/kg | 0.089 | U | - | | - | | | - | | 0.044 | U | 0.045 | U | - | - |
| **Total Metals - Westborough Lab** | | | | | | | | | | | | | | | | | | | | | |
| Aluminum, Total | | | | | | mg/kg | 7000 | | - | | - | | | - | | 7000 | | - | - | - | - |
| Antimony, Total | | | | | | mg/kg | 4 | U | - | | - | | | - | | 4.1 | U | - | - | - | - |
| Arsenic, Total | | 16 | 16 | 16 | 13 | mg/kg | 4 | | - | | - | | | - | | 6.6 | | - | - | - | - |

**TDI Real Estate - Ardsley, NY**
**Former Akzo Nobel Pilot Plant Facility**
**Summary of Soil Analytical Results**

| LOCATION | | | | | | | VES-5 | | VES-1A | | VES-1B | | | VES-6 | | VES-7 | | VES-8 | | VES-2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE | | | | | | | 3/1/2014 | | 3/1/2014 | | 3/1/2014 | | | 3/1/2014 | | 3/1/2014 | | 3/1/2014 | | 3/1/2014 | |
| LAB SAMPLE ID | | | | | | | L1404461-01 | | L1404461-02 | | L1404461-03 | | | L1404461-04 | | L1404461-05 | | L1404461-06 | | L1404461-07 | |
| SAMPLE TYPE | | | | | | | Soil | | Soil | | Soil | | | Soil | | Soil | | Soil | | Soil | |
| SAMPLE DEPTH (ft.) | | | | | | | 3.25-4 | | 2.5-4 | | 13-13.5 | | | 2-4 | | 2-3 | | 1-2 | | 11-12 | |
| | | Commercial | Residential | Restricted | Unrestricted | | VOC Fraction 5.5-6 | | | | | | | | | VOC Fraction at 10' | | | | | |
| | NY-CP51 | SCOs | SCOs | Residential SCOs | SCOs | Units | | Qual | | Qual | | Qual | Qual | | Qual | | Qual | | Qual | | Qual |
| Barium, Total | | 400 | 350 | 400 | 350 | mg/kg | 38 | | - | | - | | | - | | 42 | | - | - | - | - |
| Beryllium, Total | | 590 | 14 | 72 | 7.2 | mg/kg | 0.17 | J | - | | - | | | - | | 0.2 | J | - | - | - | - |
| Cadmium, Total | | 9.3 | 2.5 | 4.3 | 2.5 | mg/kg | 0.79 | U | - | | - | | | - | | 0.82 | U | - | - | - | - |
| Calcium, Total | | | | | | mg/kg | 41000 | | - | | - | | | - | | 21000 | | - | - | - | - |
| Chromium, Total | | | | | | mg/kg | 8.8 | | - | | - | | | - | | 14 | | - | - | - | - |
| Cobalt, Total | | | 30 | | | mg/kg | 2.5 | | - | | - | | | - | | 4.4 | | - | - | - | - |
| Copper, Total | | 270 | 270 | 270 | 50 | mg/kg | 9.2 | | - | | - | | | - | | 13 | | - | - | - | - |
| Iron, Total | | | 2000 | | | mg/kg | 6900 | | - | | - | | | - | | 12000 | | - | - | - | - |
| Lead, Total | | 1000 | 400 | 400 | 63 | mg/kg | 12 | | - | | - | | | - | | 5.2 | | - | - | - | - |
| Magnesium, Total | | | | | | mg/kg | 3800 | | - | | - | | | - | | 3500 | | - | - | - | - |
| Manganese, Total | | 10000 | 2000 | 2000 | 1600 | mg/kg | 150 | | - | | - | | | - | | 170 | | - | - | - | - |
| Mercury, Total | | 2.8 | 0.81 | 0.81 | 0.18 | mg/kg | 0.06 | J | - | | - | | | - | | 0.07 | U | - | - | - | - |
| Nickel, Total | | 310 | 140 | 310 | 30 | mg/kg | 6.4 | | - | | - | | | - | | 12 | | - | - | - | - |
| Potassium, Total | | | | | | mg/kg | 1100 | | - | | - | | | - | | 1300 | | - | - | - | - |
| Selenium, Total | | 1500 | 36 | 180 | 3.9 | mg/kg | 1.6 | U | - | | - | | | - | | 1.6 | U | - | - | - | - |
| Silver, Total | | 1500 | 36 | 180 | 2 | mg/kg | 0.79 | U | - | | - | | | - | | 0.82 | U | - | - | - | - |
| Sodium, Total | | | | | | mg/kg | 290 | | - | | - | | | - | | 120 | J | - | - | - | - |
| Thallium, Total | | | | | | mg/kg | 1.6 | U | - | | - | | | - | | 1.6 | U | - | - | - | - |
| Vanadium, Total | | | 100 | | | mg/kg | 11 | | - | | - | | | - | | 17 | | - | - | - | - |
| Zinc, Total | | 10000 | 2200 | 10000 | 109 | mg/kg | 28 | | - | | - | | | - | | 28 | | - | - | - | - |
| **Volatile Organics by GC/MS - Westborough Lab** | | | | | | | | | | | | | | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | | | | | | mg/kg | - | | 0.03 | U | - | - | - | - | - | - | - | - | - | - | - |
| 1,4-Dioxane | | 130 | 9.8 | 13 | 0.1 | mg/kg | - | | 0.61 | U | - | - | - | - | - | - | - | - | - | - | - |
| 1,2-Dibromoethane | | | | | | mg/kg | - | | 0.024 | U | - | - | - | - | - | - | - | - | - | - | - |
| Methylene chloride | | 500 | 51 | 100 | 0.05 | mg/kg | - | | 0.03 | U | - | - | - | - | - | - | - | - | - | - | - |
| 1,1-Dichloroethane | | 240 | 19 | 26 | 0.27 | mg/kg | - | | 0.0091 | U | - | - | - | - | - | - | - | - | - | - | - |
| Chloroform | | 350 | 10 | 49 | 0.37 | mg/kg | - | | 0.013 | | - | - | - | - | - | - | - | - | - | - | - |
| Carbon tetrachloride | | 22 | 1.4 | 2.4 | 0.76 | mg/kg | - | | 0.0061 | U | - | - | - | - | - | - | - | - | - | - | - |
| 1,2-Dichloropropane | | | | | | mg/kg | - | | 0.021 | U | - | - | - | - | - | - | - | - | - | - | - |
| Dibromochloromethane | | | | | | mg/kg | - | | 0.0061 | U | - | - | - | - | - | - | - | - | - | - | - |
| 1,1,2-Trichloroethane | | | | | | mg/kg | - | | 0.0091 | U | - | - | - | - | - | - | - | - | - | - | - |
| Tetrachloroethene | | 150 | 5.5 | 19 | 1.3 | mg/kg | - | | 100 | | - | - | - | - | - | - | - | - | - | - | - |
| Chlorobenzene | | 500 | 100 | 100 | 1.1 | mg/kg | - | | 0.0061 | U | - | - | - | - | - | - | - | - | - | - | - |
| Trichlorofluoromethane | | | | | | mg/kg | - | | 0.03 | U | - | - | - | - | - | - | - | - | - | - | - |
| 1,2-Dichloroethane | | 30 | 2.3 | 3.1 | 0.02 | mg/kg | - | | 0.01 | | - | - | - | - | - | - | - | - | - | - | - |
| 1,1,1-Trichloroethane | | 500 | 100 | 100 | 0.68 | mg/kg | - | | 0.0061 | U | - | - | - | - | - | - | - | - | - | - | - |
| Bromodichloromethane | | | | | | mg/kg | - | | 0.0061 | U | - | - | - | - | - | - | - | - | - | - | - |
| trans-1,3-Dichloropropene | | | | | | mg/kg | - | | 0.0061 | U | - | - | - | - | - | - | - | - | - | - | - |
| cis-1,3-Dichloropropene | | | | | | mg/kg | - | | 0.0061 | U | - | - | - | - | - | - | - | - | - | - | - |
| 1,3-Dichloropropene, Total | | | | | | mg/kg | - | | 0.0061 | U | - | - | - | - | - | - | - | - | - | - | - |
| Bromoform | | | | | | mg/kg | - | | 0.024 | U | - | - | - | - | - | - | - | - | - | - | - |
| 1,1,2,2-Tetrachloroethane | | | 35 | | | mg/kg | - | | 0.0061 | U | - | - | - | - | - | - | - | - | - | - | - |
| Benzene | 0.06 | 44 | 2.9 | 4.8 | 0.06 | mg/kg | - | | 0.0061 | U | - | - | - | - | - | - | - | - | - | - | - |
| Toluene | 0.7 | 500 | 100 | 100 | 0.7 | mg/kg | - | | 0.0091 | U | - | - | - | - | - | - | - | - | - | - | - |
| Ethylbenzene | 1 | 390 | 30 | 41 | 1 | mg/kg | - | | 0.0061 | U | - | - | - | - | - | - | - | - | - | - | - |
| Chloromethane | | | | | | mg/kg | - | | 0.03 | U | - | - | - | - | - | - | - | - | - | - | - |
| Bromomethane | | | | | | mg/kg | - | | 0.012 | U | - | - | - | - | - | - | - | - | - | - | - |
| Vinyl chloride | | 13 | 0.21 | 0.9 | 0.02 | mg/kg | - | | 0.012 | U | - | - | - | - | - | - | - | - | - | - | - |
| Chloroethane | | | | | | mg/kg | - | | 0.012 | U | - | - | - | - | - | - | - | - | - | - | - |
| 1,1-Dichloroethene | | 500 | 100 | 100 | 0.33 | mg/kg | - | | 0.0061 | U | - | - | - | - | - | - | - | - | - | - | - |
| trans-1,2-Dichloroethene | | 500 | 100 | 100 | 0.19 | mg/kg | - | | 0.0091 | U | - | - | - | - | - | - | - | - | - | - | - |
| Trichloroethene | | 200 | 10 | 21 | 0.47 | mg/kg | - | | 0.013 | | - | - | - | - | - | - | - | - | - | - | - |
| 1,2-Dichlorobenzene | | 500 | 100 | 100 | 1.1 | mg/kg | - | | 0.03 | U | - | - | - | - | - | - | - | - | - | - | - |
| 1,3-Dichlorobenzene | | 280 | 17 | 49 | 2.4 | mg/kg | - | | 0.03 | U | - | - | - | - | - | - | - | - | - | - | - |
| 1,4-Dichlorobenzene | | 130 | 9.8 | 13 | 1.8 | mg/kg | - | | 0.03 | U | - | - | - | - | - | - | - | - | - | - | - |
| Methyl tert butyl ether | 0.93 | 500 | 62 | 100 | 0.93 | mg/kg | - | | 0.012 | U | - | - | - | - | - | - | - | - | - | - | - |

TDI Real Estate - Ardsley, NY
Former Akzo Nobel Pilot Plant Facility
Summary of Soil Analytical Results

| LOCATION | | | | | | | VES-5 | | VES-1A | | VES-1B | | | VES-6 | | VES-7 | | VES-8 | | VES-2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE | | | | | | | 3/1/2014 | | 3/1/2014 | | 3/1/2014 | | | 3/1/2014 | | 3/1/2014 | | 3/1/2014 | | 3/1/2014 | |
| LAB SAMPLE ID | | | | | | | L1404461-01 | | L1404461-02 | | L1404461-03 | | | L1404461-04 | | L1404461-05 | | L1404461-06 | | L1404461-07 | |
| SAMPLE TYPE | | | | | | | Soil | | Soil | | Soil | | | Soil | | Soil | | Soil | | Soil | |
| SAMPLE DEPTH (ft.) | | | | | | | 3.25-4 | | 2.5-4 | | 13-13.5 | | | 2-4 | | 2-3 | | 1-2 | | 11-12 | |
| | | Commercial | Residential | Restricted | Unrestricted | | VOC Fraction 5.5-6 | | | | | | | | | VOC Fraction at 10' | | | | | |
| | NY-CP51 | SCOs | SCOs | Residential SCOs | SCOs | Units | | Qual | | Qual | | Qual | Qual | | Qual | | Qual | | Qual | | Qual |
| p/m-Xylene | 0.26 | | | | | mg/kg | - | | 0.012 | U | - | - | - | - | - | - | - | - | - | - | - |
| o-Xylene | 0.26 | | | | | mg/kg | - | | 0.012 | U | - | - | - | - | - | - | - | - | - | - | - |
| Xylenes, Total | 0.26 | 500 | 100 | 100 | 0.26 | mg/kg | - | | 0.012 | U | - | - | - | - | - | - | - | - | - | - | - |
| cis-1,2-Dichloroethene | | 500 | 59 | 100 | 0.25 | mg/kg | - | | 0.0052 | J | - | - | - | - | - | - | - | - | - | - | - |
| Styrene | | | | | | mg/kg | - | | 0.012 | U | - | - | - | - | - | - | - | - | - | - | - |
| Dichlorodifluoromethane | | | | | | mg/kg | - | | 0.061 | U | - | - | - | - | - | - | - | - | - | - | - |
| Acetone | | 500 | 100 | 100 | 0.05 | mg/kg | - | | 0.22 | U | - | - | - | - | - | - | - | - | - | - | - |
| Carbon disulfide | | | 100 | | | mg/kg | - | | 0.061 | U | - | - | - | - | - | - | - | - | - | - | - |
| 2-Butanone | | 500 | 100 | 100 | 0.12 | mg/kg | - | | 0.061 | U | - | - | - | - | - | - | - | - | - | - | - |
| 4-Methyl-2-pentanone | | | | | | mg/kg | - | | 0.061 | U | - | - | - | - | - | - | - | - | - | - | - |
| 2-Hexanone | | | | | | mg/kg | - | | 0.061 | U | - | - | - | - | - | - | - | - | - | - | - |
| Bromochloromethane | | | | | | mg/kg | - | | 0.03 | U | - | - | - | - | - | - | - | - | - | - | - |
| n-Butylbenzene | 12 | 500 | 100 | 100 | 12 | mg/kg | - | | 0.0061 | U | - | - | - | - | - | - | - | - | - | - | - |
| sec-Butylbenzene | 11 | 500 | 100 | 100 | 11 | mg/kg | - | | 0.0061 | U | - | - | - | - | - | - | - | - | - | - | - |
| tert-Butylbenzene | 5.9 | 500 | 100 | 100 | 5.9 | mg/kg | - | | 0.03 | U | - | - | - | - | - | - | - | - | - | - | - |
| Isopropylbenzene | 2.3 | | 100 | | | mg/kg | - | | 0.0061 | U | - | - | - | - | - | - | - | - | - | - | - |
| n-Propylbenzene | 3.9 | 500 | 100 | 100 | 3.9 | mg/kg | - | | 0.0061 | U | - | - | - | - | - | - | - | - | - | - | - |
| 1,2,3-Trichlorobenzene | | | | | | mg/kg | - | | 0.03 | U | - | - | - | - | - | - | - | - | - | - | - |
| 1,2,4-Trichlorobenzene | | | | | | mg/kg | - | | 0.03 | U | - | - | - | - | - | - | - | - | - | - | - |
| 1,3,5-Trimethylbenzene | 8.4 | 190 | 47 | 52 | 8.4 | mg/kg | - | | 0.03 | U | - | - | - | - | - | - | - | - | - | - | - |
| 1,2,4-Trimethylbenzene | 3.6 | 190 | 47 | 52 | 3.6 | mg/kg | - | | 0.03 | U | - | - | - | - | - | - | - | - | - | - | - |
| Methyl Acetate | | | | | | mg/kg | - | | 0.024 | U | - | - | - | - | - | - | - | - | - | - | - |
| Cyclohexane | | | | | | mg/kg | - | | 0.12 | U | - | - | - | - | - | - | - | - | - | - | - |
| Methyl cyclohexane | | | | | | mg/kg | - | | 0.024 | U | - | - | - | - | - | - | - | - | - | - | - |
| Freon-113 | | | 100 | | | mg/kg | - | | 0.12 | U | - | - | - | - | - | - | - | - | - | - | - |
| **Volatile Organics by GC/MS-5035 - Westborough Lab** | | | | | | | | | | | | | | | | | | | | | |
| 1,2-Dibromo-3-chloropropane | | | | | | mg/kg | 0.0051 | U | - | | 0.49 | U | | - | | 0.0047 | U | - | - | - | - |
| 1,4-Dioxane | | 130 | 9.8 | 13 | 0.1 | mg/kg | 0.1 | U | - | | 9.8 | U | | - | | 0.093 | U | - | - | - | - |
| 1,2-Dibromoethane | | | | | | mg/kg | 0.004 | U | - | | 0.39 | U | | - | | 0.0037 | U | - | - | - | - |
| Methylene chloride | | 500 | 51 | 100 | 0.05 | mg/kg | 0.0051 | U | - | | 0.49 | U | | - | | 0.0047 | U | - | - | - | - |
| 1,1-Dichloroethane | | 240 | 19 | 26 | 0.27 | mg/kg | 0.0015 | U | - | | 0.15 | U | | - | | 0.0014 | U | - | - | - | - |
| Chloroform | | 350 | 10 | 49 | 0.37 | mg/kg | 0.0015 | U | - | | 0.15 | U | | - | | 0.0014 | U | - | - | - | - |
| Carbon tetrachloride | | 22 | 1.4 | 2.4 | 0.76 | mg/kg | 0.001 | U | - | | 0.098 | U | | - | | 0.00093 | U | - | - | - | - |
| 1,2-Dichloropropane | | | | | | mg/kg | 0.0035 | U | - | | 0.34 | U | | - | | 0.0033 | U | - | - | - | - |
| Dibromochloromethane | | | | | | mg/kg | 0.001 | U | - | | 0.098 | U | | - | | 0.00093 | U | - | - | - | - |
| 1,1,2-Trichloroethane | | | | | | mg/kg | 0.0015 | U | - | | 0.15 | U | | - | | 0.0014 | U | - | - | - | - |
| Tetrachloroethene | | 150 | 5.5 | 19 | 1.3 | mg/kg | 0.001 | U | - | | 4.6 | | | - | | 0.00093 | U | - | - | - | - |
| Chlorobenzene | | 500 | 100 | 100 | 1.1 | mg/kg | 0.001 | U | - | | 0.098 | U | | - | | 0.00093 | U | - | - | - | - |
| Trichlorofluoromethane | | | | | | mg/kg | 0.0051 | U | - | | 0.49 | U | | - | | 0.0047 | U | - | - | - | - |
| 1,2-Dichloroethane | | 30 | 2.3 | 3.1 | 0.02 | mg/kg | 0.001 | U | - | | 0.098 | U | | - | | 0.00093 | U | - | - | - | - |
| 1,1,1-Trichloroethane | | 500 | 100 | 100 | 0.68 | mg/kg | 0.001 | U | - | | 0.098 | U | | - | | 0.00093 | U | - | - | - | - |
| Bromodichloromethane | | | | | | mg/kg | 0.001 | U | - | | 0.098 | U | | - | | 0.00093 | U | - | - | - | - |
| trans-1,3-Dichloropropene | | | | | | mg/kg | 0.001 | U | - | | 0.098 | U | | - | | 0.00093 | U | - | - | - | - |
| cis-1,3-Dichloropropene | | | | | | mg/kg | 0.001 | U | - | | 0.098 | U | | - | | 0.00093 | U | - | - | - | - |
| 1,3-Dichloropropene, Total | | | | | | mg/kg | 0.001 | U | - | | 0.098 | U | | - | | 0.00093 | U | - | - | - | - |
| Bromoform | | | | | | mg/kg | 0.004 | U | - | | 0.39 | U | | - | | 0.0037 | U | - | - | - | - |
| 1,1,2,2-Tetrachloroethane | | | 35 | | | mg/kg | 0.001 | U | - | | 0.098 | U | | - | | 0.00093 | U | - | - | - | - |
| Benzene | 0.06 | 44 | 2.9 | 4.8 | 0.06 | mg/kg | 0.001 | U | - | | 0.097 | J | | - | | 0.00093 | U | - | - | - | - |
| Toluene | 0.7 | 500 | 100 | 100 | 0.7 | mg/kg | 0.0015 | U | - | | 0.15 | U | | - | | 0.0014 | U | - | - | - | - |
| Ethylbenzene | 1 | 390 | 30 | 41 | 1 | mg/kg | 0.001 | U | - | | 0.098 | U | | - | | 0.00093 | U | - | - | - | - |
| Chloromethane | | | | | | mg/kg | 0.0051 | U | - | | 0.49 | U | | - | | 0.0047 | U | - | - | - | - |
| Bromomethane | | | | | | mg/kg | 0.002 | U | - | | 0.2 | U | | - | | 0.0019 | U | - | - | - | - |
| Vinyl chloride | | 13 | 0.21 | 0.9 | 0.02 | mg/kg | 0.002 | U | - | | 0.2 | U | | - | | 0.0019 | U | - | - | - | - |
| Chloroethane | | | | | | mg/kg | 0.002 | U | - | | 0.2 | U | | - | | 0.0019 | U | - | - | - | - |
| 1,1-Dichloroethene | | 500 | 100 | 100 | 0.33 | mg/kg | 0.001 | U | - | | 0.098 | U | | - | | 0.00093 | U | - | - | - | - |
| trans-1,2-Dichloroethene | | 500 | 100 | 100 | 0.19 | mg/kg | 0.0015 | U | - | | 0.15 | U | | - | | 0.0014 | U | - | - | - | - |

TDI Real Estate - Ardsley, NY
Former Akzo Nobel Pilot Plant Facility
Summary of Soil Analytical Results

| LOCATION | | | | | | | VES-5 | | VES-1A | | VES-1B | | | VES-6 | | VES-7 | | VES-8 | | VES-2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE | | | | | | | 3/1/2014 | | 3/1/2014 | | 3/1/2014 | | | 3/1/2014 | | 3/1/2014 | | 3/1/2014 | | 3/1/2014 | |
| LAB SAMPLE ID | | | | | | | L1404461-01 | | L1404461-02 | | L1404461-03 | | | L1404461-04 | | L1404461-05 | | L1404461-06 | | L1404461-07 | |
| SAMPLE TYPE | | | | | | | Soil | | Soil | | Soil | | | Soil | | Soil | | Soil | | Soil | |
| SAMPLE DEPTH (ft.) | | | | | | | 3.25-4 | | 2.5-4 | | 13-13.5 | | | 2-4 | | 2-3 | | 1-2 | | 11-12 | |
| | | Commercial | Residential | Restricted | Unrestricted | | VOC Fraction 5.5-6 | | | | | | | | | VOC Fraction at 10' | | | | | |
| | NY-CP51 | SCOs | SCOs | Residential SCOs | SCOs | Units | | Qual | | Qual | | Qual | Qual | | Qual | | Qual | | Qual | | Qual |
| Trichloroethene | | 200 | 10 | 21 | 0.47 | mg/kg | 0.001 | U | - | | 0.098 | U | | - | | 0.00093 | U | - | - | - | - |
| 1,2-Dichlorobenzene | | 500 | 100 | 100 | 1.1 | mg/kg | 0.0051 | U | - | | 0.49 | U | | - | | 0.0047 | U | - | - | - | - |
| 1,3-Dichlorobenzene | | 280 | 17 | 49 | 2.4 | mg/kg | 0.0051 | U | - | | 0.49 | U | | - | | 0.0047 | U | - | - | - | - |
| 1,4-Dichlorobenzene | | 130 | 9.8 | 13 | 1.8 | mg/kg | 0.0051 | U | - | | 0.49 | U | | - | | 0.0047 | U | - | - | - | - |
| Methyl tert butyl ether | 0.93 | 500 | 62 | 100 | 0.93 | mg/kg | 0.002 | U | - | | 0.2 | U | | - | | 0.0019 | U | - | - | - | - |
| p/m-Xylene | 0.26 | | | | | mg/kg | 0.002 | U | - | | 0.2 | U | | - | | 0.0019 | U | - | - | - | - |
| o-Xylene | 0.26 | | | | | mg/kg | 0.002 | U | - | | 0.2 | U | | - | | 0.0019 | U | - | - | - | - |
| Xylenes, Total | 0.26 | 500 | 100 | 100 | 0.26 | mg/kg | 0.002 | U | - | | 0.2 | U | | - | | 0.0019 | U | - | - | - | - |
| cis-1,2-Dichloroethene | | 500 | 59 | 100 | 0.25 | mg/kg | 0.001 | U | - | | 0.098 | U | | - | | 0.00093 | U | - | - | - | - |
| Styrene | | | | | | mg/kg | 0.002 | U | - | | 0.2 | U | | - | | 0.0019 | U | - | - | - | - |
| Dichlorodifluoromethane | | | | | | mg/kg | 0.01 | U | - | | 0.98 | U | | - | | 0.0093 | U | - | - | - | - |
| Acetone | | 500 | 100 | 100 | 0.05 | mg/kg | 0.036 | U | - | | 0.42 | J | | - | | 0.0059 | J | - | - | - | - |
| Carbon disulfide | | | 100 | | | mg/kg | 0.01 | U | - | | 58 | | | - | | 0.0093 | U | - | - | - | - |
| 2-Butanone | | 500 | 100 | 100 | 0.12 | mg/kg | 0.01 | U | - | | 0.34 | J | | - | | 0.0093 | U | - | - | - | - |
| 4-Methyl-2-pentanone | | | | | | mg/kg | 0.01 | U | - | | 0.98 | U | | - | | 0.0093 | U | - | - | - | - |
| 2-Hexanone | | | | | | mg/kg | 0.01 | U | - | | 0.98 | U | | - | | 0.0093 | U | - | - | - | - |
| Bromochloromethane | | | | | | mg/kg | 0.0051 | U | - | | 0.49 | U | | - | | 0.0047 | U | - | - | - | - |
| n-Butylbenzene | 12 | 500 | 100 | 100 | 12 | mg/kg | 0.001 | U | - | | 0.098 | U | | - | | 0.00093 | U | - | - | - | - |
| sec-Butylbenzene | 11 | 500 | 100 | 100 | 11 | mg/kg | 0.001 | U | - | | 0.098 | U | | - | | 0.00093 | U | - | - | - | - |
| tert-Butylbenzene | 5.9 | 500 | 100 | 100 | 5.9 | mg/kg | 0.0051 | U | - | | 0.49 | U | | - | | 0.0047 | U | - | - | - | - |
| Isopropylbenzene | 2.3 | | 100 | | | mg/kg | 0.001 | U | - | | 0.098 | U | | - | | 0.00093 | U | - | - | - | - |
| n-Propylbenzene | 3.9 | 500 | 100 | 100 | 3.9 | mg/kg | 0.001 | U | - | | 0.098 | U | | - | | 0.00093 | U | - | - | - | - |
| 1,2,3-Trichlorobenzene | | | | | | mg/kg | 0.0051 | U | - | | 0.49 | U | | - | | 0.0047 | U | - | - | - | - |
| 1,2,4-Trichlorobenzene | | | | | | mg/kg | 0.0051 | U | - | | 0.49 | U | | - | | 0.0047 | U | - | - | - | - |
| 1,3,5-Trimethylbenzene | 8.4 | 190 | 47 | 52 | 8.4 | mg/kg | 0.0051 | U | - | | 0.49 | U | | - | | 0.0047 | U | - | - | - | - |
| 1,2,4-Trimethylbenzene | 3.6 | 190 | 47 | 52 | 3.6 | mg/kg | 0.0051 | U | - | | 0.49 | U | | - | | 0.0047 | U | - | - | - | - |
| Methyl Acetate | | | | | | mg/kg | 0.004 | U | - | | 0.39 | U | | - | | 0.0037 | U | - | - | - | - |
| Cyclohexane | | | | | | mg/kg | 0.02 | U | - | | 2 | U | | - | | 0.019 | U | - | - | - | - |
| Methyl cyclohexane | | | | | | mg/kg | 0.004 | U | - | | 0.39 | U | | - | | 0.0037 | U | - | - | - | - |
| Freon-113 | | | 100 | | | mg/kg | 0.02 | U | - | | 2 | U | | - | | 0.019 | U | - | - | - | - |

| LOCATION<br>SAMPLING DATE<br>LAB SAMPLE ID | CasNum | NYSDEC AWQS | NYSDEC TOGS-GA | Units | SB-74 GW<br>4/17/2014<br>L1408315-16 | Qual | VES-12 GW<br>4/18/2014<br>L1408315-13 | Qual | VES-12 GW<br>4/18/2014<br>L1408315-13 R1 | Qual | VES-14 GW<br>4/17/2014<br>L1408315-17 | Qual | VES-14 GW<br>4/17/2014<br>L1408315-17 R1 | Qual | VES-15 GW<br>4/18/2014<br>L1408315-02 | Qual | VES-15 GW<br>4/18/2014<br>L1408315-02 R1 | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dissolved Metals** | | | | | | | | | | | | | | | | | | |
| Aluminum, Dissolved | 7429-90-5 | | 2000 | ug/l | - | - | - | | 4.89 | J | - | - | - | - | - | | 66 | |
| Antimony, Dissolved | 7440-36-0 | 3 | 6 | ug/l | - | - | - | | 0.17 | J | - | - | - | - | - | | 0.58 | J |
| Arsenic, Dissolved | 7440-38-2 | 25 | 50 | ug/l | - | - | - | | 1.66 | | - | - | - | - | - | | 0.5 | |
| Barium, Dissolved | 7440-39-3 | 1000 | 2000 | ug/l | - | - | - | | 70.4 | | - | - | - | - | - | | 21.61 | |
| Beryllium, Dissolved | 7440-41-7 | 3 | 3 | ug/l | - | - | - | | 0.5 | U | - | - | - | - | - | | 0.5 | U |
| Cadmium, Dissolved | 7440-43-9 | 5 | 10 | ug/l | - | - | - | | 0.2 | U | - | - | - | - | - | | 0.12 | J |
| Calcium, Dissolved | 7440-70-2 | | | ug/l | - | - | 188000 | | - | - | - | - | - | - | 174000 | | - | |
| Chromium, Dissolved | 7440-47-3 | 50 | 100 | ug/l | - | - | - | | 0.36 | J | - | - | - | - | - | | 0.58 | J |
| Cobalt, Dissolved | 7440-48-4 | | | ug/l | - | - | - | | 0.2 | J | - | - | - | - | - | | 1.14 | |
| Copper, Dissolved | 7440-50-8 | 200 | 1000 | ug/l | - | - | - | | 1.07 | | - | - | - | - | - | | 2.15 | |
| Iron, Dissolved | 7439-89-6 | 300 | 600 | ug/l | - | - | - | | 6550 | | - | - | - | - | - | | 351 | |
| Lead, Dissolved | 7439-92-1 | 25 | 50 | ug/l | - | - | - | | 1 | U | - | - | - | - | - | | 0.31 | J |
| Magnesium, Dissolved | 7439-95-4 | 35000 | 35000 | ug/l | - | - | 96200 | | - | - | - | - | - | - | - | | 38200 | |
| Manganese, Dissolved | 7439-96-5 | 300 | 600 | ug/l | - | - | 1050 | | - | - | - | - | - | - | - | | 127.7 | |
| Mercury, Dissolved | 7439-97-6 | 0.7 | 1.4 | ug/l | - | - | 0.2 | U | - | - | - | - | - | - | 0.2 | U | - | |
| Nickel, Dissolved | 7440-02-0 | 100 | 200 | ug/l | - | - | - | | 1.74 | | - | - | - | - | - | | 7.96 | |
| Potassium, Dissolved | 7440-09-7 | | | ug/l | - | - | - | | 8820 | | - | - | - | - | - | | 10900 | |
| Selenium, Dissolved | 7782-49-2 | 10 | 20 | ug/l | - | - | - | | 1.01 | J | - | - | - | - | - | | 1.77 | J |
| Silver, Dissolved | 7440-22-4 | 50 | 100 | ug/l | - | - | - | | 0.4 | U | - | - | - | - | - | | 0.4 | U |
| Sodium, Dissolved | 7440-23-5 | 20000 | | ug/l | - | - | 310000 | | - | - | - | - | - | - | - | | 27100 | |
| Thallium, Dissolved | 7440-28-0 | 0.5 | 0.5 | ug/l | - | - | - | | 0.5 | U | - | - | - | - | - | | 0.04 | J |
| Vanadium, Dissolved | 7440-62-2 | | | ug/l | - | - | - | | 0.25 | J | - | - | - | - | - | | 0.71 | J |
| Zinc, Dissolved | 7440-66-6 | 2000 | 5000 | ug/l | - | - | - | | 4.35 | J | - | - | - | - | - | | 21.94 | |
| **Organochlorine Pesticides by GC** | | | | | | | | | | | | | | | | | | |
| Delta-BHC | 319-86-8 | 0.04 | 0.04 | ug/l | - | | - | | - | | 0.02 | U | - | - | - | | - | |
| Lindane | 58-89-9 | 0.05 | 0.05 | ug/l | - | | - | | - | | 0.03 | P | - | - | - | | - | |
| Alpha-BHC | 319-84-6 | 0.01 | 0.01 | ug/l | - | | - | | - | | 0.023 | | - | - | - | | - | |
| Beta-BHC | 319-85-7 | 0.04 | 0.04 | ug/l | - | | - | | - | | 0.21 | | - | - | - | | - | |
| Heptachlor | 76-44-8 | 0.04 | 0.04 | ug/l | - | | - | | - | | 0.02 | U | - | - | - | | - | |
| Aldrin | 309-00-2 | 0 | 0 | ug/l | - | | - | | - | | 0.039 | P | - | - | - | | - | |
| Heptachlor epoxide | 1024-57-3 | 0.03 | 0.03 | ug/l | - | | - | | - | | 0.02 | U | - | - | - | | - | |
| Endrin | 72-20-8 | 0 | 0 | ug/l | - | | - | | - | | 0.077 | | - | - | - | | - | |
| Endrin ketone | 53494-70-5 | 5 | 5 | ug/l | - | | - | | - | | 0.45 | | - | - | - | | - | |
| Dieldrin | 60-57-1 | 0.004 | 0.004 | ug/l | - | | - | | - | | 2.13 | E | 5.26 | | - | | - | |
| 4,4'-DDE | 72-55-9 | 0.2 | 0.2 | ug/l | - | | - | | - | | 0.04 | U | - | - | - | | - | |
| 4,4'-DDD | 72-54-8 | 0.3 | 0.3 | ug/l | - | | - | | - | | 0.04 | U | - | - | - | | - | |
| 4,4'-DDT | 50-29-3 | 0.2 | 0.2 | ug/l | - | | - | | - | | 0.07 | | - | - | - | | - | |
| Endosulfan I | 959-98-8 | | | ug/l | - | | - | | - | | 0.02 | U | - | - | - | | - | |
| Endosulfan II | 33213-65-9 | | | ug/l | - | | - | | - | | 0.04 | U | - | - | - | | - | |
| Endosulfan sulfate | 1031-07-8 | | | ug/l | - | | - | | - | | 0.04 | U | - | - | - | | - | |
| Methoxychlor | 72-43-5 | 35 | 35 | ug/l | - | | - | | - | | 0.2 | U | - | - | - | | - | |
| Toxaphene | 8001-35-2 | 0.06 | 0.06 | ug/l | - | | - | | - | | 0.2 | U | - | - | - | | - | |
| cis-Chlordane | 5103-71-9 | | | ug/l | - | | - | | - | | 0.02 | U | - | - | - | | - | |
| trans-Chlordane | 5103-74-2 | | | ug/l | - | | - | | - | | 0.02 | U | - | - | - | | - | |
| Chlordane | 57-74-9 | 0.05 | 0.05 | ug/l | - | | - | | - | | 0.2 | U | - | - | - | | - | |
| **Polychlorinated Biphenyls by GC** | | | | | | | | | | | | | | | | | | |
| Aroclor 1016 | 12674-11-2 | 0.09 | 0.09 | ug/l | 0.1 | U | - | | - | | - | - | - | - | - | | - | |
| Aroclor 1221 | 11104-28-2 | 0.09 | 0.09 | ug/l | 0.1 | U | - | | - | | - | - | - | - | - | | - | |
| Aroclor 1232 | 11141-16-5 | 0.09 | 0.09 | ug/l | 0.1 | U | - | | - | | - | - | - | - | - | | - | |
| Aroclor 1242 | 53469-21-9 | 0.09 | 0.09 | ug/l | 0.1 | U | - | | - | | - | - | - | - | - | | - | |
| Aroclor 1248 | 12672-29-6 | 0.09 | 0.09 | ug/l | 0.1 | U | - | | - | | - | - | - | - | - | | - | |
| Aroclor 1254 | 11097-69-1 | 0.09 | 0.09 | ug/l | 0.1 | U | - | | - | | - | - | - | - | - | | - | |
| Aroclor 1260 | 11096-82-5 | 0.09 | 0.09 | ug/l | 0.1 | U | - | | - | | - | - | - | - | - | | - | |
| Aroclor 1262 | 37324-23-5 | 0.09 | 0.09 | ug/l | 0.1 | U | - | | - | | - | - | - | - | - | | - | |
| Aroclor 1268 | 11100-14-4 | 0.09 | 0.09 | ug/l | 0.1 | U | - | | - | | - | - | - | - | - | | - | |

Former Akzo Nobel Pilot Plant Facility
Summary of Groundwater Analytical Results

| LOCATION<br>SAMPLING DATE<br>LAB SAMPLE ID | CasNum | NYSDEC AWQS | NYSDEC TOGS-GA | Units | VES-1 GWA<br>4/18/2014<br>L1408315-14 | Qual | VES-9 GW<br>4/18/2014<br>L1408315-03 | Qual | VES-10 GW<br>4/18/2014<br>L1408315-15 | Qual | VES-11 GW<br>4/18/2014<br>L1408315-11 | Qual | VES-12 GW<br>4/18/2014<br>L1408315-13 | Qual | VES-13 GW<br>4/18/2014<br>L1408315-12 | Qual | VES-10 GW<br>4/18/2014<br>L1408315-15 | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Semivolatile Organics by GC/MS** | | | | | | | | | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | 120-82-1 | 5 | 5 | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| Bis(2-chloroethyl)ether | 111-44-4 | 1 | 1 | ug/l | - | - | - | | - | - | 2 | U | - | - | - | - | - | - |
| 1,2-Dichlorobenzene | 95-50-1 | 3 | 3 | ug/l | - | - | - | | - | - | 2 | U | - | - | - | - | - | - |
| 1,3-Dichlorobenzene | 541-73-1 | 3 | 3 | ug/l | - | - | - | | - | - | 2 | U | - | - | - | - | - | - |
| 1,4-Dichlorobenzene | 106-46-7 | 3 | 3 | ug/l | - | - | - | | - | - | 2 | U | - | - | - | - | - | - |
| 3,3'-Dichlorobenzidine | 91-94-1 | 5 | 5 | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| 2,4-Dinitrotoluene | 121-14-2 | 5 | 5 | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| 2,6-Dinitrotoluene | 606-20-2 | 5 | 5 | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| 4-Chlorophenyl phenyl ether | 7005-72-3 | | | ug/l | - | - | - | | - | - | 2 | U | - | - | - | - | - | - |
| 4-Bromophenyl phenyl ether | 101-55-3 | | | ug/l | - | - | - | | - | - | 2 | U | - | - | - | - | - | - |
| Bis(2-chloroisopropyl)ether | 108-60-1 | 5 | 5 | ug/l | - | - | - | | - | - | 2 | U | - | - | - | - | - | - |
| Bis(2-chloroethoxy)methane | 111-91-1 | 5 | 5 | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| Hexachlorocyclopentadiene | 77-47-4 | 5 | 5 | ug/l | - | - | - | | - | - | 20 | U | - | - | - | - | - | - |
| Isophorone | 78-59-1 | 50 | 50 | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| Nitrobenzene | 98-95-3 | 0.4 | 0.4 | ug/l | - | - | - | | - | - | 2 | U | - | - | - | - | - | - |
| NitrosoDiPhenylAmine(NDPA)/DP | 86-30-6 | 50 | 50 | ug/l | - | - | - | | - | - | 2 | U | - | - | - | - | - | - |
| n-Nitrosodi-n-propylamine | 621-64-7 | | | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| Bis(2-Ethylhexyl)phthalate | 117-81-7 | 5 | 5 | ug/l | - | - | - | | - | - | 3 | U | - | - | - | - | - | - |
| Butyl benzyl phthalate | 85-68-7 | 50 | 50 | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| Di-n-butylphthalate | 84-74-2 | 50 | 50 | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| Di-n-octylphthalate | 117-84-0 | 50 | 50 | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| Diethyl phthalate | 84-66-2 | 50 | 50 | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| Dimethyl phthalate | 131-11-3 | 50 | 50 | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| Biphenyl | 92-52-4 | 5 | 5 | ug/l | - | - | - | | - | - | 2 | U | - | - | - | - | - | - |
| 4-Chloroaniline | 106-47-8 | 5 | 5 | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| 2-Nitroaniline | 88-74-4 | 5 | 5 | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| 3-Nitroaniline | 99-09-2 | 5 | 5 | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| 4-Nitroaniline | 100-01-6 | 5 | 5 | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| Dibenzofuran | 132-64-9 | | | ug/l | - | - | - | | - | - | 2 | U | - | - | - | - | - | - |
| 1,2,4,5-Tetrachlorobenzene | 95-94-3 | 5 | 5 | ug/l | - | - | - | | - | - | 10 | U | - | - | - | - | - | - |
| Acetophenone | 98-86-2 | | | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| 2,4,6-Trichlorophenol | 88-06-2 | | | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| P-Chloro-M-Cresol | 59-50-7 | | | ug/l | - | - | - | | - | - | 2 | U | - | - | - | - | - | - |
| 2-Chlorophenol | 95-57-8 | | | ug/l | - | - | - | | - | - | 2 | U | - | - | - | - | - | - |
| 2,4-Dichlorophenol | 120-83-2 | 1 | 2 | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| 2,4-Dimethylphenol | 105-67-9 | 50 | 2 | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| 2-Nitrophenol | 88-75-5 | | | ug/l | - | - | - | | - | - | 10 | U | - | - | - | - | - | - |
| 4-Nitrophenol | 100-02-7 | | | ug/l | - | - | - | | - | - | 10 | U | - | - | - | - | - | - |
| 2,4-Dinitrophenol | 51-28-5 | 10 | 2 | ug/l | - | - | - | | - | - | 20 | U | - | - | - | - | - | - |
| 4,6-Dinitro-o-cresol | 534-52-1 | | | ug/l | - | - | - | | - | - | 10 | U | - | - | - | - | - | - |
| Phenol | 108-95-2 | 1 | 2 | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| 2-Methylphenol | 95-48-7 | | | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| 3-Methylphenol/4-Methylphenol | 108-39-4 | | | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| 2,4,5-Trichlorophenol | 95-95-4 | | | ug/l | - | - | - | | - | - | 5 | U | - | - | - | - | - | - |
| Benzoic Acid | 65-85-0 | | | ug/l | - | - | - | | - | - | 50 | U | - | - | - | - | - | - |
| Benzyl Alcohol | 100-51-6 | | | ug/l | - | - | - | | - | - | 2 | U | - | - | - | - | - | - |
| Carbazole | 86-74-8 | | | ug/l | - | - | - | | - | - | 2 | U | - | - | - | - | - | - |
| **Semivolatile Organics by GC/MS-SIM** | | | | | | | | | | | | | | | | | | |
| Acenaphthene | 83-32-9 | 20 | 20 | ug/l | - | - | - | | - | - | 0.09 | J | - | - | - | - | - | - |
| 2-Chloronaphthalene | 91-58-7 | 10 | 10 | ug/l | - | - | - | | - | - | 0.2 | U | - | - | - | - | - | - |
| Fluoranthene | 206-44-0 | 50 | 50 | ug/l | - | - | - | | - | - | 0.09 | J | - | - | - | - | - | - |
| Hexachlorobutadiene | 87-68-3 | 0.5 | 0.5 | ug/l | - | - | - | | - | - | 0.5 | U | - | - | - | - | - | - |
| Naphthalene | 91-20-3 | 10 | 10 | ug/l | - | - | - | | - | - | 0.2 | U | - | - | - | - | - | - |
| Benzo(a)anthracene | 56-55-3 | 0.002 | 0.002 | ug/l | - | - | - | | - | - | 0.2 | U | - | - | - | - | - | - |
| Benzo(a)pyrene | 50-32-8 | 0 | 0 | ug/l | - | - | - | | - | - | 0.2 | U | - | - | - | - | - | - |
| Benzo(b)fluoranthene | 205-99-2 | 0.002 | 0.002 | ug/l | - | - | - | | - | - | 0.2 | U | - | - | - | - | - | - |
| Benzo(k)fluoranthene | 207-08-9 | 0.002 | 0.002 | ug/l | - | - | - | | - | - | 0.2 | U | - | - | - | - | - | - |
| Chrysene | 218-01-9 | 0.002 | 0.002 | ug/l | - | - | - | | - | - | 0.2 | U | - | - | - | - | - | - |
| Acenaphthylene | 208-96-8 | | | ug/l | - | - | - | | - | - | 0.2 | U | - | - | - | - | - | - |

**Former Akzo Nobel Pilot Plant Facility**
**Summary of Groundwater Analytical Results**

| LOCATION<br>SAMPLING DATE<br>LAB SAMPLE ID | CasNum | NYSDEC AWQS | NYSDEC TOGS-GA | Units | VES-1 GWA<br>4/18/2014<br>L1408315-14 | Qual | VES-9 GW<br>4/18/2014<br>L1408315-03 | Qual | VES-10 GW<br>4/18/2014<br>L1408315-15 | Qual | VES-11 GW<br>4/18/2014<br>L1408315-11 | Qual | VES-12 GW<br>4/18/2014<br>L1408315-13 | Qual | VES-13 GW<br>4/18/2014<br>L1408315-12 | Qual | VES-10 GW<br>4/18/2014<br>L1408315-15 | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Anthracene | 120-12-7 | 50 | 50 | ug/l | - | - | - | | - | - | 0.2 | U | - | - | - | - | - | - |
| Benzo(ghi)perylene | 191-24-2 | | | ug/l | - | - | - | | - | - | 0.2 | U | - | - | - | - | - | - |
| Fluorene | 86-73-7 | 50 | 50 | ug/l | - | - | - | | - | - | 0.07 | J | - | - | - | - | - | - |
| Phenanthrene | 85-01-8 | 50 | 50 | ug/l | - | - | - | | - | - | 0.2 | U | - | - | - | - | - | - |
| Dibenzo(a,h)anthracene | 53-70-3 | | | ug/l | - | - | - | | - | - | 0.2 | U | - | - | - | - | - | - |
| Indeno(1,2,3-cd)Pyrene | 193-39-5 | 0.002 | 0.002 | ug/l | - | - | - | | - | - | 0.2 | U | - | - | - | - | - | - |
| Pyrene | 129-00-0 | 50 | 50 | ug/l | - | - | - | | - | - | 0.08 | J | - | - | - | - | - | - |
| 2-Methylnaphthalene | 91-57-6 | | | ug/l | - | - | - | | - | - | 0.2 | U | - | - | - | - | - | - |
| Pentachlorophenol | 87-86-5 | 1 | 2 | ug/l | - | - | - | | - | - | 0.8 | U | - | - | - | - | - | - |
| Hexachlorobenzene | 118-74-1 | 0.04 | 0.04 | ug/l | - | - | - | | - | - | 0.8 | U | - | - | - | - | - | - |
| Hexachloroethane | 67-72-1 | 5 | 5 | ug/l | - | - | - | | - | - | 0.8 | U | - | - | - | - | - | - |
| **Volatile Organics by GC/MS** | | | | | | | | | | | | | | | | | | |
| Methylene chloride | 75-09-2 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| 1,1-Dichloroethane | 75-34-3 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| Chloroform | 67-66-3 | 7 | 7 | ug/l | 2.5 | U | 2.5 | U | 1.4 | J | 2.5 | | 2.5 | U | 2.5 | U | 1.4 | J |
| Carbon tetrachloride | 56-23-5 | 5 | 5 | ug/l | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U |
| 1,2-Dichloropropane | 78-87-5 | 1 | 1 | ug/l | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U |
| Dibromochloromethane | 124-48-1 | 50 | 50 | ug/l | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U |
| 1,1,2-Trichloroethane | 79-00-5 | 1 | 1 | ug/l | 1.5 | U | 1.5 | U | 1.5 | U | 1.5 | U | 1.5 | U | 1.5 | U | 1.5 | U |
| Tetrachloroethene | 127-18-4 | 5 | 5 | ug/l | 4 | | 0.5 | U | 7.4 | | 13 | | 0.5 | U | 0.5 | U | 7.4 | |
| Chlorobenzene | 108-90-7 | 5 | 5 | ug/l | 2 | J | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.9 | | 2.5 | U |
| Trichlorofluoromethane | 75-69-4 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 3.5 | | 4.6 | | 2.5 | U | 2.5 | U | 3.5 | |
| 1,2-Dichloroethane | 107-06-2 | 0.6 | 0.6 | ug/l | 0.5 | U | 0.5 | U | 0.32 | J | 0.5 | U | 0.5 | U | 0.49 | J | 0.32 | J |
| 1,1,1-Trichloroethane | 71-55-6 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| Bromodichloromethane | 75-27-4 | 50 | 50 | ug/l | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U |
| trans-1,3-Dichloropropene | 10061-02-6 | 0.4 | 0.4 | ug/l | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U |
| cis-1,3-Dichloropropene | 10061-01-5 | 0.4 | 0.4 | ug/l | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U |
| 1,1-Dichloropropene | 563-58-6 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| Bromoform | 75-25-2 | 50 | 50 | ug/l | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 5 | 5 | ug/l | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U |
| Benzene | 71-43-2 | 1 | 1 | ug/l | 0.51 | | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.16 | J | 0.5 | U |
| Toluene | 108-88-3 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| Ethylbenzene | 100-41-4 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| Chloromethane | 74-87-3 | | | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| Bromomethane | 74-83-9 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| Vinyl chloride | 75-01-4 | 2 | 2 | ug/l | 1 | U | 1 | U | 1 | U | 1 | U | 1 | U | 2.3 | | 1 | U |
| Chloroethane | 75-00-3 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| 1,1-Dichloroethene | 75-35-4 | 5 | 5 | ug/l | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U | 0.5 | U |
| trans-1,2-Dichloroethene | 156-60-5 | 5 | 5 | ug/l | 2.1 | J | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 3.4 | | 2.5 | U |
| Trichloroethene | 79-01-6 | 5 | 5 | ug/l | 0.19 | J | 0.5 | U | 0.5 | U | 0.27 | J | 0.5 | U | 0.2 | J | 0.5 | U |
| 1,2-Dichlorobenzene | 95-50-1 | 3 | 3 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| 1,3-Dichlorobenzene | 541-73-1 | 3 | 3 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| 1,4-Dichlorobenzene | 106-46-7 | 3 | 3 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| Methyl tert butyl ether | 1634-04-4 | 10 | 10 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| p/m-Xylene | 179601-23-1 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| o-Xylene | 95-47-6 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| cis-1,2-Dichloroethene | 156-59-2 | 5 | 5 | ug/l | 17 | | 0.87 | J | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| Dibromomethane | 74-95-3 | 5 | 5 | ug/l | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 1,2,3-Trichloropropane | 96-18-4 | 0.04 | 0.04 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| Acrylonitrile | 107-13-1 | 5 | 5 | ug/l | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Styrene | 100-42-5 | 5 | 930 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| Dichlorodifluoromethane | 75-71-8 | 5 | 5 | ug/l | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Acetone | 67-64-1 | 50 | 50 | ug/l | 5 | U | 5 | U | 1.3 | J | 5 | U | 5 | U | 1.3 | J | 1.3 | J |
| Carbon disulfide | 75-15-0 | 60 | 60 | ug/l | 1.4 | J | 5 | U | 5 | U | 5 | U | 1.5 | J | 5 | U | 5 | U |
| 2-Butanone | 78-93-3 | 50 | 50 | ug/l | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Vinyl acetate | 108-05-4 | | | ug/l | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 4-Methyl-2-pentanone | 108-10-1 | | | ug/l | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| 2-Hexanone | 591-78-6 | 50 | 50 | ug/l | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U | 5 | U |
| Bromochloromethane | 74-97-5 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| 2,2-Dichloropropane | 594-20-7 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| 1,2-Dibromoethane | 106-93-4 | 0.0006 | 0.0006 | ug/l | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U |

**Former Akzo Nobel Pilot Plant Facility**
**Summary of Groundwater Analytical Results**

| LOCATION | | | | | VES-1 GWA | | VES-9 GW | | VES-10 GW | | VES-11 GW | | VES-12 GW | | VES-13 GW | | VES-10 GW | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE | | | | | 4/18/2014 | | 4/18/2014 | | 4/18/2014 | | 4/18/2014 | | 4/18/2014 | | 4/18/2014 | | 4/18/2014 | |
| LAB SAMPLE ID | | NYSDEC | NYSDEC | | L1408315-14 | | L1408315-03 | | L1408315-15 | | L1408315-11 | | L1408315-13 | | L1408315-12 | | L1408315-15 | |
| | CasNum | AWQS | TOGS-GA | Units | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual |
| 1,3-Dichloropropane | 142-28-9 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| Bromobenzene | 108-86-1 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| n-Butylbenzene | 104-51-8 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| sec-Butylbenzene | 135-98-8 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| tert-Butylbenzene | 98-06-6 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| o-Chlorotoluene | 95-49-8 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| p-Chlorotoluene | 106-43-4 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| 1,2-Dibromo-3-chloropropane | 96-12-8 | 0.04 | 0.04 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| Hexachlorobutadiene | 87-68-3 | 0.5 | 0.5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| Isopropylbenzene | 98-82-8 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| p-Isopropyltoluene | 99-87-6 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| Naphthalene | 91-20-3 | 10 | 10 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| n-Propylbenzene | 103-65-1 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| 1,2,3-Trichlorobenzene | 87-61-6 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| 1,2,4-Trichlorobenzene | 120-82-1 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| 1,3,5-Trimethylbenzene | 108-67-8 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| 1,2,4-Trimethylbenzene | 95-63-6 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| 1,4-Dioxane | 123-91-1 | | | ug/l | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U | 250 | U |
| p-Diethylbenzene | 105-05-5 | | | ug/l | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U |
| p-Ethyltoluene | 622-96-8 | | | ug/l | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U |
| 1,2,4,5-Tetramethylbenzene | 95-93-2 | | | ug/l | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U | 2 | U |
| Ethyl ether | 60-29-7 | | | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |
| trans-1,4-Dichloro-2-butene | 110-57-6 | 5 | 5 | ug/l | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U | 2.5 | U |

Exceeds applicable NYSDEC Standards

Reporting Limit is equal to or exceeds applicable NYSDEC Standard

| LOCATION | | | | | | | SB-64 (3.5-4) | | SB-74A (3.5-4) | | VB-8 | | VB-9 | | VB-10 | | VB-11 | | VB-12 (0-1.5') | | VB-12 (2.5-4') | | VB-13 | | VB-14 | | VB-16 | | VB-22 | | VB-22 | | VB-15 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE | | | | | | | 4/18/2014 | | 4/17/2014 | | 4/17/2014 | | 4/17/2014 | | 4/17/2014 | | 4/17/2014 | | 4/18/2014 | | 4/18/2014 | | 4/17/2014 | | 4/17/2014 | | 4/18/2014 | | 4/18/2014 | | 4/18/2014 | | 4/18/2014 | |
| LAB SAMPLE ID | | | | | | | L1408315-07 | | L1408198-08 | | L1408198-06 | | L1408198-07 | | L1408198-10 | | L1408198-11 | | L1408315-04 | | L1408315-05 | | L1408198-12 | | L1408198-13 | | L1408315-08 | | L1408315-09 | | L1408315-09 R1 | | L1408315-10 | |
| SAMPLE TYPE | | | | | | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| SAMPLE DEPTH (ft.) | | NYSDEC | NYSDEC | NYSDEC | NYSDEC | | 3.5-4 | | 3.5-4 | | 0-2 | | 0-2 | | 0-2 | | 0-2 | | 0-1.5 | | 2.5-4 | | 0-1.5 | | 0-1.5 | | 0-1.5 | | 0-1.5 | | 0-1.5 | | 0-1.5 | |
| | CasNum | RESGW | RESR | RESRR | UNRES | Units | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual |
| **General Chemistry** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Solids, Total | NONE | | | | | % | 77.4 | | 67.7 | | 91.2 | | 80.1 | | 76.4 | | 91.4 | | 88.1 | | 87.4 | | 89.4 | | 74.7 | | 87.2 | | 88.1 | | - | | 92 | |
| **Organochlorine Pesticides by GC** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Delta-BHC | 319-86-8 | 0.25 | 100 | 100 | 0.04 | mg/kg | - | | - | - | - | | 0.00194 | U | - | - | - | - | - | | - | | - | - | - | - | 0.00179 | U | - | | 0.00897 | U | 0.0017 | U |
| Lindane | 58-89-9 | 0.1 | 0.28 | 1.3 | 0.1 | mg/kg | - | | - | - | - | | 0.000809 | U | - | - | - | - | - | | - | | - | - | - | - | 0.000747 | U | - | | 0.00374 | U | 0.000707 | U |
| Alpha-BHC | 319-84-6 | 0.02 | 0.097 | 0.48 | 0.02 | mg/kg | - | | - | - | - | | 0.000809 | U | - | - | - | - | - | | - | | - | - | - | - | 0.000747 | U | - | | 0.00374 | U | 0.000707 | U |
| Beta-BHC | 319-85-7 | 0.09 | 0.072 | 0.36 | 0.036 | mg/kg | - | | - | - | - | | 0.00194 | U | - | - | - | - | - | | - | | - | - | - | - | 0.00179 | U | - | | 0.00897 | U | 0.0017 | U |
| Heptachlor | 76-44-8 | 0.38 | 0.42 | 2.1 | 0.042 | mg/kg | - | | - | - | - | | 0.000971 | U | - | - | - | - | - | | - | | - | - | - | - | 0.000896 | U | - | | 0.00449 | U | 0.000848 | U |
| Aldrin | 309-00-2 | 0.19 | 0.019 | 0.097 | 0.005 | mg/kg | - | | - | - | - | | 0.00194 | U | - | - | - | - | - | | - | | - | - | - | - | 0.00179 | U | - | | 0.00897 | U | 0.0017 | U |
| Heptachlor epoxide | 1024-57-3 | 0.02 | 0.077 | | | mg/kg | - | | - | - | - | | 0.00364 | U | - | - | - | - | - | | - | | - | - | - | - | 0.00336 | U | - | | 0.0168 | U | 0.00318 | U |
| Endrin | 72-20-8 | 0.06 | 2.2 | 11 | 0.014 | mg/kg | - | | - | - | - | | 0.000809 | U | - | - | - | - | - | | - | | - | - | - | - | 0.000747 | U | - | | 0.00374 | U | 0.000707 | U |
| Endrin ketone | 53494-70-5 | | | | | mg/kg | - | | - | - | - | | 0.00194 | U | - | - | - | - | - | | - | | - | - | - | - | 0.00179 | U | - | | 0.00897 | U | 0.0017 | U |
| Dieldrin | 60-57-1 | 0.1 | 0.039 | 0.2 | 0.005 | mg/kg | - | | - | - | - | | 0.00121 | U | - | - | - | - | - | | - | | - | - | - | - | 0.00112 | U | - | | 0.00561 | U | 0.00106 | U |
| 4,4'-DDE | 72-55-9 | 17 | 1.8 | 8.9 | 0.0033 | mg/kg | - | | - | - | - | | 0.00194 | U | - | - | - | - | - | | - | | - | - | - | - | 0.00179 | U | - | | 0.00897 | U | 0.0017 | U |
| 4,4'-DDD | 72-54-8 | 14 | 2.6 | 13 | 0.0033 | mg/kg | - | | - | - | - | | 0.00194 | U | - | - | - | - | - | | - | | - | - | - | - | 0.00179 | U | - | | 0.00897 | U | 0.0017 | U |
| 4,4'-DDT | 50-29-3 | 136 | 1.7 | 7.9 | 0.0033 | mg/kg | - | | - | - | - | | 0.0955 | | - | - | - | - | - | | - | | - | - | - | - | 0.0123 | | - | | 0.0351 | | 0.00318 | U |
| Endosulfan I | 959-98-8 | 102 | 4.8 | 24 | 2.4 | mg/kg | - | | - | - | - | | 0.00194 | U | - | - | - | - | - | | - | | - | - | - | - | 0.00179 | U | - | | 0.00897 | U | 0.0017 | U |
| Endosulfan II | 33213-65-9 | 102 | 4.8 | 24 | 2.4 | mg/kg | - | | - | - | - | | 0.00194 | U | - | - | - | - | - | | - | | - | - | - | - | 0.00179 | U | - | | 0.00897 | U | 0.0017 | U |
| Endosulfan sulfate | 1031-07-8 | 1000 | 4.8 | 24 | 2.4 | mg/kg | - | | - | - | - | | 0.000809 | U | - | - | - | - | - | | - | | - | - | - | - | 0.000747 | U | - | | 0.00374 | U | 0.000707 | U |
| Methoxychlor | 72-43-5 | 900 | 100 | | | mg/kg | - | | - | - | - | | 0.00364 | U | - | - | - | - | - | | - | | - | - | - | - | 0.00336 | U | - | | 0.0168 | U | 0.00318 | U |
| Toxaphene | 8001-35-2 | | | | | mg/kg | - | | - | - | - | | 0.0364 | U | - | - | - | - | - | | - | | - | - | - | - | 0.0336 | U | - | | 0.168 | U | 0.0318 | U |
| cis-Chlordane | 5103-71-9 | 2.9 | 0.91 | 4.2 | 0.094 | mg/kg | - | | - | - | - | | 0.00243 | U | - | - | - | - | - | | - | | - | - | - | - | 0.00224 | U | - | | 0.0112 | U | 0.00212 | U |
| trans-Chlordane | 5103-74-2 | 14 | 0.54 | | | mg/kg | - | | - | - | - | | 0.00243 | U | - | - | - | - | - | | - | | - | - | - | - | 0.00224 | U | - | | 0.0112 | U | 0.00212 | U |
| Chlordane | 57-74-9 | | | | | mg/kg | - | | - | - | - | | 0.0158 | U | - | - | - | - | - | | - | | - | - | - | - | 0.0146 | U | - | | 0.0729 | U | 0.0138 | U |
| **Polychlorinated Biphenyls by GC** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Aroclor 1016 | 12674-11-2 | 3.2 | 1 | 1 | 0.1 | mg/kg | 0.0424 | U | 0.464 | U | 0.0353 | U | - | | 0.835 | U | 0.174 | U | 0.0364 | U | - | | 0.0354 | U | 0.0437 | U | - | - | - | - | - | - | - | - |
| Aroclor 1221 | 11104-28-2 | 3.2 | 1 | 1 | 0.1 | mg/kg | 0.0424 | U | 0.464 | U | 0.0353 | U | - | | 0.835 | U | 0.174 | U | 0.0364 | U | - | | 0.0354 | U | 0.0437 | U | - | - | - | - | - | - | - | - |
| Aroclor 1232 | 11141-16-5 | 3.2 | 1 | 1 | 0.1 | mg/kg | 0.0424 | U | 0.464 | U | 0.0353 | U | - | | 0.835 | U | 0.174 | U | 0.0364 | U | - | | 0.0354 | U | 0.0437 | U | - | - | - | - | - | - | - | - |
| Aroclor 1242 | 53469-21-9 | 3.2 | 1 | 1 | 0.1 | mg/kg | 0.0424 | U | 0.464 | U | 0.0353 | U | - | | 0.835 | U | 0.174 | U | 0.0364 | U | - | | 0.0354 | U | 0.0437 | U | - | - | - | - | - | - | - | - |
| Aroclor 1248 | 12672-29-6 | 3.2 | 1 | 1 | 0.1 | mg/kg | 0.0424 | U | 0.464 | U | 0.0353 | U | - | | 0.835 | U | 0.174 | U | 0.0364 | U | - | | 0.0354 | U | 0.0437 | U | - | - | - | - | - | - | - | - |
| Aroclor 1254 | 11097-69-1 | 3.2 | 1 | 1 | 0.1 | mg/kg | 0.0424 | U | 3.18 | | 0.375 | | - | | 7.1 | | 1.74 | | 0.522 | | - | | 0.16 | | 0.0677 | P | - | - | - | - | - | - | - | - |
| Aroclor 1260 | 11096-82-5 | 3.2 | 1 | 1 | 0.1 | mg/kg | 0.0424 | U | 0.464 | U | 0.0353 | U | - | | 0.835 | U | 0.174 | U | 0.0364 | U | - | | 0.0354 | U | 0.0437 | U | - | - | - | - | - | - | - | - |
| Aroclor 1262 | 37324-23-5 | 3.2 | 1 | 1 | 0.1 | mg/kg | 0.0424 | U | 0.464 | U | 0.0353 | U | - | | 0.835 | U | 0.174 | U | 0.0364 | U | - | | 0.0354 | U | 0.0437 | U | - | - | - | - | - | - | - | - |
| Aroclor 1268 | 11100-14-4 | 3.2 | 1 | 1 | 0.1 | mg/kg | 0.0424 | U | 0.464 | U | 0.0353 | U | - | | 0.835 | U | 0.174 | U | 0.0364 | U | - | | 0.0354 | U | 0.0437 | U | - | - | - | - | - | - | - | - |

RESGW - NYSDEC Protection of Groundwater Soil Cleanup Objective
RESR - NYSDEC Residential Use Soil Cleanup Objective
RESRR - NYSDEC Restricted Residential Use Soil Cleanup Objective
UNRES - NYSDEC Unrestricted Use Soil Cleanup Objective

| LOCATION | | | | | | | VB-1 | | VB-2 | | VB-3 | | SB-38A | | SB-38A | | VB-4 | | VB-5 | | VB-6 (2.5-4) | | VB-6 (13.5-14) | | VB-7 | | SB-53A (16.5-17') | | VB-12 (2.5-4') | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE | | | | | | | 4/16/2014 | | 4/16/2014 | | 4/16/2014 | | 4/16/2014 | | 4/16/2014 | | 4/17/2014 | | 4/17/2014 | | 4/16/2014 | | 4/16/2014 | | 4/16/2014 | | 4/16/2014 | | 4/18/2014 | |
| LAB SAMPLE ID | | | | | | | L1408055-04 | | L1408055-05 | | L1408055-02 | | L1408055-03 | | L1408055-03 R1 | | L1408198-02 | | L1408198-01 | | L1408055-10 | | L1408055-11 | | L1408055-07 | | L1408055-09 | | L1408315-05 | |
| SAMPLE TYPE | | | | | | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| SAMPLE DEPTH (ft.) | | NYSDEC | NYSDEC | NYSDEC | NYSDEC | | 11.5-12 | | 11.5-12 | | 11.5-12 | | 15-15.5 | | 15-15.5 | | 13.5-14 | | 13.5-14 | | 2.5-4 | | 13.5-14 | | 13.5-14 | | 16.5-17 | | | |
| | CasNum | RESGW | RESR | RESRR | UNRES | Units | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual |
| **General Chemistry** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Solids, Total | NONE | | | | | % | 81.2 | | 83.2 | | 75.6 | | 75.2 | | - | | | | | | 92 | | 85.7 | | 75.9 | | 80.2 | | | |
| **Petroleum Hydrocarbon Quantitation** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TPH | NONE | | | | | mg/kg | - | | - | | - | | - | | - | | | | | | - | | 7690 | | - | | - | | | |
| **Volatile Organics by 8260/5035** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Methylene chloride | 75-09-2 | 0.05 | 51 | 100 | 0.05 | mg/kg | 0.012 | U | 0.013 | U | 0.012 | U | 0.011 | U | - | | 0.012 | U | 0.72 | U | 0.012 | U | 0.73 | U | 0.012 | U | 0.012 | U | 0.14 | J |
| 1,1-Dichloroethane | 75-34-3 | 0.27 | 19 | 26 | 0.27 | mg/kg | 0.0017 | U | 0.002 | U | 0.0018 | U | 0.0017 | U | - | | 0.0018 | U | 0.11 | U | 0.0018 | U | 0.11 | U | 0.0018 | U | 0.0018 | U | 0.089 | U |
| Chloroform | 67-66-3 | 0.37 | 10 | 49 | 0.37 | mg/kg | 0.0017 | U | 0.002 | U | 0.0018 | U | 0.0017 | U | - | | 0.0018 | U | 0.11 | U | 0.0018 | U | 0.11 | U | 0.0018 | U | 0.0018 | U | 0.7 | |
| Carbon tetrachloride | 56-23-5 | 0.76 | 1.4 | 2.4 | 0.76 | mg/kg | 0.0012 | U | 0.0013 | U | 0.0012 | U | 0.0011 | U | - | | 0.0012 | U | 0.072 | U | 0.0012 | U | 0.073 | U | 0.0012 | U | 0.0012 | U | 4.2 | |
| 1,2-Dichloropropane | 78-87-5 | | | | | mg/kg | 0.0041 | U | 0.0046 | U | 0.0041 | U | 0.004 | U | - | | 0.0042 | U | 0.25 | U | 0.0043 | U | 0.26 | U | 0.0041 | U | 0.0043 | U | 0.21 | U |
| Dibromochloromethane | 124-48-1 | | | | | mg/kg | 0.0012 | U | 0.0013 | U | 0.0012 | U | 0.0011 | U | - | | 0.0012 | U | 0.072 | U | 0.0012 | U | 0.073 | U | 0.0012 | U | 0.0012 | U | 0.059 | U |
| 1,1,2-Trichloroethane | 79-00-5 | | | | | mg/kg | 0.0017 | U | 0.002 | U | 0.0018 | U | 0.0017 | U | - | | 0.0018 | U | 0.11 | U | 0.0018 | U | 0.11 | U | 0.0018 | U | 0.0018 | U | 0.089 | U |
| Tetrachloroethene | 127-18-4 | 1.3 | 5.5 | 19 | 1.3 | mg/kg | 0.053 | | 0.097 | | 0.0018 | | 0.0011 | U | - | | 0.0004 | J | 0.072 | U | 0.014 | | 0.073 | U | 0.0017 | | 0.0019 | | 4.2 | |
| Chlorobenzene | 108-90-7 | 1.1 | 100 | 100 | 1.1 | mg/kg | 0.0012 | U | 0.0013 | U | 0.0012 | U | 0.0017 | | - | | 0.0012 | U | 0.072 | U | 0.0012 | U | 0.056 | J | 0.0012 | U | 0.003 | | 0.059 | U |
| Trichlorofluoromethane | 75-69-4 | | | | | mg/kg | 0.0018 | J | 0.001 | J | 0.0059 | U | 0.0057 | U | - | | 0.006 | U | 0.36 | U | 0.0088 | | 0.36 | U | 0.0059 | U | 0.0061 | U | 0.3 | U |
| 1,2-Dichloroethane | 107-06-2 | 0.02 | 2.3 | 3.1 | 0.02 | mg/kg | 0.0012 | U | 0.0013 | U | 0.0012 | U | 0.0011 | U | - | | 0.00037 | J | 0.072 | U | 0.0012 | U | 0.073 | U | 0.0012 | U | 0.0012 | U | 0.15 | |
| 1,1,1-Trichloroethane | 71-55-6 | 0.68 | 100 | 100 | 0.68 | mg/kg | 0.0012 | U | 0.0013 | U | 0.0012 | U | 0.0011 | U | - | | 0.0012 | U | 0.072 | U | 0.0012 | U | 0.073 | U | 0.0012 | U | 0.0012 | U | 0.059 | U |
| Bromodichloromethane | 75-27-4 | | | | | mg/kg | 0.0012 | U | 0.0013 | U | 0.0012 | U | 0.0011 | U | - | | 0.0012 | U | 0.072 | U | 0.0012 | U | 0.073 | U | 0.0012 | U | 0.0012 | U | 0.059 | U |
| trans-1,3-Dichloropropene | 10061-02-6 | | | | | mg/kg | 0.0012 | U | 0.0013 | U | 0.0012 | U | 0.0011 | U | - | | 0.0012 | U | 0.072 | U | 0.0012 | U | 0.073 | U | 0.0012 | U | 0.0012 | U | 0.059 | U |
| cis-1,3-Dichloropropene | 10061-01-5 | | | | | mg/kg | 0.0012 | U | 0.0013 | U | 0.0012 | U | 0.0011 | U | - | | 0.0012 | U | 0.072 | U | 0.0012 | U | 0.073 | U | 0.0012 | U | 0.0012 | U | 0.059 | U |
| 1,1-Dichloropropene | 563-58-6 | | | | | mg/kg | 0.0058 | U | 0.0065 | U | 0.0059 | U | 0.0057 | U | - | | 0.006 | U | 0.36 | U | 0.0062 | U | 0.36 | U | 0.0059 | U | 0.0061 | U | 0.3 | U |
| Bromoform | 75-25-2 | | | | | mg/kg | 0.0046 | U | 0.0052 | U | 0.0047 | U | 0.0046 | U | - | | 0.0048 | U | 0.29 | U | 0.0049 | U | 0.29 | U | 0.0047 | U | 0.0049 | U | 0.24 | U |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 0.6 | 35 | | | mg/kg | 0.0012 | U | 0.0013 | U | 0.0012 | U | 0.0011 | U | - | | 0.0012 | U | 0.072 | U | 0.0012 | U | 0.073 | U | 0.0012 | U | 0.0012 | U | 0.059 | U |
| Benzene | 71-43-2 | 0.06 | 2.9 | 4.8 | 0.06 | mg/kg | 0.0012 | U | 0.0013 | U | 0.0012 | U | 0.0011 | U | - | | 0.0012 | U | 0.072 | U | 0.0012 | U | 0.086 | | 0.0012 | U | 0.0012 | U | 0.059 | U |
| Toluene | 108-88-3 | 0.7 | 100 | 100 | 0.7 | mg/kg | 0.0017 | U | 0.002 | U | 0.0018 | U | 0.0017 | U | - | | 0.0018 | U | 0.11 | U | 0.0018 | U | 0.044 | J | 0.0018 | U | 0.0018 | U | 0.018 | J |
| Ethylbenzene | 100-41-4 | 1 | 30 | 41 | 1 | mg/kg | 0.0012 | U | 0.0013 | U | 0.0012 | U | 0.0011 | U | - | | 0.0012 | U | 0.1 | | 0.0012 | U | 0.17 | | 0.0012 | U | 0.0014 | | 0.059 | U |
| Chloromethane | 74-87-3 | | | | | mg/kg | 0.0058 | U | 0.0065 | U | 0.0059 | U | 0.0057 | U | - | | 0.006 | U | 0.36 | U | 0.0062 | U | 0.36 | U | 0.0059 | U | 0.0061 | U | 0.3 | U |
| Bromomethane | 74-83-9 | | | | | mg/kg | 0.0023 | U | 0.0026 | U | 0.0024 | U | 0.0023 | U | - | | 0.0024 | U | 0.14 | U | 0.0025 | U | 0.15 | U | 0.0024 | U | 0.0024 | U | 0.12 | U |
| Vinyl chloride | 75-01-4 | 0.02 | 0.21 | 0.9 | 0.02 | mg/kg | 0.0023 | U | 0.00095 | J | 0.0024 | U | 0.0023 | U | - | | 0.0024 | U | 0.14 | U | 0.0025 | U | 0.15 | U | 0.0024 | U | 0.0024 | U | 0.12 | U |
| Chloroethane | 75-00-3 | 1.9 | | | | mg/kg | 0.0023 | U | 0.0026 | U | 0.0024 | U | 0.0023 | U | - | | 0.0024 | U | 0.14 | U | 0.0025 | U | 0.15 | U | 0.0024 | U | 0.0024 | U | 0.12 | U |
| 1,1-Dichloroethene | 75-35-4 | 0.33 | 100 | 100 | 0.33 | mg/kg | 0.0012 | U | 0.0013 | U | 0.0012 | U | 0.0011 | U | - | | 0.0012 | U | 0.072 | U | 0.0012 | U | 0.073 | U | 0.0012 | U | 0.0012 | U | 0.059 | U |
| trans-1,2-Dichloroethene | 156-60-5 | 0.19 | 100 | 100 | 0.19 | mg/kg | 0.0017 | U | 0.002 | U | 0.0018 | U | 0.0017 | U | - | | 0.0018 | U | 0.11 | U | 0.0018 | U | 0.11 | U | 0.0018 | U | 0.0018 | U | 0.089 | U |
| Trichloroethene | 79-01-6 | 0.47 | 10 | 21 | 0.47 | mg/kg | 0.0026 | | 0.017 | | 0.0012 | U | 0.0012 | | - | | 0.0012 | U | 0.072 | U | 0.0012 | U | 0.073 | U | 0.0012 | U | 0.0028 | | 0.059 | U |
| 1,2-Dichlorobenzene | 95-50-1 | 1.1 | 100 | 100 | 1.1 | mg/kg | 0.0058 | U | 0.00085 | J | 0.0059 | U | 0.0057 | U | - | | 0.006 | U | 0.36 | U | 0.0062 | U | 0.36 | U | 0.0059 | U | 0.0061 | U | 0.3 | U |
| 1,3-Dichlorobenzene | 541-73-1 | 2.4 | 17 | 49 | 2.4 | mg/kg | 0.0058 | U | 0.0065 | U | 0.0059 | U | 0.0057 | U | - | | 0.006 | U | 0.36 | U | 0.0062 | U | 0.36 | U | 0.0059 | U | 0.0061 | U | 0.3 | U |
| 1,4-Dichlorobenzene | 106-46-7 | 1.8 | 9.8 | 13 | 1.8 | mg/kg | 0.0058 | U | 0.0065 | U | 0.0059 | U | 0.0057 | U | - | | 0.006 | U | 0.36 | U | 0.0062 | U | 0.36 | U | 0.0059 | U | 0.0061 | U | 0.3 | U |
| Methyl tert butyl ether | 1634-04-4 | 0.93 | 62 | 100 | 0.93 | mg/kg | 0.0023 | U | 0.0026 | U | 0.0024 | U | 0.0023 | U | - | | 0.0024 | U | 0.14 | U | 0.0025 | U | 0.15 | U | 0.0024 | U | 0.0024 | U | 0.12 | U |
| p/m-Xylene | 179601-23-1 | | | | | mg/kg | 0.0023 | U | 0.0026 | U | 0.0024 | U | 0.0023 | U | - | | 0.0024 | U | 0.064 | J | 0.0025 | U | 0.16 | | 0.0024 | U | 0.0024 | U | 0.12 | U |
| o-Xylene | 95-47-6 | | | | | mg/kg | 0.0023 | U | 0.0026 | U | 0.0024 | U | 0.0023 | U | - | | 0.0024 | U | 0.12 | J | 0.0025 | U | 0.18 | | 0.0024 | U | 0.0024 | U | 0.12 | U |
| cis-1,2-Dichloroethene | 156-59-2 | 0.25 | 59 | 100 | 0.25 | mg/kg | 0.0012 | U | 0.031 | | 0.0012 | U | 0.0015 | | - | | 0.0012 | U | 0.072 | U | 0.0012 | U | 0.073 | U | 0.0012 | U | 0.0089 | | 0.059 | U |
| Dibromomethane | 74-95-3 | | | | | mg/kg | 0.012 | U | 0.013 | U | 0.012 | U | 0.011 | U | - | | 0.012 | U | 0.72 | U | 0.012 | U | 0.73 | U | 0.012 | U | 0.012 | U | 0.59 | U |
| Styrene | 100-42-5 | | | | | mg/kg | 0.0023 | U | 0.0026 | U | 0.0024 | U | 0.0023 | U | - | | 0.0024 | U | 0.14 | U | 0.0025 | U | 0.15 | U | 0.0024 | U | 0.0024 | U | 0.12 | U |
| Dichlorodifluoromethane | 75-71-8 | | | | | mg/kg | 0.012 | U | 0.013 | U | 0.012 | U | 0.011 | U | - | | 0.012 | U | 0.72 | U | 0.012 | U | 0.73 | U | 0.012 | U | 0.012 | U | 0.59 | U |
| Acetone | 67-64-1 | 0.05 | 100 | 100 | 0.05 | mg/kg | 0.0085 | J | 0.0051 | J | 0.023 | | 0.013 | | - | | 0.017 | | 0.72 | U | 0.0091 | J | 0.73 | U | 0.015 | | 0.0072 | J | 0.2 | J |
| Carbon disulfide | 75-15-0 | 2.7 | 100 | | | mg/kg | 0.0051 | J | 0.0054 | J | 0.031 | | 0.39 | E | - | | 0.0063 | J | 1.1 | | 0.012 | U | 0.78 | | 0.0032 | J | 0.099 | | 0.59 | U |
| 2-Butanone | 78-93-3 | 0.12 | 100 | 100 | 0.12 | mg/kg | 0.012 | U | 0.013 | U | 0.012 | U | 0.011 | U | - | | 0.0044 | J | 0.72 | U | 0.012 | U | 0.73 | U | 0.012 | U | 0.012 | U | 0.59 | U |
| Vinyl acetate | 108-05-4 | | | | | mg/kg | 0.012 | U | 0.013 | U | 0.012 | U | 0.011 | U | - | | 0.012 | U | 0.72 | U | 0.012 | U | 0.73 | U | 0.012 | U | 0.012 | U | 0.59 | U |
| 4-Methyl-2-pentanone | 108-10-1 | 1 | | | | mg/kg | 0.012 | U | 0.013 | U | 0.012 | U | 0.011 | U | - | | 0.012 | U | 0.72 | U | 0.012 | U | 0.73 | U | 0.012 | U | 0.012 | U | 0.59 | U |
| 1,2,3-Trichloropropane | 96-18-4 | 0.34 | 80 | | | mg/kg | 0.012 | U | 0.013 | U | 0.012 | U | 0.011 | U | - | | 0.012 | U | 0.72 | U | 0.012 | U | 0.73 | U | 0.012 | U | 0.012 | U | 0.59 | U |
| 2-Hexanone | 591-78-6 | | | | | mg/kg | 0.012 | U | 0.013 | U | 0.012 | U | 0.011 | U | - | | 0.012 | U | 0.72 | U | 0.012 | U | 0.73 | U | 0.012 | U | 0.012 | U | 0.59 | U |
| Bromochloromethane | 74-97-5 | | | | | mg/kg | 0.0058 | U | 0.0065 | U | 0.0059 | U | 0.0057 | U | - | | 0.006 | U | 0.36 | U | 0.0062 | U | 0.36 | U | 0.0059 | U | 0.0061 | U | 0.3 | U |
| 2,2-Dichloropropane | 594-20-7 | | | | | mg/kg | 0.0058 | U | 0.0065 | U | 0.0059 | U | 0.0057 | U | - | | 0.006 | U | 0.36 | U | 0.0062 | U | 0.36 | U | 0.0059 | U | 0.0061 | U | 0.3 | U |
| 1,2-Dibromoethane | 106-93-4 | | | | | mg/kg | 0.0046 | U | 0.0052 | U | 0.0047 | U | 0.0046 | U | - | | 0.0048 | U | 0.29 | U | 0.0049 | U | 0.29 | U | 0.0047 | U | 0.0049 | U | 0.24 | U |
| 1,3-Dichloropropane | 142-28-9 | 0.3 | | | | mg/kg | 0.0058 | U | 0.0065 | U | 0.0059 | U | 0.0057 | U | - | | 0.006 | U | 0.36 | U | 0.0062 | U | 0.36 | U | 0.0059 | U | 0.0061 | U | 0.3 | U |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | | | | | mg/kg | 0.0012 | U | 0.0013 | U | 0.0012 | U | 0.0011 | U | - | | 0.0012 | U | 0.072 | U | 0.0012 | U | 0.073 | U | 0.0012 | U | 0.0012 | U | 0.059 | U |
| Bromobenzene | 108-86-1 | | | | | mg/kg | 0.0058 | U | 0.0065 | U | 0.0059 | U | 0.0057 | U | - | | 0.006 | U | 0.36 | U | 0.0062 | U | 0.36 | U | 0.0059 | U | 0.0061 | U | 0.3 | U |
| n-Butylbenzene | 104-51-8 | 12 | 100 | 100 | 12 | mg/kg | 0.0012 | U | 0.0013 | U | 0.0012 | U | 0.0011 | U | - | | 0.0012 | U | 0.2 | | 0.0012 | U | 0.18 | | 0.0012 | U | 0.0012 | U | 0.059 | U |
| sec-Butylbenzene | 135-98-8 | 11 | 100 | 100 | 11 | mg/kg | 0.0012 | U | 0.0013 | U | 0.0012 | U | 0.0011 | U | - | | 0.0012 | U | 0.12 | | 0.0012 | U | 0.12 | | 0.0012 | U | 0.0012 | U | 0.059 | U |
| tert-Butylbenzene | 98-06-6 | 5.9 | 100 | 100 | 5.9 | mg/kg | 0.0058 | U | 0.0065 | U | 0.0059 | U | 0.0057 | U | - | | 0.006 | U | 0.36 | U | 0.0062 | U | 0.36 | U | 0.0059 | U | 0.0061 | U | 0.3 | U |
| o-Chlorotoluene | 95-49-8 | | | | | mg/kg | 0.0058 | U | 0.0065 | U | 0.0059 | U | 0.0057 | U | - | | 0.006 | U | 0.36 | U | 0.0062 | U | 0.36 | U | 0.0059 | U | 0.0061 | U | 0.3 | U |
| p-Chlorotoluene | 106-43-4 | | | | | mg/kg | 0.0058 | U | 0.0065 | U | 0.0059 | U | 0.0057 | U | - | | 0.006 | U | 0.36 | U | 0.0062 | U | 0.36 | U | 0.0059 | U | 0.0061 | U | 0.3 | U |
| 1,2-Dibromo-3-chloropropane | 96-12-8 | | | | | mg/kg | 0.0058 | U | 0.0065 | U | 0.0059 | U | 0.0057 | U | - | | 0.006 | U | 0.36 | U | 0.0062 | U | 0.36 | U | 0.0059 | U | 0.0061 | U | 0.3 | U |
| Hexachlorobutadiene | 87-68-3 | | | | | mg/kg | 0.0058 | U | 0.0065 | U | 0.0059 | U | 0.0057 | U | - | | 0.006 | U | 0.36 | U | 0.0062 | U | 0.36 | U | 0.0059 | U | 0.0061 | U | 0.3 | U |
| Isopropylbenzene | 98-82-8 | 2.3 | 100 | | | mg/kg | 0.0012 | U | 0.0013 | U | 0.0012 | U | 0.0011 | U | - | | 0.0012 | U | 0.084 | | 0.0012 | U | 0.095 | | 0.0012 | U | 0.0012 | U | 0.059 | U |
| p-Isopropyltoluene | 99-87-6 | 10 | | | | mg/kg | 0.0012 | U | 0.0013 | U | 0.0012 | U | 0.0011 | U | - | | 0.0012 | U | 0.14 | | 0.0012 | U | 0.12 | | 0.0012 | U | 0.0012 | U | 0.059 | U |
| Naphthalene | 91-20-3 | 12 | 100 | 100 | 12 | mg/kg | 0.0058 | U | 0.0065 | U | 0.0059 | U | 0.0057 | U | - | | 0.006 | U | 0.39 | | 0.0062 | U | 0.88 | | 0.0059 | U | 0.0061 | U | 0.12 | J |
| Acrylonitrile | 107-13-1 | | | | | mg/kg | 0.012 | U | 0.013 | U | 0.012 | U | 0.011 | U | - | | 0.012 | U | 0.72 | U | 0.012 | U | 0.73 | U | 0.012 | U | 0.012 | U | 0.59 | U |
| n-Propylbenzene | 103-65-1 | 3.9 | 100 | 100 | 3.9 | mg/kg | 0.0012 | U | 0.0013 | U | 0.0012 | U | 0.0011 | U | - | | 0.0012 | U | 0.15 | | 0.0012 | U | 0.17 | | 0.0012 | U | 0.0012 | U | 0.059 | U |
| 1,2,3-Trichlorobenzene | 87-61-6 | | | | | mg/kg | 0.0058 | U | 0.0065 | U | 0.0059 | U | 0.0057 | U | - | | 0.006 | U | 0.36 | U | 0.0062 | U | 0.36 | U | 0.0059 | U | 0.0061 | U | 0.3 | U |
| 1,2,4-Trichlorobenzene | 120-82-1 | 3.4 | | | | mg/kg | 0.0058 | U | 0.0065 | U | 0.0059 | U | 0.0057 | U | - | | 0.006 | U | 0.36 | U | 0.0062 | U | 0.36 | U | 0.0059 | U | 0.0061 | U | 0.3 | U |
| 1,3,5-Trimethylbenzene | 108-67-8 | 8.4 | 47 | 52 | 8.4 | mg/kg | 0.0058 | U | 0.0065 | U | 0.0059 | U | 0.0057 | U | - | | 0.006 | U | 0.36 | U | 0.0062 | U | 0.3 | J | 0.0059 | U | 0.0061 | U | 0.3 | U |
| 1,2,4-Trimethylbenzene | 95-63-6 | 3.6 | 47 | 52 | 3.6 | mg/kg | 0.0058 | U | 0.0065 | U | 0.0059 | U | 0.0057 | U | - | | 0.006 | U | 0.81 | | 0.0062 | U | 0.89 | | 0.0059 | U | 0.0061 | U | 0.3 | U |
| 1,4-Dioxane | 123-91-1 | 0.1 | 9.8 | 13 | 0.1 | mg/kg | 0.12 | U | 0.13 | U | 0.12 | U | 0.11 | U | - | | 0.12 | U | 7.2 | U | 0.12 | U | 7.3 | U | 0.12 | U | 0.12 | U | 5.9 | U |
| 1,4-Diethylbenzene | 105-05-5 | | | | | mg/kg | 0.0046 | U | 0.0052 | U | 0.0047 | U | 0.0046 | U | - | | 0.0048 | U | 0.18 | J | 0.0049 | U | 0.18 | J | 0.0047 | U | 0.0049 | U | 0.019 | J |
| 4-Ethyltoluene | 622-96-8 | | | | | mg/kg | 0.0046 | U | 0.0052 | U | 0.0047 | U | 0.0046 | U | - | | 0.0048 | U | 0.24 | J | 0.0049 | U | 0.42 | | 0.0047 | U | 0.0049 | U | 0.24 | U |
| 1,2,4,5-Tetramethylbenzene | 95-93-2 | | | | | mg/kg | 0.0046 | U | 0.0052 | U | 0.0047 | U | 0.0046 | U | - | | 0.0048 | U | 0.57 | | 0.0049 | U | 0.42 | | 0.0004 | J | 0.0049 | U | 0.014 | J |
| Ethyl ether | 60-29-7 | | | | | mg/kg | 0.0058 | U | 0.0065 | U | 0.0059 | U | 0.0057 | U | - | | 0.006 | U | 0.36 | U | 0.0062 | U | 0.36 | U | 0.0059 | U | 0.0061 | U | 0.3 | U |
| trans-1,4-Dichloro-2-butene | 110-57-6 | | | | | mg/kg | 0.0058 | U | 0.0065 | U | 0.0059 | U | 0.0057 | U | - | | 0.006 | U | 0.36 | U | 0.0062 | U | 0.36 | U | 0.0059 | U | 0.0061 | U | 0.3 | U |

Former Akzo Nobel Pilot Plant Facility
Summary of Soil Analytical Results

| LOCATION | | | | | | | VB-1 | | VB-2 | | VB-3 | | SB-38A | | SB-38A | | VB-4 | | VB-5 | | VB-6 (2.5-4) | | VB-6 (13.5-14) | | VB-7 | | SB-53A (16.5-17') | | VB-12 (2.5-4') | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLING DATE | | | | | | | 4/16/2014 | | 4/16/2014 | | 4/16/2014 | | 4/16/2014 | | 4/16/2014 | | 4/17/2014 | | 4/17/2014 | | 4/16/2014 | | 4/16/2014 | | 4/16/2014 | | 4/16/2014 | | 4/18/2014 | |
| LAB SAMPLE ID | | | | | | | L1408055-04 | | L1408055-05 | | L1408055-02 | | L1408055-03 | | L1408055-03 R1 | | L1408198-02 | | L1408198-01 | | L1408055-10 | | L1408055-11 | | L1408055-07 | | L1408055-09 | | L1408315-05 | |
| SAMPLE TYPE | | | | | | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | | Soil | |
| SAMPLE DEPTH (ft.) | | NYSDEC | NYSDEC | NYSDEC | NYSDEC | | 11.5-12 | | 11.5-12 | | 11.5-12 | | 15-15.5 | | 15-15.5 | | 13.5-14 | | 13.5-14 | | 2.5-4 | | 13.5-14 | | 13.5-14 | | 16.5-17 | | | |
| | CasNum | RESGW | RESR | RESRR | UNRES | Units | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual | | Qual |
| **Volatile Organics by EPA 5035 High** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Methylene chloride | 75-09-2 | 0.05 | 51 | 100 | 0.05 | mg/kg | - | - | - | - | - | | - | | 0.77 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,1-Dichloroethane | 75-34-3 | 0.27 | 19 | 26 | 0.27 | mg/kg | - | - | - | - | - | | - | | 0.12 | U | | | | | - | - | - | - | - | - | - | | - | |
| Chloroform | 67-66-3 | 0.37 | 10 | 49 | 0.37 | mg/kg | - | - | - | - | - | | - | | 0.12 | U | | | | | - | - | - | - | - | - | - | | - | |
| Carbon tetrachloride | 56-23-5 | 0.76 | 1.4 | 2.4 | 0.76 | mg/kg | - | - | - | - | - | | - | | 0.077 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,2-Dichloropropane | 78-87-5 | | | | | mg/kg | - | - | - | - | - | | - | | 0.27 | U | | | | | - | - | - | - | - | - | - | | - | |
| Dibromochloromethane | 124-48-1 | | | | | mg/kg | - | - | - | - | - | | - | | 0.077 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,1,2-Trichloroethane | 79-00-5 | | | | | mg/kg | - | - | - | - | - | | - | | 0.12 | U | | | | | - | - | - | - | - | - | - | | - | |
| Tetrachloroethene | 127-18-4 | 1.3 | 5.5 | 19 | 1.3 | mg/kg | - | - | - | - | - | | - | | 0.077 | U | | | | | - | - | - | - | - | - | - | | - | |
| Chlorobenzene | 108-90-7 | 1.1 | 100 | 100 | 1.1 | mg/kg | - | - | - | - | - | | - | | 0.077 | U | | | | | - | - | - | - | - | - | - | | - | |
| Trichlorofluoromethane | 75-69-4 | | | | | mg/kg | - | - | - | - | - | | - | | 0.38 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,2-Dichloroethane | 107-06-2 | 0.02 | 2.3 | 3.1 | 0.02 | mg/kg | - | - | - | - | - | | - | | 0.077 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,1,1-Trichloroethane | 71-55-6 | 0.68 | 100 | 100 | 0.68 | mg/kg | - | - | - | - | - | | - | | 0.077 | U | | | | | - | - | - | - | - | - | - | | - | |
| Bromodichloromethane | 75-27-4 | | | | | mg/kg | - | - | - | - | - | | - | | 0.077 | U | | | | | - | - | - | - | - | - | - | | - | |
| trans-1,3-Dichloropropene | 10061-02-6 | | | | | mg/kg | - | - | - | - | - | | - | | 0.077 | U | | | | | - | - | - | - | - | - | - | | - | |
| cis-1,3-Dichloropropene | 10061-01-5 | | | | | mg/kg | - | - | - | - | - | | - | | 0.077 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,1-Dichloropropene | 563-58-6 | | | | | mg/kg | - | - | - | - | - | | - | | 0.38 | U | | | | | - | - | - | - | - | - | - | | - | |
| Bromoform | 75-25-2 | | | | | mg/kg | - | - | - | - | - | | - | | 0.31 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 0.6 | 35 | | | mg/kg | - | - | - | - | - | | - | | 0.077 | U | | | | | - | - | - | - | - | - | - | | - | |
| Benzene | 71-43-2 | 0.06 | 2.9 | 4.8 | 0.06 | mg/kg | - | - | - | - | - | | - | | 0.077 | U | | | | | - | - | - | - | - | - | - | | - | |
| Toluene | 108-88-3 | 0.7 | 100 | 100 | 0.7 | mg/kg | - | - | - | - | - | | - | | 0.033 | J | | | | | - | - | - | - | - | - | - | | - | |
| Ethylbenzene | 100-41-4 | 1 | 30 | 41 | 1 | mg/kg | - | - | - | - | - | | - | | 0.077 | U | | | | | - | - | - | - | - | - | - | | - | |
| Chloromethane | 74-87-3 | | | | | mg/kg | - | - | - | - | - | | - | | 0.38 | U | | | | | - | - | - | - | - | - | - | | - | |
| Bromomethane | 74-83-9 | | | | | mg/kg | - | - | - | - | - | | - | | 0.15 | U | | | | | - | - | - | - | - | - | - | | - | |
| Vinyl chloride | 75-01-4 | 0.02 | 0.21 | 0.9 | 0.02 | mg/kg | - | - | - | - | - | | - | | 0.15 | U | | | | | - | - | - | - | - | - | - | | - | |
| Chloroethane | 75-00-3 | 1.9 | | | | mg/kg | - | - | - | - | - | | - | | 0.15 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,1-Dichloroethene | 75-35-4 | 0.33 | 100 | 100 | 0.33 | mg/kg | - | - | - | - | - | | - | | 0.077 | U | | | | | - | - | - | - | - | - | - | | - | |
| trans-1,2-Dichloroethene | 156-60-5 | 0.19 | 100 | 100 | 0.19 | mg/kg | - | - | - | - | - | | - | | 0.12 | U | | | | | - | - | - | - | - | - | - | | - | |
| Trichloroethene | 79-01-6 | 0.47 | 10 | 21 | 0.47 | mg/kg | - | - | - | - | - | | - | | 0.077 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,2-Dichlorobenzene | 95-50-1 | 1.1 | 100 | 100 | 1.1 | mg/kg | - | - | - | - | - | | - | | 0.38 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,3-Dichlorobenzene | 541-73-1 | 2.4 | 17 | 49 | 2.4 | mg/kg | - | - | - | - | - | | - | | 0.38 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,4-Dichlorobenzene | 106-46-7 | 1.8 | 9.8 | 13 | 1.8 | mg/kg | - | - | - | - | - | | - | | 0.38 | U | | | | | - | - | - | - | - | - | - | | - | |
| Methyl tert butyl ether | 1634-04-4 | 0.93 | 62 | 100 | 0.93 | mg/kg | - | - | - | - | - | | - | | 0.15 | U | | | | | - | - | - | - | - | - | - | | - | |
| p/m-Xylene | 179601-23-1 | | | | | mg/kg | - | - | - | - | - | | - | | 0.15 | U | | | | | - | - | - | - | - | - | - | | - | |
| o-Xylene | 95-47-6 | | | | | mg/kg | - | - | - | - | - | | - | | 0.15 | U | | | | | - | - | - | - | - | - | - | | - | |
| cis-1,2-Dichloroethene | 156-59-2 | 0.25 | 59 | 100 | 0.25 | mg/kg | - | - | - | - | - | | - | | 0.077 | U | | | | | - | - | - | - | - | - | - | | - | |
| Dibromomethane | 74-95-3 | | | | | mg/kg | - | - | - | - | - | | - | | 0.77 | U | | | | | - | - | - | - | - | - | - | | - | |
| Styrene | 100-42-5 | | | | | mg/kg | - | - | - | - | - | | - | | 0.15 | U | | | | | - | - | - | - | - | - | - | | - | |
| Dichlorodifluoromethane | 75-71-8 | | | | | mg/kg | - | - | - | - | - | | - | | 0.77 | U | | | | | - | - | - | - | - | - | - | | - | |
| Acetone | 67-64-1 | 0.05 | 100 | 100 | 0.05 | mg/kg | - | - | - | - | - | | - | | 0.77 | U | | | | | - | - | - | - | - | - | - | | - | |
| Carbon disulfide | 75-15-0 | 2.7 | 100 | | | mg/kg | - | - | - | - | - | | - | | 0.77 | U | | | | | - | - | - | - | - | - | - | | - | |
| 2-Butanone | 78-93-3 | 0.12 | 100 | 100 | 0.12 | mg/kg | - | - | - | - | - | | - | | 0.27 | J | | | | | - | - | - | - | - | - | - | | - | |
| Vinyl acetate | 108-05-4 | | | | | mg/kg | - | - | - | - | - | | - | | 0.77 | U | | | | | - | - | - | - | - | - | - | | - | |
| 4-Methyl-2-pentanone | 108-10-1 | 1 | | | | mg/kg | - | - | - | - | - | | - | | 0.77 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,2,3-Trichloropropane | 96-18-4 | 0.34 | 80 | | | mg/kg | - | - | - | - | - | | - | | 0.77 | U | | | | | - | - | - | - | - | - | - | | - | |
| 2-Hexanone | 591-78-6 | | | | | mg/kg | - | - | - | - | - | | - | | 0.77 | U | | | | | - | - | - | - | - | - | - | | - | |
| Bromochloromethane | 74-97-5 | | | | | mg/kg | - | - | - | - | - | | - | | 0.38 | U | | | | | - | - | - | - | - | - | - | | - | |
| 2,2-Dichloropropane | 594-20-7 | | | | | mg/kg | - | - | - | - | - | | - | | 0.38 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,2-Dibromoethane | 106-93-4 | | | | | mg/kg | - | - | - | - | - | | - | | 0.31 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,3-Dichloropropane | 142-28-9 | 0.3 | | | | mg/kg | - | - | - | - | - | | - | | 0.38 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | | | | | mg/kg | - | - | - | - | - | | - | | 0.077 | U | | | | | - | - | - | - | - | - | - | | - | |
| Bromobenzene | 108-86-1 | | | | | mg/kg | - | - | - | - | - | | - | | 0.38 | U | | | | | - | - | - | - | - | - | - | | - | |
| n-Butylbenzene | 104-51-8 | 12 | 100 | 100 | 12 | mg/kg | - | - | - | - | - | | - | | 0.077 | U | | | | | - | - | - | - | - | - | - | | - | |
| sec-Butylbenzene | 135-98-8 | 11 | 100 | 100 | 11 | mg/kg | - | - | - | - | - | | - | | 0.077 | U | | | | | - | - | - | - | - | - | - | | - | |
| tert-Butylbenzene | 98-06-6 | 5.9 | 100 | 100 | 5.9 | mg/kg | - | - | - | - | - | | - | | 0.38 | U | | | | | - | - | - | - | - | - | - | | - | |
| o-Chlorotoluene | 95-49-8 | | | | | mg/kg | - | - | - | - | - | | - | | 0.38 | U | | | | | - | - | - | - | - | - | - | | - | |
| p-Chlorotoluene | 106-43-4 | | | | | mg/kg | - | - | - | - | - | | - | | 0.38 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,2-Dibromo-3-chloropropane | 96-12-8 | | | | | mg/kg | - | - | - | - | - | | - | | 0.38 | U | | | | | - | - | - | - | - | - | - | | - | |
| Hexachlorobutadiene | 87-68-3 | | | | | mg/kg | - | - | - | - | - | | - | | 0.38 | U | | | | | - | - | - | - | - | - | - | | - | |
| Isopropylbenzene | 98-82-8 | 2.3 | 100 | | | mg/kg | - | - | - | - | - | | - | | 0.077 | U | | | | | - | - | - | - | - | - | - | | - | |
| p-Isopropyltoluene | 99-87-6 | 10 | | | | mg/kg | - | - | - | - | - | | - | | 0.077 | U | | | | | - | - | - | - | - | - | - | | - | |
| Naphthalene | 91-20-3 | 12 | 100 | 100 | 12 | mg/kg | - | - | - | - | - | | - | | 0.38 | U | | | | | - | - | - | - | - | - | - | | - | |
| Acrylonitrile | 107-13-1 | | | | | mg/kg | - | - | - | - | - | | - | | 0.77 | U | | | | | - | - | - | - | - | - | - | | - | |
| n-Propylbenzene | 103-65-1 | 3.9 | 100 | 100 | 3.9 | mg/kg | - | - | - | - | - | | - | | 0.077 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,2,3-Trichlorobenzene | 87-61-6 | | | | | mg/kg | - | - | - | - | - | | - | | 0.38 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,2,4-Trichlorobenzene | 120-82-1 | 3.4 | | | | mg/kg | - | - | - | - | - | | - | | 0.38 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,3,5-Trimethylbenzene | 108-67-8 | 8.4 | 47 | 52 | 8.4 | mg/kg | - | - | - | - | - | | - | | 0.38 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,2,4-Trimethylbenzene | 95-63-6 | 3.6 | 47 | 52 | 3.6 | mg/kg | - | - | - | - | - | | - | | 0.38 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,4-Dioxane | 123-91-1 | 0.1 | 9.8 | 13 | 0.1 | mg/kg | - | - | - | - | - | | - | | 7.7 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,4-Diethylbenzene | 105-05-5 | | | | | mg/kg | - | - | - | - | - | | - | | 0.31 | U | | | | | - | - | - | - | - | - | - | | - | |
| 4-Ethyltoluene | 622-96-8 | | | | | mg/kg | - | - | - | - | - | | - | | 0.31 | U | | | | | - | - | - | - | - | - | - | | - | |
| 1,2,4,5-Tetramethylbenzene | 95-93-2 | | | | | mg/kg | - | - | - | - | - | | - | | 0.31 | U | | | | | - | - | - | - | - | - | - | | - | |
| Ethyl ether | 60-29-7 | | | | | mg/kg | - | - | - | - | - | | - | | 0.38 | U | | | | | - | - | - | - | - | - | - | | - | |
| trans-1,4-Dichloro-2-butene | 110-57-6 | | | | | mg/kg | - | - | - | - | - | | - | | 0.38 | U | | | | | - | - | - | - | - | - | - | | - | |

RESGW - NYSDEC Protection of Groundwater Soil Cleanup Objective
RESR - NYSDEC Residential Use Soil Cleanup Objective
RESRR - NYSDEC Restricted Residential Use Soil Cleanup Objective
UNRES - NYSDEC Unrestricted Use Soil Cleanup Objective

# APPENDIX C

# Quality Assurance Project Plan for the Former Akzo Nobel Pilot Plant 1 Lawrence Street Ardsley, New York

## NYSDEC Project No. C360146

## July 21, 2017

**Prepared for:** Ardsley, LLC
1650 Des Peres Road, Suite 303
St. Louis, MO 63131

**Prepared by:** First Environment, Inc.
91 Fulton Street
Boonton, New Jersey 07005

FIRST ENVIRONMENT

TABLE OF CONTENTS

TABLES



FIGURES

# Introduction

This Quality Assurance Project Plan (QAPP) has been developed as part of the Remedial Investigation Workplan (RIWP) that has been prepared on behalf of Ardsley, LLC ) for the Former Akzo Nobel Chemicals, Inc. facility (the Site), located at One Lawrence Street in Ardsley, Westchester County, New York.

## Purpose

The purpose of this QAPP is to indicate the prime responsibilities of Ardsley, LLC and its contractors and subcontractors during the implementation of the Site Investigation/Remediation. This QAPP also describes the policy, organization, and specific Quality Assurance (QA) and Quality Control (QC) elements necessary to achieve data quality objectives and fulfill NYSDEC requirements. The QAPP also provides detailed descriptions of the field procedures that will be used during the Site Investigation/Remediation.

In general, there are 10 elements to be addressed in a QAPP to ensure safe, efficient, and effective practices are implemented at environment investigation and remediation sites. These elements include:

1. The project's scope and complexity and how the project relates to the overall site investigation and remediation strategy.
2. The data quality objectives specific to the site and sampling event.
3. Project organization, including the name and telephone number of each of the individuals responsible for overall project coordination, sampling activities, and laboratory analyses.
4. An "Analytical Methods/Quality Assurance Summary Table" (combination of Table 2 and Table 4).
5. A detailed description of the site-specific sampling methods, sample storage in the field, and sampling holding time requirements.
6. A detailed description of all calibration and preventative maintenance procedures for all field instrumentation.
7. A detailed description of the criteria and procedures to obtain duplicate and split samples.
8. A detailed description of the chain-of-custody procedures to be utilized in the field and the laboratory.
9. A detailed description of sample storage procedures to be utilized by the laboratory.
10. Laboratory data deliverable formats to be used.

# Scope and Goals Relation to Investigation / Remediation Strategy

The scope of the project involves addressing:

- Volatile Organic Compounds (VOCs) impact in soil and groundwater on site;
- Pesticides impact in soil on site; and
- Polychlorinated Biphenyls (PCBs) impact in soil on site.

The goals of the remediation are:

- generally eliminate VOC impacted soils and groundwater on site;
- prevent human and environmental contact with PAH, PCB, and metal impacted soil on site;
- prevent VOC impacted groundwater from future migration off site;
- reduce any impact of VOC on off-site groundwater.

The strategy for conducting the investigation will involve:

- a pre-design investigation to further characterize the extent of impact for on-site soil and groundwater;
- a remedial alternative assessment to identify feasibility of remedial alternatives; and
- a remedial design program to provide the details necessary to implement the remedial program.

## Data Quality Objectives

In order to ensure that data generated during any sampling component of the Remedial Investigation is of the highest quality, the analytical results of such sampling will be compared to appropriate data quality indicators. These indicators include precision, accuracy, representativeness, completeness, and comparability. Each of these indicators is described below:

1. Precision is the agreement or reproducibility among individual measurements on the same property, usually made under the same conditions.
2. Accuracy is the degree of agreement of a measurement with the true or accepted value.
3. Representativeness is the degree to which a measurement accurately and precisely represents a characteristic of a population, parameter, variations at a sampling point, a process condition, or an environmental condition.
4. Completeness is a measure of the amount of valid data obtained from a measurement's system compared with the amount that was expected to be obtained under correct and normal conditions.
5. Comparability is an expression of the confidence with which one data set can be compared with another data set with regard to the same parameter.

The data quality objectives (DQO) vary according to the specific objectives of each task that is being undertaken. For example, accuracy, precision, and representativeness of data are functions of sample origin, analytical procedures, and specific sample matrices. Quality control practices for the evaluation of these data quality indicators include the use of accepted analytical procedures, adherence to holding times, and the analysis of QC samples (blanks, duplicates, spikes, calibration standards, and reference standards).

Completeness is a function of the number of valid data results generated compared to the number of data results planned. Completeness can be less than 100 percent due to poor sample recovery, sample damage, or disqualification of results due to results being outside of laboratory control limits. Completeness is documented by including sufficient information in field logs and laboratory reports to allow the data user to assess the quality of the results. The overall completeness goal for each task is difficult to determine prior to data acquisition. However, all reasonable attempts will be made for this project to attain a completeness of 85 percent or better. The completeness goal for the analytical laboratory will be 90 percent or greater.

Comparability is a function of the analytical and field methodologies used. Ensuring comparable data will be accomplished by using standard and accepted methodologies; using methods traceable to the National Institute of Standards and Technologies (NIST), NYSDEC sources, New York Department of Health (NYDOH) sources, or USEPA sources; using appropriate levels of quality control; reporting results in consistent standard units of measure; and participating in studies designed to evaluate laboratory performance.

Table 1 identifies the different levels of quality assurance that are being assigned to each task that will be implemented during the Site Investigation/Remediation.

**Table 1: Levels of Quality Assurance**

| DQO Level | Description | Associated Activity |
|---|---|---|
| I | Level I is the lowest quality data but provides the fastest and least expensive results. Field screening or analysis provides Level I data. The generated data can indicate the presence or absence of certain constituents and is generally qualitative rather than quantitative. | • Health and Safety Monitoring (PID, FID) |
| II | Level II data are generated by field laboratory analysis using more sophisticated portable laboratory instruments or a mobile laboratory onsite. This provides fast results and better-quality data than in Level I. | • Field Analyses (pH, specific conductance, temperature, dissolved oxygen) |
| III | Level III data may be obtained by a commercial laboratory with or without CLP procedures. The analysis does not usually use the validation or documentation procedures required of CLP (Level IV) analysis. The analyzed parameters are relevant to site characterization, risk assessment, and design and implementation of the remedial action. | • Ongoing Groundwater sampling<br>• Waste Classification Sampling |
| IV | Level IV data are typically used for risk assessment, engineering design, and cost-recovery documentation. All analyses are performed in a CLP analytical laboratory and follow CLP procedures. Level IV is characterized by rigorous QC protocols, documentation and detection limits. | • Post-excavation soil sampling<br>• Soil sampling for soil reuse<br>• Final Groundwater sampling |
| V | Level V data are those obtained by non-standard analytical procedures. Method development or modification may be required for specific constituents or detection limits. | • Not Applicable |
| VI | Other methodologies not described above. | • Physical soil description<br>• Geotechnical tests<br>• Water level measurements<br>• Aquifer tests |

# Project Organization and Responsibilities

First Environment and a qualified team of subcontractors will perform the work activities for this RIWP under the direction of representatives of Ardsley, LLC. The lead regulatory agency for this project is the NYSDEC with the New York State Department of Health (NYSDOH) providing additional regulatory oversight. First Environment is the primary contractor.

All of Ardsley, LLC's, First Environment's, and other appropriate project personnel and their respective roles are described below. The project organization chart for the Remedial Action is shown in Figure 1.

## Ardsley, LLC

First Environment is contracted to Ardsley, LLC to provide technical services for this project. The project manager is Mr. Dan Dunn. He may be contacted using the following:

Ardsley, LLC
1650 Des Peres Road, Suite 303
St. Louis, MO 63131
Phone: (314) 835-2814
E-mail: ddunn@enviroanalyticsgroup.com

## NYSDEC Project Manager

The NYSDEC Project Manager assigned to the Site is Douglas MacNeal. Mr. MacNeal is to be contacted using the following:

New York State Department of Environmental Conservation
Remediation New York State Department of Environmental Conservation
625 Broadway, 11th Floor
Albany, NY 12233-7014
Phone: (518) 402-9662
Fax: (518) 402-9679
E-mail: douglas.macneal@.dec.ny.gov

## NYSDOH Public Health Specialist

The NYSDOH Public Health Specialist assigned to this project is Krista Anders. Ms. Anders can be contacted using the following:

New York State Department of Health
Bureau of Environmental Exposure Investigation
Empire State Plaza
Corning Tower, Room 1787
Albany, New York 12237
(518) 402-7800 or (800) 458-1158 ext. 27880
krista.anders@health.ny.gov

## First Environment, Inc.

First Environment will be the prime contractor implementing the Remedial Investigation/Remediation. The project responsibilities of First Environment personnel shall be as follows:

***Mr. Thomas Bambrick, LSRP*** is the Director of Site Investigation and Remediation at First Environment and will act as the Senior Scientist and Senior Project Manager. Mr. Bambrick will provide senior management oversight and provide technical advice and review of all Investigation/Remediation-related issues. Mr. Bambrick has the responsibility of ensuring and overseeing the preparation of all deliverables, staffing, scheduling, coordinating subcontractors, and overseeing all technical project activities.

***Mr. Daniel Lattanzi, LSRP*** is a Senior Associate at First Environment and will act as the Project Manager. Mr. Lattanzi will be responsible for the day-to-day project operations, preparation of all deliverables, coordinating subcontractors, and the implementation and oversight of all work being performed in the field. Mr. Lattanzi will be responsible for oversight of all Health and Safety issues during the field activities.

***Mr. Allen Attenborough, P.G., LSRP*** is an Associate at First Environment and is serving as the Project Quality Assurance Project Plan Manager. Mr. Attenborough has the responsibility for all First Environment work on the project, including achieving objectives and ensuring quality.

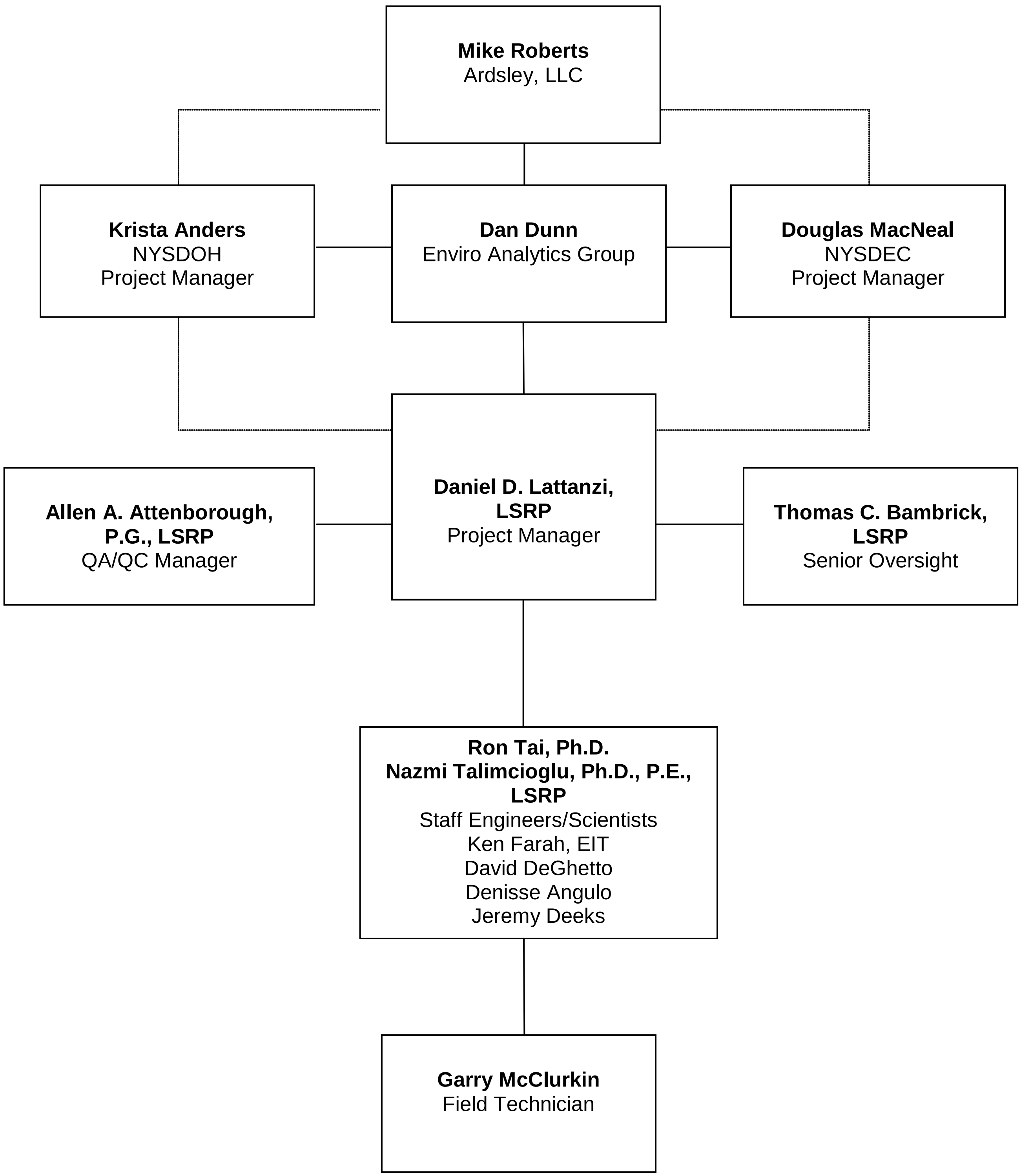
***Dr. Ronald Tai; Dr. Nazmi Talimcioglu, P.E., LSRP; and Mr. Kenneth Farah, EIT*** are Engineers, and ***Mr. David DeGhetto; Ms. Denisse Angulo; and Mr. Jeremey Deeks*** are Environmental Scientists at First Environment. One or more of these individuals will act as the Staff Engineers/Scientists/Environmental Specialists for this project. The Staff Engineers/Scientists/ Environmental Specialist will be responsible for the completion and oversight of on-site and off-site activities, oversight of all First Environment retained subcontractors, and the Health and Safety issues during the field activities.

***Mr. Garry McClurkin*** is First Environment’s Field Technician who will assist with work being performed in the field.

All of the First Environment employees can be contacted at:

First Environment, Inc
91 Fulton Street
Boonton, New Jersey 07005
Phone: (973) 334-0003
Fax: (973) 334-0928

**FIGURE 1: Organization Chart**



## Subcontractors

First Environment is in the process of obtaining subcontractors to perform the various duties associated with the Investigation/Remediation at the Site. In addition, competitive bids will be acquired in accordance with ERP guidance. To date, the following Subcontractors have been contracted with and approved by the NYSDEC:

Hampton-Clarke Veritech
175 US Route 46
Farifield, NJ 07004
Phone: (800) 426-9992
Email: info@hcvlab.com

Environmental Test Boring & Remediation Services, Inc.
11 Fox Hill Road
Denville, New Jersey 07834
Phone: (888) 433-4877
Email: info@environmentaltestboring.com

# Analytical Procedures

Method references for the analyses to be performed during the Site Investigation/Remediation are summarized in Table 2.

**Table 2: Method References, Holding Times and Preservation Requirements**

| Parameters | Matrix | Method Reference | Holding Time | Preservation | Sample Volume | DQO Level |
|---|---|---|---|---|---|---|
| VOC | Aqueous | USEPA 624/8260 | 14 days | $4^oC$, HCl | 40mL glass vial | III/IV |
| VOC | Soil | USEPA 8260 | 14 days | $4^oC$, Methanol* | 5g glass jar | III/IV |
| VOC | Air | USEPA TO-15 | 14 days | N/A | 2 to 6L*** | IV |
| PAHs | Aqueous | USEPA 8270B | 7 days | $4^oC$ | 2L glass jar | III/IV |
| PAHs | Soil | USEPA 8270 | 14 days | $4^oC$ | 4oz glass jar | III/IV |
| Metals | Aqueous | 7000 Series | 6 months | $4^oC$, HNO3 | 250mL PE jar | III/IV |
| Metals | Soil | USEPA 6020/7471A | 180 days, 28 days ** | N/A | 2oz glass jar | III/IV |
| PCBs/Pesticides | Soil | USEPA 8082/8081A | ++ | $4^oC$ | 2oz glass jar | III/IV |
| Dissolved Oxygen | Aqueous | Electrode | Immediate | N/A | N/A | II |
| Temperature | Aqueous | Thermometer | Immediate | N/A | N/A | II |
| Turbidity | Aqueous | Electrode | Immediate | N/A | N/A | II |
| Specific Conductivity | Aqueous | Electrode | Immediate | N/A | N/A | II |
| Organic Vapor | Air | PID or FID | Immediate | N/A | N/A | I |
| PH | Aqueous | Electrode | Immediate | N/A | N/A | I |

* If sample is not collected using an EnCore TM sampling device
** For Mercury samples only
++ 7 days for extraction, up to 40 days after extraction

# Field Procedures

The accuracy of the data is dependent upon well-conceived and carefully implemented sampling and analysis procedures. This section presents the procedures with which samples will be collected or measurements made during the execution of this project.

## Changes in Procedure

Field conditions may require modifications to the QAPP. Significant changes to the sampling procedures specified in the QAPP due to unanticipated field conditions will be identified and discussed with the First Environment Project Manager prior to the implementation. The First Environment Project Manager will in turn discuss the needed changes in procedure with the NYSDEC Project Manager. Changes in sampling procedures cannot be implemented unless approval is received from the NYSDEC Project Manager. Minor changes may be made with the concurrence of the First Environment Senior Project Manager but must be documented in the field logbook and/or interoffice memoranda. Any and all changes in sampling procedures will also be documented in the associated report submittal.

## Acquisition of Samples

All samples will be adequately marked for identification from the time of collection and packaging through handling and storage. Marking for sample identification shall be on a sample label attached to each sample container. Sample identification will include, at a minimum, the following:

- sample identification number;
- analysis required;
- sample date and time; and
- initials of the individual performing the sampling.

A description of the sample will be included in the field logbook.

Alphanumeric codes will be used to identify sample locations. The coding for sample identification numbers should be consistent, identify a single sample location, and unless otherwise directed, use the following naming convention:

**Table 3: Sample Identification Naming Conventions**

| | |
|---|---|
| MW-XX | Shallow-depth Overburden Monitoring Well |
| MW-XXI | Intermediate-depth Overburden Monitoring Well |
| MW-XXD | Deep Overburden Monitoring Well |
| TW-XX | Temporary well point |
| RW-XX | Recovery Well |
| FE-SB-X | Test Boring |
| TP-XX | Test Pit |
| EX-YSXX | Post Excavation Sidewall |
| EX-BXX | Post Excavation Base |
| SW-XX | Surface water sampling location |
| W-XX | Wipe sample |
| WCS-XX | Soils Waste Classification |
| WCW-XX | Water Waste Classification |
| IA-BXX | Indoor Air at Building XX |
| OA-UW or DW | Outdoor Air upwind or downwind |
| SS-BXX | Sub Slab Vapor at Building XX |
| SV-XX | Soil Vapor |

Where XX is a numerical value, and Y is coordinate such as Northwest.

The methods and references for collecting the soil and groundwater samples are provided in the RIWP. The laboratory will provide appropriately cleaned and prepared sample containers. Reagents, preservation procedures, and analytical holding times will be in accordance with the published analytical methods.

The specific requirements for sample container preparation, sample preservation, holding times, and any special handling requirements are listed in Table 2. Sample containers will be kept closed until the time each set of sample containers is to be filled. After sample collection, the sample containers will be securely closed, residue wiped from the sides of the containers, sample identification marked on the container label, and the container immediately placed in a cooler that contains ice. Samples will be kept chilled and delivered to or picked up by the laboratory. Samples of dissimilar matrices will be shipped in separate coolers whenever possible. All reasonable effort will be used to limit the time the sample containers are on the Site to no more than two calendar days.

## Calibration Procedures

Laboratory calibration procedures and frequency of calibration will be completed in accordance with the NYSDOH ELAP CLP criteria. These criteria represent accepted techniques to ensure accurate sampling, monitoring, testing, and documentation as per QA/QC standards. Field instruments such as pH meters, dissolved oxygen meters, and specific conductivity meters will be standardized in accordance with the manufacturer's recommendations against National Institute of Standards and Technology (NIST) traceable standards, where appropriate. During sampling, calibration will be performed at the beginning and end of each day of use. Appropriate calibration records will be maintained in field logbooks.

Samples that do not contain concentrations of target analytes that exceed instrument calibration range, absent of matrix interference, will be analyzed so as to achieve the lowest practical quantitation limits. Samples that do contain concentrations of target analytes that exceed the instrument calibration range will be diluted in accordance with approved methodologies and good laboratory practice.

## Field Sampling Procedures

The field sampling activities are divided into two categories: field screening and subsurface characterization. Field screening will be used to obtain immediate site data that can be used to ensure the health and safety of site workers and/or assist in the selection of soil and groundwater sampling locations and depths. Subsurface characterization involves the collection of samples for analysis by the laboratory. The results generated from these sample analyses will be used to characterize and monitor site conditions. The components of the Remedial Investigation include on-site soil sampling and groundwater monitoring.

### Groundwater Level Measurements

Groundwater levels will be measured during Remedial Investigation. Synoptic (instantaneous) groundwater level measurements will be collected from all accessible wells and piezometers concurrently with all on-site groundwater sampling events. Groundwater level measurements will be made using a Slope Indicator electronic water level meter or equivalent. The water level meter will be field decontaminated prior to use and between measurements at each well location. Measurements to the depth-of-water will be made to the nearest 0.01-foot relative to the northernmost point at the top of the casing elevation. This measurement will be converted to a groundwater elevation based upon the surveyed casing elevation.

If non-aqueous phase liquids are observed, then thickness measurements will be made using an oil/water interface probe, indicator paste, or other appropriate methods.

## Groundwater Sampling

Groundwater sampling of any one monitoring well will be performed no sooner than one week following the development of that monitoring well unless otherwise approved by the NYSDEC. Groundwater sampling for any one sampling event will consist of determining the casing volume, purging, and sample collection. These procedures are described below.

### Determination of Casing Volume

Casing volume will be determined by measuring the water level in each monitoring well and utilizing well construction information to calculate the volume of standing water in the well. An electronic water level indicator will be used to measure the depth from the top of the innermost casing to the water table to the nearest 0.01 feet. The water level indicator will be decontaminated using phosphate-free detergent and distilled or deionized water prior to its use in any one monitoring well. The depth to the bottom of the monitoring well will be determined during the first sampling event to confirm well construction details. The measurement will be taken with a field-decontaminated electronic water level indicator and recorded to the nearest 0.01 feet.

### Purging

One of two groundwater purge techniques may be applied at this Site. The first method is low-flow purge method. This method minimizes data quality interference by suspended solids by purging groundwater at such a low rate so as not to cause sediment in the well to become suspended. To ensure that pore water and not casing water is sampled upon completion of purging, groundwater is purged until several indicator parameters become stable. This technique is described in detail by Puls and Barcelona (“Low-flow (minimal drawdown) groundwater sampling procedures.” EPA/540/S-95/504; April 1996).

If a low-flow purging technique is used, then groundwater will be extracted at a rate that is equal to or less than one liter per minute. The water level will be checked periodically during purging to monitor drawdown and to guide flow rate adjustment.  The flow rate will be adjusted to achieve a minimal drawdown that does not exceed 0.33 feet (4 inches).

During low-flow purging, in-line water quality will be monitored during purging using a flow-through cell.  The water quality indicator parameters that will be monitored will include pH, conductivity, dissolved oxygen (DO), and turbidity.  Measurements will be taken every three to five minutes until water quality parameters have stabilized.  Stabilization is achieved when three successive readings are within ± 0.1 standard units for pH, ± 3 percent for conductivity, and ± 10 percent for turbidity and DO.

If the low-flow purge technique is not used, then the wells will be purged by removing three to five casing volumes of water from the monitoring well prior to sampling.  The wells will be purged using positive displacement pumps such as a submersible pump.  A bottom-filled bailer may also be used to purge a well.  If a submersible pump is used, then the pump and power cord will be decontaminated prior to each use using the methods described later in this document.  New ASTM drinking water grade polyethylene tubing will be attached to the submersible pump to discharge water from the monitoring well.  The tubing will be discarded after use at a monitoring well.

If well or piezometer diameter is such that a positive displacement pump cannot be used, a peristaltic pump with dedicated thin plastic tubing will be used to purge the required volume.

The field parameters pH, specific conductance, temperature, and DO will be measured and recorded prior to purging the monitoring well.  During purging, all reasonable effort must be made to keep the purging rate low and to avoid pumping the well to dryness.  Monitoring well purging rates will not exceed five gpm.  In some cases the evacuation of three casing volumes may not be practical due to slow recovery.  If a monitoring well is pumped to near dryness at a rate less than 0.5 gpm, then the monitoring well will be allowed to recover to a volume sufficient for sampling.  Sampling will occur within two hours of purging, as long as the well has sufficiently recovered.  It may be necessary to allow all such monitoring wells to recover sufficiently for sampling.  Details of the monitoring well's recovery rate will be noted on the field form.

The following monitoring well purge data will be recorded on the field form for each monitoring well sampled whenever the “3 to 5 volume” purge method is used:

Before Purging:

- date, time, and whether conditions;
- monitoring well identification number;
- PID measurements taken from the monitoring well immediately after the cap is removed;
- pH, DO, temperature, and specific conductivity;
- total monitoring well depth and depth-to-water from the top of the innermost casing; and
- water volume within the monitoring well.

After Purging

- start and end time of purging;
- purge method;
- purge rate;
- total volume purged; and
- pH, DO, temperature and specific conductivity.

After Sampling

- start and end time of sampling;
- pH, DO, temperature, and specific conductivity;
- sampling method; and
- pertinent observations regarding sample characteristics (e.g., turbidity, color, odor).

**Sampling**

If the low-flow purge method is used, the sample will be collected by disconnecting the intake hose from the flow-through cell and using the discharge from the hose fill the laboratory provided containers.

If the “3 to 5 volume” purge method is used, monitoring well sampling will be performed within two hours of purging unless, as stated earlier, a monitoring well recovers at too slow a rate. Sampling will be performed with a dedicated clean Teflon bailer with a single check valve at the bottom.

To obtain a sample, the bailer will be slowly lowered into the well using the leader and rope until it is submerged and slowly brought back to the surface after filling. The contents of the bailer will then be slowly poured into the sampling containers provided by the laboratory.

The preferred order of sample collection is as follows:

- VOCs;
- SVOCs
- metals (if necessary);
- wet chemistry parameters (i.e., natural attenuation parameters such as nitrate); and
- field measurements (temperature, DO, pH, and specific conductance).

The following procedures will be performed immediately after sample collection:

- the sample containers will be securely closed;
- residue will be wiped from the sides of the containers;
- the containers will be properly labeled;
- the containers will be immediately placed in a cooler and maintianed at a temperature of $4^{o}$C.

Samples will be shipped on the day of sample collection under a chain-of-custody to the analytical laboratory. Samples of dissimilar matrices will be shipped in separate coolers whenever possible.

## Soil Sampling

Soil samples collected for VOC analysis will be collected with a properly decontaminated soil coring device or waste pile sampler from a depth of between 0 to 6 inches below the excavated surface and along the sidewalls. The frequency of the sampling will be proposed in the RIWP. A sub-sample will be collected from the soil coring device or waste pile sampler using either an Encore® sampler, a Terra Core Kit, or a disposable dedicated plastic syringe. Sub-samples collected using the dedicated plastic syringe will be transferred to a 40mL glass vial and preserved with Methanol. To prevent loss of VOCs, no samples collected for VOC analysis will be composited, unless required by a disposal facility,.

Soil samples collected for metals or PAH analysis will be collected using a properly decontaminated stainless steel hand scoop/trowel and transferred to the appropriate glassware.

Samples collected for waste classification will be composited on site prior to shipment to the laboratory, except cases in which the samples are expected to be hazardous, in which case samples will be composited at the laboratory. All sample containers will consist of laboratory-cleaned bottles that, once filled with sample, are to be properly labeled and placed into coolers maintained at 4$^{o}$C.

Sampling locations shall be noted on a site map and measured from a set location, such as a monitoring well. The soil borings will be characterized and soil texture at each soil sampling location shall be logged in accordance with the Unified Soil Classification System (USCS). Waste classification and post-treatment soil samples will not be logged for texture.

## Decontamination Procedures

Decontamination of equipment and other materials will be conducted at a designated on-site decontamination area. Thus, if gross contamination is observed on field sampling equipment, decontamination will involve the following steps:

1. non-phosphate detergent plus tap water wash;
2. tap water rinse;
3. distilled/deionized water rinse;
4. 10 percent nitric acid solution rinse;[1]
5. distilled/Deionized water rinse;[2]
6. Alconox rinse;[3]
7. distilled/deionized water rinse.[4]

If gross contamination is not observed, the field sampling equipment may be field-decontaminated utilizing the following procedure:

1. non-phosphate detergent and tap water scrub to remove residual particles;
2. generous potable water rinse;
3. distilled/deionized water rinse.

[1] Apply this step only if the sample is to be analyzed for metals.
[2] Apply this step only if the sample is to be analyzed for metals.
[3] Apply this step only if the sample is to be analyzed for organic compounds.
[4] Apply this step only if the sample is to be analyzed for organic compounds.

Decontamination of submersible pumps used for monitoring well purging and sampling will use the following procedures:

1. non-phosphate detergent and tap water wash to remove residual particles from the pump casing, hose, and cables;[5]
2. distilled/deionized water rinse;
3. flush a minimum of one gallon of potable water through the pump.

New ASTM drinking grade polyethylene tubing will be used for each well and discarded after use. The submersible pump, associated tubing, and other sampling equipment will be placed on clean polyethylene sheeting prior to use in order to avoid contact with the ground surface.

## Waste Handling Procedures

Decontamination water and purged groundwater will be generated during the implementation of the aforementioned activities. If product, a sheen, or heavy odors are observed, the water will be collected and containerized in 55-gallon DOT approved drums. The drums will be properly staged on site until the waste can be characterized for disposal at a licensed facility.

All collection, storage, and disposal of all waste material generated during the remedial investigation activities will be coordinated with the Ardsley, LLC. All wastes will be disposed of in accordance with NYSDEC and NYSDOH requirements.

[5] Steam cleaning of pump casing, hose and cables may be conducted instead of applying the detergent and tap water rinse.

# Field Quality Control Procedures

## Field Duplicates

Field Duplicate samples are collected to evaluate the laboratory's performance by comparing two separate samples that were collected from the same location. The frequency of duplicate sample collection will be five percent or one for every 20 samples, or part thereof, per matrix. If less than 20 samples are collected for a particular matrix, then one duplicate will be collected.

The collection of a duplicate groundwater sample will be obtained by alternately filling sample containers from the same sampling device for each parameter. The sample locations that require VOC analysis should have all the VOC sample containers filled from a single sampling device, whenever possible.

## Field Blanks

Field Blanks will be collected as a mechanism of control on sample equipment handling, preparation, decontamination, storage, and shipment. Field Blanks will be collected at a frequency of one per day during aqueous sampling events. They will be analyzed for all parameters analyzed during a particular sampling event on that day of sampling.

Field Blank water will be analyte free water provided by the analytical laboratory. The Field Blank water will be transported to the field in bottles that are of the same type as that which is used to contain the Field Blank sample. All Field Blank and sample containers will be transported to and from the field and handled in a manner that is identical, in every practical aspect, to the manner in which environmental samples and sample containers are handled.

## Trip Blanks

A Trip Blank will accompany each environmental sample container (cooler) carrying samples that are to be analyzed for VOCs. The Trip Blanks will be analyzed for any and all VOC parameters that are targeted for analysis in any particular sample shipment. Trip Blanks are not required for sampling events for which VOCs will not be analyzed.

Trip Blanks will be prepared by the analytical laboratory using analyte-free water. The Trip Blanks will be marked by the laboratory with the date and time of preparation. This date and time will represent the sampling date and time for the Trip Blank that is to be entered into the field logbooks and chain-of-custody forms.

Trip Blanks will accompany the coolers and environmental samples during transport to and from the field.  Every practical step should be taken to expose the Trip Blanks to the same conditions as the environmental samples and coolers.

**Table 4: Quality Assurance Sample Frequency**

| QA Sample Type | Aqueous | Soil |
|---|---|---|
| Duplicate | 5% | 5% |
| Field Blank | Daily | Daily |
| Trip Blank | 1 per Cooler (VOCs only) | 1 per Cooler (VOCs only) |

## Chain-of-Custody Procedures and Sample Storage

Chain-of-custody procedures have been established to ensure sample traceability from the time of collection through the completion of analyses. The National Enforcement Investigation/ Remediation Center (NEIC) of the USEPA considers a sample to be in custody under the following conditions:

- it is in your possession; or
- it is in your view after being in your possession; or
- it was in your possession and you secured it with a lock; or
- it is in a designated secure area.

All environmental samples will be handled under strict chain-of-custody procedures beginning in the field. The First Environment Field Team Leader will be the Field Sample Custodian and will be responsible for ensuring that the procedures outlined in the applicable work plan and this QAPP will be followed. Sample custody for field activities will include the use of chain-of-custody forms, sample labels, and field logbooks. Dedicated field logbooks will be used throughout the project to document field activities.

Once samples are transported to the laboratory, custodial responsibility is transferred to the Laboratory Sample Manager to ensure that the appropriate procedures and methods are followed.

## Data Reduction, Evaluation and Reporting

The laboratory will submit analytical reports to First Environment. Precision, accuracy, representativeness, comparability, and completeness of the laboratory data will be evaluated based upon adherence to sample holding times and the analysis of QA/QC samples (i.e., duplicates, spikes, and blanks). Data validation of non-CLP reduced deliverables (Category A) will be based upon method-specific QC criteria similar to the criteria of Section 8 of the USEPA 600 series methods provided in 40 CFR Part 136. The overall responsibility for reporting laboratory data lies with the laboratory director. Professional judgment will be used to determine data usability with respect to the Data Quality Objectives. Data validation of CLP deliverables (Category B) will be performed by a third party verifier and be reported in a Data Usability Summary Report (DUSR) as specified in the NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation dated May 2010.

In accordance with Section 502 of the Public Health Law, data upon which decisions impacting human health are based will be analyzed by an ELAP certified lab and documented by Category B deliverables. The following types of samples fall under this category:

- initial groundwater sampling (including both on-site and off-site sampling);
- soil to remain at the site (waste classification for reuse);
- post-excavation sampling; and
- air Sampling, including outdoor air, indoor air, sub-slab vapor, and soil vapor samples.

Assessment of accuracy, precision, and completeness of both field and laboratory measurements is based upon obtaining acceptable results from QA/QC samples. Where appropriate, these may include blanks, duplicate samples, laboratory control spikes, or matrix spike/matrix spike duplicate samples. At least one physical set of Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples will be collected and analyzed per 20 samples for each matrix. Duplicates and MS/MSDs will be collected at least once during each major analytical event.

Method blanks, field blanks, and trip blanks are expected not to contain any targeted analytes with concentrations greater than the reported detection limit, with the possible exception of common laboratory contaminants (e.g., methylene chloride).

Field and laboratory duplicate results will be assessed based upon the relative percent difference (RPD) between values, using the following equation:

$$RPD = \frac{(D1-D2)}{(D1+D2)/2} \times 100$$

where, D1 = Primary sample result; and
D2 = Duplicate sample result.

Laboratory Control Samples will be assessed based upon the percent recovery of spiked analytes. The percent recovery will be calculated using the following equation:

$$\text{Percent Recovery} = \frac{X}{TV} \times 100$$

where, X = observed value of measurement; and,
TV = "true" value of spiked analyte.

Matix Spike/Matrix Spike Duplicate (MS/MSD) data will be assessed based upon the percent recovery of spiked analytes using the following equation:

$$\text{Percent Recovery} = \frac{(SSR - SR)}{SA} \times 100$$

where, SSA = Spiked sample result for analyte x;
SR = Sample result for analyte x;
SA = Spike of analyte x added.

Laboratory completeness will be assessed based upon the amount of valid data obtained from a particular measurement system. It may be quantitatively expressed using the following equation:

$$\text{Laboratory Completeness} = \frac{N1}{N2} \times 100$$

where, N1 = Number of valid measurements obtained; and,
N2 = Number of measurements validated.

Project Data completeness will be assessed based upon the amount of valid data obtained from field sampling and laboratory analyses. It may be quantitatively expressed using the following equation:

$$\text{Project Completeness} = \frac{N1}{N2} \times 100$$

where, N1 = Number of valid measurements obtained; and,
N2 = Number of measurements anticipated in the RAWP.

The laboratory will assess all QC data with regard to precision and accuracy. Individuals making field measurements will determine whether or not field QC criteria were met. A First Environment data validator will examine laboratory analytical data and field data to determine the usability of this data as well as the data's consistency with Analytical Data Quality Objectives.

## Corrective Actions

The need for corrective action will be based upon predetermined limits for acceptability for all aspects of sample collection and analysis.  Predetermined limits for acceptability may include, but are not limited to, comparison to historical data, precision, accuracy, representativeness, consistency, and completeness criteria.

Laboratory Corrective Actions are described in the laboratory's Quality Assurance Manual. Laboratory personnel will assess laboratory QC samples, and if applicable, re-analyze samples that do not meet Quality Assurance requirements prior to expirations of holding times.  Other corrective actions may include collection and analysis of additional samples from the Site. Problems that cannot be resolved by the laboratory's managers or QA officers will be brought to the attention of the First Environment Project Manager.  The Project Manager, following consulting with NYSDEC, will determine the corrective action to be taken, if any.

The detection of system and performance problems during field activities and the implementation of any resulting corrective actions will be documented in the field logbook and placed in the project file.  System and performance problems may include, but not be limited to, field equipment failure, limited or no site access, and unanticipated field conditions.  The First Environment Project Manager will be notified of all system and performance problems immediately after field personnel discover them.  The Project Manager may consult with the NYSDEC and Ardsley, LLC, if necessary, to determine the corrective action to be taken, if any.

# APPENDIX D

FIRST ENVIRONMENT

# Site Health and Safety Plan[1]

## Section 1: General Information

| | | | |
|---|---|---|---|
| **Overall Haz Eval:** | Low | **Project Manager:** | Dan Lattanzi |
| **Site Name:** | Former Akzo Nobel Pilot Plant | **Site Emer Contact:** | Dan Lattanzi |
| **Project Name:** | Ardsley, NY | **Site Emer Contact #:** | (908) 472-8662 |
| **Project Number:** | ENVLT008 | **HASP Revision #:** | 00 |
| **Project Location:** | Ardsley, New York | **HASP Approval Date:** | |
| **Client Name:** | Ardsley, LLC | **HASP Effective Date:** | |
| **Site Contact:** | Dan Dunn | | |
| **Contact #:** | 314-835-2814 | | |

## Section 2: Emergency Contact Information

### Local Service Contact Numbers

| | | | |
|---|---|---|---|
| **Ambulance:** | 911 | **Poison Control:** | 800-462-6642 |
| **Fire:** | 911 | **Fire (non-emergency):** | 845-562-1212 |
| **Police:** | 911 | **Police (non-emergency):** | 845-561-3131 |

### Spill Response Information

| | | | |
|---|---|---|---|
| DOT HazMat Info: | 202-366-4488 | CHEMTREC | 800-424-9300 |
| National Response Center Hotline: | 800-424-8802 | CMA Chemical Referral Center: | 800-262-8200 |
| State Spill Response Hotline Name | NYSDEC Spill Hotline | Emergency Response Contractor Name: | Not applicable |
| State Spill Response Hotline number: | 1-800-457-7362 | Emergency Response Contractor Number: | Not applicable |

### First Environment Contact Information

| | | | |
|---|---|---|---|
| Project Manager: | Dan Lattanzi | FE Office Number: | 973-334-0003 |
| Cell Phone: | 908-472-8662 | Alternate FE Contact: | Allen Attenborough |
| Home Phone: | 973-334-0003 | Cell Phone: | (973) 980-1199 |
| FE Medical Consultant: | Jeffrey Liva, M.D. | FE Human Resources Dir: | Scott Kymer |
| FE Medical Consultant #: | 201-444-3060 | Cell Phone: | 973-632-6741 |

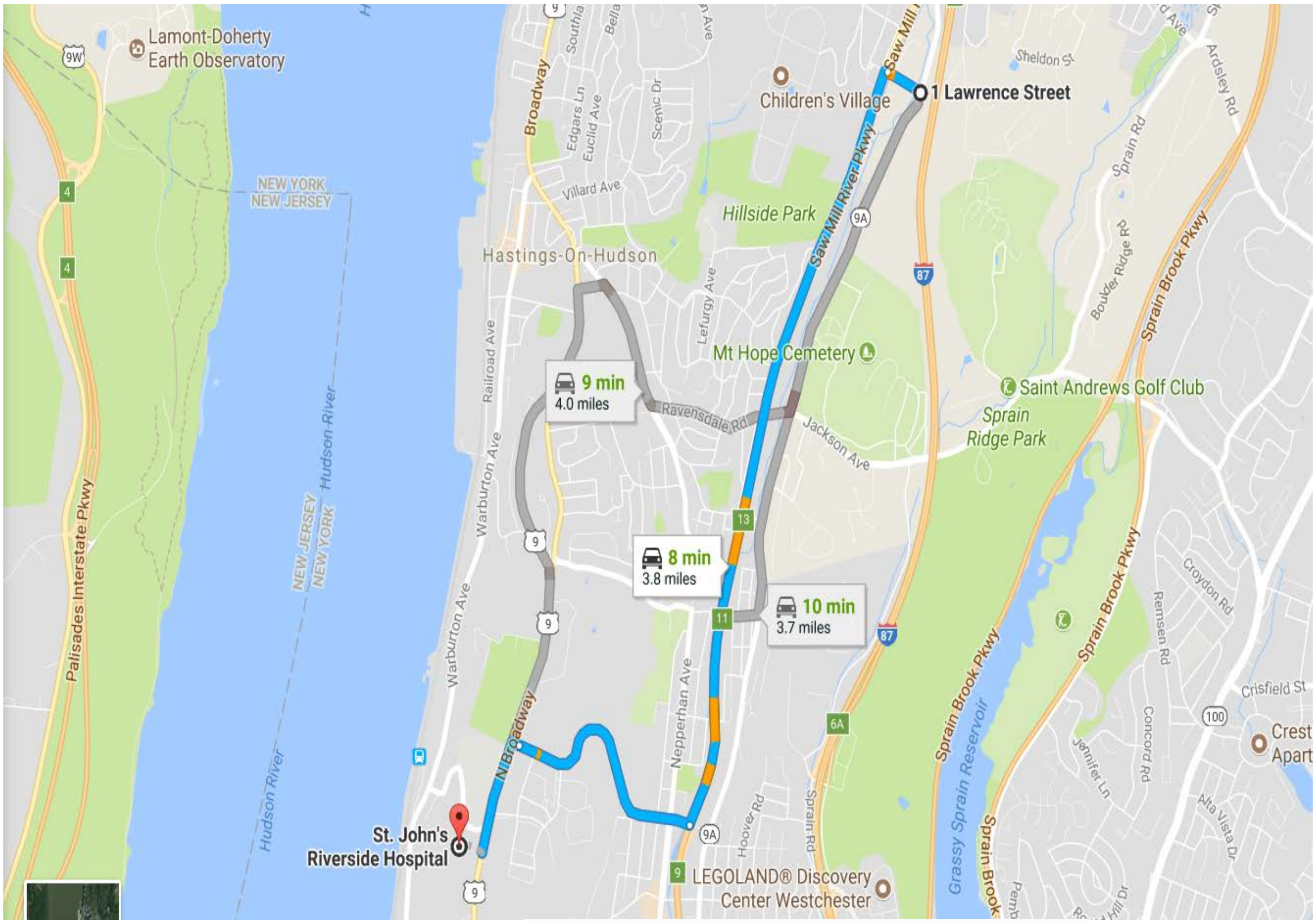
### Hospital Information (Do NOT attempt to transport anyone for anything other than a minor injury in which the individual is ambulatory. Call 911 for an ambulance instead.)

| | | | |
|---|---|---|---|
| Name: | St. John's Riverside Hospital | | |
| Address: | 967 N Broadway, Yonkers, New York 10701 | | |
| Non-Emerg. Phone: | 914-964-4444 | Hours of Operation: | 24 hours |
| Verified by: | Denisse Angulo | Date: | 07/14/2017 |

[1] Note: This Health and Safety Plan has been written for the use of First Environment, Inc. and its employees. The plan is written for specific trained personnel who are under medical surveillance. The plan is applicable for the specific purposes and objectives stated and is representative of conditions believed to exist at the time of its preparation. First Environment, Inc. claims no responsibility for its use by others

## Section 3: Map to Hospital

This page reserved for a map and directions to the hospital.




**1 Lawrence St**
Ardsley, NY 10502

- Head northwest on Lawrence St toward S County Trailway
  0.1 mi
- Turn left onto Saw Mill River Pkwy S
  2.4 mi
- Turn right onto Executive Blvd
  0.9 mi
- Turn left onto N Broadway
  0.4 mi

**St. John's Riverside Hospital**
967 N Broadway, Yonkers, NY 10701

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

## Section 4: Site Description

### Field Effort Objectives

Initial Assessment
Delineate contamination **X**
Remediate contamination
Other (list below)

### Site Characteristics (check all that apply)

| | |
|---|---|
| First Entry | Hazardous (CERCLA/State Superfund) |
| Previously Characterized **X** | Hazardous (RCRA) |
| Active | HAZWOPER |
| Inactive **X** | Sanitary or C and D Landfill |
| UST/LUST **X** | Secure |
| Manufacturing | Other (list below) |
| Construction | |

### Project History

The property was initially developed by Stauffer Chemical Company (Stauffer) in the 1920s. Stauffer manufactured citric acid (not manufactured in the Pilot Plant portion of the property) from the 1920s to the 1940s, potash from the 1930s to 1973, and carbon disulfide and insoluble sulfur from the 1930s through the 1950s. A variety of biocides and pesticides were produced at the site through 1984, when chemical manufacturing at the facility was ceased entirely. Due to the extensive use of the site as a chemical manufacturing and R&D facility, a complete list of raw materials used at the facility is not known. However, information obtained from historical documents and Akzo Nobel personnel indicate that some of the raw materials used at the Pilot Plant facility included carbon disulfide, monomethylamines, bromomethane, dimethyl sulfoxide, biocides, sulfur, organophosphorous compounds, oroganomettalics, fatty amines, ethylene oxide, methyl chloride, and ammonia.

### Site Security and Control Measures

None.

## Section 5 Work Description

If multiple tasks with different hazard profiles and risk controls are planned, copy Sections 5, 6, and 7 and fill out for each task with different hazards requiring different controls.

**Tasks to be performed by First Environment**
**Tasks**: Soil and Groundwater Sampling

**Tasks to be performed by First Environment Contractors**[2]

**Task**: Drilling

[2] Site characteristics to the best of First Environment's knowledge are included in this HASP. Per the subcontractor agreement, each subcontractor must assess hazards associated with their site activities and have a site- specific health and safety plan covering their work on site.

**Contractor:** Environmental Test Boring

**Task**:
Laboratory
Analysis

**Contractor:** Hampton Clarke-Veritech

## Section 6: Hazard Assessment

**Potential Chemical Hazards**

Identify suspected compounds and levels if known. If levels are unknown, indicate unknown. If compounds are not present or not suspected to be present indicate with NA. If a class of compounds (in bold) is not present at the site, indicate NA for the class, it is then not necessary to fill in NA for compounds within the class.

| **Unknown or partially characterized** | | | |
|---|---|---|---|
| **Compounds** | **Levels** | | **Symptoms of Acute Exposure** |
| | **Soil** (mg/kg) | **W/GW** ($\mu$g/L) | |
| **Nonchlorinated VOCs** | | | |
| Benzene | X | X | Irritation: Eyes, Skin, Respiratory System |
| 2-Butanone (MEK) | | | |
| Ethylbenzene | | | |
| Hexone (MIBK) | | | |
| Methyl-t-butyl Ether (MTBE) | | | |
| Toluene | | | |
| Xylene | | | |
| Other(specify) | | | |
| | | | |
| | | | |
| | | | |
| **Chlorinated VOCs** | | | |
| Carbon tetrachloride | | | |
| Chlorobenzene | | X | |
| 1,2-Dichloroethane | | | |
| 1,1 Dichloroethylene (1,1-DCE) | X | X | Irritation: Eyes, Skin, Throat; Dizziness; Headache; Nausea, Breathing Difficulty |
| Tetrachloroethylene (PCE) | X | X | Irritation; Eyes, Skin, Nose; Throat, Respiratory System; Nausea; Flush Face and Neck; Dizziness; Lack of Coordination; Headache; Drowsiness |
| 1,1,1-Trichloroethane (TCA) | | X | Irritation; Eyes, Skin; Headache; Weakness; Exhaustion |
| Trichloroethylene (TCE) | | X | Irritation: Eyes, Skin; Headache |
| Vinyl Chloride | | X | Weakness; Abdominal Pain |
| Other (specify) | | | |
| Carbon Disulfide | | X | |
| | | | |
| | | | |
| **Semi-Volatile Organics** | | | |
| Naphthalene | | X | |
| PAHs | X | X | |
| Other (specify) | | | |
| | | | |
| | | | |
| | | | |

| Compounds | Levels | | Symptoms of Acute Exposure |
|---|---|---|---|
| | **Soil** (mg/kg) | **W/GW** (μg/L) | |
| **Petroleum Products** | | | |
| Gasoline | | | |
| Fuel Oil #2 | | | Irritation: Eyes, Skin, Mucous Membrane |
| Fuel Oil #6 | | | |
| Petroleum Distillates | | | |
| Other (specify) | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| **Metals** | | | |
| Arsenic | | | |
| Cadmium | | | |
| Chromium | | | |
| Lead | X | | |
| Mercury | | | |
| Other(specify) | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| **PCBs** | X | | Irritation: Eyes; Chloroacne (acne-like skin irritation) |
| **Coal/MGP Tar** | | | |
| **Pesticides** | | | |
| **Asbestos** | | | |
| **Fiberglass** | | | |
| **Other (specify)** | | | |
| | | | |
| | | | |
| | | | |

## Chemicals Brought On-Site by FE

Alconox X

Gasoline

Dilute Hydrochloric Acid

Methanol

Dilute Nitric Acid

Dilute Sulfuric Acid

Other (specify)

Is there a high potential for a chemical release beyond an incidental release?
If yes, explain:

## Potential Physical Hazards

Check all that apply.

Unknown/Partially Characterized
Cold Exposure X
Electrical (other than lines)
Explosion*
Fire
Toxic Gases

Heat Stress X
Stored Energy
Confined Space*
Heavy Machinery
Slippery Surfaces
Fall Potential

Oxygen Deficiency*
Pinch Points
Uneven Terrain
Noise
Traffic
Venomous Snakes
Mosquitoes, Ticks or other Biting Insects X
Poor Visibility/Inadequate Light
Ionizing Radiation*
Poisonous Plants X
Venomous Spiders
Wild Animals X
Utility Lines X
Biological Waste (specify)
Flying or Falling Material
Pump Winch
Other (specify)

## Overall Hazard Evaluation

Overall: High Medium Low X Unknown
Justification:

# Section 7 Risk Control

## Utilities

**Utility Markout**

| Utility | Req. | Company Name | Telephone # |
|---|---|---|---|
| One Call | | Dig Safely | 800-962-7962 |
| Gas: | | Robison Oil Corp | 914-345-5700 |
| Electric: | | Westchester County Electric | 914-345-5082 |
| Water: | | Elmsford Village Water Works | 914-592-7770 |
| Sewer: | | Greenburgh Water & Sewer Division | 914-993-1592 |
| Telephone: | | National Telephone Planning | 914-948-8200 |
| Cable: | | Cablevision | 914-378-8900 |

| Markout Ticket Confirmation # | Date |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |

**Activity modifications to address onsite utility lines:**

## PPE

**Primary protective equipment to be worn during this task**

Level C Level D **X** Level D Modified
If PPE beyond Level D is required, consult the Project Manager or Senior Management

* If this risk is identified, Senior Management must approve the HASP.

| Equipment | Primary | Conting** |
|---|---|---|
| Respiratory | | |
| Respirator (full) | | |
| Respirator (half) | | |
| Cartridge type: | | |
| P100 | | |
| Combo | | |
| Other | | |
| Dust Mask | | |
| Not Needed | | |
| Head and Eye | | |
| Safety Glasses | | X |
| Face Shield | | |
| Goggles | | |
| Hard Hat | | |
| Not Needed | | |
| Ears | | |
| Hearing Protection | | |

| Equipment | Primary | Conting** |
|---|---|---|
| Feet | | |
| Steel Toe Safety Boots | | X |
| Overboots | | |
| Workboots | | |
| No Special Reqts. | | |
| Hands | | |
| Nitrile Gloves | | X |
| Overgloves | | |
| Not Needed | | |
| Body | | |
| Tyvek Coverall | | |
| Polycoated Tyvek | | |
| Cold Weather Gear (carhart) | | |
| Rain Gear | | |
| Safety Vest | | X |
| Not Needed | | |

**Other PPE Requirements:**

**Trigger for Contingency Requirements****:

## Other Equipment and Supplies:

| | |
|---|---|
| Lighting | |
| Potable Water | X |
| Insect Repellent | X |
| Fire Extinguisher (2.5 lb) | X |
| Fire Extinguisher (5 lb) | |
| Fire Extinguisher (10 lb) | |
| Eyewash Kit | |
| Spill Kit | X |
| First Aid Kit | X |
| Other (specify): | |
| | |

**Restroom Facilities Location:**

If equipment at the facility is to be relied on, list the equipment and location:

| Equipment | Location |
|---|---|
| | |
| | |
| | |

## Operational Control Procedures:

**Decontamination Procedures:**

Follow the Field Decontamination Procedure.  List any differences or additions below.

**Discharge Control Measures**
Discharge Control Measures:

** If contingency is necessary, move from work area and consult the Project Manager or other Senior Personnel prior to upgrading.

**Waste Disposal Practices:**
Specify Waste Disposal Practices:

| Waste Type | Sample | Containerize | Dispose of off Site | Return to Site | Dispose in FE Solid Waste |
|---|---|---|---|---|---|
| Drill Cuttings | | | | X | |
| Purge Water | | X | | | |
| Soil | X | | | | |
| PPE and other field related waste | | | | | X |
| Other (Specify) | | | | | |

Additional waste handling instructions:

Additional discharge control instructions:

**General Safe Work Practices:**
To ensure the safety of First Environment personnel and the public at a site where fieldwork is being conducted, the Safe Work Practices listed below will be followed.

- Good housekeeping practices are to be maintained.
- A "buddy system" in which another worker is close enough to render immediate aid will be in effect when specified in the HASP.
- In the event of treacherous weather-related working conditions field tasks will be suspended until conditions improve or appropriate protection from the elements is provided.
- Smoking, eating, chewing gum or tobacco, or drinking are forbidden except in clean or designated area.
- Ignition of flammable liquids within or through improvised heating devices is forbidden.
- Contact with samples, excavated materials, or other contaminated materials must be minimized.
- Use of contact lenses is not advisable.
- If drilling equipment is involved, know where the 'kill switch' is.
- All electrical equipment used in outside locations, wet area or near water must be plugged into ground fault circuit interrupter protected outlets.
- Illumination - Work in the early morning or at dusk may require site lighting.

List any differences or additions below:

**Buddy System required?**
If yes, describe circumstances:

**Lockout – Tagout:**
Is lockout – tagout required?
Specify equipment to be locked out:
Follow the Lockout - Tagout procedure.  List any differences or additions below:

**Exclusion Zones:**
Will exclusion zones be used at the site?
If yes, zones indicated on the site map?

## Emergency Response Procedures

**Field Emergency Response:**
Follow the Field Emergency Response Procedure. List any differences or additions below

**Spill Response:**
Follow the Field Spill Response Procedure. List any differences or additions below.

Is a stand-by external emergency response contractor required?
Date Contacted: Contacted by:

## H&S Monitoring and Measurement:

H&S Field Monitoring Required?
If so, follow the Health and Safety Monitoring Table below.

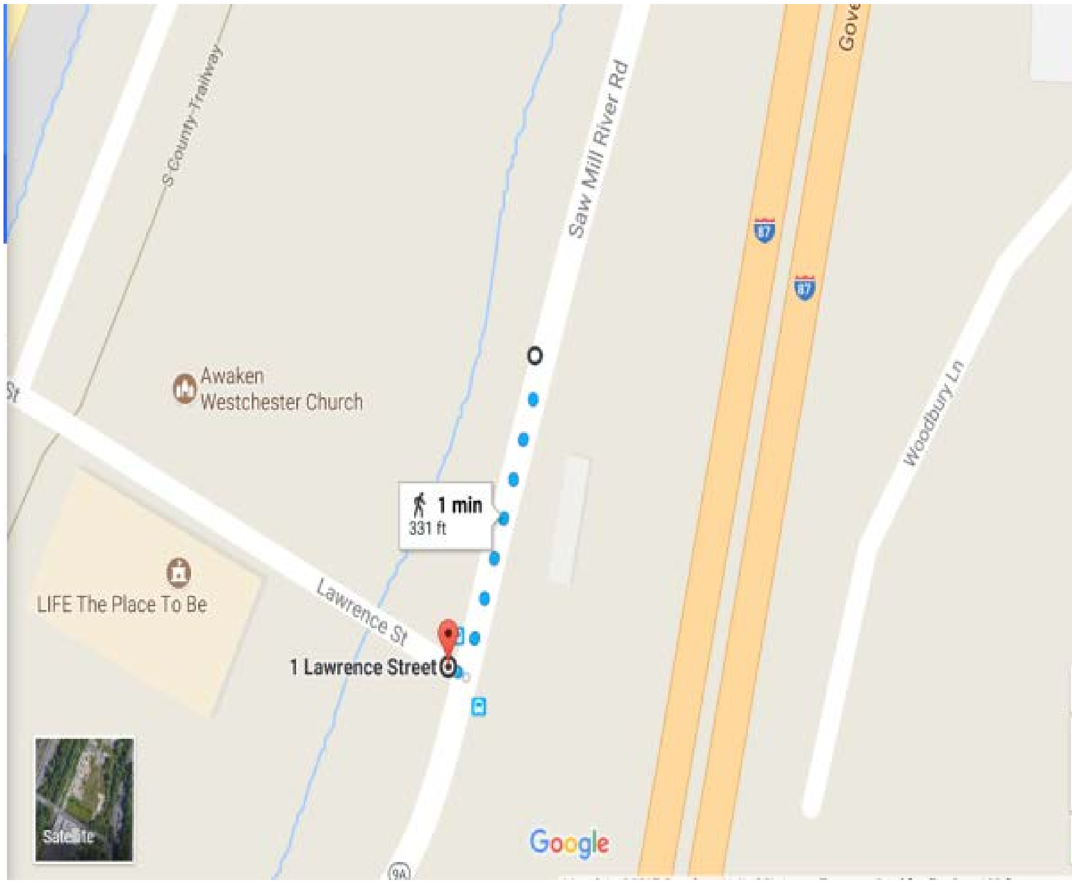
## Corrective/Preventive Action

In the event that corrective action becomes necessary and is taken in the field or a necessary preventive action is identified, the Field Team must ensure the notification of the PM so that appropriate modifications can be made to the HASP and fieldwork activities. In the event that a corrective or preventive action has application beyond the immediate project and work being performed, a PCAN must be filed.

## Audits

As part of First Environment's ISO 14001 EMS, the HASP and its implementation are subject to internal audit and audit by our third party auditor. Findings are addressed through the PCAN Process.

This page reserved for a site map showing work locations, staging areas, exclusion zones as appropriate, emergency response equipment locations as appropriate, and the evacuation route and muster point.



**H&S Monitoring**

| Type of Meter/Monitoring | Monitors | Check if to be Used/ Done | Surveillance Methodology (select one) | | Monitoring Locations | Guidance Action Levels* | Site Action Levels** |
|---|---|---|---|---|---|---|---|
| | | | Determined by FTL Based on Site Conditions | Specified Frequency | | | |
| Photoionization Detector (PID)<br>9.8eV<br>10.2eV<br>10.6 eV<br>11.7eV | Total Volatile Organics levels | | | | | 5 ppm above background - evacuate and notify | |
| Flame Ionization Detector (FID) | Total Volatile Organics levels | | | | | 5 ppm above background - evacuate and notify | |
| Multi-gas meters<br>Oxygen<br>Combustible Gas<br>CO<br>H2S<br>Other Gas (Specify) | Oxygen levels<br>LEL<br>Toxic gas levels<br>Toxic gas levels | | | | | < 21% - notify<br>< 19.5% - evacuate<br>10-20% - notify<br>>20% - evacuate<br>>9 ppm – notify<br>>10 ppm – notify | |
| Other equipment (specify) | | | | | | | |

* For notify action levels, move off worksite and contact PM to take corrective action or upgrade PPE. For evacuation move off worksite and contact PM for further instructions.

**If site levels are different from guidance levels specify reason:

## Section 8 Plan Approval

| | | | |
|---|---|---|---|
| Plan Prepared by: | Denisse Angulo | Date: | 07/17/2017 |
| Plan Reviewed/Approved by: | | Date: | |
| Project Manager: | Dan Lattanzi | Date: | 07/18/2017 |

If modifications are made to the plan, it must be reviewed and approved again. The revision number and approval date on the first page must be changed.

## Section 9 FE Personnel Acknowledgement

First Environment employees assigned to work on-site have attended 40-hour HAZWOPER training and annual refreshers, as applicable, per 29 CFR 1910.120, and have been certified medically fit by a qualified occupational physician to work on hazardous sites and to wear a respirator. Medical and training records are maintained by Human Resources.

By signing below, First Environment employees acknowledge that they:

- have read and understand this Site Health and Safety Plan
- meet the training and medical fitness requirements
- understand the process of continual improvement and will use the PCAN process.

The effectiveness of this Health and Safety Plan is determined through periodic auditing as part of our ISO 14001 Environmental Management System.

If review of the plan at the site indicates changes to the HASP are necessary, provide the specifics on the last page of this HASP (Make changes in the HASP and initial the changes).

| | | | | Subcontractors | | | |
|---|---|---|---|---|---|---|---|
| Name | Responsibilities | Site Task | Signature | Sub HASP[3] | Guide R&A[4] | N/A[5] | Date |
| 1 | FTL / FT / FHSO | | | ☐ | ☐ | ☐ | |
| 2 | FTL / FT / FHSO | | | ☐ | ☐ | ☐ | |
| 3 | FTL / FT / FHSO | | | ☐ | ☐ | ☐ | |
| 4 | FTL / FT / FHSO | | | ☐ | ☐ | ☐ | |
| 5 | FTL / FT / FHSO | | | ☐ | ☐ | ☐ | |
| 6 | FTL / FT / FHSO | | | ☐ | ☐ | ☐ | |
| 7 | FTL / FT / FHSO | | | ☐ | ☐ | ☐ | |

[3] Subcontractor is using HASP onsite and has reviewed it with employees
[4] Subcontractor has received our Guide for Subcontractors and Vendors and has signed the Read and Acknowledge Form
[5] Not applicable – No subcontractor present

| | | | | | |
|---|---|---|---|---|---|
| 8 | FTL / FT / FHSO | ☐ | ☐ | ☐ | |
| 9 | FTL / FT / FHSO | ☐ | ☐ | ☐ | |
| 10 | FTL / FT / FHSO | ☐ | ☐ | ☐ | |
| 11 | FTL / FT / FHSO | ☐ | ☐ | ☐ | |
| 12 | FTL / FT / FHSO | ☐ | ☐ | ☐ | |
| 13 | FTL / FT / FHSO | ☐ | ☐ | ☐ | |
| 14 | FTL / FT / FHSO | ☐ | ☐ | ☐ | |
| 15 | FTL / FT / FHSO | ☐ | ☐ | ☐ | |
| 16 | FTL / FT / FHSO | ☐ | ☐ | ☐ | |
| 17 | FTL / FT / FHSO | ☐ | ☐ | ☐ | |
| 18 | FTL / FT / FHSO | ☐ | ☐ | ☐ | |
| 19 | FTL / FT / FHSO | ☐ | ☐ | ☐ | |
| 20 | FTL / FT / FHSO | ☐ | ☐ | ☐ | |
| 21 | FTL / FT / FHSO | ☐ | ☐ | ☐ | |
| 22 | FTL / FT / FHSO | ☐ | ☐ | ☐ | |
| 23 | FTL / FT / FHSO | ☐ | ☐ | ☐ | |

[3] Subcontractor is using HASP onsite and has reviewed it with employees
[4] Subcontractor has received our Guide for Subcontractors and Vendors and has signed the Read and Acknowledge Form
[5] Not applicable – No subcontractor present

| | | | | |
|---|---|---|---|---|
| 24 | FTL / FT / FHSO | ☐ | ☐ | ☐ |
| 25 | FTL / FT / FHSO | ☐ | ☐ | ☐ |
| 26 | FTL / FT / FHSO | ☐ | ☐ | ☐ |
| 27 | FTL / FT / FHSO | ☐ | ☐ | ☐ |
| 28 | FTL / FT / FHSO | ☐ | ☐ | ☐ |
| 29 | FTL / FT / FHSO | ☐ | ☐ | ☐ |
| 30 | FTL / FT / FHSO | ☐ | ☐ | ☐ |

If review of the plan at the site indicates changes to the HASP are necessary, provide the specifics below (Make changes in the HASP and initial the changes).

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________

________________________________________________________

Date:____________________ FTL:____________________________________

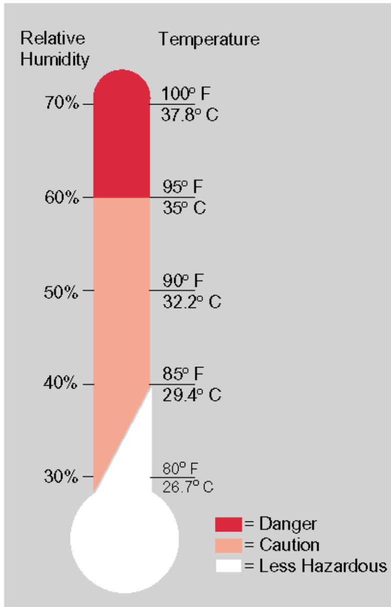
[3] Subcontractor is using HASP onsite and has reviewed it with employees
[4] Subcontractor has received our Guide for Subcontractors and Vendors and has signed the Read and Acknowledge Form
[5] Not applicable – No subcontractor present

## Section 10
Attach MSDSs.

## THE HEAT EQUATION

**HIGH TEMPERATURE + HIGH HUMIDITY + PHYSICAL WORK = HEAT ILLNESS**

When the body is unable to cool itself through sweating, **serious** heat illnesses may occur. The most severe heat-induced illnesses are **heat exhaustion** and **heat stroke**. If actions are not taken to treat heat exhaustion, the illness could progress to heat stroke and possible **death**.




U.S. Department of Labor
Occupational Safety and Health Administration
OSHA 3154
1998

## HEAT EXHAUSTION

***What Happens to the Body:***

HEADACHES, DIZZINESS/LIGHT HEADEDNESS, WEAKNESS, MOOD CHANGES (irritable, or confused/can't think straight), FEELING SICK TO YOUR STOMACH, VOMITING/THROWING UP, DECREASED and DARK COLORED URINE, FAINTING/PASSING OUT, and PALE CLAMMY SKIN.

***What Should Be Done:***

- Move the person to a cool shaded area to rest. Don't leave the person alone. If the person is dizzy or light headed, lay them on their back and raise their legs about 6-8 inches. If the person is sick to their stomach lay them on their side.
- Loosen and remove any heavy clothing.
- Have the person drink some cool water (a small cup every 15 minutes) if they are not feeling sick to their stomach.
- Try to cool the person by fanning them. Cool the skin with a cool spray mist of water or wet cloth.
- If the person does not feel better in a few minutes call for emergency help (Ambulance or Call 911).

*(If heat exhaustion is not treated, the illness may advance to heat stroke.)*

## HEAT STROKE—A MEDICAL EMERGENCY

***What Happens to the Body:***

DRY PALE SKIN (no sweating), HOT RED SKIN (looks like a sunburn), MOOD CHANGES (irritable, confused/not making any sense), SEIZURES/FITS, and COLLAPSE/PASSED OUT (will not respond).

***What Should Be Done:***

- Call for emergency help (Ambulance or Call 911).
- Move the person to a cool shaded area. Don't leave the person alone. Lay them on their back and if the person is having seizures/fits remove any objects close to them so they won't strike against them. If the person is sick to their stomach lay them on their side.
- Remove any heavy and outer clothing.
- Have the person drink some cool water (a small cup every 15 minutes) if they are alert enough to drink anything and not feeling sick to their stomach.
- Try to cool the person by fanning them. Cool the skin with a cool spray mist of water, wet cloth, or wet sheet.
- If ice is available, place ice packs under the arm pits and groin area.

### How to Protect Workers

- Learn the signs and symptoms of heat-induced illnesses and what to do to help the worker.
- Train the workforce about heat-induced illnesses.
- Perform the heaviest work in the coolest part of the day.
- Slowly build up tolerance to the heat and the work activity (usually takes up to 2 weeks).
- Use the buddy system (work in pairs).
- Drink plenty of cool water (one small cup every 15-20 minutes)
- Wear light, loose-fitting, breathable (like cotton) clothing.
- Take frequent short breaks in cool shaded areas (allow your body to cool down).
- Avoid eating large meals before working in hot environments.
- Avoid caffeine and alcoholic beverages (these beverages make the body lose water and increase the risk for heat illnesses).

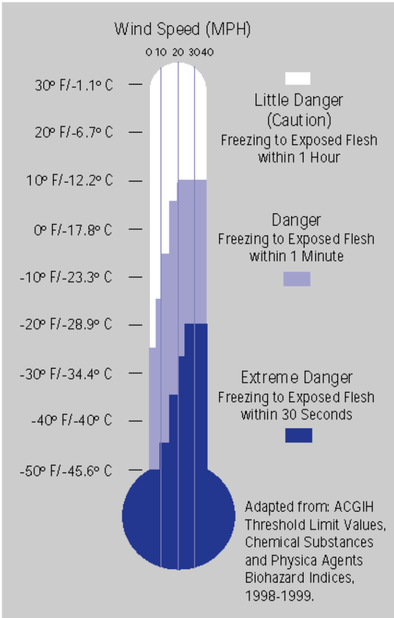
### Workers Are at Increased Risk When

- They take certain medication (check with your doctor, nurse, or pharmacy and ask if any medicines you are taking affect you when working in hot environments).
- They have had a heat-induced illness in the past.
- They wear personal protective equipment (like respirators or suits).

## THE COLD STRESS EQUATION

**LOW TEMPERATURE + WIND SPEED + WETNESS = INJURIES & ILLNESS**

When the body is unable to warm itself, serious cold-related illnesses and injuries may occur, and permanent tissue damage and death may result. **Hypothermia** can occur when *land temperatures* are **above** freezing or *water temperatures* are below 98.6°F/ 37°C. Cold-related illnesses can slowly overcome a person who has been chilled by low temperatures, brisk winds, or wet clothing.





U.S. Department of Labor
Occupational Safety and Health Administration
OSHA 3156
1998


## FROST BITE

### *What Happens to the Body:*

FREEZING IN DEEP LAYERS OF SKIN AND TISSUE; PALE, WAXY-WHITE SKIN COLOR; SKIN BECOMES HARD and NUMB; USUALLY AFFECTS THE FINGERS, HANDS, TOES, FEET, EARS, and NOSE.

### *What Should Be Done: (land temperatures)*

- Move the person to a warm dry area. Don't leave the person alone.
- Remove any wet or tight clothing that may cut off blood flow to the affected area.
- **DO NOT** rub the affected area, because rubbing causes damage to the skin and tissue.
- **Gently** place the affected area in a warm (105°F) water bath and monitor the water temperature to **slowly** warm the tissue. Don't pour warm water directly on the affected area because it will warm the tissue too fast causing tissue damage. Warming takes about 25-40 minutes.
- After the affected area has been warmed, it may become puffy and blister. The affected area may have a burning feeling or numbness. When normal feeling, movement, and skin color have returned, the affected area should be dried and wrapped to keep it warm. **NOTE:** If there is a chance the affected area may get cold again, do not warm the skin. If the skin is warmed and then becomes cold again, it will cause severe tissue damage.
- Seek medical attention as soon as possible.

## HYPOTHERMIA - (Medical Emergency)

### *What Happens to the Body:*

NORMAL BODY TEMPERATURE (98.6°F/37°C) DROPS TO OR BELOW 95°F (35°C); FATIGUE OR DROWSINESS; UNCONTROLLED SHIVERING; COOL BLUISH SKIN; SLURRED SPEECH; CLUMSY MOVEMENTS; IRRITABLE, IRRATIONAL OR CONFUSED BEHAVIOR.

### *What Should Be Done: (land temperatures)*

- Call for emergency help (i.e., Ambulance or Call 911).
- Move the person to a warm, dry area. Don't leave the person alone. Remove any wet clothing and replace with warm, dry clothing or wrap the person in blankets.
- Have the person drink warm, sweet drinks (sugar water or sports-type drinks) if they are alert. **Avoid drinks with caffeine** (coffee, tea, or hot chocolate) or alcohol.
- Have the person move their arms and legs to create muscle heat. If they are unable to do this, place warm bottles or hot packs in the arm pits, groin, neck, and head areas. **DO NOT** rub the person's body or place them in warm water bath. This may stop their heart.

### *What Should Be Done: (water temperatures)*

- Call for emergency help (Ambulance or Call 911). Body heat is lost up to 25 times faster in water.
- **DO NOT** remove any clothing. Button, buckle, zip, and tighten any collars, cuffs, shoes, and hoods because the layer of trapped water closest to the body provides a layer of insulation that slows the loss of heat. Keep the head out of the water and put on a hat or hood.
- Get out of the water as quickly as possible or climb on anything floating. **DO NOT** attempt to swim unless a floating object or another person can be reached because swimming or other physical activity uses the body's heat and reduces survival time by about 50 percent.
- If getting out of the water is not possible, wait quietly and conserve body heat by folding arms across the chest, keeping thighs together, bending knees, and crossing ankles. If another person is in the water, huddle together with chests held closely.

### *How to Protect Workers*

- Recognize the environmental and workplace conditions that lead to potential cold-induced illnesses and injuries.
- Learn the signs and symptoms of cold-induced illnesses/injuries and what to do to help the worker.
- Train the workforce about cold-induced illnesses and injuries.
- Select proper clothing for cold, wet, and windy conditions. Layer clothing to adjust to changing environmental temperatures. Wear a hat and gloves, in addition to underwear that will keep water away from the skin (polypropylene).
- Take frequent short breaks in warm dry shelters to allow the body to warm up.
- Perform work during the warmest part of the day.
- Avoid exhaustion or fatigue because energy is needed to keep muscles warm.
- Use the buddy system (work in pairs).
- Drink warm, sweet beverages (sugar water, sports-type drinks). Avoid drinks with caffeine (coffee, tea, or hot chocolate) or alcohol.
- Eat warm, high-calorie foods like hot pasta dishes.

### *Workers Are at Increased Risk When…*

- They have predisposing health conditions such as cardiovascular disease, diabetes, and hypertension.
- They take certain medication (check with your doctor, nurse, or pharmacy and ask if any medicines you are taking affect you while working in cold environments).
- They are in poor physical condition, have a poor diet, or are older.

# APPENDIX E

# Community Air Monitoring Plan (CAMP) for the Former Akzo Nobel Pilot Plant 1 Lawrence Street Ardsley, New York

## NYSDEC Project No. C360146

**July 21, 2017**

**Prepared for:** Ardsley, LLC
1650 Des Peres Road, Suite 303
St. Louis, MO 63131

**Prepared by:** First Environment, Inc.
91 Fulton Street
Boonton, New Jersey 07005

TABLE OF CONTENTS

# Introduction

In addition to precautions outlined in the Health and Safety Plan, the following measures will be taken to evaluate and control, as necessary, potential fugitive particulates and volatile organic compounds (VOC) generated during both ground intrusive and non-intrusive activities. The following Community Air Monitoring Plan (CAMP) was developed using the New York State Department of Health Generic Community Air Monitoring Plan in combination with site-specific information and proposed activities.

Depending on the type of activity, levels of airborne particulates and/or VOCs will be monitored and recorded in real-time at both the upwind and downwind perimeters of the immediate work area. The purpose of the CAMP is to protect the downwind community from potential release of contaminants to the air generated during the activities. The action levels developed by the NYSDOH will be followed as part of the CAMP.

## Scope-of-Work

This CAMP addresses two basic remedial activities that will occur at the Site:

1. installation of soil borings and collection of soil samples; and
2. collection of groundwater samples from existing monitoring wells.

**Periodic monitoring** for volatile organic compounds (VOCs) will be required during non-intrusive activities at the Site, which will include the collection of soil samples via direct push drilling methods, and groundwater samples from existing on-site monitoring wells. "Periodic" monitoring may consist of taking a reading upon arrival at a sample location, during monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location.

# Air Monitoring Procedures

## Intrusive Activities

### VOC Monitoring, Response Levels, and Actions

The VOC monitoring for intrusive activities will be conducted on a periodic basis and will follow the same response levels and actions for VOCs as outlined below. The measurements will be collected from the immediate work area using a MiniRAE 2000 photoionization detector or equivalent.

VOCs will be periodically monitored at the downwind perimeter of the work area, or exclusion zone, during soil boring installation and sampling using a MiniRAE 2000 photoionization detector or equivalent. Upwind measurements will also be collected prior to the start of work each day and periodically throughout the day at locations away from the work areas to establish background conditions. A minimum of three background measurements will be collected daily. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least daily against a standard VOC calibrations gas appropriate for the contaminants of concern and for concentrations which will be comparable to the levels specified below. The monitoring, response levels, and actions for VOCs are as follows:

- If the ambient air concentration of total organic vapors in the work area exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.
- If total organic vapor levels in the work area persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the Site or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less – but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shut down.

## Non-intrusive Activities

The only non-intrusive activity to be performed is groundwater sampling, which will require periodic monitoring for VOCs.

### VOC Monitoring, Response Levels, and Actions

The VOC monitoring for non-intrusive activities will be conducted on a periodic basis and will follow the same response levels and equipment for VOCs as outlined above. The measurements will be collected from the exclusion zone using a MiniRAE 2000 photoionization detector or equivalent.

Periodic VOC monitoring will consist of taking readings prior to the initiation of work at each well location, during bailing and purging activities, and prior to leaving each monitoring well location. Upwind concentrations will also be measured at the start of each workday and periodically thereafter to establish background conditions. The equipment will be calibrated at least daily against a standard VOC calibrations gas appropriate for the contaminants of concern and for concentrations which will be comparable to the levels specified below. The monitoring, response levels, and actions for VOCs are as follows:

- If the ambient air concentration of total organic vapors in the work area exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.
- If total organic vapor levels in the work area persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the Site or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less – but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shut down.

### Weather Monitoring

In order to identify the specific upgradient and downgradient sampling locations, meteorological data will be collected three times daily from a Davis Remote weather station, or equivalent, for barometric pressure, temperature, humidity, rainfall, and wind speed and direction.