RECORD OF DECISION

Former Aluminum Louvre Corporation
Operable Unit Number 01: On-Site Contamination
State Superfund Project
Old Bethpage, Nassau County
Site No. 130195
March 2013

Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

DECLARATION STATEMENT - RECORD OF DECISION

Former Aluminum Louvre Corporation
Operable Unit Number: 01
State Superfund Project
Old Bethpage, Nassau County
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Statement of Purpose and Basis

This document presents the remedy for Operable Unit Number: 01: On-Site Contamination of the Former Aluminum Louvre Corporation site, a Class 2 inactive hazardous waste disposal site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375, and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for Operable Unit Number: 01 of the Former Aluminum Louvre Corporation site and the public's input to the proposed remedy presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Description of Selected Remedy

The elements of the selected remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance

ecological, economic and social goals; and

- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. In-Situ Thermal Treatment will be implemented to destroy or volatilize volatile organic compounds (VOCs) in the unsaturated soil on the east side of the site. The gases produced by the thermal treatment will be collected by vapor extraction wells and treated in an ex-situ treatment unit. Effluent vapors will be treated by adsorption on granular activated carbon.

At this site, about 46 heating wells and 46 vacuum extraction wells will be installed in the portion of the site to be treated to an approximate depth of 33 feet.

3. Both on-site buildings will be required to have sub-slab depressurization systems, or similar engineered systems, to prevent the migration of vapors into the building from soil and/or groundwater.

4. Air sparging will be implemented to address the on-site groundwater plume contaminated by VOCs. VOCs will be physically removed from the groundwater and soil below the water table (saturated soil) by injecting air into the subsurface. As the injected air rises through the groundwater, the VOCs volatilize and transfer from the groundwater and/or soil into the injected air. The VOCs are carried with the injected air into the vadose zone (the area below the ground surface but above the water table) where a soil vapor extraction (SVE) system is used to remove the injected air. The SVE system applies a vacuum to wells that have been installed into the vadose zone to remove the VOCs along with the air introduced by the sparging process. The air extracted from the SVE wells is then treated as necessary prior to being discharged to the atmosphere.

At this site, about 98 air injection wells will be installed in the portion of the site to be treated, which is located beneath the eastern portion of the site, to approximate depths ranging from 95 to 135 feet, which is 30 to 70 feet below the water table. To capture the volatilized contaminants, about 53 SVE wells will be installed in the vadose zone at a depth of approximately 20 below ground surface. The air containing VOCs extracted from the SVE wells will be treated by passing the air stream through activated carbon which removes the VOCs from the air prior to it being discharged to the atmosphere.

5. Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allows the use and development of the controlled property for commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and
- requires compliance with the Department approved Site Management Plan.

6. A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 5 above.

Engineering Controls: The in-situ thermal treatment, sub-slab depressurization systems, and air sparging/soil vapor extraction systems discussed in Paragraphs 2, 3, and 4, respectively.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use and/or groundwater restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater and the treatment system influent and effluent to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department; and
- monitoring for vapor intrusion for any buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The operation of the components of the remedy will continue until the remedial objectives have been achieved, or until the Department determines that continued operation is technically impracticable or not feasible. The plan includes, but is not limited to:

- compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

March 29,2013

Date

Robert W. Schick, P.E., Director
Division of Environmental Remediation

RECORD OF DECISION

Former Aluminum Louvre Corporation
Old Bethpage, Nassau County
Site No. 130195
March 2013

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of hazardous wastes at the site has resulted in threats to public health and the environment that would be addressed by the remedy. The disposal or release of hazardous wastes at this site, as more fully described in this document, has contaminated various environmental media. The remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This Record of Decision (ROD) identifies the selected remedy, summarizes the other alternatives considered, and discusses the reasons for selecting the remedy.

The New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repositories:

New York State Department of Environmental Conservation
Attn: Jeffrey Dyber
625 Broadway
Albany, NY 12233-7015
Phone: (518) 402-9621

New York State Department of Environmental Conservation
Attn: William Fonda
50 Circle Road
Stony Brook, NY 11790-3409
Phone: (631) 444-0350

Plainview-Old Bethpage Public Library
Attn: Janice Weinman
999 Old Country Road
Plainview, NY 11803
Phone: (516) 938-0077

A public meeting was also conducted. At the meeting, the findings of the remedial investigation (RI) and the feasibility study (FS) were presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period was held, during which verbal or written comments were accepted on the proposed remedy.

Comments on the remedy received during the comment period are summarized and addressed in the responsiveness summary section of the ROD.

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The Former Aluminum Louvre Corporation site includes two parcels. The addresses of the two parcels are 161-Bethpage-Sweethollow Road and 301 Winding Road. The site is located in a suburban area.

Site Features: The main site features include two commercial buildings, which are surrounded by paved outdoor parking and storage. Each parcel contains one of the commercial buildings.

Current Zoning/Uses: Both properties on the site are zoned for light industrial use. The building on 161 Bethpage-Sweethollow Road contains three tenants: a paving company, AAA of New York and a general contracting company. The 301 Winding Road property has two tenants. One tenant removes solids from vegetable oil for use in producing biodiesel while the other tenant stores tires. The surrounding properties are used for a combination of commercial and light industrial. The nearest residential area is 0.35 miles northwest of the site.

Past Uses of the Site: The Aluminum Louvre Corporation formerly owned 161 Bethpage Sweethollow Road and simultaneously occupied both lots that comprise the site. Aluminum Louvre manufactured louvers, which involved stamping, cutting, and shaping of metal stock; degreasing parts and painting. From 1986-1993, Aluminum Louvre generated halogenated solvent waste, including tetrachloroethylene (PCE), trichloroethylene (TCE) and 1,1,1-trichloroethane (1,1,1-TCA). Nassau County records also indicate that Aluminum Louvre used TCE and 1,1,1-TCA from 1983-1994. In 1997, a contaminated dry well was remediated under a voluntary cleanup agreement at the 301 Winding Road property. Dry well remediation was also conducted under a separate voluntary cleanup agreement at the 161 Bethpage-Sweethollow Road property in 1999-2000. In 2007, the USEPA collected soil and groundwater samples at the site and found both media to be contaminated with TCE and other volatile organic compounds. The NYSDEC investigated the properties in 2008-2009 as part of the Old Bethpage Industrial Area Site Characterization and determined that the site should be listed on the Registry of Inactive Hazardous Waste Disposal Sites.

Operable Units: The site was divided into two operable units. An operable unit represents a portion of a remedial program for a site that for technical or administrative reasons can be addressed separately to investigate, eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination. Operable Unit 1 (OU1) includes on-site contamination while Operable Unit 2 (OU2) covers off-site contamination.

Site Geology and Hydrogeology: The subsurface of the site consists of sand with silt and clay lenses. Depth to groundwater ranges from 60 to 70 feet below ground surface. Groundwater at the site flows east in the shallow groundwater and southeast in the deeper groundwater.

Operable Unit (OU) Number 01 is the subject of this document.

A Record of Decision will be issued for OU 02 in the future.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to commercial use (which allows for industrial use) as described in Part 375-1.8(g) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the RI to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is included in the Tables for the media being evaluated in Exhibit A.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The PRPs for the site, documented to date, include Sweet Hollow Realty Group, LLC, WDM, LLC, Aluminum Louvre Corporation, and Trulite Louvre Corp.

The PRPs for the site declined to implement a remedial program when requested by the Department. After the remedy is selected, the PRPs will again be contacted to assume responsibility for the remedial program. If an agreement cannot be reached with the PRPs, the Department will evaluate the site for further action under the State Superfund. The PRPs are subject to legal actions by the state for recovery of all response costs the state has incurred.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A Remedial Investigation (RI) has been conducted. The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The field activities and findings of the investigation are described in the RI Report.

The following general activities are conducted during an RI:

- Research of historical information,
- Geophysical survey to determine the lateral extent of wastes,
- Test pits, soil borings, and monitoring well installations,
- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor,
- Sampling of surface water and sediment,
- Ecological and Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- groundwater
- soil
- indoor air
- sub-slab vapor

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a hazardous waste that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified for this Operable Unit at this site is/are:

TRICHLOROETHENE (TCE)	DICHLOROETHYLENE
TETRACHLOROETHYLENE (PCE)	1,1,1 TCA

As illustrated in Exhibit A, the contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- soil
- soil vapor intrusion
- indoor air

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Record of Decision.

There were no IRMs performed at this site during the RI.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary for OU 01.

For OU1: On-Site Areas

Based upon investigations conducted to date, the primary contaminants of concern for OU 1 include the following volatile organic compounds (VOCs): trichloroethene (TCE), tetrachloroethylene (PCE), cis-1,2-dichloroethylene (cis-1,2-DCE), and 1,1,1-trichloroethane (1,1,1-TCA).

Soil - On-site soil VOC contamination is largely confined to an area beneath and south of the southeast corner of the building on the 161 Bethpage-Sweethollow Road property. The contamination was generally found in a silty-clay lens located at a depth interval of 15-20 feet below ground surface (bgs). The maximum TCE concentration in soil was 1,000 parts-per-million (ppm), exceeding the unrestricted use soil cleanup objective (SCO) of 0.47 ppm. The highest PCE and cis-1,2-DCE levels were 13 ppm and 1 ppm, respectively, exceeding their unrestricted use SCO's of 1.3 ppm and 0.25 ppm, respectively. 1,1,1-TCA and cis-1,2-DCE contamination was found in the same locations and depths as the PCE contamination.

On-Site Groundwater - On-site groundwater contamination primarily consisted of TCE, but also included PCE, 1,1,1-TCA and their breakdown products. The most contaminated groundwater was located directly beneath the aforementioned soil VOC contamination source area in shallow groundwater (65 feet bgs). This location exhibited a maximum TCE concentration of 2,500 parts-per-billion (ppb), exceeding the New York State ambient water quality standard of 5 ppb. TCE levels downgradient of the source area exceeded 100 ppb at depths ranging from 65-125 feet bgs. Maximum PCE and cis-1,2-DCE levels were 39 ppb and 110 ppb, respectively. These levels were found beneath the soil contamination source area in shallow groundwater and exceeded the New York State ambient water quality standard for both compounds of 5 ppb.

Soil Vapor and Indoor Air - PCE was detected in subslab soil vapor of both on-site buildings at concentrations up to 8,300 micrograms per cubic meter (ug/m3) and was also detected in indoor air of the northern on-site building at concentrations up to 3,200 ug/m3. TCE and 1,1,1-TCA were also detected at concentrations up to 23,000 ug/m3 and 560 ug/m3, respectively, in subslab vapor.

Off-Site Groundwater (Operable Unit 2): The groundwater located downgradient of the site is contaminated with VOCs from the water table to the maximum sampling depth, which is 125 feet bgs. TCE, the primary contaminant, was detected at a maximum concentration of 300 ppb, exceeding the New York State ambient water quality standard of 5 ppb.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure.*

People are not drinking contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. Since the site is covered with buildings and pavement and the contamination is found at depth, it is not expected that people will come into

contact with contaminated soils or groundwater. Volatile organic compounds in the groundwater or soil may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. The potential exists in on-site buildings for people to inhale site contaminants in indoor air due to soil vapor intrusion. The potential exists for soil vapor migration to occur at off-site areas which may result in inhalation of site contaminants in indoor air.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

SECTION 7: SUMMARY OF THE SELECTED REMEDY

To be selected the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the remedial action objectives identified for the site, which are presented in Section 6.5. Potential remedial alternatives for the Site were identified, screened and evaluated in the feasibility study (FS) report.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved. A summary of the Remedial Alternatives Costs is included as Exhibit C.

The basis for the Department's remedy is set forth at Exhibit D.

The selected remedy is referred to as the In-Situ Thermal Desorption, Sub-Slab Depressurization and Air Sparging remedy.

The estimated present worth cost to implement the remedy is $8,050,000. The cost to construct the remedy is estimated to be $3,900,000 and the estimated average annual cost is $499,000.

The elements of the selected remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. In-Situ Thermal Treatment will be implemented to destroy or volatilize volatile organic compounds (VOCs) in the unsaturated soil on the east side of the site. The gases produced by the thermal treatment will be collected by vapor extraction wells and treated in an ex-situ treatment unit. Effluent vapors will be treated by adsorption on granular activated carbon.

At this site, about 46 heating wells and 46 vacuum extraction wells will be installed in the portion of the site to be treated to an approximate depth of 33 feet.

3. Both on-site buildings will be required to have sub-slab depressurization systems, or similar engineered systems, to prevent the migration of vapors into the building from soil and/or groundwater.

4. Air sparging will be implemented to address the on-site groundwater plume contaminated by VOCs. VOCs will be physically removed from the groundwater and soil below the water table (saturated soil) by injecting air into the subsurface. As the injected air rises through the groundwater, the VOCs volatilize and transfer from the groundwater and/or soil into the injected air. The VOCs are carried with the injected air into the vadose zone (the area below the ground surface but above the water table) where a soil vapor extraction (SVE) system is used to remove the injected air. The SVE system applies a vacuum to wells that have been installed into the vadose zone to remove the VOCs along with the air introduced by the sparging process. The air extracted from the SVE wells is then treated as necessary prior to being discharged to the atmosphere.

At this site, about 98 air injection wells will be installed in the portion of the site to be treated, which is located beneath the eastern portion of the site, to approximate depths ranging from 95 to 135 feet, which is 30 to 70 feet below the water table. To capture the volatilized contaminants, about 53 SVE wells will be installed in the vadose zone at a depth of approximately 20 below ground surface. The air containing VOCs extracted from the SVE wells will be treated by passing the air stream through activated carbon which removes the VOCs from the air prior to it being discharged to the atmosphere.

5. Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allows the use and development of the controlled property for commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and
- requires compliance with the Department approved Site Management Plan.

6. A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 5 above.

Engineering Controls: The in-situ thermal treatment, sub-slab depressurization systems, and air sparging/soil vapor extraction systems discussed in Paragraphs 2, 3, and 4, respectively.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use and/or groundwater restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater and the treatment system influent and effluent to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department; and
- monitoring for vapor intrusion for any buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The operation of the components of the remedy will continue until the remedial objectives have been achieved, or until the Department determines that continued operation is technically impracticable or not feasible. The plan includes, but is not limited to:

- compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation for all environmental media that were evaluated. As described in Section 6.1, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium for which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into two categories; volatile organic compounds (VOCs) and pesticides/ polychlorinated biphenyls (PCBs). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 4 and Section 6.1.1 are also presented.

Groundwater

Groundwater samples were collected from 58-183 feet below ground surface from temporary and permanent overburden monitoring wells. The results indicate that contamination in groundwater at the site exceeds SCGs for volatile organic compounds (VOCs) to a depth of 125 feet below ground surface.

Table 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG (ppb)[ab]	Frequency Exceeding SCG[b]
VOC NYS CLASS GA			
1,1,1-TRICHLOROETHANE	0-57.0	5	15/143
1,1,2-TRICHLOROETHANE	0-2.90	1	8/143
1,1-DICHLOROETHANE	0-8.80	5	6/143
1,1-DICHLOROETHENE	0-42.0	5	6/143
1,2,3-TRICHLOROPROPANE	0-21.0	0.04	2/143
ACETONE	0-160	50	8/143
BENZENE	0-1.90	1	2/143
CIS-1,2-DICHLOROETHYLENE	0-110	5	23/143
TERT-BUTYL METHYL ETHER	0-23.0	10	2/143
TETRACHLOROETHYLENE(PCE)	0-39.0	5	17/143
TRICHLOROETHYLENE (TCE)	0-2,500	5	77/148

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

The primary groundwater contaminants are trichloroethylene (TCE), tetrachloroethylene (PCE), 1,1,1-trichloroethane (1,1,1-TCA), and cis-1,2-dichloroethylene (cis-1,2-DCE) associated with previous industrial activities. This contamination is associated with disposal into former dry wells located on the eastern side of the site. Secondary contaminants include other VOCs and will be addressed along with remediation of the primary contaminants. The on-site groundwater contamination is presented in Figure 2.

Based on the findings of the RI, the past disposal of hazardous waste has resulted in the contamination of groundwater. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of groundwater to be addressed by the remedy selection process are: TCE, PCE, 1,1,1-TCA, and cis-1,2-DCE.

Soil

Subsurface soil samples were collected at the site from 3.5-185 feet below ground surface during the RI. As the surface is almost entirely covered with buildings and pavement, surface soil samples were not needed. The results indicate that soils at the site exceed the unrestricted SCG for volatile organic compounds, pesticides and polychlorinated biphenyls (PCBs). On-site soil contamination is depicted in Figure 3.

Table 2 - Subsurface Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted Use SCG (ppm)[ab]	Frequency Exceeding Unrestricted Use SCG	Restricted Use SCG (ppm)[ac]	Frequency Exceeding Restricted Use SCG
Pesticides/PCBs PART 375					
DIELDRIN	0-0.0380	0.005	2/31	1.4	0/31
P,P'-DDD	0-0.0550	0.0033	2/31	92	0/31
P,P'-DDE	0-0.0520	0.0033	2/31	62	0/31
P,P'-DDT	0-0.120	0.0033	2/31	47	0/31
PCB-1254 (AROCLOR 1254)	0-1.60	0.1	2/31	1	2/31
VOC PART 375					
1,1,1-TRICHLOROETHANE	0-3.00	0.68	2/157	500	0/157
ACETONE	0-0.0660	0.05	3/157	500	0/157
CIS-1,2-DICHLOROETHYLENE	0-1.00	0.25	7/157	500	0/157
O-XYLENE (1,2-DIMETHYLBENZENE)	0-0.390	0.26	2/157	500	0/157
TETRACHLOROETHYLENE(PCE)	0-13.0	1.3	14/157	150	0/157
TOLUENE	0-4.20	0.7	11/157	500	0/157
TRICHLOROETHYLENE (TCE)	0-1,000	0.47	22/157	200	8/157
XYLENES, TOTAL	0-1.80	0.26	6/157	500	0/157

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Commercial Use, unless otherwise noted.

The primary soil contaminants are volatile organic compounds (VOCs) associated with previous industrial activities. This contamination is associated with disposal into former dry wells located on the eastern side of the site. The other VOCs detected in the on-site soils are in the same locations as the primary contaminants and will be remediated along with the primary contaminants. The extent of on-site soil contamination is depicted in Figure 3.

The soil contaminated with pesticides and PCB-1254 will not be remediated as part of the selected remedy. The contaminated soil was found in two samples at a depth of 10 feet below ground surface (bgs). Also, these contaminants were not detected in groundwater samples. Therefore, the contaminants are not considered to be contaminants of concern.

Based on the findings of the Remedial Investigation, the past disposal of hazardous waste has resulted in the contamination of soil. The site contaminants identified in soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are, TCE, PCE, 1,1,1-TCA, and cis-1,2-DCE.

Soil Vapor

The evaluation of the potential for soil vapor intrusion resulting from the presence of site related soil or groundwater contamination was evaluated by the sampling of sub-slab soil vapor under structures, and indoor air inside structures. At this site, due to the presence of buildings in the impacted area a full suite of samples were collected to evaluate whether soil vapor intrusion was occurring.

Soil vapor samples were collected from beneath the slabs of both on-site buildings. Indoor air and outdoor air samples were also collected at this time. The samples were collected to assess the potential for soil vapor intrusion. The results indicate tetrachloroethylene (PCE) and trichloroethylene (TCE) were detected in sub-slab soil vapor and the indoor air of both on-site structures. Also, 1,1,1-trichloroethane (1,1,1-TCA) was detected in the soil vapor beneath both structures. The on-site soil vapor intrusion contamination is depicted on Figure 4.

The primary soil vapor contaminants are PCE, TCE and 1,1,1-TCA, which are associated with previous industrial operations at the site. As noted on Figure 4, soil vapor contamination is found under both on-site buildings at concentrations that warrant mitigation of the potential for soil vapor intrusion to occur at both on-site buildings.

Based on the findings of the Remedial Investigation, the disposal of hazardous waste has resulted in the contamination of soil vapor. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of soil vapor to be addressed by the remedy selection process are, PCE, TCE, and 1,1,1-TCA.

Exhibit B

Description of Remedial Alternatives

The following alternatives were considered based on the remedial action objectives (see Section 6.5) to address the contaminated media identified at the site as described in Exhibit A.

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment.

The remaining alternatives address on-site contamination present in specific environmental media and are presented below. Alternatives S2, S3 and S4 address contamination present in soil and soil vapor. Alternatives G2, G3 and G4 address contamination in groundwater.

Unless the No Action alternative is selected, the selected remedy will consist of a combination of an alternative to address soil and soil vapor contamination and an alternative to address groundwater contamination. Regardless of which of the active remedial alternatives are included in the selected remedy, the selected remedy will include the following elements:

- Imposition of an institutional control in the form of an environmental easement for the controlled property that:

    - requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
    - allows the use and development of the controlled property for commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
    - restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and
    - requires compliance with the Department approved Site Management Plan.

- A Site Management Plan is required, which includes the following:

    a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

    Institutional Controls: The Environmental Easement discussed in the above paragraph.

    Engineering Controls: The soil, groundwater and soil vapor intrusion treatment systems discussed in the alternatives below.

    This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use and/or groundwater restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater and the treatment system influent and effluent to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department; and
- monitoring for vapor intrusion for any buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The operation of the components of the remedy will continue until the remedial objectives have been achieved, or until the Department determines that continued operation is technically impracticable or not feasible. The plan includes, but is not limited to:

- compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.

Alternative S2: Sub-Slab Depressurization, PCB/Pesticide Area Excavation and Soil Vapor Extraction

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil clean objectives listed in Part 375-6.8 (a). This alternative includes:

- Soil vapor extraction (SVE) to remove volatile organic compounds (VOCs) from the subsurface. VOCs will be physically removed from the soil by applying a vacuum to wells that have been installed into the vadose zone (the area below the ground but above the water table). The vacuum draws air through the soil matrix which carries the VOCs from the soil to the SVE well. The air extracted from the SVE wells is then treated as necessary prior to being discharged to the atmosphere.

  Approximately nine SVE wells will be installed into the vadose zone to a depth of approximately 38 feet. The air containing VOCs extracted from the SVE wells will be treated by passing the air stream through activated carbon which removes the VOCs from the air prior to it being discharged to the

atmosphere.

- Excavation and off-site disposal for on-site soils which are contaminated with pesticides and/or PCBs exceeding unrestricted SCOs, as defined by 6 NYCRR Part 375-6.8. Approximately 65 cubic yards of soil will be removed from the site. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be imported to replace the excavated soil and establish the designed grades at the site.

- Sub-slab depressurization systems, or similar engineered systems, for both on-site buildings to prevent the migration of vapors into the building from soil and/or groundwater.

The SVE system will remediate the contaminated soil in approximately five years. Although costs are included to operate and maintain the subslab depressurization system for 30 years, the annual cost provided below is based on the five-year soil remediation period. As the period of operation for the subslab depressurization system depends on which groundwater remedy is selected, the 30-year operation and maintenance period is a conservative assumption.

Present Worth: *$2,040,000*
Capital Cost: *$1,080,000*
Annual Costs: *$220,000*

Alternative S3: Sub-Slab Depressurization and In-Situ Thermal Treatment

This alternative includes:

- In-Situ Thermal Treatment will be implemented to destroy or volatilize volatile organic compounds (VOCs) in the unsaturated soil on the east side of the site. The gases produced by the thermal treatment will be collected by vapor extraction wells and treated in an ex-situ treatment unit. Effluent vapors will be treated by adsorption on granular activated carbon. At this site, about 46 heating wells and 46 vacuum extraction wells will be installed in the portion of the site to be treated to an approximate depth of 33 feet.

- Sub-slab depressurization systems, or similar engineered systems, for both on-site buildings to prevent the migration of vapors into the building from soil and/or groundwater.

For this alternative, the soil treatment system will likely remediate the contaminated soil in less than one year. Therefore, the annual costs reflect 30 years of operation and maintenance for the sub-slab depressurization system, which is the only remedy element requiring long-term operation and maintenance. As the period of operation for the subslab depressurization system depends on which groundwater remedy is selected, the 30-year operation and maintenance period is a conservative assumption.

Present Worth: *$2,060,000*
Capital Cost: *$1,540,000*
Annual Costs: *$35,000*

Alternative S4: Sub-Slab Depressurization, Excavation and Off-Site Disposal of Contaminated Soil and Site Cover Using Existing Foundation

This alternative includes:

- Excavation and off-site disposal for on-site soils which are contaminated with VOCs, pesticides and/or PCBs exceeding unrestricted SCOs, as defined by 6 NYCRR Part 375-6.8. Excavation will be limited to areas which are not covered by on-site buildings. Approximately 2,665 cubic yards of soil will be removed from the site. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be imported to replace the excavated soil and establish the designed grades at the site.

- A site cover currently exists and will be maintained to allow for commercial use of the site. The cover consists of the building slab on the 161 Bethpage-Sweethollow Road property, which covers the contaminated soil remaining on the site after excavation. Any site redevelopment will maintain a site cover, which will consist of the structures such as buildings, pavement, and sidewalks comprising the site development. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

- Sub-slab depressurization systems, or similar engineered systems, for both on-site buildings to prevent the migration of vapors into the building from soil and/or groundwater.

After soil excavation is completed, operation and/or maintenance of the sub-slab depressurization systems and the site cover may continue indefinitely, as contaminated soil under one of the site buildings will be left in place. Therefore, the annual costs reflect 30 years of operation and maintenance of these remedy elements.

Present Worth: *$2,790,000*
Capital Cost: *$2,260,000*
Annual Costs: *$35,000*

Alternative G2: In-Situ Chemical Oxidation

This alternative includes in-situ chemical oxidation (ISCO) to treat volatile organic compounds VOCs in groundwater. A chemical oxidant will be injected into the subsurface to destroy the contaminants in the contaminated groundwater beneath the eastern portion of the site via injection wells screened from 65 to 95 feet and 95 feet to 135 feet. The byproducts of the ISCO/ISCR process are non-toxic.

Prior to the full implementation of this technology, laboratory and on-site pilot scale studies will be conducted to more clearly define design parameters. Between the pilot and the full scale implementations, it is estimated that 10 shallow and 10 deep injection points will be installed. It is estimated that the chemical oxidant will be injected during approximately two separate events over several months.

Present Worth: *$11,100,000*
Capital Cost: *$8,290,000*
Annual Costs: *$661,000*

Alternative G3: Air Sparge/Soil Vapor Extraction

This alternative includes air sparging to address the on-site groundwater plume contaminated by VOCs. VOCs will be physically removed from the groundwater and soil below the water table (saturated soil) by injecting air

into the subsurface. As the injected air rises through the groundwater, the VOCs volatilize and transfer from the groundwater and/or soil into the injected air. The VOCs are carried with the injected air into the vadose zone (the area below the ground surface but above the water table) where a soil vapor extraction (SVE) system is used to remove the injected air. The SVE system applies a vacuum to wells that have been installed into the vadose zone to remove the VOCs along with the air introduced by the sparging process. The air extracted from the SVE wells is then treated as necessary prior to being discharged to the atmosphere.

At this site, about 98 air injection wells will be installed in the portion of the site to be treated, which is located beneath the eastern portion of the site, to approximate depths ranging from 95 to 135 feet, which is 30 to 70 feet below the water table. To capture the volatilized contaminants, about 53 SVE wells will be installed in the vadose zone at a depth of approximately 20 below ground surface. The air containing VOCs extracted from the SVE wells will be treated by passing the air stream through activated carbon which removes the VOCs from the air prior to it being discharged to the atmosphere.

Present Worth: *$5,990,000*
Capital Cost: *$2,370,000*
Annual Costs: *$437,000*

Alternative G4: Groundwater Extraction and Treatment

This alternative includes groundwater extraction and treatment to treat contaminants in groundwater and to ensure contaminated groundwater does not migrate off-site. The groundwater extraction system will be designed and installed so that the capture zone is sufficient to cover the areal and vertical extent of the area of concern. The extraction system will create a depression of the water table so that contaminated groundwater is directed toward the extraction wells within the plume area. Groundwater will be extracted from the subsurface in the eastern portion of the site using a submersible pump placed in extraction wells screened from about 55 to 95 feet and 95 to 135 feet.

Prior to the full implementation of this technology, studies will be conducted to more clearly define design parameters, including extraction well spacing. Between the pilot and the full scale implementations, it is estimated that four shallow and three deep extraction wells will be installed.

Air stripping will be implemented ex-situ to remove volatile contaminants from extracted groundwater. The groundwater will be contacted with an air stream to volatilize contaminants from groundwater to air. The extracted air stream containing the volatile contaminants will be treated by adsorption prior to discharge to the atmosphere using liquid granular activated carbon (GAC). The GAC system will consist of one or more vessels filled with carbon connected in series and/or parallel. Following treatment, the groundwater will be discharged to the subsurface.

Present Worth: *$22,800,000*
Capital Cost: *$3,300,000*
Annual Costs: *$1,260,000*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
1: No Action	0	0	0
S2: Sub-Slab Depressurization, PCB/Pesticide Area Excavation and Soil Vapor Extraction	1,080,000	220,000	2,040,000
S3: Sub-Slab Depressurization and In-Situ Thermal Treatment	1,540,000	35,000	2,060,000
S4: Sub-Slab Depressurization, Excavation and Off-Site Disposal of Contaminated Soil and Site Cover Using Existing Foundation	2,260,000	35,000	2,790,000
G2: In-Situ Chemical Oxidation	8,290,000	661,000	11,100,000
G3: Air Sparge/Soil Vapor Extraction	2,370,000	437,000	5,990,000
G4: Groundwater Extraction and Treatment	3,300,000	1,260,000	22,800,000

Exhibit D

SUMMARY OF THE SELECTED REMEDY

The Department is selecting Alternatives S3 and G3, In-Situ Thermal Desorption, Sub-Slab Depressurization and Air Sparging as the remedy for this site. Alternatives S3 and G3 will achieve the remediation goals for the site by remediating contaminated soil using in-situ thermal desorption, cleaning up groundwater using air sparging and soil vapor extraction, and protecting the occupants of the on-site buildings from soil vapor intrusion using sub-slab depressurization. The elements of this remedy are described in Section 7. The selected remedy is depicted in Figures 5 and 6.

Basis for Selection

The selected remedy is based on the results of the RI and the evaluation of alternatives. The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

The selected remedy (Alternatives S3 and G3) will satisfy this criterion by removing volatile organic compounds (VOCs) from on-site soils using in-situ thermal treatment, removing VOCs from contaminated groundwater using air sparging, and protecting the occupants of the on-site buildings from soil vapor intrusion using sub-slab depressurization. Therefore, the selected remedy protects the environment by removing contamination from all contaminated environmental media and protects human health by mitigating soil vapor intrusion impacts in the on-site buildings. Alternatives S2 and S4 protect human health using sub-slab depressurization, the same technology as Alternative S3. Alternative S2 removes soil contamination using excavation and soil vapor extraction, and therefore provides equivalent environmental protection to Alternative S3. Alternative S4 relies on a site cover and land use restrictions to address contaminated soil that is not included in the excavation, and therefore is less protective of the environment than Alternatives S2 and S3. For the groundwater remediation alternatives, all three active remediation alternatives (G2, G3, and G4) remediate the on-site groundwater and are therefore equally protective of the environment. These three alternatives also protect public health with a groundwater use restriction. Alternative 1 (No Action) leaves the site in its present condition and does not provide any additional protection to public health and the environment. As this criterion must be satisfied for an alternative to be considered for selection, Alternative 1 is dropped from further consideration.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

For soil contamination and soil vapor intrusion, the selected remedy (Alternative S3) meets unrestricted use soil cleanup objectives (SCOs) for VOCs using in-situ thermal treatment, and meets the soil vapor intrusion SCGs using subslab depressurization. Alternative S2 also meets these SCGs using soil vapor extraction and subslab

depressurization. Alternative S4 meets less stringent soil contamination SCGs for the contaminants of concern, as some VOC soil contamination that exceeds unrestricted use SCOs and meets restricted commercial use SCOs is not excavated and remains beneath the site cover. Alternatives S3 and S4 are expected to meet SCGs for the contaminants of concern within one year, while the soil vapor extraction system in Alternative S2 will run for several years before SCGs are met.

As discussed in Exhibit A, soil contaminated with pesticides and PCB-1254 is not addressed by the selected remedy. As these contaminants are not considered to be contaminants of concern, the SCGs are not applicable to these contaminants at this site.

For groundwater contamination, all three alternatives (Alternatives G2, G3 and G4) meet groundwater SCGs through active remediation. Alternatives G2 (in-situ chemical oxidation), G3 (air sparging) and G4 (groundwater extraction and treatment) are expected to meet groundwater SCGs in two years, five years, and 30 years, respectively.

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

For the soil and vapor intrusion alternatives, the selected remedy (Alternative S3) will be the most effective and permanent. In-situ thermal treatment will permanently remove soil contamination from the subsurface, while the sub-slab depressurization will effectively protect the occupants of the on-site buildings from soil vapor intrusion. Most of the VOC soil contamination is in a clay layer and can be more effectively remediated by in-situ thermal treatment (Alternative S3) than soil vapor extraction (Alternative S2). Also, Alternative S3 is more effective and permanent than Alternative S4, which relies on a cover system (i.e. the northern on-site building) to address contaminated soil beneath one of the site buildings. Alternative S4 is less effective than Alternatives S2 and S3 at reducing the potential for soil vapor intrusion, as Alternative S4 leaves VOC-contaminated soil beneath one of the on-site buildings as a continuing source of soil vapor intrusion and groundwater contamination.

The active groundwater remediation alternatives (G2, G3 and G4) will effectively and permanently remediate the on-site groundwater contamination. Alternatives G3 (air sparging) and G4 (groundwater extraction and treatment) are treatment systems that are expected to run until groundwater SCGs are met or their continued operation is no longer found to be effective. Alternative G2 (in-situ chemical oxidation) may require several rounds of oxidant injections to meet SCGs. All three alternatives require a groundwater use restriction and reduce the potential for soil vapor intrusion.

4. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

The selected remedy for soil and soil vapor contamination (Alternative S3) reduces the toxicity, mobility and volume of on-site contamination by treating the VOC-contaminated soil with in-situ thermal desorption. Alternative S2 (soil vapor extraction) is less likely to reduce the toxicity and volume of contamination because

soil vapor extraction is less effective at treating the VOC contamination present in the clay layer at this site. Alternative S4 depends on a site cover to address the soil contamination beneath one of the site buildings and therefore less effectively reduces toxicity, mobility and volume than Alternatives S2 and S3, which treat all of the soil contamination.

All of the active groundwater remediation alternatives (G2, G3 and G4) reduce the toxicity, mobility and volume of on-site groundwater contamination. Alternative G2 meets these objectives by injecting chemicals into the groundwater that destroy the contaminants and produce nontoxic byproducts. Alternatives G3 and G4 accomplishes these goals by removing the contaminants from the groundwater and treating the contaminants in above ground treatment systems.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

For the soil and soil vapor alternatives, Alternatives S2 and S3 have short-term impacts which could easily be controlled. Alternative S4 causes significant temporary disruptions to the site tenants. Alternatives S3 requires the shortest time to meet remediation goals, while Alternative S2 requires the longest time to meet these goals. Because Alternative S4 addresses the VOC-contaminated soil using a site cover, this alternative does not remove the source of groundwater contamination, which is a remedial action objective for this site.

For the groundwater alternatives, all three alternatives (G2, G3 and G4) have short-term impacts which could easily be controlled. Alternatives G2 requires the shortest time to meet remediation goals, while Alternative G4 requires the longest time to meet these goals.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

For the soil and soil vapor alternatives, the selected remedy (Alternative S3) is favorable in that it is readily implementable. As soil vapor extraction has limited effectiveness in fine-grained soils such as clay, pilot testing is needed to determine the implementability of Alternative S2. Alternative S4 requires specialized engineering to protect buildings adjacent to the excavation and demolition of large pavement areas and underground drainage systems.

For groundwater alternatives, Alternatives G3 and G4 are readily implementable. With Alternative G2, there are concerns with transport, storage and handling the oxidizing agent in the field that will need to be addressed in remedial design and operations.

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision.

For the soil and soil vapor contamination, the costs of the selected remedy (Alternative S3) and Alternative S2 are nearly equal. Alternative S4 is about 36% more expensive than Alternative S3 and is less effective at remediating the contaminated soil.

For the groundwater contamination, the selected remedy (Alternative G3) has the lowest cost of the alternatives. The cost of Alternative G3 is about half of the cost of Alternative G2 and is less than one third of the cost of Alternative G4. Neither Alternative G2 nor Alternative G4 has advantages that justify their higher costs.

8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

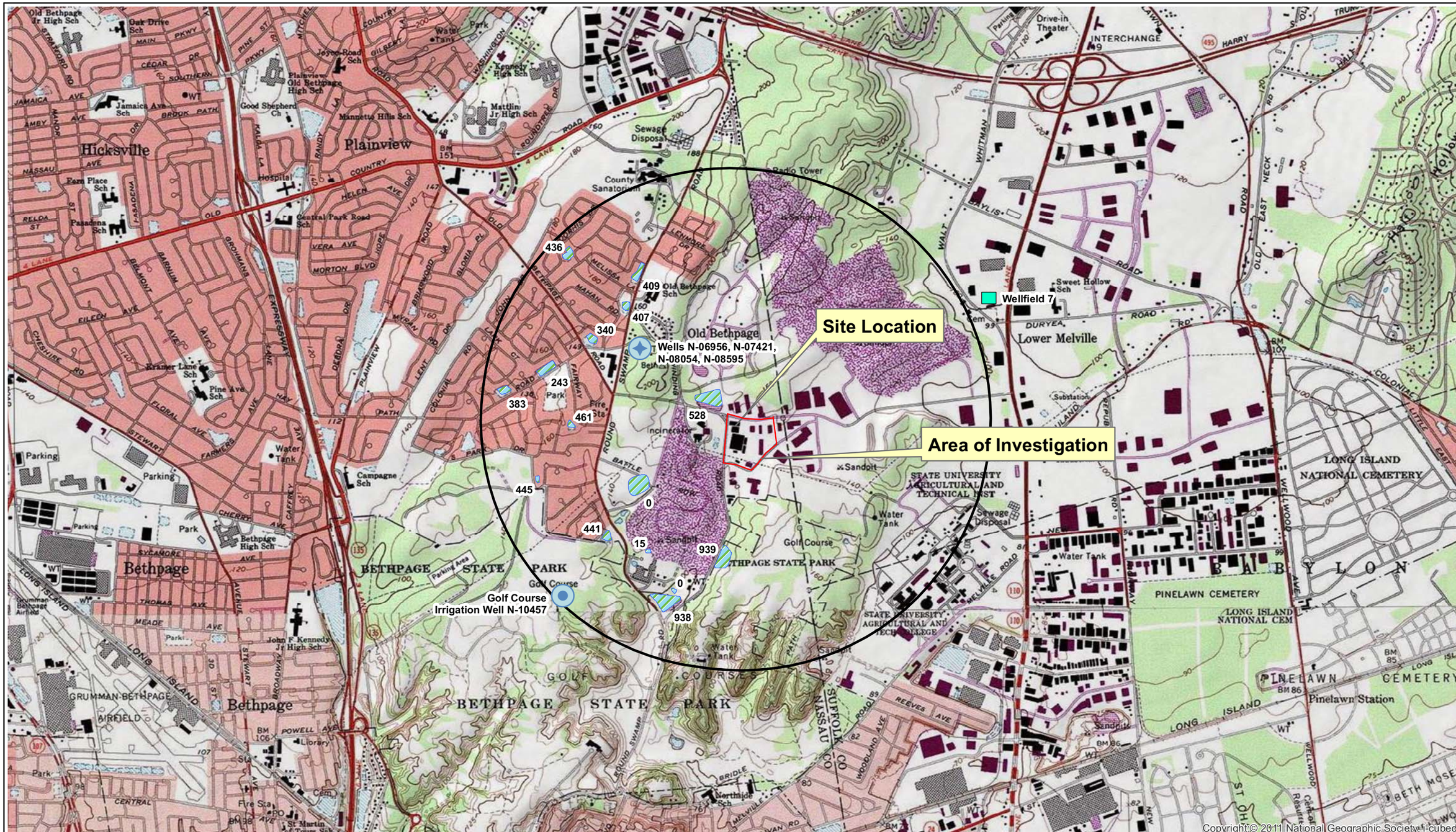
All of the soil and soil vapor alternatives (S2, S3 and S4) remediate the site to levels that are appropriate for the on-site and adjacent land use, which is commercial and industrial. Alternatives S2 and S3 clean up the soil contamination to unrestricted use cleanup objectives for the contaminants of concern, which is most favorable. Alternative S4 remediates the soil to restricted commercial soil cleanup objectives for the soil beneath one of the site buildings. Therefore, Alternative S4 remediates the site to a less stringent cleanup objective than Alternatives S2 and S3.

The three active groundwater remediation alternatives (G2, G3, and G4) clean up the on-site groundwater to the same standards; therefore, the three alternatives are equally favorable for this criterion.

The final criterion, Community Acceptance, is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP are evaluated. A responsiveness summary has been prepared that describes public comments received and the manner in which the Department will address the concerns raised.

Alternatives S3 and G3 has been selected because, as described above, they satisfy the threshold criteria and provide the best balance of the balancing criterion.



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One Mile Radius from Site Location

Active Potable Wells - Plainview Water District, Magothy Aquifer, Screened 482-540 ft

Nassau County Recharge Basin
Label (528) is Basin Number

South Huntington Water District Potable Wellfield

HDR

Henningson, Durham & Richardson, Architecture and Engineering, P.C. In Association with HDR Engineering, Inc.

Site Location and Area of Investigation Map (with Potable Wells and Recharge Basins)

Former Aluminum Louvre RI/FS
NYSDEC Site #130195
Old Bethpage, NY

DATE
1-9-2013

FIGURE
1

ALC-MW3	7/22/2011
	ALC-MW3-WT-2
Depth (ft)	59.8
1,1,1-TCA	***19***
1,1,2-TCA	***2.7***
1,1-DCA	***7.4***
cis-1,2-DCE	***100***
PCE	***17***
TCE	***2400 D***

MW-161-1-ID	7/19/2011	7/25/2011
	MW-161-1-I-2	MW-161-1-D-2
Depth (ft)	85-95	114.5-124.5
1,1,1-TCA	2.4	1 ND
1,1,2-TCA	1 ND	1 ND
1,1-DCA	1 ND	1 ND
cis-1,2-DCE	***7.9***	0.51 J
PCE	1 ND	1 ND
TCE	***190 D***	***43***

MW-161-1-S	7/18/2011
	MW-161-1-S-2
Depth (ft)	60-70
1,1,1-TCA	1 ND
1,1,2-TCA	1 ND
1,1-DCA	1 ND
cis-1,2-DCE	1 ND
PCE	1 ND
TCE	4.6

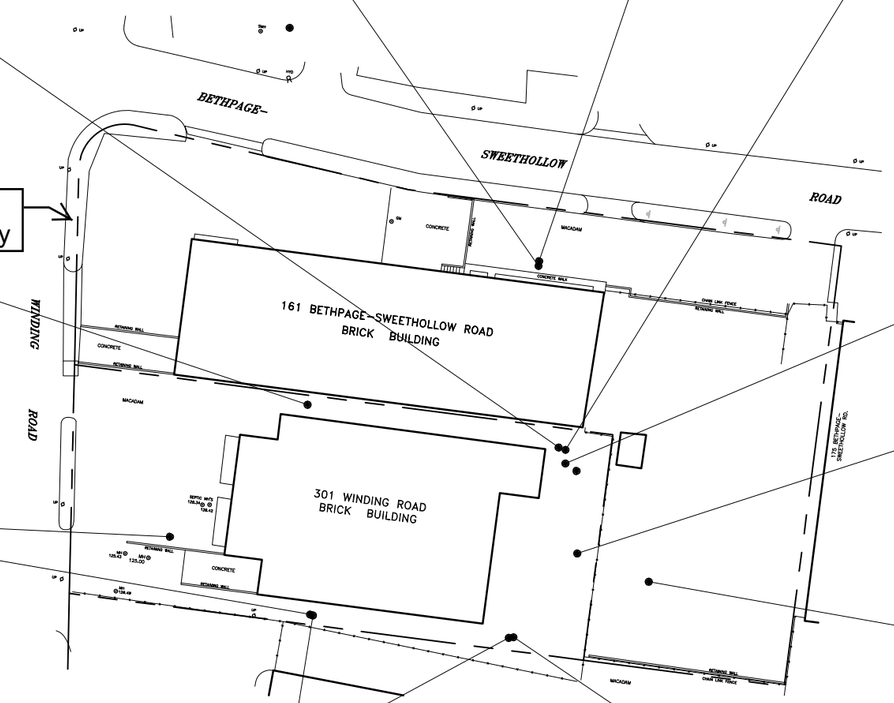
MW-301-1-SI	7/22/2011	7/22/2011
	MW-301-1-S-2	MW-301-1-I-2
Depth (ft)	56-66	85-95
1,1,1-TCA	***11***	1 ND
1,1,2-TCA	***2.6***	1 ND
1,1-DCA	2.5	1 ND
cis-1,2-DCE	***68***	2.9
PCE	***39***	0.82 J
TCE	***2500 D***	***45***

GROUNDWATER FLOW

N

ALC-OLD-MW1	7/21/2011
	ALC-OLD-MW1-WT
Depth (ft)	60.2
1,1,1-TCA	1 ND
1,1,2-TCA	1 ND
1,1-DCA	1 ND
cis-1,2-DCE	1 ND
PCE	1 ND
TCE	1.6

Site Boundary



MW-301-1-D	7/22/2011
	MW-301-1-D-2
Depth (ft)	115-125
1,1,1-TCA	1 ND
1,1,2-TCA	1 ND
1,1-DCA	1 ND
cis-1,2-DCE	0.67 J
PCE	1 ND
TCE	***17***

ALC-MW4	7/21/2011
	ALC-MW4-WT-2
Depth (ft)	60
1,1,1-TCA	1.2
1,1,2-TCA	1 ND
1,1-DCA	1 ND
cis-1,2-DCE	5
PCE	1 ND
TCE	***67***

MW-301-4	7/19/2011	7/19/2011	7/19/2011
	MW-301-4-S-2	MW-301-4-I-2	MW-301-4-D-2
Depth (ft)	55-65	85-95	115-125
1,1,1-TCA	1 ND	1 ND	1 ND
1,1,2-TCA	1 ND	1 ND	1 ND
1,1-DCA	1 ND	1 ND	1 ND
cis-1,2-DCE	***5.6***	1 ND	1 ND
PCE	1 ND	1 ND	1 ND
TCE	***6.3***	1 ND	1 ND

MW-161-2	7/20/2011	7/20/2011	7/20/2011
	MW-161-2-S-2	MW-161-2-I-2	MW-161-2-D-2
Depth (ft)	60-70	85-95	115-125
1,1,1-TCA	0.74 J	1 ND	1 ND
1,1,2-TCA	1 ND	1 ND	1 ND
1,1-DCA	1 ND	1 ND	1 ND
cis-1,2-DCE	0.83 J	3.9	1 ND
PCE	1 ND	1 ND	1 ND
TCE	***36***	***26***	***23***

ALC-OLD-MW2	7/21/2011
	ALC-OLD-MW2-WT-2
Depth (ft)	58.8
1,1,1-TCA	1 ND
1,1,2-TCA	1 ND
1,1-DCA	1 ND
cis-1,2-DCE	1.3
PCE	1 ND
TCE	***8***

MW-301-2	7/21/2011	7/21/2011
	MW-301-2-I-2	MW-301-2-D-2
Depth (ft)	85-95	112-122
1,1,1-TCA	1 ND	1 ND
1,1,2-TCA	1 ND	1 ND
1,1-DCA	1 ND	1 ND
cis-1,2-DCE	1 ND	1 ND
PCE	1 ND	1 ND
TCE	4.2	0.87 J

MW-301-3	7/19/2011	7/19/2011
	MW-301-3-I-2	MW-301-3-D-2
Depth (ft)	81-91	112-122
1,1,1-TCA	1 ND	1 ND
1,1,2-TCA	1 ND	1 ND
1,1-DCA	1 ND	1 ND
cis-1,2-DCE	1 ND	1 ND
PCE	1 ND	1 ND
TCE	1.8	1 ND

ALC-OLD-MW3	7/21/2011
	ALC-OLD-MW3-WT-2
Depth (ft)	59.9
1,1,1-TCA	1.8
1,1,2-TCA	1 ND
1,1-DCA	1 ND
cis-1,2-DCE	***11***
PCE	3.2
TCE	***260 D***

LEGEND

• MONITORING WELL

Notes			
Result units:	µg/l	micrograms per liter	Criteria
Abbreviations:	1,1,1-TCA	1,1,1-Trichloroethane	5
	1,1,2-TCA	1,1,2-Trichloroethane	1
	1,1-DCA	1,1-Dichloroethane	5
	cis-1,2-DCE	cis-1,2-Dichloroethene	5
	PCE	Tetrachloroethene	5
	TCE	Trichloroethene	5
	ND	not detected	
	NDJ	not detected; estimated value	
	D	value from secondary dilution analysis	
	NJ	tentative ID, estimated J estimated value	
	B	also detected in associated method blank	
Criteria: Part 703: Surface Water and Groundwater Quality Standards (Class GA)			
Bold/italic/underlined value in table is exceedance of applicable criteria			

0 100 200

SCALE IN FEET

HDR

Henningson, Durham & Richardson, Architecture and Engineering, P.C. In Association with HDR Engineering, Inc.

Groundwater Sampling Results
On-Site Chlorinated VOCs -
July 2011 (3 of 8)
Former Aluminum Louvre RI/FS
NYSDEC Site # 130195
Old Bethpage, NY

DATE
01-09-2013

FIGURE
2

DB-301-2E	01/21/11	
	DB-301-2E-18	DB-301-2E-38
Depth (ft)	18	38
1,1,1-TCA	130 J	4.9 ND
cis-1,2-DCE	***1000***	4.9 ND
PCE	***1500***	4.9 ND
TCE	***430000 D***	2.2 B
Toluene	***800***	4.9 ND
Xylene (Total)	410 ND	4.9 ND

ALC-MW-3W	01/21/11
	ALC-MW-3W-17
Depth (ft)	17
1,1,1-TCA	190 J
cis-1,2-DCE	***910***
PCE	***2900***
TCE	***380000 D***
Toluene	***1100***
Xylene (Total)	400 ND

DW-7	05/31/12
	DW-7-053112
Depth (ft)	3.5
1,1,1-TCA	7.1 ND
cis-1,2-DCE	34
PCE	2 J
TCE	29
Toluene	14
Xylene (Total)	7.1 ND

MW-301-1-SI	04/04/11	4/6/2011
	MW-301-1-14	MW-301-1-94
Depth (ft)	14	94
1,1,1-TCA	5.3 ND	5.7 ND
cis-1,2-DCE	5.3 ND	5.7 ND
PCE	3.4 J	5.7 ND
TCE	5.4	5.7 ND
Toluene	5.3 ND	5.7 ND
Xylene (Total)	1.4 J	5.7 ND

ALC-MW-3NE	01/19/11
	ALC-MW-3NE-18
Depth (ft)	18
1,1,1-TCA	3700 ND
cis-1,2-DCE	3700 ND
PCE	3700 ND
TCE	***600000 D***
Toluene	***2200 J***
Xylene (Total)	3700 ND

ALC-MW-3SE	01/19/11
	ALC-MW-3SE-16
Depth (ft)	16
1,1,1-TCA	1600 ND
cis-1,2-DCE	1600 ND
PCE	1100 J
TCE	***28000***
Toluene	230 J
Xylene (Total)	1600 ND

301-2E	01/11/11
	301-2E-11.5
Depth (ft)	11.5
All six results	5.7 ND

ALC-MW-3E	01/19/11	
	ALC-MW-3E-17	ALC-MW-3E-38
Depth (ft)	17	38
1,1,1-TCA	3800 ND	5.2 ND
cis-1,2-DCE	3800 ND	5.2 ND
PCE	***4500***	5.2 ND
TCE	***140000***	1.5 B
Toluene	***1300 J***	5.2 ND
Xylene (Total)	3800 ND	5.2 ND

ALC-MW3-SO	01/19/11		
	ALC-MW3-SO-18	ALC-MW3-SO-33	ALC-MW3-SO-44
Depth (ft)	18	33	44
1,1,1-TCA	4000 ND	5.4 ND	5.1 ND
cis-1,2-DCE	4000 ND	5.4 ND	5.1 ND
PCE	***13000***	5.4 ND	5.1 ND
TCE	***950000 D***	3.9 B	2.3 B
Toluene	***3200 J***	5.4 ND	5.1 ND
Xylene (Total)	4000 ND	5.4 ND	5.1 ND

DB-MW-3E	01/19/11
	DB-MW-3E-17.5
Depth (ft)	17.5
1,1,1-TCA	380 ND
cis-1,2-DCE	380 ND
PCE	290 J
TCE	***1600***
Toluene	39 J
Xylene (Total)	380 ND

MW-301-1-D	04/06/11
	MW-301-1-114
Depth (ft)	114
All six results	5.3 ND

DB-ALC-MW-3S	01/21/11
	DB-ALC-MW-3S-17
Depth (ft)	17
1,1,1-TCA	410 ND
cis-1,2-DCE	***410 J***
PCE	***3600***
TCE	***6700***
Toluene	220 J
Xylene (Total)	***430***

301-DB-3	03/16/11
	301-DB-3-17
Depth (ft)	17
1,1,1-TCA	220 J
cis-1,2-DCE	***520 J***
PCE	***3300***
TCE	***32000***
Toluene	680 J
Xylene (Total)	***450 J***

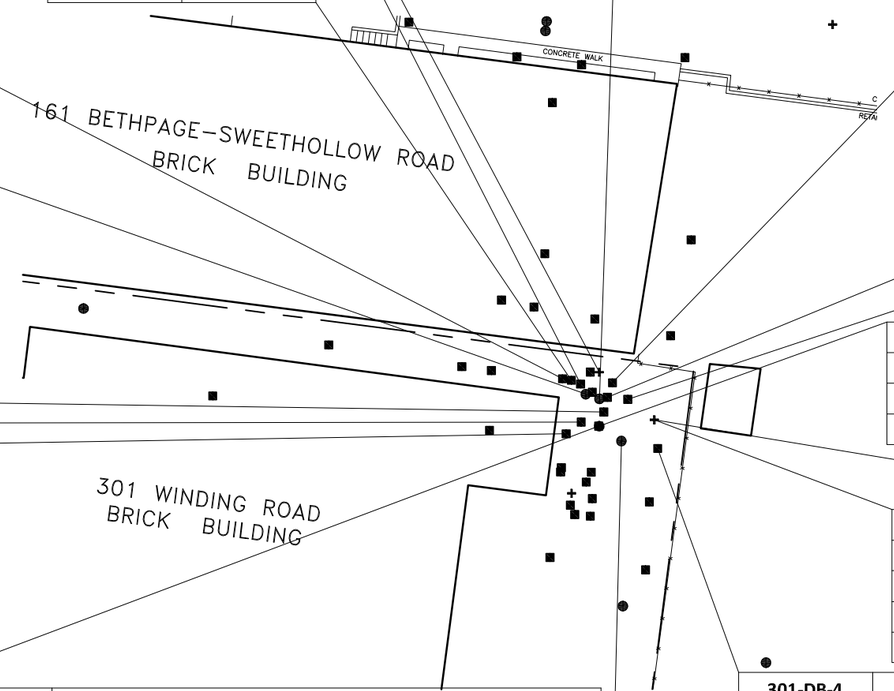
DW-8	08/30/12
	DW-8-083012
Depth (ft)	14
Five results	11 ND
Toluene	8.3 J

DB-DW-8	01/21/11
	DB-DW-8-15
Depth (ft)	15
1,1,1-TCA	4 J
cis-1,2-DCE	1.9 J
PCE	3.4 J
TCE	***560 D***
Toluene	2.5 B
Xylene (Total)	5.9 ND

301-DB-4	03/17/11
	301-DB-4-18
Depth (ft)	18
Five results	5.5 ND
TCE	19

DB-ALC-MW-3SE	01/21/11		
	DB-ALC-MW-3SE-14	DB-ALC-MW-3SE-24	DB-ALC-MW-3SE-38
Depth (ft)	14	24	38
1,1,1-TCA	220 J	5 ND	4.6 ND
cis-1,2-DCE	310 ND	5 ND	4.6 ND
PCE	***11000 D***	5 ND	4.6 ND
TCE	***39000 D***	2.4 B	1.5 B
Toluene	***1400***	5 ND	4.6 ND
Xylene (Total)	***1800***	5 ND	4.6 ND

MW-301-1-VD	05/10/12	
	MW-301-1-VD-26	MW-301-1-VD-185
Depth (ft)	26	185
All six results	5.1 ND	6.1 ND



Notes

Result units:	µg/kg	micrograms per kilogram	Criteria
Abbreviations:	1,1,1-TCA	1) 1,1,1-Trichloroethane	680
	cis-1,2-DCE	2) cis-1,2-Dichloroethene	250
	PCE	3) Tetrachloroethene	1300
	TCE	4) Trichloroethene	470
		5) Toluene	700
		6) Xylene (Total)	260
	ND	not detected	
	NDJ	not detected; estimated value	
	D	value from secondary dilution analysis	
	J	estimated value	
	B	also detected in associated method blank	

Criteria: 6NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives

Bold/italic/underlined value in table is exceedance of applicable criteria

LEGEND

- ● MONITORING WELL
- ■ SOIL BORING
- + DRYWELL

0 50 100

SCALE IN FEET

HDR

Henningson, Durham & Richardson, Architecture and Engineering, P.C. In Association with HDR Engineering, Inc.

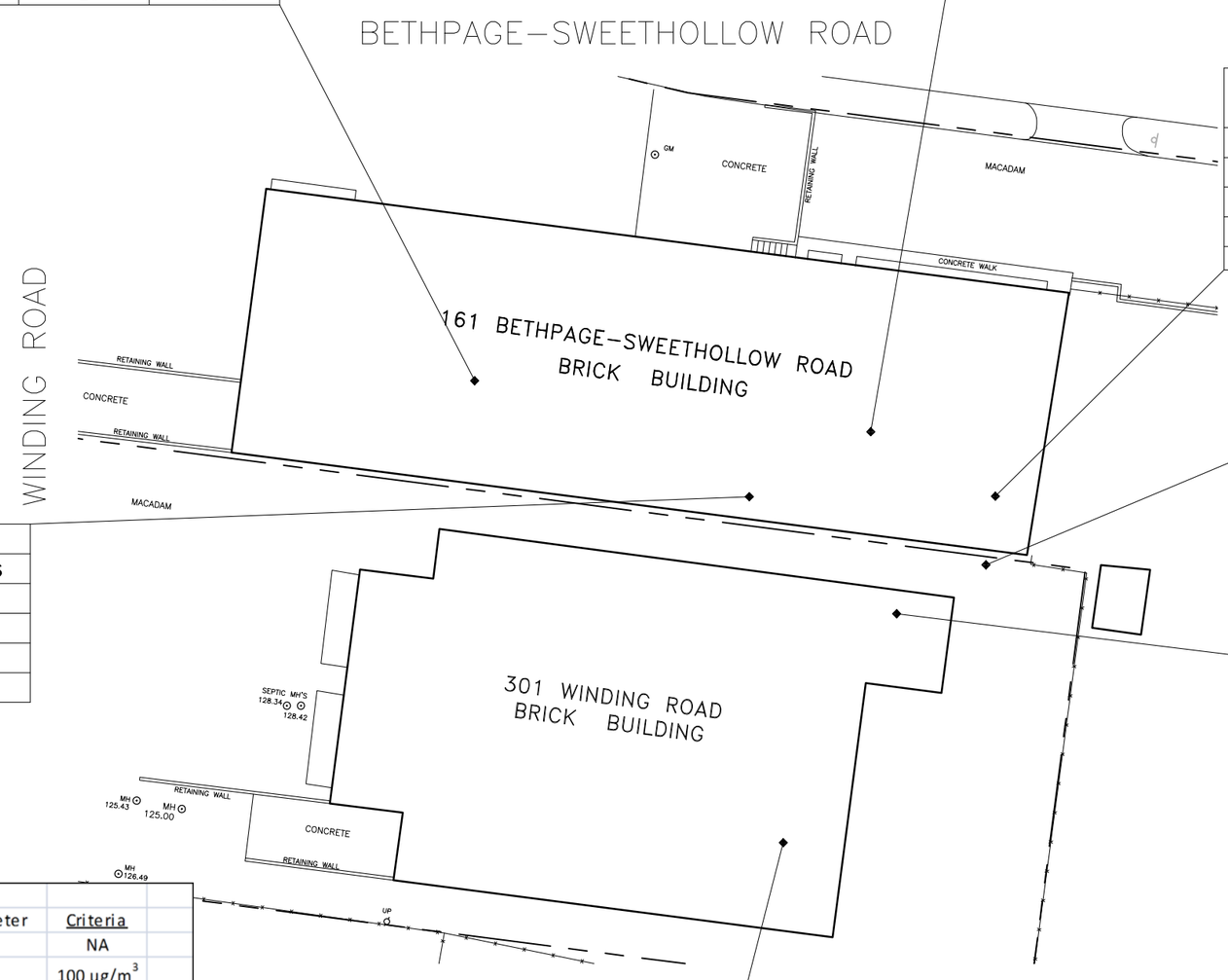
Soil Sample Results
301 Winding Road - Eastern Portion of the Site
Chlorinated VOCs, Toluene and Xylene (1 of 2)
Former Aluminum Louvre RI/FS
NYSDEC Site # 130195
Old Bethpage, NY

DATE
12-10-2012

FIGURE
3

161-W-2011/	1/13/2011		3/12/2012	
161-A-2012	161-W-AMB	161-W-SS-1	161-A-IA	161-A-SS
Depth	BZ	0" - 6"	BZ	0" - 6"
1,1,1-TCA	0.83 ND	0.83 ND	0.83 ND	120
PCE	11	1.4	3.1	1100
TCE	0.49	0.98	2	460

161-N-2012	3/12/2012	
	161-N-IA	161-N-SS
Depth	BZ	0" - 6"
1,1,1-TCA	0.83 ND	560
PCE	34	2000
TCE	2.8	8600



161-E-2011/ 161-SE-2012	1/13/2011		3/12/2012	
	161-E-AMB	161-E-SS	161-SE-IA	161-SE-SS
Depth	BZ	0" - 6"	BZ	0" - 6"
1,1,1-TCA	0.83 ND	4.9	0.83 ND	530
PCE	***3200****	3000	57	1300
TCE	2.6	52	2.9	4200

*Chemicals used indoors at this location assumed to have contributed to indoor air result

301-NE-2011/ 301-OA-2012	1/13/2011	3/12/2012
	301-NE-OA	301-OA
Depth	BZ	BZ
1,1,1-TCA	0.83 ND	0.83 NDJ
PCE	5.9	3.8 J
TCE	1.7	3.8 J

161-W-2012	3/12/2012	
	161-W-IA	161-W-SS
Depth	BZ	0" - 6"
1,1,1-TCA	0.83 ND	100
PCE	14	2000
TCE	3.8	9500

301-N-2011/ 301-NE-2012	1/13/2011		3/12/2012
	301-N-AMB	301-N-SS	301-NE-SS1
Depth	BZ	0" - 6"	0" - 6"
1,1,1-TCA	0.83 ND	0.83 ND	260
PCE	3.7	2	2100
TCE	1.9	1.4	9000

LEGEND

◆ SOIL VAPOR/AIR SAMPLE

Notes			
Result units:	ug/m^3	micrograms per cubic meter	Criteria
Abbreviations:	1,1,1-TCA	1,1,1-Trichloroethane	NA
	PCE	Tetrachloroethene	100 $\mu g/m^3$
	TCE	Trichloroethene	5 $\mu g/m^3$
NA - not available		SS - sub-slab soil vapor sample	
IA - indoor air sample		AMB - ambient (indoor) air sample	
OA - outdoor air sample		BZ - breathing zone (approx. 4-5 ft above floor)	
		Results Qualifiers:	
		ND - not detected	
		NDJ - not detected; detection limit estimated	
		J - estimated concentration	
Criteria: NYS Dept. of Health indoor air guideline values			
Bold/italic/underlined value in table is exceedance of applicable criteria			

301-S-2011/ 301-SW-2012	1/13/2011		3/12/2012
	301-S-AMB	301-S-SS	301-SW-SS
Depth	BZ	0" - 6"	0" - 6"
1,1,1-TCA	0.83 ND	1.3	440
PCE	2.4	3.9	8300
TCE	1.9	2.9	23000

0 50 100

SCALE IN FEET

HDR

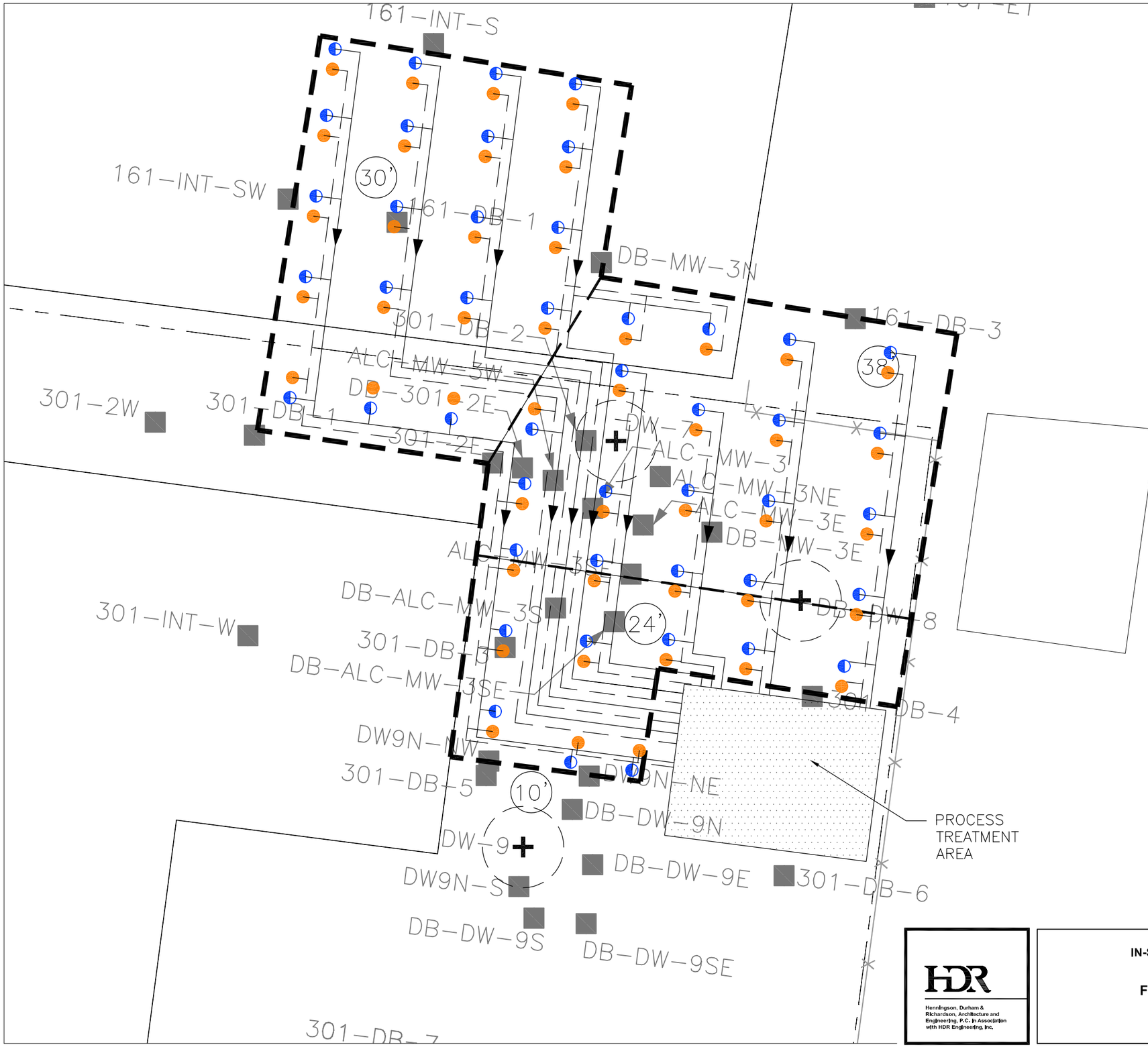
Henningson, Durham & Richardson, Architecture and Engineering, P.C. In Association with HDR Engineering, Inc.

Vapor Intrusion Samples

Former Aluminum Louvre RI/FS
NYSDEC Site # 130195
Old Bethpage, NY

DATE
12-10-2012

FIGURE
4



N

LEGEND

- BUILDING/STRUCTURE
- PROPERTY LINE
- CHAIN LINK FENCE
- HEATER FUEL TRANSMISSION PIPING
- SVE VACUUM TRANSMISSION PIPING
- SOIL BORING
- DRYWELL
- APPROXIMATE LIMIT OF TCE SOIL CONTAMINATION
- VACUUM EXTRACTION WELL IN SAND
- HEATING WELL
- TCE TRICHLOROETHENE
- SVE SOIL VAPOR EXTRACTION

NOTES:

1. VACUUM EXTRACTION WELLS AND HEATING WELLS ARE CO-LOCALED AT APPROXIMATELY 10 FOOT SPACING.
2. LIMIT OF CONTAMINATION ESTIMATED BASED ON NEXT AVAILABLE (HORIZONTAL AND VERTICAL) CLEAN SAMPLE WITH CONTAMINANT CONCENTRATIONS LESS THAN UNRESTRICTED USE CRITERIA.

0 10 20

SCALE IN FEET

HDR

Henningson, Durham & Richardson, Architecture and Engineering, P.C. In Association with HDR Engineering, Inc.

IN-SITU LOW TEMPERATURE THERMAL DESORPTION SYSTEM PLAN ALTERNATIVE S3

Former Aluminum Louvre Feasibility Study
On-Site Contamination
NYSDEC Site # 130196
Old Bethpage, NY

DATE	01-24-2013
FIGURE	5

N

LEGEND

- GROUNDWATER MONITORING WELL
- TEMPORARY GROUNDWATER POINT
- SHALLOW GROUNDWATER REMEDIATION AREA (40 FEET THICK) (55–95 FEET BGS)
- DEEP GROUNDWATER REMEDIATION AREA (40 FEET THICK) (95–135 FEET BGS)
- VACUUM EXTRACTION WELL
- AIR SPARGE SHALLOW WELL
- AIR SPARGE DEEP WELL
- PRESSURIZED AIR TRANSMISSION PIPING
- SVE VACUUM TRANSMISSION PIPING
- ROI RADIUS OF INFLUENCE
- GW GROUNDWATER
- SVE SOIL VAPOR EXTRACTION
- BGS BELOW GROUND SURFACE

NOTES:
1. VACUUM EXTRACTION WELLS ARE ESTIMATED TO HAVE A 30 FOOT RADIUS OF INFLUENCE.
2. AIR SPARGE WELLS ARE ESTIMATED TO HAVE A 20 FOOT RADIUS OF INFLUENCE.

0 40 80
SCALE IN FEET

HDR
Henningson, Durham & Richardson, Architecture and Engineering, P.C. In Association with HDR Engineering, Inc.

AIR SPARGE AND VACUUM WELL PLAN
ALTERNATIVE G3

Former Aluminum Louvre Feasibility Study
On-Site Contamination
NYSDEC Site # 130196
Old Bethpage, NY

DATE
01-24-2013

FIGURE
6

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Former Aluminum Louvre Corporation Site
Operable Unit No. 1: On-Site Contamination
State Superfund Project
Town of Oyster Bay, Nassau County, New York
Site No. 130195

The Proposed Remedial Action Plan (PRAP) for the Former Aluminum Louvre Corporation site was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on February 26, 2013. The PRAP outlined the remedial measure proposed for the contaminated soil, soil vapor and groundwater at the Former Aluminum Louvre Corporation site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on March 20, 2013, which included a presentation of the remedial investigation/feasibility study (RI/FS) for the Former Aluminum Louvre Corporation site as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on March 28, 2013.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the Department's responses:

COMMENT 1: Does the groundwater remediation system planned for this site only extend to the property line?

RESPONSE 1: The proposed remedy addresses on-site contamination (Operable Unit 1), so the treatment system does not extend beyond the property line. Off-site groundwater contamination will be addressed under Operable Unit 2 (OU2).

COMMENT 2: Is the off-site plume continuing to migrate? It seems that as it moves further and further away from the site that it gets deeper and deeper. With it moving, does it get into the aquifer at any time?

RESPONSE 2: The remedial investigation revealed the presence of groundwater contamination in the Upper Glacial and Magothy aquifers. The contaminated groundwater will continue to migrate unless the contamination is remediated. Some or all of the contaminated groundwater may be captured by the groundwater treatment systems for the Claremont Polychemical site.

COMMENT 3: Is there a danger that the public water supply wells will become contaminated?

RESPONSE 3: While the plume is migrating in the direction of some public supply wells, the nearest downgradient public water supply wells are 1.75 miles south of the site. The OU2 off-site remedial investigation will determine the extent of site-related groundwater contamination in relation to the downgradient public water supply wells. Based on the results of the OU2 remedial investigation, the Department will select a remedy that addresses the migrating groundwater.

COMMENT 4: When did the groundwater treatment systems for the Claremont Polychemical Site start up?

RESPONSE 4: The on-site groundwater extraction and treatment system began running in February 2000. The off-site treatment system started operating in April 1992.

COMMENT 5: Will the Claremont site remediation system pick up some of the groundwater contamination from the Former Aluminum Louvre site?

RESPONSE 5: This is likely the case. The upcoming off-site remedial investigation will determine the extent of contamination originating at the Former Aluminum Louvre site and will therefore determine whether some or all of the contamination is entering the treatment wells at the Claremont Polychemical site.

COMMENT 6: Do the Plainview Water district wells have contaminants?

RESPONSE 6: The Plainview water district wells are not downgradient of this site and therefore would not be affected by site-related contaminants.

COMMENT 7: Why is there chlorination of the public water supply?

RESPONSE 7: Public water supplies are routinely chlorinated to eliminate bacteria.

COMMENT 8: The plume dives as it keeps going, getting deeper into the aquifer. Now we are going to wait to do this remediation?

RESPONSE 8: It is expected that the off-site investigation will be performed concurrently while the on-site groundwater remediation is implemented.

COMMENT 9: Are the responsible parties cooperating?

RESPONSE 9: None of the responsible parties were willing to conduct the remedial investigation/feasibility study (RI/FS), so the Department performed the RI/FS using State Superfund money.

COMMENT 10: Will the State implement the remediation?

RESPONSE 10: The Department will give the responsible parties an opportunity to implement the remedy in the Record of Decision. If the parties are unable or unwilling to implement the remedy, the Department will implement the remedy using State Superfund money. The Department will seek to recover any costs incurred in investigating and remediating the site-related contamination.

COMMENT 11: The Village of Farmingdale water supply well is 350 feet deep. DEC has already told us that the Claremont contamination will contaminate this well in seven years. This plume from the Aluminum Louvre site is nearly a third of the way down to this public drinking water supply well. Will the remediation that you are proposing prevent this contamination from the Aluminum Louvre site from reaching this supply well? Will this contamination from the Aluminum Louvre site contribute to the Claremont contamination and potentially impact the Village of Farmingdale's public water supply well?

RESPONSE 11: The proposed remedy for the Former Aluminum Louvre site will remediate on-site soil and groundwater contamination and will therefore eliminate the source of the off-site groundwater contamination plume. The extent of the off-site groundwater contamination will be investigated while the on-site remedy is being implemented. The off-site investigation will determine whether the site-related contamination will potentially affect public water supply wells.

COMMENT 12: What is your best estimate as to when DEC will implement the remedy that you are proposing for this site?

RESPONSE 12: The Department must first determine whether the responsible parties will implement the remedy. After negotiations with the responsible parties are complete, the selected remedy must be designed. The Department estimates that the remedy will be implemented within two years.

COMMENT 13: When do you think you will be back here to present the proposed remedial action plan for Operable Unit 2 of this site?

RESPONSE 13: The Department must complete the remedial investigation and feasibility study before proposing a remedy for Operable Unit 2. The Department estimates that a proposed remedy for Operable Unit 2 will be presented to the public within two years.

COMMENT 14: Have any health studies been done in connection with this site?

RESPONSE 14: There have been no health studies conducted in relation to the former Aluminum Louvre site. The potential for exposure to site related contamination is limited because the source of the contamination is below the ground surface; therefore, we would not expect to see health effects associated with the site.

Joseph Byrnes of Envirotrac submitted an electronic mail message, dated March 28, 2013, which included the following comments:

COMMENT 15: According to the PRAP, drywells appear to be the source of contaminants. What is the source of the hydraulically upgradient ground water impacts, i.e. MW-301-4, ALC-OLD-MW-2 and MW-161-1-I-2?

RESPONSE 15: Of the monitoring wells listed in the comment, all of the wells are on-site and within the OU1 groundwater regime. Of these, only MW-161-1-I is hydraulically upgradient of the known source area. To determine whether the groundwater contamination detected in MW-161-1-I originated at an upgradient source, nine groundwater samples were obtained at three locations that are off-site and upgradient of MW-161-1-I. TCE was detected in one of the nine samples at 6 ppb, exceeding the SCG of 5 ppb. As no other contaminants exceeded SCGs in the nine upgradient samples, the RI found no evidence of an upgradient source. As no on-site or off-site source of the groundwater contamination in MW-161-1-I was found during the RI, the source of the contamination in that well is unknown. In addition, the Department investigated properties north of the site during the site characterization of the Old Bethpage Industrial Area and did not find any sources upgradient of the Former Aluminum Louvre on-site contamination. Therefore, this factor was not considered when selecting the remedial action objectives identified in the PRAP and ROD.

COMMENT 16: Did the DEC investigate potentially upgradient sources?

RESPONSE 16: See Response 15.

COMMENT 17: Did the DEC consider upgradient sources in determining cleanup objectives for this site?

RESPONSE 17: See Response 15**.**

COMMENT 18: Based on the soil data provided in the PRAP, soil impacts appear to be isolated in the silts and clay approximately 15-20 ft. below grade. Why was excavation not chosen? Although excavation would be challenging, excavation would remove the bulk of the contaminant mass (source) and it would be more cost effective than thermal.

RESPONSE 18: As indicated in Exhibit D of the PRAP, and now the ROD, the selected soil cleanup remedy, in-situ thermal treatment, has several advantages above the excavation alternative. The excavation alternative would leave VOC-contaminated soil beneath the slab of the northern on-site building. This contaminated soil would be a continuing source of soil vapor intrusion and groundwater contamination. The excavation alternative is also estimated to be 36% more expensive than the proposed remedy.

COMMENT 19: How many sites has the DEC implemented in-situ Thermal Treatment of soils? and can you provide successful examples? This is not a common remedial choice due to its high capital and operational costs.

RESPONSE 19: The Department has successfully implemented in-situ thermal treatment at several sites. Examples of successful implementation include the Midler City Industrial Park site (Site No.

C734103), Westside Corporation site (Site No. 241026), Former IBM Endicott Facility site (Site No. 704014), and the Erdle Perforating site (Site No. 828072).

COMMENT 20: Why is the estimated costs for In-situ chemical oxidation so high? The DEC has implemented large-scale remediation using this technology on Long Island and costs are significantly less.

RESPONSE 20: The cost estimates for the alternatives are detailed in the Feasibility Study Report, which was signed and sealed by a Professional Engineer. The Department reviewed and accepted the Feasibility Study Report, including the costs estimates for the remedial alternatives.

COMMENT 21: If the proposed plan is implemented as is, why would sub-slab systems be necessary for the buildings? Soil remediation already includes SVE system wells both outside the buildings and beneath the building slab. Why can't these wells also act as a sub-slab system and mitigate vapor intrusion concerns?

RESPONSE 21: The subslab vapor mitigation systems are needed to prevent soil vapor intrusion into the on-site buildings until such time as the source of the vapor intrusion is remediated. The soil vapor extraction wells included in the selected remedy would not meet this objective.

APPENDIX B

Administrative Record

Administrative Record

Former Aluminum Louvre Corporation Site
Operable Unit No. 1: On-Site Contamination
State Superfund Project
Town of Oyster Bay, Nassau County, New York
Site No. 130195

1. Proposed Remedial Action Plan for the Former Aluminum Louvre Corporation site, Operable Unit No. 1, dated February 2013, prepared by the Department.

2. Referral Memorandum dated January 28, 2010 for Remedial Investigation/Feasibility Study.

3. "Records Search and Site Reconnaissance Report, Old Bethpage Industrial Area Plume Trackdown", May 2008, prepared by Malcolm Pirnie.

4. "Site Characterization Report, Old Bethpage Industrial Area Plume Trackdown", February 2010, prepared by Malcolm Pirnie.

5. "Executive Summary, Remedial Investigation/Feasibility Study", December 2010, prepared by HDR.

6. "Citizen Participation Plan", December 2010, prepared by the Department.

7. "Remedial Investigation Report", Volume 1, January 2013, prepared by HDR.

8. "Remedial Investigation Report", Volume 2, January 2013, prepared by HDR.

9. "Feasibility Study Report", February 2013, prepared by HDR.

10. Electronic mail message dated March 28, 2013 from Joseph Byrnes of Envirotrac.