PROPOSED REMEDIAL ACTION PLAN

Temco Uniforms
State Superfund Project
West Haverstraw, Rockland County
Site No. 344054
February 2018

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

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SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is proposing 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 proposed by this Proposed Remedial Action Plan (PRAP). The disposal of hazardous wastes at this site, as more fully described in Section 6 of this document, has contaminated various environmental media. The proposed remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This PRAP identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for the preferred 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 Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York; (6 NYCRR) Part 375. This document is a summary of the information that can be found in the site-related reports and documents in the document repository identified below.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all PRAPs. This is an opportunity for public participation in the remedy selection process. The public is encouraged to review the reports and documents, which are available at the following repository:

Haverstraw Library
Attn: Reference Desk
85 Main Street
Haverstraw, NY
Phone: (845) 429-3445

A public comment period has been set from:

2/27/2018 to 3/28/2018

A public meeting is scheduled for the following date:

3/15/2018 at 7:00 PM

Public meeting location:

Village Hall - 130 Samsondale Avenue, West Haverstraw, NY

At the meeting, the findings of the remedial investigation (RI) and the feasibility study (FS) will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP.

Written comments may also be sent through 3/28/2018 to:

John Miller
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
john.miller@dec.ny.gov

The Department may modify the proposed remedy or select another of the alternatives presented in this PRAP based on new information or public comments. Therefore, the public is encouraged to review and comment on the proposed remedy identified herein. Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the Department's final selection of the remedy for this site.

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 Temco Uniforms Site is located at 29 Samsondale Avenue in West

Haverstraw, Rockland County and is approximately 2.6 acres in size. The site is located adjacent to residential properties. The closest residential structure is a group of two-story condominiums located approximately 50 feet south of the site. The site is bounded to the north by Samsondale Avenue, to the east by an active rail line and to the south and west by residential properties.

Site Features: The site contains an abandoned and dilapidated one-story slab-on-grade building, totaling approximately 32,000 square feet. A paved parking lot is located at the rear of the building. Areas of overgrown vegetation are present on-site, with the heaviest area of vegetation present along the southern boundary of the site

Current Zoning and Land Use: The site is an industrially-zoned parcel, but is located in a predominantly residential neighborhood. The site has been vacant for many years and the on-site building is currently dilapidated.

Past Use of the Site: The site was initially developed in 1958 when a single story building was constructed for the manufacturing of vacuum bags, tape and labels. In 1985, an industrial uniform manufacturing, washing, and dry cleaning facility began operating in the building, and this use continued until it was vacated in 2002.

Site Geology and Hydrogeology: The overburden predominantly consists of fine to coarse sand mixed with trace amounts of silt, clay and gravel deposits. The bedrock is located approximately 90 feet below grade and is part of the Brunswick Formation, consisting of sandstone, shale and conglomerate. Groundwater at the site is located approximately twenty-five feet below grade and generally flows to the southeast.

A site location map is attached as Figure 1. Figure 2 depicts the boundary of the site.

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) are/is being evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the investigation 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:

LOUIS TEMCO

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
- sub-slab vapor
- indoor air

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 at this site is/are:

tetrachloroethene (PCE)

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

- groundwater
- indoor air
- soil vapor intrusion

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.

The following IRM(s) has/have been completed at this site based on conditions observed during the RI.

Interim Remedial Measures - Soil Vapor Mitigation Systems

During 2012 and 2013, sub-slab vapor and indoor air samples were collected at six off-site properties near the site to determine whether actions are needed to address exposures related to soil vapor intrusion. The sub-slab vapor results ranged from 51 micrograms per cubic meter (ug/m^3) to 5200 ug/m^3 of PCE. The results of the sampling indicated that the following actions were warranted: mitigative actions in four buildings and no further action in the remaining two buildings. Note that PCE was the only VOC detected and no degradation products were observed during sampling.

As a result of the sampling, the Department contacted affected building owners and recommended that sub-slab depressurization systems (SSDS) be installed as Interim Remedial Measures (IRM)s to mitigate potential exposures. Owners at two of the four properties agreed to have SSDSs installed. Prior to mitigation one of the two buildings had 2,400 (ug/m^3) of PCE in

the sub-slab soil vapor and the other one had 4,600 ug/m^3. PCE was also detected in the indoor air of these buildings at concentrations of 1.7 ug/m^3 and 61 ug/m^3, which is above the current PCE air guideline of 30 ug/m^3.

In 2013 a state contractor was hired to install sub-slab depressurization systems (SSDS) to mitigate the two properties. The SSDS create a vacuum beneath the buildings to prevent sub-slab vapors from migrating into the indoor air of the homes. Each system consisted of a centrally located suction point installed into the sub-structure. Piping was routed from the extraction point to a fan which extracts vapors from beneath the building and discharges them to the ambient air. Pressure testing conducted post-installation confirmed that the systems were providing an adequate vacuum beneath the structures and operating as designed. Post-mitigation indoor air samples will be collected. The SSDS installations are described in the March 2013 Mitigation System Installation Records prepared by Aztech Environmental.

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.

Nature and Extent of Contamination: Based on investigations conducted to date, the primary contaminant of concern at the site is the chlorinated solvent tetrachloroethene (PCE). Note that, based upon previous investigations, sample analysis for soil and groundwater was limited to volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) during the RI. Previous investigations, including a Phase II investigation completed in 1997, and an RI completed under the Brownfield Cleanup Program in 2008, included analyses for VOCs, SVOCs, polychlorinated biphenyls (PCBs) and pesticides. Only VOC and SVOC contaminants were identified.

Soil - Numerous surface (0-2") and subsurface soil samples were collected during the RI. Samples were analyzed for VOCs and SVOCs. No significant contamination exceeding soil cleanup objectives (SCOs) for commercial use was observed. Indeno (1,2,3-dc) pyrene was detected in one surface soil sample at a concentration of 0.53 parts per million (ppm) which slightly exceeds its unrestricted soil cleanup objective of 0.5 ppm.

Historically PCE has been detected in subsurface soils in the vicinity of the former dry cleaning machine. Although contamination was not detected in any of the samples collected during the RI, it is likely that a source existed beneath the on-site building at some point in time. The need for additional soil investigation will be assessed in the future if redevelopment is planned or the on-site structure is demolished.

Groundwater - Groundwater samples were collected during the RI and analyzed for VOCs. PCE has impacted groundwater quality across the site and has been documented in both the shallower and deeper portions of the unconsolidated aquifer. The maximum concentration of PCE detected in groundwater during the most recent sampling event was 200 parts per billion (ppb) detected in monitoring well MW-8S. Contamination was also observed in several off-site monitoring wells during the investigation.

Sub-slab Vapor and Indoor Air - Sub-slab vapor and indoor air samples were not collected on-site since the current structure is vacant and uninhabitable.

A soil vapor intrusion investigation was completed at off-site properties located near the site. The results indicated that soil vapor intrusion risks exist at some of these properties. Sub-slab mitigation systems have been installed at two properties thus far. The Department and NYSDOH recommended sub-slab mitigation systems be installed at two other properties but did not receive responses from the homeowners. Additional off-site evaluation is recommended.

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*.

Persons who dig below the ground surface or pavement may come into contact with contamination in subsurface soil. Contaminated groundwater at the site is not used for drinking or other purposes and the area is served by a public water supply that obtains water from a different source not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the 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. Because the site is vacant, the inhalation of site-related contaminants due to soil vapor intrusion does not represent a current concern. However, the potential exists for the inhalation of site contaminants due to soil vapor intrusion for any future on-site development. Sampling identified soil vapor intrusion concerns for four off-site buildings. Sub-slab depressurization systems have been installed to prevent the indoor air quality from being affected by the contamination in soil vapor beneath two of the buildings, however additional air monitoring is needed to verify further actions are not needed. The owners of the other two buildings have not agreed to have sub-slab depressurization systems installed in their buildings. Soil vapor intrusion may continue to be a concern for these two buildings and monitoring and/or mitigation offers should continue. The continued investigation of soil vapor intrusion for off-site buildings is recommended.

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.
- Prevent the discharge of contaminants to surface water.
- 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.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

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 PROPOSED 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 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 proposed remedy is set forth at Exhibit D.

The proposed remedy is referred to as the Enhanced In-Situ Bioremediation Treatment of Overburden Groundwater remedy.

The estimated present worth cost to implement the remedy is $ 956,000. The cost to construct the remedy is estimated to be $ 791,000 and the estimated average annual cost is $ 16,500.

The elements of the proposed remedy are as follows:

1. Remedial Design

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. Cover System

A site cover will be required to allow for commercial use of the site. Where a soil cover is to be used it will be a minimum of one foot of soil placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetative layer. Soil cover material, including any fill material brought to the site, will meet the SCOs for cover material for the use of the site as set forth in 6 NYCRR Part 375-6.7(d). Substitution of other materials and components may be allowed where such components already exist or are a component of the tangible property to be placed as part of site redevelopment. Such components may include, but are not necessarily

limited to: pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs.

3. In-Situ Enhanced Bioremediation

In-situ enhanced biodegradation will be employed to treat contaminants in groundwater near the suspected source area where the dry-cleaning machines were historically located. The biological breakdown of contaminants through anaerobic reductive dechlorination will be enhanced by the addition of an emulsified vegetable oil/whey mixture or similar material into the subsurface. The addition of nutrients and microbes may also be introduced into the subsurface to create a more optimal environment for biological degradation. The final determination on which injectants will be used will be made in design.

The material will be delivered through injection wells spaced approximately 30 feet apart. Initially there would be six wells with additional injection points added as needed based upon the pre-design program. It is expected that approximately 10,000 gallons of material will need to be injected at each location for a total of approximately 60,000 gallons in the initial phase. For cost analysis purposes it is assumed that four additional injection points will be added in subsequent phases of injection.

4. Vapor Mitigation

Any on-site building will be required to have a sub-slab depressurization system (SSDS), or other acceptable measures, to mitigate the migration of contaminated soil vapor into the building.

5. Engineering and Institutional Controls

Imposition of an institutional control in the form of an environmental easement and a Site Management Plan, as described below, will be required.

Institutional Control

Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

- require the 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);

- allow the use and development of the controlled property for commercial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;

- restrict 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

- require compliance with the Department approved Site Management Plan.

Site Management Plan

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

1. 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 site cover discussed in Paragraph 2 and the SSDS discussed in paragraph 4 above.

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;

- a provision for further investigation and remediation should large scale redevelopment occur, if any of the on-site building is demolished, or if the subsurface is otherwise made accessible. The nature and extent of contamination in areas where access was previously limited or unavailable will be immediately and thoroughly investigated pursuant to a plan approved by the Department. Based on the investigation results and the Department's determination of the need for a remedy, a Remedial Action Work Plan (RAWP) will be developed for the final remedy for the site, including removal and/or treatment of any source areas to the extent feasible. Citizen Participation Plan (CPP) activities will continue through this process. Any necessary remediation will be completed prior to, or in association with, redevelopment. This includes the dilapidated on-site building;

- a description of the provisions of the environmental easement including any land use, and/or groundwater use restrictions;

- a provision for evaluation of the potential for soil vapor intrusion for off-site buildings (including those that have previously declined testing) as sampling indicates a need, including a provision for implementing actions recommended to address exposures related to soil vapor intrusion;

- should owners at properties where sub-slab depressurizations systems have been previously declined request to have systems installed in the future, the NYSDEC, in consultation with the NYSDOH, shall determine whether soil vapor intrusion mitigation is still recommended. If necessary, additional sampling might be completed and appropriate actions to address exposures related to soil vapor intrusion will be implemented;

- 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.

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

- monitoring of groundwater, indoor air, and soil vapor to assess the performance and effectiveness of the remedy;

- a schedule of monitoring and frequency of submittals to the Department;

- monitoring for vapor intrusion for any buildings, as may be required by the Institutional and Engineering Control Plan discussed above.

3. 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 active vapor intrusion mitigation systems remedy. The plan includes, but is not limited to:

- procedures for operating and maintaining the remedy;

- 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 (RI) 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, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in each media and compares the data with the applicable SCGs for the site. The contaminants of concern at the site are volatile organic compounds (VOCs). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, the Restricted Use SCGs identified in Section 6.1.1 are also presented.

It should be noted that, based upon previous investigations, sample analysis for soil and groundwater was limited to VOCs and semi-volatile organic compounds (SVOCs) during the RI. Previous investigations, including a Phase II investigation completed in 1997, and an RI completed under the Brownfield Cleanup Program in 2008, included analyses for VOCs, SVOCs, Polychlorinated Biphenyls (PCBs) and Pesticides. Only VOC and SVOC contaminants were identified.

Waste/Source Areas

No waste/source area was identified during the RI. However, based upon data in previous investigations, it is believed that one existed beneath the foundation of the on-site structure at one time. Some small remnants of this source area may have escaped detection and may still be present. Remedial alternatives for the site will take this possibility into account.

Groundwater

In total, 31 groundwater samples were collected from 15 well locations during the RI to determine the nature and extent of contamination in groundwater. 12 of the groundwater wells are located on-site with four of the wells being located upgradient and side-gradient of the suspected source area. Eight wells are located in the vicinity of the suspected source area in the north and eastern portions of the site. In addition, 3 wells were installed off-site to assess the downgradient groundwater conditions on adjacent residential areas.

Due to the depth of bedrock near the site (approximately 90 feet below grade), all of the groundwater samples were collected from overburden monitoring wells. Most of the wells were screened across the groundwater table, which is present approximately twenty-five feet below ground surface, while other wells were installed at intermediate depths. An additional well was installed to the top of bedrock to assess deeper aquifer conditions in the suspected source area. No impacts were detected in the deepest well and results from the other wells indicate decreased groundwater impacts with depth.

As shown in Table 1, several overburden groundwater samples exceeded the SCGs for the contaminant of concern, PCE. Figure 3 depicts the overburden well locations and lists the contaminants detected in each overburden groundwater well.

Table # 1 – Groundwater Data

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Tetrachloroethene	ND – 300	5	21 of 31
Chloroform	ND - 38	7	10 of 31

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).

Based on the findings of the RI, the past disposal of hazardous waste has resulted in the contamination of groundwater. The site contaminant that is considered to be the primary contaminant of concern which will drive the remediation of groundwater to be addressed by the remedy selection process are: tetrachloroethene (PCE).

Soil

Both surface and subsurface soil samples were collected at the site during the RI. A total of six surface soil samples were collected from a depth of 0 – 2 inches to assess the potential for direct human exposure. Two of the samples were collected near the suspected source area, one sample was collected adjacent to the railroad tracks, another sample was collected near the loading dock and two samples were collected from other areas with vegetation. Figure 4 depicts the results of the surface soil sampling.

In addition, 14 soil borings were advanced to evaluate subsurface conditions. Seven of the borings were advanced in the suspected source area near the northeast corner of the on-site building. The locations of the other borings correspond to the placement of the seven newly installed groundwater wells. Each boring was continuously sampled and screened using a photoionization detector (PID). One soil sample was collected from each boring. In general, the lab samples were collected from the location where the highest PID readings were detected or, if there were no detections, from the interval just above the water table. Figure 5 depicts the results of the subsurface soil boring samples.

Table 2 summarizes the results for both the surface and subsurface soils. The only contaminant that was observed was a surface soil detection of a semi-volatile contaminant, Indeno (1,2,3-C-D) pyrene.

Table # 2- Soil Data

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG
SVOCs					
Indeno(1,2,3-C, D)pyrene	ND – 0.53	0.5	1 of 20	8.2	0 of 20

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 Groundwater.

Despite an extensive soil sampling program, no site-related soil contamination of concern was identified during the RI. Therefore, no active remedial alternatives are being evaluated for soil at this time. However, it should be noted that although a source area was not identified, it appears likely that soil contamination did exist under the on-site building at some point in time. Some small areas of contamination may still exist in areas which escaped detection during the RI. Therefore, soil remediation activities may need to be evaluated in the future if additional soil contamination is found. A variety of proven technologies exist for remediation of VOC soil contamination if such contamination is identified in the future.

Soil Vapor

The soil vapor intrusion pathway was assessed during the remedial investigation due to the presence of site related groundwater contamination. This was achieved by the collection of sub-slab soil vapor and indoor air samples at several nearby structures. During this investigation, there were no soil vapor intrusion samples collected on-site since the current structure is dilapidated and unoccupied.

Off-site properties were identified for soil vapor intrusion sampling based upon their location relative to the site's groundwater contamination. Notices were sent to these property owners to gain access for sampling. Samples were collected from the properties that granted access to perform the work. One sub-slab soil vapor sample and one indoor air sample were collected from each property. An ambient air sample was also collected during each sampling event.

In total, soil vapor intrusion sampling was offered to eight off-site property owners. Two of the property owners never responded to the Department's request for sampling. Soil vapor intrusion sampling was completed at the remaining six properties. The results of the sampling indicated that two of the buildings had no soil vapor intrusion impacts. Thus, no further action was recommended for these buildings. The sampling results from the remaining four properties indicated that soil vapor contamination was observed at levels that warranted mitigation. PCE was detected in the sub-slab vapor of these buildings at concentrations ranging from 1,500 micrograms per cubic meter (ug/m^3) up to 5,200 ug/m^3. PCE was also detected in the indoor air of these buildings at concentrations of 1.7 ug/m^3 and 61 ug/m^3, which is above the current PCE air guideline of 30 ug/m^3.

Soil vapor contamination was identified at four off-site locations during the RI. The impacts at two of the properties were addressed by means of the IRMs described in Section 6.2. However, the Department was unable to obtain permission to perform IRMs at the other two properties. The Department and NYSDOH will continue to work with interested homeowners to address exposures related to soil vapor intrusion and investigate any additional buildings near the site as sample results indicate warranted.

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 Further Action

The No Further Action Alternative recognizes the remediation of the site completed by the IRM(s) described in Section 6.2. This alternative leaves the site in its present condition and does not provide any additional protection of the environment.

Present Worth: *$0*
Capital Cost: *$0*
Annual Costs: *$0*

Alternative 2: Soil Excavation to Pre-Disposal Conditions and Groundwater Treatment

This alternative would achieve all of the SCGs discussed in Section 6.1.1 and Exhibit A. It would ensure that soil meets the unrestricted soil cleanup objectives (SCOs) listed in Part 375-6.8 (a).

Alternative 2 calls for the excavation, removal and disposal of all contaminated soil. This would be estimated to include all soil present in areas where groundwater impacts exist. In general, soil would be excavated to bedrock across much of the site and at several nearby properties. It is anticipated that approximately 165,000 cubic yards of soil would be removed, assuming an average excavation depth of 80 feet below grade, and disposed of in accordance with applicable regulations. Alternative 2 also includes collection and treatment of all contaminated groundwater generated during excavation activities. The groundwater would be treated with a carbon filtration system and discharged in accordance with permit requirements in 6 NYCRR Part 375. This alternative would also require the demolition and removal of the existing on-site structure and is estimated to require two years to complete.

Alternative 2 would also include a provision for maintaining existing SSDSs and investigating off-site properties where sampling is warranted for soil vapor intrusion. These property owners will be contacted and offered the chance to have their buildings tested for soil vapor intrusion.

Present Worth: *$55,784,000*
Capital Cost: *$55,759,000*
Annual Costs(2 years): *$12,500*

Alternative 3: Enhanced In-Situ Bioremediation (EISB) of Overburden Groundwater, MNA and Institutional/Engineering Controls

This alternative would treat overburden groundwater by means of enhanced in-situ bioremediation injections. Alternative 3 utilizes injections of an emulsified vegetable oil and whey mixture (or similar compound) to treat contaminants in overburden groundwater by means of anaerobic reductive dechlorination. Since significant evidence of contaminant breakdown has not been observed in groundwater, Ferrous Sulfate and Dehalococcoides may also be introduced into the subsurface to enhance conditions necessary for bioremediation. The material would be dispersed into the subsurface near the suspected source area, the north-east corner of the on-site structure. The initial treatment zone is estimated to consist of an area of approximately 3000 square feet in total. It would include four injection points spaced 30 feet apart. Two of the locations would consist of two tier injection wells for a total of six injection wells. The purpose of the additional injections points are to treat deeper overburden intervals at these locations. In total, it is estimated that approximately 60,000 gallons of material would be utilized in the initial injection event and the event would require about one week to complete. Alternative 3 assumes that additional injection wells would be added in subsequent injection events and that three EISB treatment applications would be required to complete remediation. 10 years of groundwater monitoring are assumed. The final specifications of the injection program would be determined during design.

Alternative 3 also utilizes institutional controls (ICs) and Engineering Controls (ECs) to provide protection to human health and the environment. The ICs would include restrictions on the use of groundwater and land development. An EC would be utilized to maintain the site's current soil cover and off-site SSDSs. In addition, a Site Management Plan (SMP) would be developed to manage the ICs and ECs and provides the details of the site's future monitoring activities. The treatment technology in Alternative 3 has proven effective in the treatment of chlorinated volatile organic chemicals in groundwater at numerous sites in New York and elsewhere. However, its effectiveness in treating more heavily contaminated soils and source areas is less certain. Accordingly, the SMP would also contain a provision for additional treatment of soil or groundwater, if determined necessary, if SCGs are not achieved. Alternative 3 will also include the soil vapor intrusion evaluations and actions provision discussed in Alternative 2.

Present Worth: *$956,000*
Capital Cost: *$791,000*
Annual Costs(10years): *$16,500*

Alternative 4: In-Situ Chemical Oxidation (ISCO) of Overburden Groundwater with Institutional and Engineering Controls

This alternative includes in-situ treatment of overburden groundwater by means of in-situ chemical oxidation (ISCO). ISCO utilizes injections of liquid chemical oxidants to react with and destroy contaminants in overburden groundwater. For this Alternative, it is assumed that sodium permanganate will be used, which is an oxidant proven to treat chlorinated contamination in groundwater. The material would be dispersed into the subsurface through a series of injection wells near the vicinity of the suspected source area, the north-east corner of the on-site structure. A bench scale test would be conducted to determine the optimal injectant type and volume of material needed to treat the groundwater contamination

The treatment area would cover approximately 3,000 square feet assuming an injection point spacing of approximately 30 feet. Alternative 4 is expected to utilize an injection well configuration similar to that outlined in Alternative 3 above. In total, it is estimated that approximately 170,000 gallons of a 10% sodium permanganate

solution would be required for injection. This volume is based upon the natural oxidant demand and an assumed effective porosity of 20 % in the treatment zone. The ISCO treatment is estimated to take two weeks to complete. 10 years of groundwater monitoring are assumed.

Alternative 4 includes the ICs and ECs outlined in Alternative 3, including the development of an SMP to manage the future maintenance of the remedy and groundwater monitoring program. The provisions for additional soil treatment, described in Alternative 3, and soil vapor intrusion evaluations and actions, described in Alternative 2, would also apply to Alternative 4.

Present Worth: *$2,698,000*
Capital Cost: *$2,561,000*
Annual Costs(10years): *$13,700*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
Alternative 1	0	0	0
Alternative 2	55,759,000	12,500	55,784,000
Alternative 3	791,000	16,500	956,000
Alternative 4	2,561,000	13,700	2,698,000

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 3, Enhanced In-Situ Bioremediation (EISB) Treatment of Overburden Groundwater, MNA with IC/ECs as the remedy for this site. Alternative 3 would achieve the remediation goals for the site by using EISB to treat the suspected contaminant source area and significantly reduce the concentration of contaminants in on-site groundwater. The elements of this remedy are described in Section 7. The proposed remedy is depicted in Figure 6.

Basis for Selection

The proposed 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.

Alternative 1 (No Further Action) does not provide any additional protection to public health and the environment and thus will not be evaluated further.

The proposed remedy, Alternative 3 would satisfy this criterion by enhancing the natural degradation processes in the area where the most heavily contaminated groundwater was observed and also by ICs and ECs, including requiring a provision for investigating and implementing actions at off-site properties for soil vapor intrusion. Alternative 3 thereby addresses the conditions which represent the most significant threat to the environment. If there is an excessive amount of source material still beneath the foundation slab, additional measures such as excavation or vapor extraction may be required.

Alternative 2, by means of extensive soil excavation and treatment of contaminated groundwater, would be expected to meet the environmental threshold criteria with a high degree of certainty, but at a far higher cost. Alternative 4 also complies with this criterion because it would treat the groundwater source area to reduce concentrations throughout the plume and also by ICs and ECs, including requiring a provision for investigating and implementing actions at off-site properties for soil vapor intrusion.

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.

All of the retained Alternatives, 2 through 4, would be expected to comply with SCGs. Alternative 3 has been successfully implemented at other comparable sites and, by addressing the groundwater source area, is expected to significantly reduce contaminant concentrations throughout the plume to meet SCGs. Alternative 4 offers a similar level of SCG compliance as Alternative 3, by using a different approach to destroy contaminants in the groundwater source area and thereby reducing contaminant concentrations throughout the plume. Alternative 2

would comply with this criterion to the highest degree of certainty by removing all soil in areas within the contaminated groundwater plume and treating groundwater that is generated during the excavation activities to reach groundwater quality standards.

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.

Alternative 2 provides the highest level of long-term effectiveness and permanence since it would remove all the soil in areas of contamination. Alternative 2 also provides extensive treatment of contaminated groundwater, thus limiting the long-term potential for soil vapor intrusion impacts and groundwater use restrictions.

Alternatives 3 and 4 would provide comparable long-term effectiveness for groundwater by treating the areas of highest contamination within the groundwater plume, although to a lesser degree of effectiveness than Alternative 2. Both Alternatives 3 and 4 would initially be expected to require groundwater use restrictions to limit potential exposures to remaining on-site contamination. These restrictions would likely be required for an indefinite period of time. Alternatives 3 and 4 are expected to significantly 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.

Alternative 2 provides the most reduction in toxicity, mobility and volume as it removes all of the soil, in areas of contamination, and disposes of it at an approved landfill. Alternative 2 also treats all contaminated groundwater encountered during the excavation activities and thus is expected to remove the potential for any toxicity, mobility and volume to remain within the groundwater medium.

Alternative 3 is expected to provide a significant reduction of toxicity, mobility and volume of contamination by treating the areas of highest concentrations within the plume through the process of anaerobic reductive dechlorination using injections designed to enhance the natural breakdown of contamination in groundwater. However, Alternative 3 would require monitored natural attenuation to evaluate groundwater degradation over time and rebounds in contaminant concentrations are possible.

Similarly, Alternative 4 would reduce contaminant toxicity, mobility and volume by treating groundwater with chemical oxidants designed to destroy the contaminant of concern, but the amount of contaminant destruction is dependent upon successfully source area treatment.

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.

All the Alternatives would be expected to have some short-term impacts associated with their activities. Each alternative involves some degree of intrusive activities which may temporarily disrupt the surrounding commercial and residential community via noise, odor, and increased truck traffic. These may be minimized with

careful coordination with the municipality and surrounding landowners during remedial design. A community air monitoring plan (CAMP) and health and safety plan (HASP) would be necessary during remediation activities for each of the Alternatives presented.

Alternative 2 would be expected to have much greater short-term impacts than Alternative 3 or 4 due to the massive volume of soil that would be removed from the site. Alternative 2 would be expected to cause significant disruption to neighboring properties due to construction noise and the large amount of truck traffic transporting contaminated soil and clean backfill materials through the community. However, it is expected that Alternative 2 would have the greatest short-term effectiveness since remedial objectives would be expected to be obtained in approximately 2 years.

Alternatives 3 and 4 would be much less disruptive to the community as they would only require periodic injection and groundwater sampling activities. Alternatives 3 and 4 would not be expected to be as effective in the short term at meeting remedial goals, however, both alternatives would be able to achieve groundwater quality standards within a reasonable timeframe, estimated to be approximately ten years. Some degree of source removal could be required under either of these alternatives, if source material is found to still exist beneath the building slab. However, the amount of soil to be removed or treated would be far smaller than the total removal contemplated under Alternative 2.

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.

Alternatives 2,3, and 4 are all considered implementable form a technical standpoint, since they all use proven technologies for treating contamination. The equipment and personnel required are widely available. The two in-situ technologies (Alternatives 3 and 4) carry a slightly higher chance that additional remediation measures will be required. Under both of these alternatives, additional removal in the original source area could be required if the in-situ treatment proves less than fully effective.

The groundwater treatments proposed in Alternatives 3 and 4 have been implemented at numerous sites, are relatively easy to construct and require the use of minimal personnel and equipment. There are not expected to be any significant administrative challenges to implementing Alternatives 3 since the initial injections are proposed on-site. If off-site injections are determined necessary then approvals may be required from local property owners. Similarly, Alternative 4's injection program is expected to be administratively feasible. However, depending upon the type of oxidant used, the Department of Homeland Security's Chemical Facility Anti-Terrorism rules may come into effect.

Alternative 2 would be implementable, but there would be significant challenges presented by the required depth of soil removal below the water table. Extensive dewatering and on-site treatment of contaminated groundwater would be required. Alternative 2 would also require intensive structural shoring and necessitate the handling of massive volumes of soil and groundwater. There would also likely be numerous administrative challenges with implementing Alternative 2 due to the need for significant off-site excavation near residential properties and the adjacent railroad tracks.

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.

The costs of the alternatives vary significantly. Since Alternative 2 requires the removal, handling and disposal of large quantities of soil and groundwater it would have by far the highest present worth cost of all the alternatives. The costs associated with Alternatives 3 and 4 are much less expensive than Alternative 2, yet the remedies would be expected to provide significant overall levels of protection for the environment. The total present worth cost of Alternatives 3 is lower than Alternative 4, primarily because it is anticipated to have a lower initial capital cost due to the nature of the material to be injected.

The annual monitoring and maintenance costs for Alternatives 3 and 4 are expected to be similar overall with both estimated to have a total required monitoring period of approximately 10 years. Alternative 2 would have the lowest annual monitoring and maintenance costs and require the shortest period of time, approximately 2 years.

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.

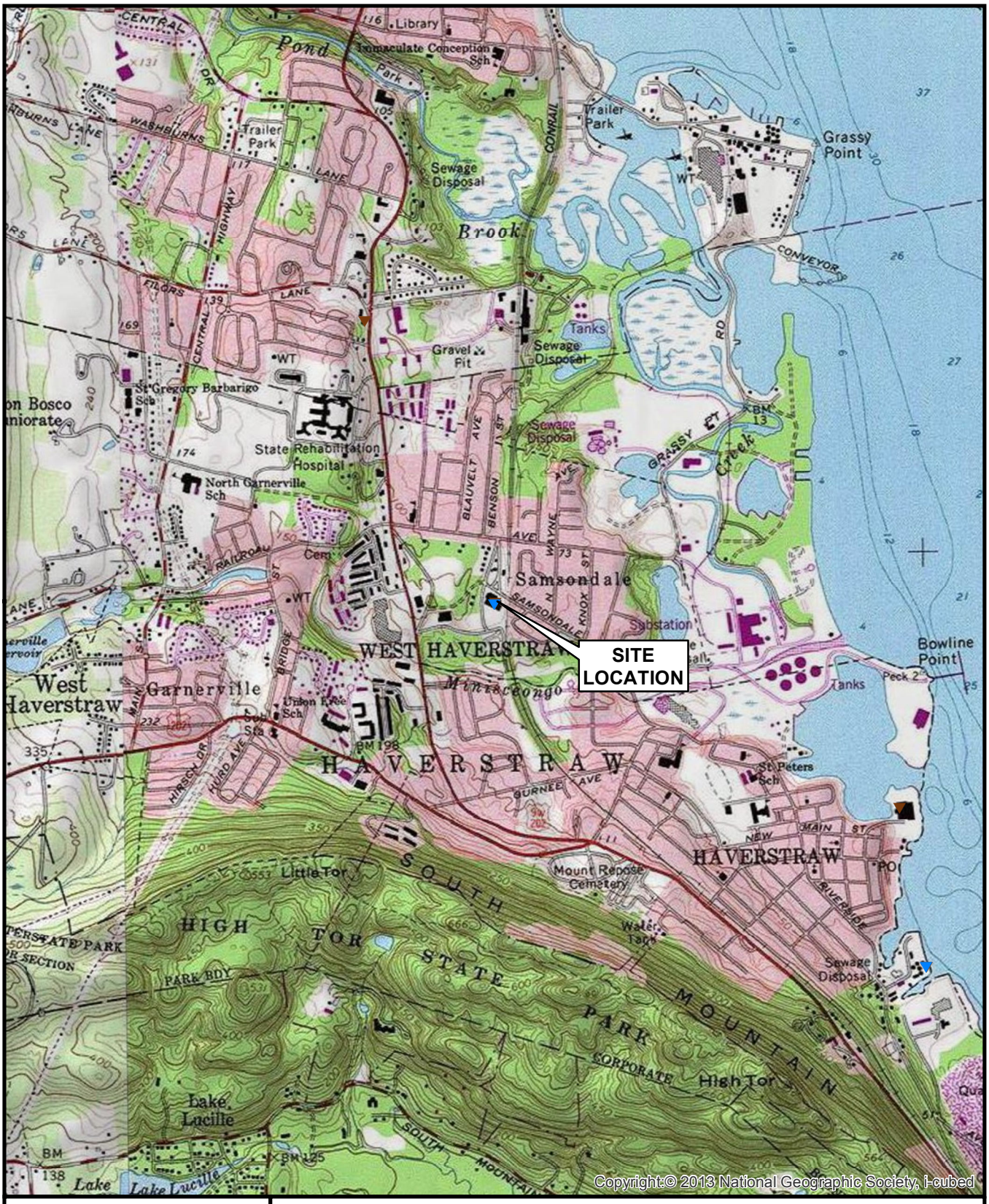
The anticipated future use of the site is commercial. However, the on-site structure is currently in a state of disrepair and is unoccupied.

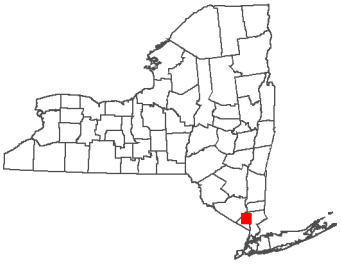
It is expected that Alternatives 2 through 4 would each provide an acceptable level of cleanup for future site redevelopment. Alternative 2 would allow for the most redevelopment options and is not expected to require any long-term institutional or engineering controls. Alternatives 3 and 4 would provide cleanups that would be sufficient for commercial use, however institutional controls such as groundwater use restrictions would be necessary for many years. In addition, Alternatives 3 and 4 would likely require engineering controls in the form of sub-slab vapor mitigation systems if commercial redevelopment occurs.

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 will be prepared that describes public comments received and the manner in which the Department will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

Alternative 3 is being proposed because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.





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Feet

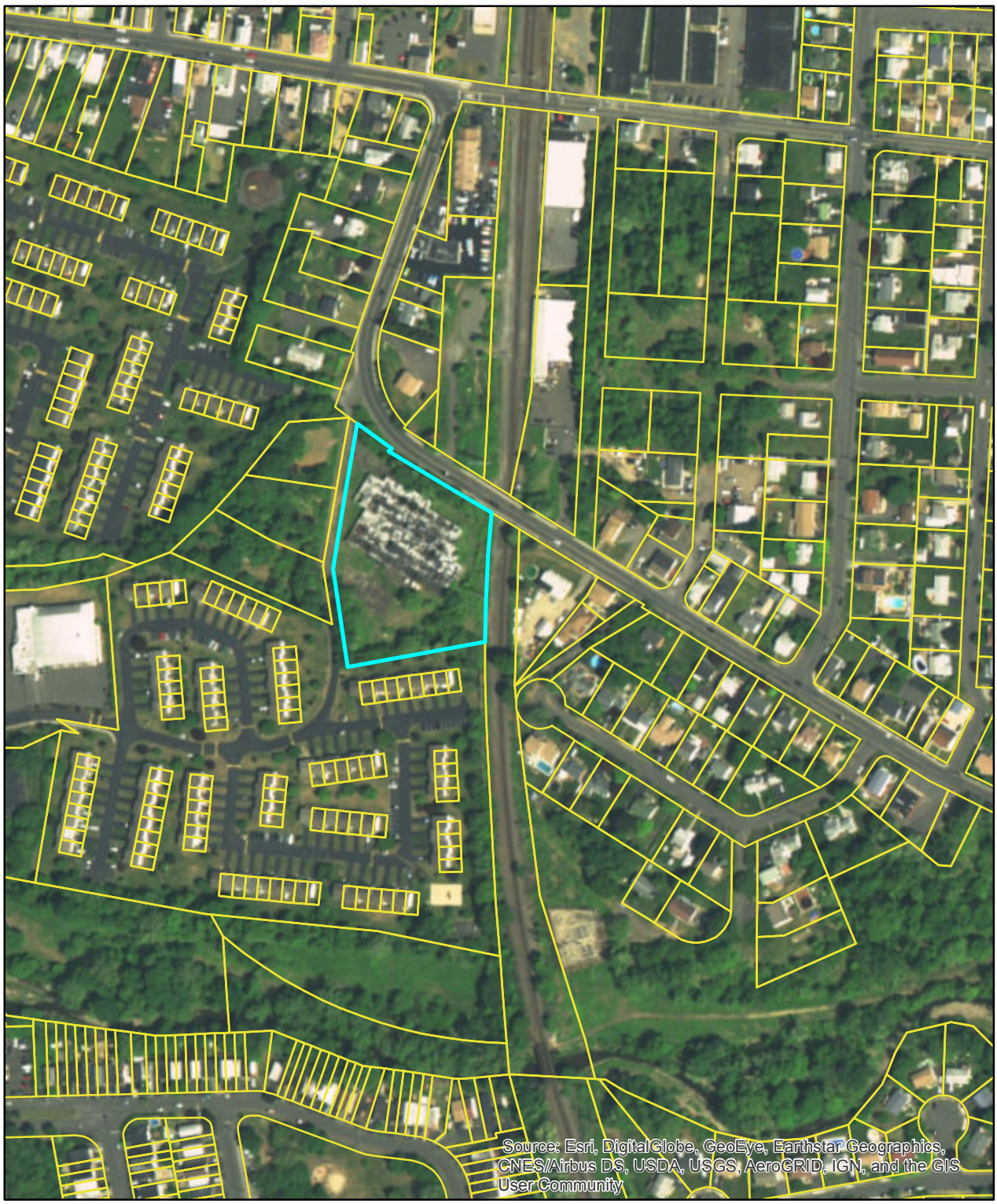
Figure 1

Site Location Map

Former Temco Uniforms Site
Town of West Haverstraw
Site No. 344054

NEW YORK STATE OF OPPORTUNITY
Department of Environmental Conservation

Former Temco Uniforms Site Property Boundary
Figure 2



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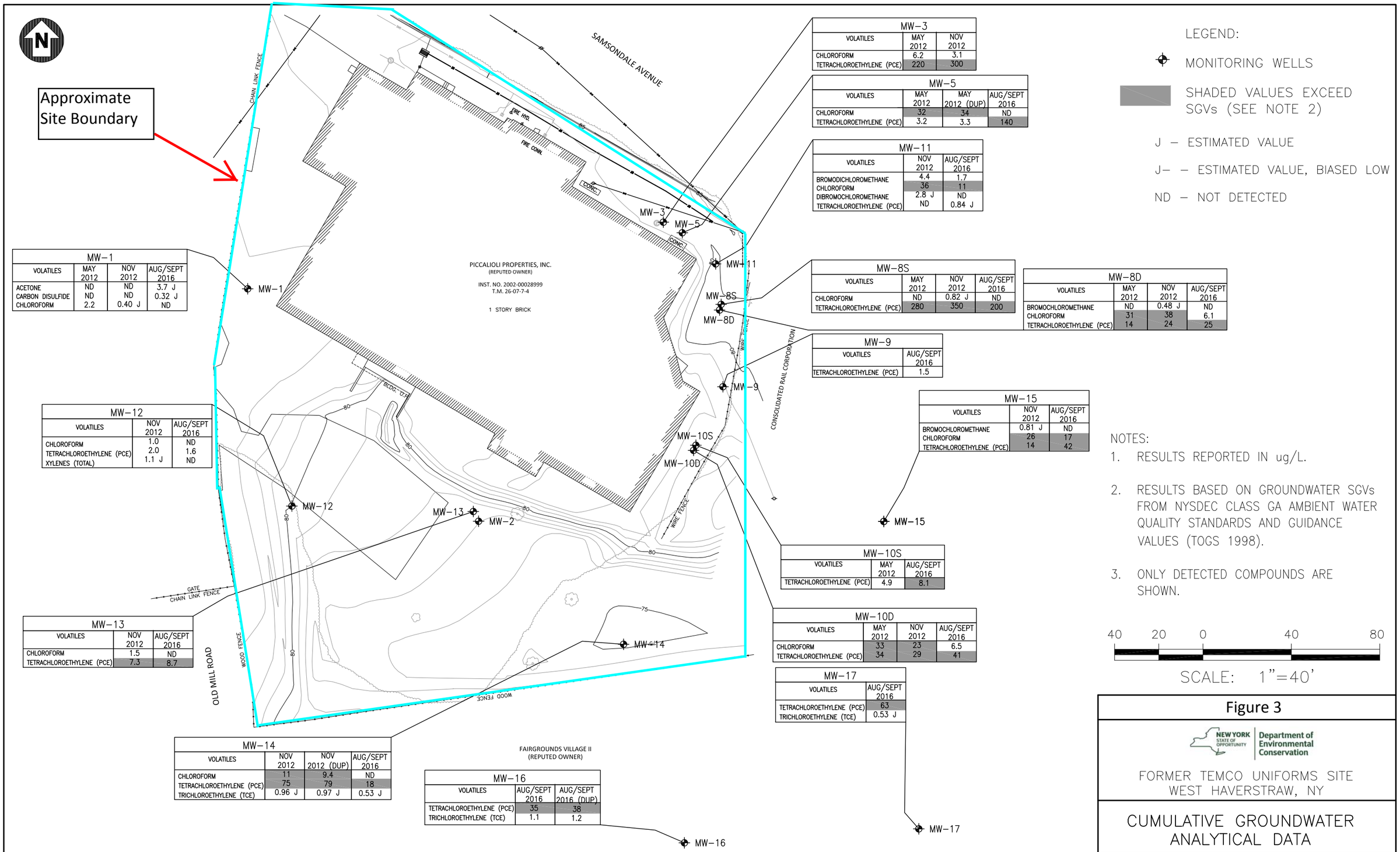
NEW YORK STATE OF OPPORTUNITY
Department of Environmental Conservation



MW-1			
VOLATILES	MAY 2012	NOV 2012	AUG/SEPT 2016
ACETONE	ND	ND	3.7 J
CARBON DISULFIDE	ND	ND	0.32 J
CHLOROFORM	2.2	0.40 J	ND

MW-3		
VOLATILES	MAY 2012	NOV 2012
CHLOROFORM	6.2	3.1
TETRACHLOROETHYLENE (PCE)	220	300

MW-5			
VOLATILES	MAY 2012	MAY 2012 (DUP)	AUG/SEPT 2016
CHLOROFORM	32	34	ND
TETRACHLOROETHYLENE (PCE)	3.2	3.3	140

MW-11		
VOLATILES	NOV 2012	AUG/SEPT 2016
BROMODICHLOROMETHANE	4.4	1.7
CHLOROFORM	36	11
DIBROMOCHLOROMETHANE	2.8 J	ND
TETRACHLOROETHYLENE (PCE)	ND	0.84 J

MW-8S			
VOLATILES	MAY 2012	NOV 2012	AUG/SEPT 2016
CHLOROFORM	ND	0.82 J	ND
TETRACHLOROETHYLENE (PCE)	280	350	200

MW-8D			
VOLATILES	MAY 2012	NOV 2012	AUG/SEPT 2016
BROMOCHLOROMETHANE	ND	0.48 J	ND
CHLOROFORM	31	38	6.1
TETRACHLOROETHYLENE (PCE)	14	24	25

MW-9	
VOLATILES	AUG/SEPT 2016
TETRACHLOROETHYLENE (PCE)	1.5

MW-15		
VOLATILES	NOV 2012	AUG/SEPT 2016
BROMOCHLOROMETHANE	0.81 J	ND
CHLOROFORM	26	17
TETRACHLOROETHYLENE (PCE)	14	42

MW-12		
VOLATILES	NOV 2012	AUG/SEPT 2016
CHLOROFORM	1.0	ND
TETRACHLOROETHYLENE (PCE)	2.0	1.6
XYLENES (TOTAL)	1.1 J	ND

MW-10S		
VOLATILES	MAY 2012	AUG/SEPT 2016
TETRACHLOROETHYLENE (PCE)	4.9	8.1

MW-10D			
VOLATILES	MAY 2012	NOV 2012	AUG/SEPT 2016
CHLOROFORM	33	23	6.5
TETRACHLOROETHYLENE (PCE)	34	29	41

MW-13		
VOLATILES	NOV 2012	AUG/SEPT 2016
CHLOROFORM	1.5	ND
TETRACHLOROETHYLENE (PCE)	7.3	8.7

MW-17	
VOLATILES	AUG/SEPT 2016
TETRACHLOROETHYLENE (PCE)	63
TRICHLOROETHYLENE (TCE)	0.53 J

MW-14			
VOLATILES	NOV 2012	NOV 2012 (DUP)	AUG/SEPT 2016
CHLOROFORM	11	9.4	ND
TETRACHLOROETHYLENE (PCE)	75	79	18
TRICHLOROETHYLENE (TCE)	0.96 J	0.97 J	0.53 J

MW-16		
VOLATILES	AUG/SEPT 2016	AUG/SEPT 2016 (DUP)
TETRACHLOROETHYLENE (PCE)	35	38
TRICHLOROETHYLENE (TCE)	1.1	1.2

LEGEND:

- MONITORING WELLS
- SHADED VALUES EXCEED SGVs (SEE NOTE 2)
- J – ESTIMATED VALUE
- J– – ESTIMATED VALUE, BIASED LOW
- ND – NOT DETECTED

NOTES:

1. RESULTS REPORTED IN ug/L.
2. RESULTS BASED ON GROUNDWATER SGVs FROM NYSDEC CLASS GA AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES (TOGS 1998).
3. ONLY DETECTED COMPOUNDS ARE SHOWN.

40 20 0 40 80

SCALE: 1"=40'

Figure 3

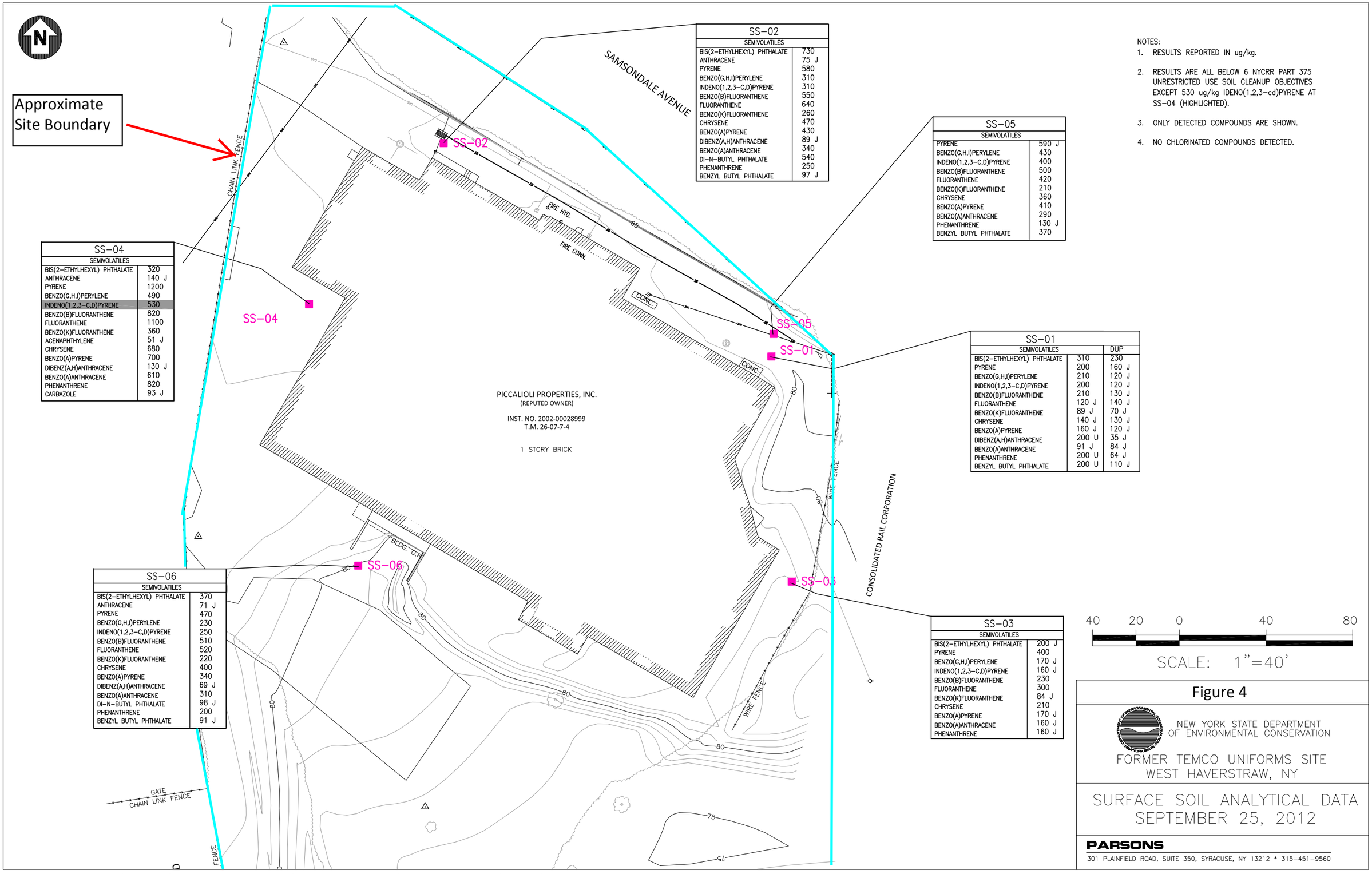
NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

FORMER TEMCO UNIFORMS SITE
WEST HAVERSTRAW, NY

CUMULATIVE GROUNDWATER ANALYTICAL DATA

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, NY 13212 * 315-451-9560

FILE NAME: P:\NYSDEC PROGRAM\447275 WA#1 FORMER TEMCO UNIFORMS SITE\10.0 TECHNICAL CATEGORIES\10.1 CAD – GIS\FIGURES\SECTION II\447275-SK012-GW.DWG
PLOT DATE: 7/27/2017 1:45 PM PLOTTED BY: RUSSO, JILL



SS-02	
SEMIVOLATILES	
BIS(2-ETHYLHEXYL) PHTHALATE	730
ANTHRACENE	75 J
PYRENE	580
BENZO(G,H,I)PERYLENE	310
INDENO(1,2,3-C,D)PYRENE	310
BENZO(B)FLUORANTHENE	550
FLUORANTHENE	640
BENZO(K)FLUORANTHENE	260
CHRYSENE	470
BENZO(A)PYRENE	430
DIBENZ(A,H)ANTHRACENE	89 J
BENZO(A)ANTHRACENE	340
DI-N-BUTYL PHTHALATE	540
PHENANTHRENE	250
BENZYL BUTYL PHTHALATE	97 J

SS-05	
SEMIVOLATILES	
PYRENE	590 J
BENZO(G,H,I)PERYLENE	430
INDENO(1,2,3-C,D)PYRENE	400
BENZO(B)FLUORANTHENE	500
FLUORANTHENE	420
BENZO(K)FLUORANTHENE	210
CHRYSENE	360
BENZO(A)PYRENE	410
BENZO(A)ANTHRACENE	290
PHENANTHRENE	130 J
BENZYL BUTYL PHTHALATE	370

SS-04	
SEMIVOLATILES	
BIS(2-ETHYLHEXYL) PHTHALATE	320
ANTHRACENE	140 J
PYRENE	1200
BENZO(G,H,I)PERYLENE	490
INDENO(1,2,3-C,D)PYRENE	530
BENZO(B)FLUORANTHENE	820
FLUORANTHENE	1100
BENZO(K)FLUORANTHENE	360
ACENAPHTHYLENE	51 J
CHRYSENE	680
BENZO(A)PYRENE	700
DIBENZ(A,H)ANTHRACENE	130 J
BENZO(A)ANTHRACENE	610
PHENANTHRENE	820
CARBAZOLE	93 J

SS-01		
SEMIVOLATILES		DUP
BIS(2-ETHYLHEXYL) PHTHALATE	310	230
PYRENE	200	160 J
BENZO(G,H,I)PERYLENE	210	120 J
INDENO(1,2,3-C,D)PYRENE	200	120 J
BENZO(B)FLUORANTHENE	210	130 J
FLUORANTHENE	120 J	140 J
BENZO(K)FLUORANTHENE	89 J	70 J
CHRYSENE	140 J	130 J
BENZO(A)PYRENE	160 J	120 J
DIBENZ(A,H)ANTHRACENE	200 U	35 J
BENZO(A)ANTHRACENE	91 J	84 J
PHENANTHRENE	200 U	64 J
BENZYL BUTYL PHTHALATE	200 U	110 J

SS-06	
SEMIVOLATILES	
BIS(2-ETHYLHEXYL) PHTHALATE	370
ANTHRACENE	71 J
PYRENE	470
BENZO(G,H,I)PERYLENE	230
INDENO(1,2,3-C,D)PYRENE	250
BENZO(B)FLUORANTHENE	510
FLUORANTHENE	520
BENZO(K)FLUORANTHENE	220
CHRYSENE	400
BENZO(A)PYRENE	340
DIBENZ(A,H)ANTHRACENE	69 J
BENZO(A)ANTHRACENE	310
DI-N-BUTYL PHTHALATE	98 J
PHENANTHRENE	200
BENZYL BUTYL PHTHALATE	91 J

SS-03	
SEMIVOLATILES	
BIS(2-ETHYLHEXYL) PHTHALATE	200 J
PYRENE	400
BENZO(G,H,I)PERYLENE	170 J
INDENO(1,2,3-C,D)PYRENE	160 J
BENZO(B)FLUORANTHENE	230
FLUORANTHENE	300
BENZO(K)FLUORANTHENE	84 J
CHRYSENE	210
BENZO(A)PYRENE	170 J
BENZO(A)ANTHRACENE	160 J
PHENANTHRENE	160 J

NOTES:
1. RESULTS REPORTED IN ug/kg.
2. RESULTS ARE ALL BELOW 6 NYCRR PART 375 UNRESTRICTED USE SOIL CLEANUP OBJECTIVES EXCEPT 530 ug/kg IDENO(1,2,3-cd)PYRENE AT SS-04 (HIGHLIGHTED).
3. ONLY DETECTED COMPOUNDS ARE SHOWN.
4. NO CHLORINATED COMPOUNDS DETECTED.

Figure 4

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FORMER TEMCO UNIFORMS SITE
WEST HAVERSTRAW, NY

SURFACE SOIL ANALYTICAL DATA
SEPTEMBER 25, 2012

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, NY 13212 * 315-451-9560

FILE NAME: P:\NYSDEC PROGRAM\447275 WA#1 FORMER TEMCO UNIFORMS SITE\10.0 TECHNICAL CATEGORIES\10.1 CAD - GIS\FIGURES\SECTION II\447275-SK004.DWG
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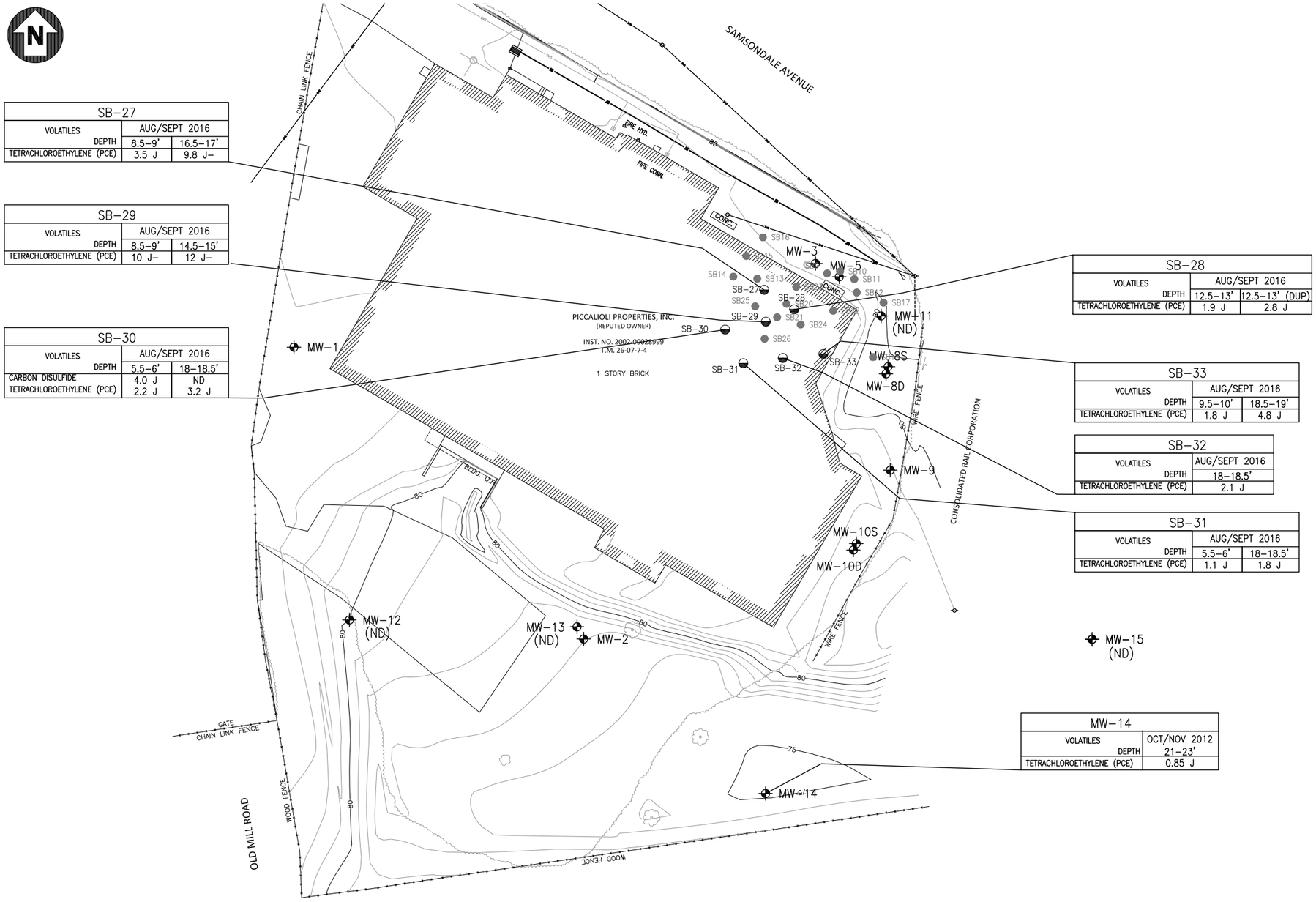


SB-27		
VOLATILES / DEPTH	AUG/SEPT 2016	
	8.5–9'	16.5–17'
TETRACHLOROETHYLENE (PCE)	3.5 J	9.8 J–

SB-29		
VOLATILES / DEPTH	AUG/SEPT 2016	
	8.5–9'	14.5–15'
TETRACHLOROETHYLENE (PCE)	10 J–	12 J–

SB-30		
VOLATILES / DEPTH	AUG/SEPT 2016	
	5.5–6'	18–18.5'
CARBON DISULFIDE	4.0 J	ND
TETRACHLOROETHYLENE (PCE)	2.2 J	3.2 J

SB-28		
VOLATILES / DEPTH	AUG/SEPT 2016	
	12.5–13'	12.5–13' (DUP)
TETRACHLOROETHYLENE (PCE)	1.9 J	2.8 J

SB-33		
VOLATILES / DEPTH	AUG/SEPT 2016	
	9.5–10'	18.5–19'
TETRACHLOROETHYLENE (PCE)	1.8 J	4.8 J

SB-32		
VOLATILES / DEPTH	AUG/SEPT 2016	
	18–18.5'	
TETRACHLOROETHYLENE (PCE)	2.1 J	

SB-31		
VOLATILES / DEPTH	AUG/SEPT 2016	
	5.5–6'	18–18.5'
TETRACHLOROETHYLENE (PCE)	1.1 J	1.8 J

MW-14	
VOLATILES / DEPTH	OCT/NOV 2012
	21–23'
TETRACHLOROETHYLENE (PCE)	0.85 J

MW-16		
VOLATILES / DEPTH	DEC 2015	
	28–30'	28–30'(DUP)
TETRACHLOROETHYLENE (PCE)	9.1	9.1
TOLUENE	ND	0.50 J

LEGEND:

- EXISTING SOIL BORINGS
- NEW SOIL BORINGS
- MONITORING WELLS
- SHADED VALUES EXCEED STANDARDS (SEE NOTE 2)

J – ESTIMATED VALUE

J– – ESTIMATED VALUE, BIASED LOW

ND – NOT DETECTED

NOTES:

1. RESULTS REPORTED IN ug/kg.
2. RESULTS BASED ON 6 NYCRR PART 375 UNRESTRICTED USE SOIL CLEANUP OBJECTIVES (2006)
3. ONLY DETECTED COMPOUNDS ARE SHOWN.

40 20 0 40 80

SCALE: 1"=40'

Figure 5

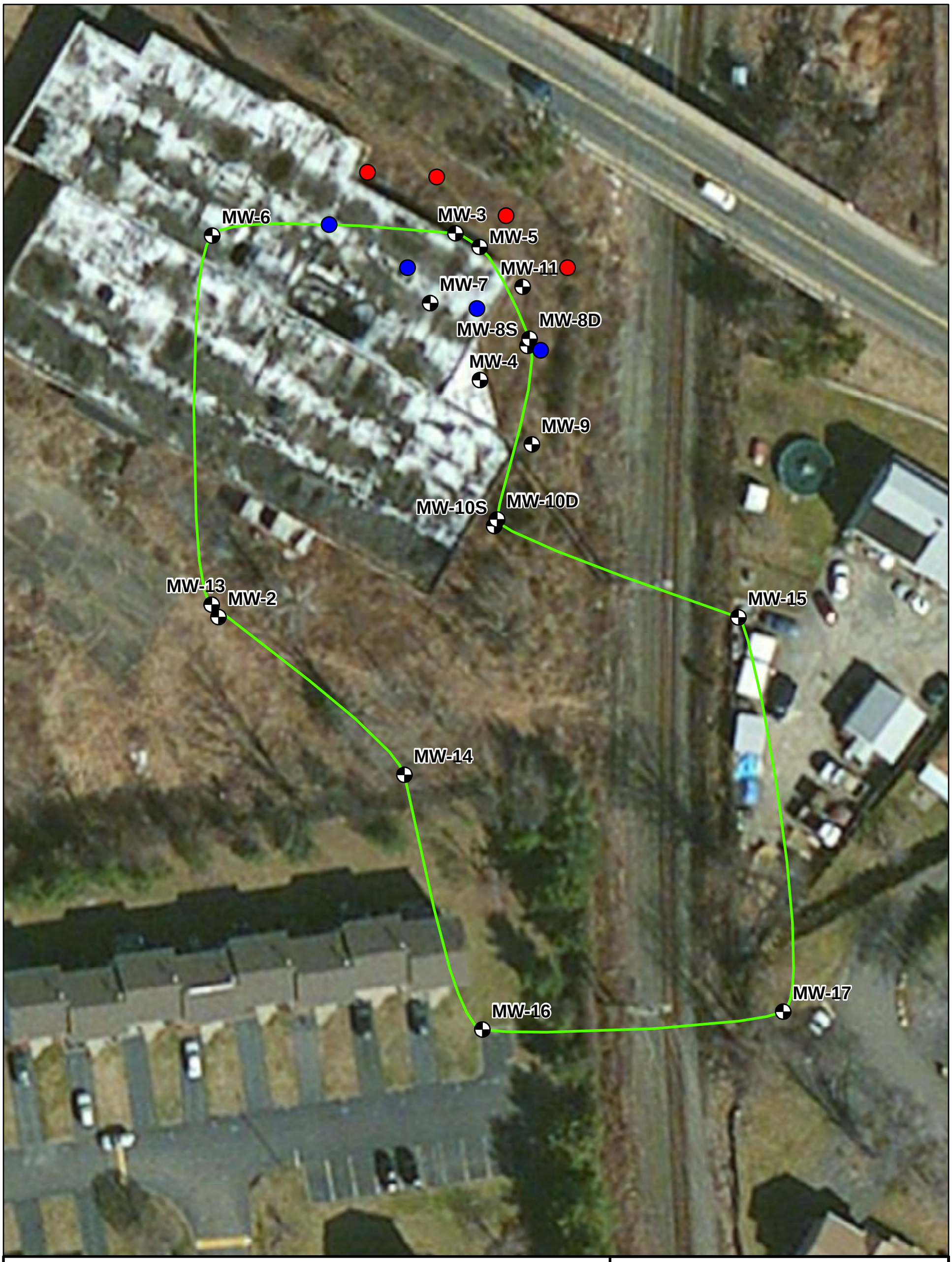
NEW YORK STATE OF OPPORTUNITY Department of Environmental Conservation

FORMER TEMCO UNIFORMS SITE
WEST HAVERSTRAW, NY

CUMULATIVE SUBSURFACE SOIL ANALYTICAL DATA

PARSONS
301 PLAINFIELD ROAD, SUITE 350, SYRACUSE, NY 13212 * 315-451-9560

FILE NAME: P:\NYSDEC PROGRAM\447275 WA#1 FORMER TEMCO UNIFORMS SITE\10.0 TECHNICAL CATEGORIES\10.1 CAD – GIS\FIGURES\SECTION II\447275-SK012-GW.DWG
PLOT DATE: 12/28/2016 4:50 PM PLOTTED BY: RUSSO, JILL



Phase 1 Injection Well

Potential Phase 2 Injection Well

Monitoring Well Locations

40 20 0 40 80

Feet

Figure 6

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Former Temco Uniforms Site

Injection Well Locations

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