PROPOSED REMEDIAL ACTION PLAN

Former Melrose Avenue Dry Cleaner
State Superfund Project
Bronx, Bronx County
Site No. 203009
May 2022

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 repositories 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 repositories:

Woodstock Library
761 East 160th Street
Bronx, NY 10456
Phone: (718) 665-6255

Bronx Community Board 1
3024 Third Avenue
Bronx, NY 10455
Phone: (718) 585-7117

Key project documents are also included on DEC Info Locator/On-line repository at:
https://www.dec.ny.gov/data/DecDocs/203009/

A public comment period has been set from:

May 11, 2022 to June 10, 2022

A public meeting is scheduled for the following date:

A virtual public meeting will be held on Wednesday, May 25, 2022, at 6:30 pm via Webex (virtual platform). The public may participate in the virtual public meeting using the link and login information below:

To join via computer:
https://meetny.webex.com/meetny/onstage/g.php?MTID=e1f1649d7fee0167561c8805fd54e7113 and use event password: FMDC1#

To join by phone, call: 1-518-549-0500 and use access code: 161 973 5611

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 **June 10, 2022** to:

Richard Mustico
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, NY 12233-7016
richard.mustico1@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 Melrose Avenue Dry Cleaner site is located in an urban area at 753 Melrose Avenue in the Melrose section of the Bronx and consists of a 0.066-acre parcel denoted as Block 2403, Lot 31 on the New York City tax map. The site is located on the west side of Melrose Avenue between East 156th and East 157th Streets.

Site Features: The site is a vacant lot covered with crushed stone and is surrounded with a chain-link fence. The site is bordered to the north by a community garden, to the east by Melrose Avenue, to the south by a six-story apartment building, and to the west by the Public School (P.S.) 29 Ballfield.

Current Zoning and Land Use: The site is zoned R6 for residential use. There are no buildings on the site, and the property is not currently in use.

Past Use of the Site: Records show the site was utilized as a store and dwelling as early as 1909. Circa 1946, the site was developed with a single structure. The site was occupied by a dry cleaner during the 1950s, with storage tanks at the rear of the building. The site structure was demolished in 1968 and the site has been vacant/abandoned ever since. Use of the site as a dry cleaner has resulted in contaminated groundwater and soil vapor at the site and down gradient of the site to the south.

Site Geology and Hydrogeology: The site is underlain by a fill unit extending 5 to 7 feet below ground surface (bgs), a native fine-medium sand unit with some silt present at depths of 5 to 28 feet bgs, and bedrock (Inwood marble) present at depths 11 to 28 feet below grade. Groundwater is approximately 16 to 19 feet bgs in the vicinity of the site. In some areas, the groundwater is below the surface of bedrock. Groundwater on-site flows southeast towards Melrose Avenue, and then to the south towards the East River (approximately 7,000 feet south of the site) along a former stream bed.

A site location map is attached as Figure 1. A site map is attached as Figure 2.

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 that restrict the use of the site to residential use (which also allows for restricted-residential use, commercial use and industrial use) as described in Part 375-1.8(g) are being

evaluated.

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:

NYC Dept. of Housing Preservation & Development

The site was deemed a significant threat on November 19th, 2013, due to the concentrations of PCE detected in on-site and off-site groundwater and soil vapor, in conjunction with the proximity of these concentrations to occupied structures.

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
- soil vapor
- 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 at this site is/are:

tetrachloroethene (PCE) cis-1,2-dichloroethene

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

- groundwater
- 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 has been completed at this site based on conditions observed during the RI.

IRM - SSDS Installation at NYPD Police Service Area (PSA) 7

In 2019, a sub-slab depressurization system (SSDS) was installed at the New York Police Department (NYPD) Police Service Area 7 building to the south of the site based on the results of an off-site soil vapor intrusion investigation that was performed in 2017. The SSDS system creates a negative pressure gradient below the foundation of the building with vapors treated by granulated activated carbon (GAC) prior to release to ambient air. The SSDS is inspected on a quarterly basis to confirm effectiveness, with routine maintenance as needed. Installation of the SSDS will be documented in the Final Engineering Report (FER).

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 the site.

Soil and groundwater samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, and metals. Groundwater samples were also analyzed for emerging contaminants. Soil vapor samples were analyzed for VOCs. Based upon investigations conducted to date, the primary contaminants of concern for the site include VOCs in groundwater and soil vapor.

Soil: Soil samples were collected from various depths throughout the site. Soil sampling analytical results did not indicate detection of any contaminants above residential soil cleanup objectives in any of the soil samples. There were no detections of SVOCs and PCBs above unrestricted use soil cleanup objectives (UUSCOs). One metal and one pesticide were detected above their respective UUSCOs in site soils. Copper was detected at a maximum concentration of 60 parts per million (ppm), exceeding the UUSCO of 50 ppm. 4-4'-DDT, was detected at a maximum concentration of 0.0088 ppm, exceeding the UUSCO of 0.0033 ppm. The VOC tetrachloroethene (PCE) was detected at a maximum concentration of 0.16 ppm, below the UUSCO of 1.3 ppm. No other VOCs were detected in the soil samples collected from on-site soil borings. Data does not indicate any off-site impacts in soil related to this site.

Groundwater: There were no detections of SVOCs, PCBs or pesticides above Technical Operation and Guidance Series Ambient Water Quality Standards (AWQS) in on-site or off-site groundwater. VOCs were detected in on-site groundwater at concentrations below AWQS and off-site groundwater at concentration above AWQS. VOCs detected at concentrations exceeding the AWQS in off-site groundwater include acetone at a maximum concentration of 390 parts per billion, or ppb (AWQS is 50 ppb), chloroform at a maximum concentration of 8.4 ppb (AWQS is 7 ppb), cis-1,2-dichloroethylene at a maximum concentration of 45 ppb (AWQS 5 ppb), tetrachloroethylene (PCE) at a maximum concentration of 660 ppb (AWQS 5 ppb), and

trichloroethylene (TCE) at a maximum concentration of 6.4 ppb (AWQS 5 ppb). VOC exceedances of AWQS extend off-site approximately 700 feet to the south of the site.
Metals were detected in on-site groundwater at concentrations below AWQS and off-site groundwater at concentration above AWQS. Metals that were detected in off-site groundwater samples at concentrations exceeding AWQS included iron at a maximum concentration of 7.1 ppb (AWQS 0.3 ppb), magnesium at a maximum concentration of 120 ppb (AWQS 35 ppb), manganese at a maximum concentration of 5.6 ppb (AWQS 0.3 ppb), and sodium at a maximum concentration of 240 ppb (AWQS 20 ppb). The metals observed above AWQS in groundwater are commonly associated with naturally occurring phenomenon.

PFAS compounds were detected in on-site groundwater at concentrations below their maximum contaminant level, or MCL (water quality standard), and in off-site groundwater at concentration above their maximum contaminant level. The PFAS perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) were detected in off-site groundwater samples at concentrations exceeding their MCL of 10 ppt each at maximum concentrations of 23 and 24 ppt, respectively.

Soil Vapor, Sub-Slab Soil Vapor and Indoor Air: Soil vapor samples were collected at off-site locations near properties underlain by PCE contamination in groundwater. 1,1,1-TCA was detected at a maximum concentration of 10 micrograms per cubic meter (ug/m3), PCE was detected at a maximum concentration of 840 ug/m3, TCE was detected at a maximum concentration of 14 ug/m3, and carbon tetrachloride was detected at a maximum concentration of 1.6 ug/m3. PCE detections in soil vapor extend approximately 700 feet to the south and southeast of the site.

An off-site soil vapor intrusion investigation was performed in March of 2017. Sub-slab soil vapor and/or indoor air samples were taken in three off-site structures where access was granted to determine if soil vapor intrusion exposures were present. Sub-slab soil vapor and indoor air concentrations for PCE at one structure, NYPD Police Service Area (PSA) 7 to the south of the site, indicated soil vapor intrusion mitigation was necessary. A sub-slab depressurization system (SSDS) was installed at the NYPD PSA 7 building in 2019 to mitigate soil vapor intrusion. No actions were needed to address soil vapor intrusion at the other structures sampled.

Significant Threat: The site was determined to pose a significant environmental threat on November 19, 2013. This determination was based on the property's past use as a dry cleaner, which contaminated groundwater and soil vapor beneath the site and down gradient of the site.

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 will not come in contact with site contamination in soil because on-site soil is not contaminated. Contaminated groundwater at the site is not used for drinking or other purposes and the site is served by a public water supply that obtains water from a different source not affected

by this contamination. Volatile organic compounds in soil vapor (air spaces within the soil) may move into 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 there is no on-site building, inhalation of site contaminants in indoor air due to soil vapor intrusion does not represent a concern for the site in its current condition. However, the potential exists for the inhalation of site contaminants due to soil vapor intrusion for any future on-site development. A subslab depressurization system has been installed at an off-site building to prevent the indoor air quality from being affected by the contamination in soil vapor beneath the building. Soil vapor intrusion evaluations with actions taken as needed to address exposures are recommended for other off-site buildings, including those buildings where testing has previously been declined by owners or whose owners did not respond to sampling requests.

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.

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 In-Situ Chemical Oxidation, Monitored Natural Attenuation, and Vapor Intrusion Evaluation remedy.

The estimated present worth cost to implement the remedy is $3,438,000. The cost to construct the remedy is estimated to be $1,958,000 and the estimated average annual cost is $96,000.

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;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings will include, at a minimum, a 20-mil vapor barrier/waterproofing membrane on the foundation to improve energy efficiency as an element of construction.

2. In-situ Chemical Oxidation

In-situ chemical oxidation (ISCO) will be implemented to treat contaminants in groundwater. A chemical oxidant will be injected into the subsurface to destroy the contaminants discovered just east of the site and in an approximately 8,000 square foot area to the southeast of the site. Both areas are where volatile organic compounds (VOCs) are present in groundwater at concentrations greater than 500 parts per billion (ppb). The chemical oxidant will be applied via injection wells screened from approximately 15 to 30 feet. The final method and depth of injection will be determined during the remedial design.

Prior to full implementation of this technology, laboratory and on-site pilot scale studies will be conducted to define parameters more clearly. Between the pilot and the full-scale implementations, it is estimated that 20 injection wells will be installed. It is estimated that the chemical oxidant will be injected as part of three separate events over three years, one injection event each year.

Monitoring will be conducted for contaminants of concern upgradient, downgradient, and within the treatment zone to determine the effectiveness of the remedy. The treatment zone will be monitored for dissolved oxygen and oxidation/reduction potential.

3. Monitored Natural Attenuation

Groundwater contamination remaining after active remediation and outside of the treatment area will be addressed with monitored natural (MNA). Groundwater will be monitored for site related contamination and also for MNA indicators which will provide an understanding of the contamination break down. It is anticipated that contamination will decrease by an order of magnitude in a reasonable period of time (5 to 10 years). Reports of the attenuation will be provided quarterly for the first two years after the last injection event and every five quarters thereafter to account for seasonal variability. Active remediation will be proposed if it appears that natural processes alone will not address the contamination. The contingency remedial action will depend on the information collected, but it is currently anticipated that in-situ chemical reduction would be the expected contingency remedial action.

4. Vapor Intrusion Evaluation

A soil vapor intrusion evaluation will be completed in any future on-site structures and off-site structures potentially impacted by soil vapor intrusion contamination originating from the site. The evaluation will include a provision for implementing actions recommended to address exposures related to soil vapor intrusion.

5. Local Institutional Controls

The following local use restriction will be relied upon to prevent ingestion of groundwater: Article 141 of the NYCDOH code, which prohibits potable use of groundwater without prior approval.

6. 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 engineering controls remain in place and effective:
   - Institutional Controls: The Local Institutional Controls discussed in Paragraph 5 above.
   - Engineering Controls: The SSDS discussed in Section 6.2 above.

   This plan includes, but may not be limited to:
   - descriptions of any land use, and groundwater use restrictions;
   - a provision for evaluation of the potential for soil vapor intrusion for any occupied buildings off the site and any future on-site buildings, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
   - a provision that should the owners of properties where sampling was offered request to have their properties sampled in the future, the NYSDEC, in consultation with the NYSDOH, shall assess the need for soil vapor intrusion sampling and take appropriate action.
   - provisions for the management and inspection of the identified engineering controls, if needed;
   - maintaining site access controls and Department notification; and
   - the steps necessary for the periodic reviews and certification of the institutional and 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 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 on or off 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, inspection, and reporting of any mechanical or physical components of active vapor mitigation system(s). 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 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 volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/ polychlorinated biphenyls (PCBs), inorganics (metals and cyanide), and emerging contaminants. 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 on-site and off-site overburden and shallow bedrock monitoring wells, as part of the Remedial Investigation (RI) for the site. Groundwater samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), metals, emerging contaminants, and pesticides to assess groundwater conditions. Analytical results of groundwater sampling are presented on Figure 3. Groundwater sampling results indicate that contaminants in groundwater exceed the SCGs for VOCs and metals. There were no exceedances of SCGs in groundwater for SVOCs, PCBs, or pesticides. The PFAS perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic Acid (PFOS) were detected in off-site groundwater samples at concentrations exceeding their maximum contaminant level (MCL) of 10 ppt each at maximum concentrations of 23 and 24 ppt, respectively. MCL is a drinking water standard being used in the absence of an ambient groundwater quality standard.

Table 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Acetone	ND-390	50	1 of 30
Chloroform	ND-8.4	7	1 of 30
Cis-1,2-Dichloroethylene	ND-45	5	3 of 30
Tetrachloroethylene (PCE)	ND-660	5	15 of 30
Trichloroethylene (TCE)	ND-6.4	5	1 of 30
SVOCs			
No Exceedances			
Inorganics			
Iron	360-7,100	300	6 of 6

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
Magnesium	25,000-120,000	35,000	5 of 6
Manganese	14.0-5,600	300	3 of 6
Sodium	79,000-240,000	20,000	6 of 6
Pesticides/PCBs			
No Exceedances			

Detected Constituents	Concentration Range Detected (ppt)[c]	MCL[d] (ppt)	Frequency Exceeding MCL
PFAS			
Perfluorooctanoic acid (PFOA)	6 – 23	10	1 of 6
Perfluorooctanesulfonic acid (PFOS)	6.3 – 24	10	1 of 6

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).
c- ppt: parts per trillion, which is equivalent to nanograms per liter, ng/L, in water.
d- MCL: Maximum Contaminant Level (MCL) – A drinking water standard being used in the absence of an ambient groundwater quality standard.

The primary groundwater contaminants are tetrachloroethene (PCE) and cis-1,2-DCE in groundwater near the site and to the south of the site. The presence of PCE and its breakdown products (TCE, cis-1,2-DCE) in groundwater is most likely associated with operations at the former dry cleaner. The primary groundwater contamination is seen at its highest levels approximately 400 feet to the south (downgradient) of the site in MW-04 and MW-47.

The area surrounding the site is served potable drinking water. The inorganic compounds found in groundwater samples are naturally occurring. Therefore, the metal compounds found in groundwater are not considered site specific contaminates of concern.

Based on the findings of the RI, the presence of PCE 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: PCE and cis-1,2-DCE.

Soil

Soil samples were collected at the site during the RI and analyzed for VOCs, SVOCs, PCBs, metals, and pesticides. Samples were collected from depths ranging from 8 to 17 feet. Analytical results of the soil sampling are presented on Figure 4. Soil sampling results indicate that soils at the site do not contain concentrations of VOCs, SVOCs, or PCBs above unrestricted use soil cleanup objectives (UUSCOs). UUSCOs are the most stringent SCG for soil. PCE, the primary site-related contaminant found in groundwater, was detected in soil at concentrations ranging from 0.0016-0.16 parts per million (ppm), well below the 1.3 ppm UUSCO. The metal

copper and the pesticide DDT were detected in one soil sample each at concentrations above their respective UUSCOs, but below residential use soil cleanup objective (RSCOs). RSCOs are the applicable SCG for this site.

Table 2 - Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG
VOCs					
Tetrachloroethylene (PCE)	0.0016 – 0.16	1.3	0 of 10	5.5	0 of 10
SVOCs					
Not Detected					
Inorganics					
Copper	12.0-60.0	50	1 of 4	270	0 of 4
Pesticides/PCBs					
DDT	0.00041-0.0088	0.0033	1 of 4	7.9	0 of 4

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 {Insert Allowable Use} Use, unless otherwise noted.
d - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater. {The GW SCO should be listed for the primary contaminants of concern listed in the Groundwater section above}
{Include the following only when applicable} {e – SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Ecological Resources}

No site-related soil contamination of concern was identified during the RI. Therefore, no remedial alternatives were evaluated for soil.

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 soil vapor.

Soil vapor samples were collected following the procedures described in the NYSDOH Soil Vapor Intrusion guidance document. The analytical results of soil vapor sampling are presented on Figure 5. Soil vapor samples were collected in off-site areas overlain by PCE contamination in groundwater to assess the potential for soil vapor intrusion. A total of forty-one (41) soil vapor samples were collected and analyzed for VOCs. The primary soil vapor contaminant is PCE most likely associated with dry cleaning operations from the former dry cleaner. The results indicate that PCE is present in soil vapor at concentrations up to 840 ug/m^3 and TCE is present in soil vapor at concentrations up to 14 ug/m^3. The extent of PCE soil vapor impacts extend approximately 700 feet to the south and southeast of the site. The highest levels of PCE in soil vapor was observed at sampling location SG-44, approximately 600 feet south of the site.

Indoor air and sub-slab soil vapor samples were collected at two off-site structures where access was granted to evaluate whether soil vapor intrusion was occurring. Analytical sampling results indicated that soil vapor

intrusion was occurring at one of the two structures. A vapor mitigation system was installed in the structure where soil vapor intrusion was documented. The vapor mitigation system is active and effectively mitigating soil vapor intrusion as this time. No actions were needed to address soil vapor intrusion at the other structure sampled.

Based on the findings of the Remedial Investigation, the presence of PCE 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 and TCE.

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.

Alternative 2: Monitored Natural Attenuation (MNA), Soil Vapor Intrusion (SVI) Evaluation

Alternative 2 consists of groundwater monitoring of site related contaminants and additional attenuation parameters. Groundwater monitoring will evaluate natural processes, which will reduce dissolved-phase groundwater contamination over time. Alternative 2 includes no active remediation of groundwater. SVI will be evaluated under Alternative 2 for all structures potentially impacted by soil vapor intrusion. Soil vapor intrusion monitoring or mitigation will be implemented for any structure impacted by soil vapor intrusion originating from the site, as needed. Alternative 2 relies on existing institutional controls (ICs) which prohibit well drilling and groundwater use to mitigate incidental exposure to contaminated groundwater. A Site Management Plan (SMP) will be prepared for groundwater monitoring and maintenance of soil vapor intrusion mitigation systems. It is expected that this alternative will eventually comply with the applicable SCGs. Groundwater contaminants will slowly reduce over time as the natural attenuation process occurs.

Present Worth: *$2,360,000*
Capital Cost: *$880,000*
Annual Costs: *$96,000*

Alternative 3: Limited In-Situ Chemical Oxidation (ISCO), Soil Vapor Intrusion (SVI) Evaluation

Alternative 3 consists of in-situ treatment of groundwater in off-site areas where groundwater concentrations exceed 500 ppm for total VOCs. A chemical oxidant will be injected into the subsurface in the area of highest groundwater contamination to destroy contamination. Following treatment, groundwater will be monitored for contaminant levels and attenuation parameters to confirm the effectiveness of in-situ treatment. Like Alternative 2, Alternative 3 includes SVI evaluation for all structure potentially impacted by soil vapor intrusion emanating from the site, with subsequent monitoring and/or mitigation as needed. ICs which prohibit well drilling and groundwater use will mitigate incidental exposure to contaminated groundwater and the chemicals used to treat groundwater. A Site Management Plan (SMP) will be prepared for groundwater monitoring and maintenance of soil vapor intrusion mitigation systems. Alternative 3 will result in groundwater contaminant concentrations reducing more quickly than with Alternative 2 as the in-situ treatment will reduce contaminant concentrations more quickly than natural attenuation processes.

Present Worth: *$3,042,000*
Capital Cost: *$1,562,000*
Annual Costs: *$96,000*

Alternative 4: In-Situ Chemical Oxidation (ISCO), Soil Vapor Intrusion (SVI) Evaluation

Alternative 4 consists of in-situ treatment of groundwater near the site and former source area (historic dry cleaner storage tanks) as well as in off-site areas where groundwater concentrations exceed 500 ppm for total VOCs. Like Alternative 4, Alternative 3 includes the injection of a chemical oxidant into the subsurface. However, under Alternative 4 a larger area of contaminated groundwater is being treated, with the goal of treating all site related groundwater contamination to below SCGs to the extent feasible. Following treatment, groundwater will be monitored for contaminant levels and attenuation parameters to confirm the effectiveness of in-situ treatment. Like Alternatives 2 and 3, Alternative 4 includes SVI evaluation for all structures potentially impacted by soil vapor intrusion emanating from the site, with subsequent monitoring and/or mitigation as needed. ICs which prohibit well drilling and groundwater use will mitigate incidental exposure to contaminated groundwater and the chemicals used to treat groundwater. A Site Management Plan (SMP) will be prepared for groundwater monitoring and maintenance of soil vapor intrusion mitigation systems. However, the scope of in-situ treatment in Alternative 4 is expected to over time reduce groundwater contaminant levels to below SCGs to the extent practicable.

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A to the extent practicable including the residential soil cleanup objectives (RSCOs) and protection of groundwater soil cleanup objectives (PGWSCOs), the lowest applicable soils SCGs for this site.

Present Worth: *$3,438,000*
Capital Cost: *$1,958,000*
Annual Costs: *$96,000*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
No Action	0	0	0
Monitored Natural Attenuation (MNA), SVI Monitoring and Mitigation	$880,000	$96,000	$2,360,000
Limited In-Situ Chemical Oxidation (ISCO), Soil Vapor Intrusion (SVI) Evaluation	$1,562,000	$96,000	$3,042,000
In-Situ Chemical Oxidation (ISCO), Soil Vapor Intrusion (SVI) Evaluation	$1,958,000	$96,000	$3,438,000

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 4, In-Situ Chemical Oxidation (ISCO), Soil Vapor Intrusion (SVI) Evaluation as the remedy for this site. Alternative 4 would achieve the remediation goals for the site by using in-situ treatment to remediate groundwater contamination which has emanated from the site to the extent practicable as well as evaluating any structure that may be impacted by soil vapor originating from the site with monitoring or mitigation as needed. The elements of this remedy are described in Section 7. The proposed remedy is depicted on Figure 6.

Basis for Selection

Alternative 4 includes in-situ treatment of groundwater near the site and former source area (historic dry cleaner storage tanks) as well as in off-site areas where groundwater concentrations exceed 500 ppm for total VOCs. The alternative is expected to achieve cleanup levels for VOCs over time as set forth in NYSDEC Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1). In-situ Chemical Oxidation (ISCO) will be used to break down PCE contamination found in groundwater during the RI. Monitored natural attenuation will then be utilized to ensure VOC concentration reduction. Alternative 4 presents general challenges of needing to understand the sub-surface environment before chemical injection as well as working in a densely populated urban setting. Standard construction and health and safety measures will be taken while implementing the remedy. Alternative 4 relies on ICs in the short term during groundwater treatment and monitoring. Engineering controls (ECs) in the form of vapor mitigation systems will be needed off-site so long as soil vapor from the site is impacting indoor air. A Site Management Plan (SMP) will be prepared for groundwater monitoring and maintenance of soil vapor intrusion mitigation systems.

Alternative 4 is the recommended remedy because it meets the RAOs through the treatment of all groundwater impacted by the site. Potential SVI impacts will also be monitored, and mitigation methods will be implemented where needed. This alternative costs slightly more than Alternative 3 but provides a greater degree of human and environmental protection. Both long-term and short-term human health and environmental protection are provided through the breakdown of PCE concentrations in the groundwater and the utilization of SVI mitigation technology. Furthermore, contact with the groundwater is limited due to the area being provided with a public water supply and ICs in place restricting well drilling and groundwater use.

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 4 satisfies this criterion by using in-situ chemical oxidation (ISCO) to address groundwater contamination and mitigating exposures to soil vapor intrusion. Alternative 1 (No Action) does not provide adequate protection to public health or the environment and will not be evaluated further. Alternative 2 provides a degree of protection, however with no active groundwater remediation VOC concentrations are still present in

the environment even though the former dry cleaner ceased operation over 50 years ago. Therefore, Alternative 2 may take a significant amount of time to reduce contaminant levels in groundwater. Alternative 3 is protective since it actively treats large areas of impacted groundwater, however it does not treat all groundwater contamination. Alternatives 2, 3, and 4 all include SVI monitoring and mitigation for the potential impacted residential and commercial properties.

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.

Alternative 1 does not comply with NYS SCGs for groundwater or SVI, since no action is undertaken, and this alternative does not provide a means to monitor and assess progress. Alternative 2 will comply with NYS SCGs for groundwater eventually but may take a great deal of time. Alternative 4 will achieve SCGs more quickly than Alternative 3 because it treats all areas where groundwater treatment is needed. Alternatives 2, 3, and 4 each provide the same level of compliance for SVI impacts.

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 4 followed by Alternative 3 provides the greatest degree of long-term effectiveness and permanence for groundwater treatment and greatest reduction of potential SVI impacts. Alternative 4 would achieve SCGs the fastest, followed by Alternative 3 and then Alternative 2. Alternative 2, 3, and 4 provide the same level of engineering-controlled protection of SVI.

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 4 followed by Alternative 3 and Alternative 2 will provide the greatest reduction of toxicity through treatment. All alternatives will over time reduce the volume of contamination through treatment or natural processes. Alternatives 4 and 3 would achieve this reduction much faster than Alternative 2.

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.

Alternative 2 would result in the least disruptive short-term impacts to the workers and the community since it does not involve extensive in-situ treatment like Alternatives 3 and 4. Alternatives 3 and 4 will need to exercise caution during the handling and injecting of oxidizing chemicals so that the remedial contractors and the public are not exposed to unsafe conditions. Additionally, understanding the sub-surface environment, particularly the potential impacts of corrosive chemicals to utilities and other building materials, needs to be understood prior to implementing the injection events. The short-term impacts of Alternatives 3 and 4 can be effectively minimized

by proper health and safety precautions as well as institutional controls (municipal groundwater use restriction) and engineering controls (remedial design precautions).

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.

Alternative 2 would be the easiest to implement, followed by Alternative 3, and then 4. Potential challenges for implementation of Alternatives 3 and 4 include the ability to install injection wells and additional performance monitoring wells and challenges associated with performing injection events in a densely populated, urban setting. Alternative 4 would not be significantly harder to implement than Alternative 3, both these alternatives involve the same treatment technology. Potential challenges for implementation of Alternative 2, 3, and 4 include obtaining access to residential and commercial properties to collect SVI samples and installing mitigation systems where necessary.

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 capital costs of the alternatives vary slightly between Alternatives 2, 3, and 4. Alternative 2 is the least expensive option with an estimated total present value of $2,360,000, followed by Alternative 3 at $3,042,000, and Alternative 4 at $3,438,000. Alternative 4 achieves the greater protective standards for human health and the environment for slightly more cost than Alternative 3. Therefore, Alternative 4 is the most cost effective.

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.

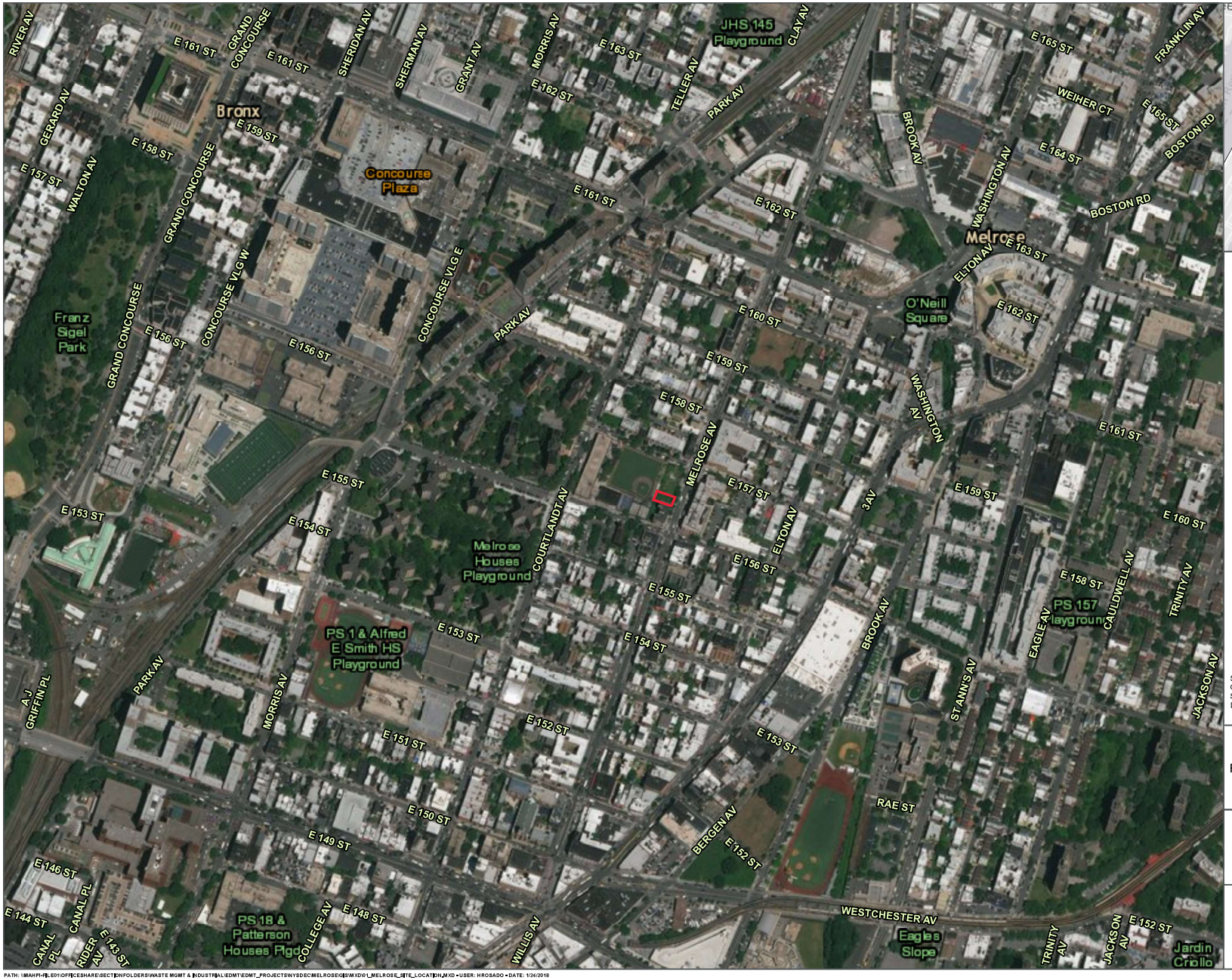
The site is in an urban area and zoned for residential use. No future land use changes are anticipated. Site soils do not exceed residential soil cleanup objectives (SCOs) and site groundwater use is restricted by a municipal institutional control. Therefore, the only potential exposure from the site that may prohibit land use is soil vapor, which is addressed by Alternative 2, 3, and 4 through mitigation if needed. For the off-site community which includes a variety of residential and commercial uses, Alternatives 2, 3, and 4 each provide varying degrees of treatment that are designed to restore the groundwater and soil vapor impacts to conditions prior to contaminant release. All Alternatives include necessary vapor mitigation for off-site structures. Since Alternative 4 accomplishes the greatest degree of groundwater remediation in the shortest amount of time it is the preferred remedy.

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



SITE LOCATION

FORMER MELROSE AVENUE DRY CLEANERS
753 MELROSE AVENUE, BRONX, NY
SITE NO 203009

N

0 500 1,000
FEET

NEW YORK STATE OF OPPORTUNITY. Department of Environmental Conservation

HDR

FIGURE 1

PATH: \\MAHPI-FILE01\OFFICESHARE\SECTIONFOLDERS\WASTE MGMT & INDUSTRIAL\EDMT\EDMT_PROJECTS\NYSDEC\MELROSE\GIS\MXD\G1_MELROSE_SITE_LOCATION.MXD • USER: HROSADO • DATE: 1/24/2018

LEGEND

Site Boundary

Service Layer Credits: Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

SITE MAP

FORMER MELROSE AVENUE DRY CLEANERS
753 MELROSE AVENUE, BRONX, NY
SITE NO 203009

N

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FEET

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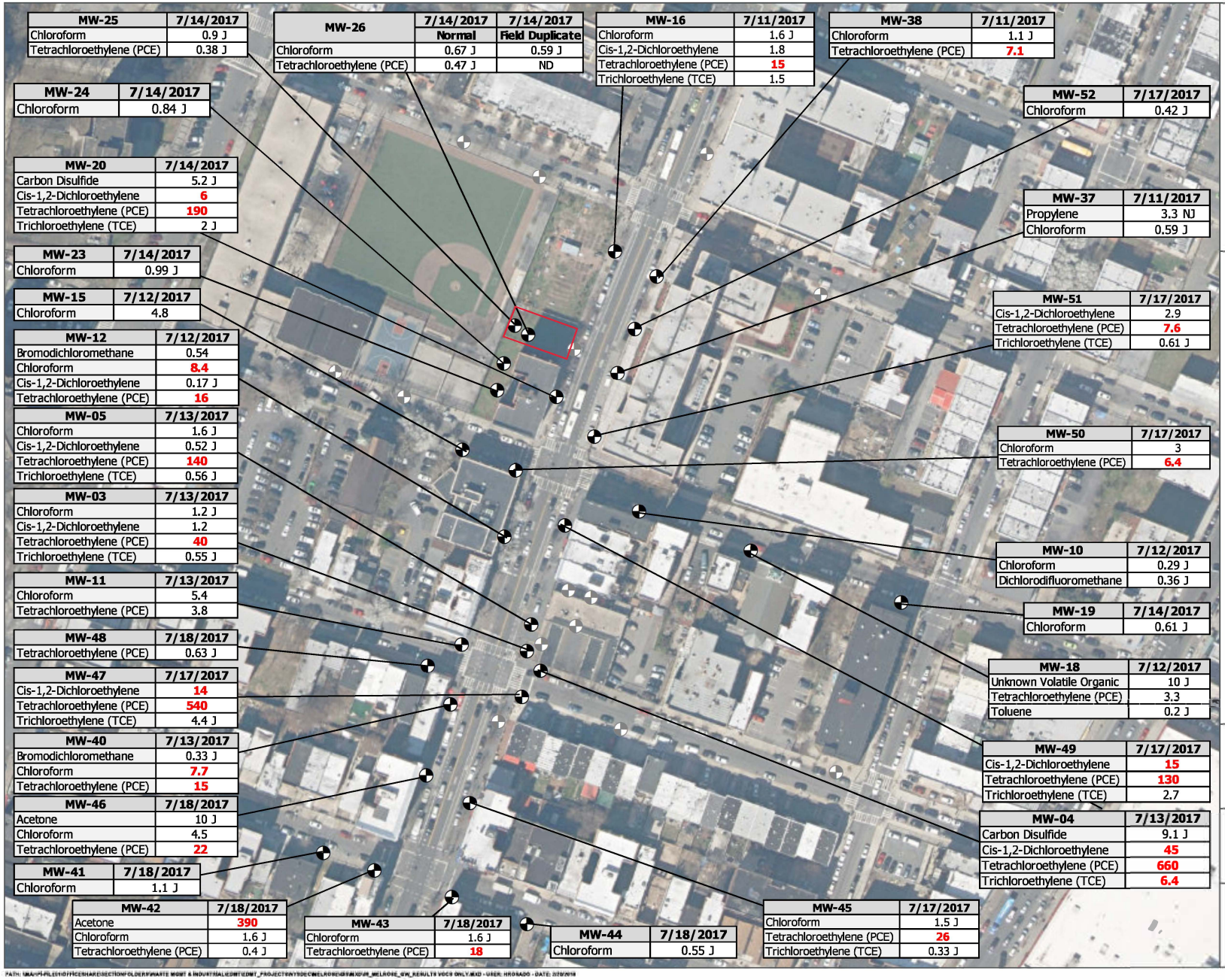
FIGURE 2

PATH: \\MAHPI-FILE01\OFFICESHARE\SECTIONFOLDERS\WASTE MGMT & INDUSTRIAL\EDM\TEDMT_PROJECTS\NYSDEC\MELROSE\GIS\MXD\02_MELROSE_SITE_MAP.MXD - USER: HROSADO - DATE: 1/24/2018



LEGEND

- Site Boundary
- Sampled Wells
- Wells Not Sampled

Analyte	NYS W 703.5 TOGS WQS GA	Unit
Acetone	50	ug/l
Chloroform	7	ug/l
Cis-1,2-Dichloroethylene	5	ug/l
Tetrachloroethylene (PCE)	5	ug/l
Trichloroethylene (TCE)	5	ug/l

Notes:
1. All detections are shown.
2. Results were compared to New York State 6 CRR-NY 703.5 Water Quality Standards supplemented with Technical & Operational Guidance Series (TOGS). Exceedances are bolded in red. Analytes for which there were exceedances are shown above.
3, Wells without detected results or that were not sampled are grayed out.

GROUNDWATER VOC RESULTS

FORMER MELROSE AVENUE DRY CLEANERS
753 MELROSE AVENUE, BRONX, NY
SITE NO 203009

N
0 50 100
FEET

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FIGURE 3

SB-10	6/23/2017 17'
Aluminum	4800
Barium	42
Beryllium	0.64
Calcium	61000
Chromium, Total	11
Cobalt	5.9
Copper	15
Iron	9600
Lead	10 J
Magnesium	36000
Manganese	220
Nickel	9.9
Potassium	1600
Sodium	160
Vanadium	15
Zinc	32

SB-08	6/26/2017 8.5'	6/26/2017 13'	6/26/2017 14'
Aluminum	NA	NA	9300
Barium	NA	NA	41
Beryllium	NA	NA	1.9
Cadmium	NA	NA	0.16 J
Calcium	NA	NA	99000
Chromium, Total	NA	NA	14
Cobalt	NA	NA	7.1
Copper	NA	NA	16
Iron	NA	NA	14000
Lead	NA	NA	6.8
Magnesium	NA	NA	56000
Manganese	NA	NA	410
Nickel	NA	NA	14
Potassium	NA	NA	2400
Sodium	NA	NA	120
Vanadium	NA	NA	19
Zinc	NA	NA	80
Tetrachloroethylene	0.051	0.014	0.16
P,P'-DDT	NA	NA	**0.0088**

SB-09	6/26/2017 15'
Aluminum	3400
Barium	20
Beryllium	0.26 J
Calcium	11000
Chromium, Total	9.9
Cobalt	4.3
Copper	12
Iron	7600
Lead	2.1
Magnesium	7300
Manganese	170
Nickel	7.6
Potassium	790
Sodium	120
Vanadium	12
Zinc	17
Tetrachloroethylene (PCE)	0.0016 J

MW-50	6/23/2017 13'	6/23/2017 15'	6/23/2017 17'
Tetrachloroethylene	0.0021 J	0.0029	0.0034

MW-49	6/20/2017 13'
Unknown Volatile Organic	0.014 J
Tetrachloroethylene (PCE)	0.0037

SB-11	6/22/2017 15'
Aluminum	8000
Barium	54
Beryllium	1.5
Calcium	78000
Chromium, Total	16
Cobalt	9.4
Copper	**60**
Iron	16000
Lead	6.5
Magnesium	45000
Manganese	420
Nickel	15
Potassium	3400
Sodium	110
Vanadium	23
Zinc	61
Tetrachloroethylene (PCE)	0.0028

MW-43	6/16/2017 13'	6/16/2017 18'
Tetrachloroethylene	0.0033	0.0069

LEGEND

- Site Boundary
- Monitoring Well
- Soil Boring

Analyte	NYS Soil SCO Unrestricted Use	Unit
Copper	50	mg/kg
P,P'-DDT	0.0033	mg/kg

Notes:
1. All detections are shown.
2. Results were compared to New York State Soil Soil Cleanup Objectives (SCO) for Unrestricted Use. Exceedances are bolded in red. Analytes for which there were exceedances are shown above.

SOIL RESULTS

FORMER MELROSE AVENUE DRY CLEANERS
753 MELROSE AVENUE, BRONX, NY
SITE NO 203009

N

0 50 100
FEET

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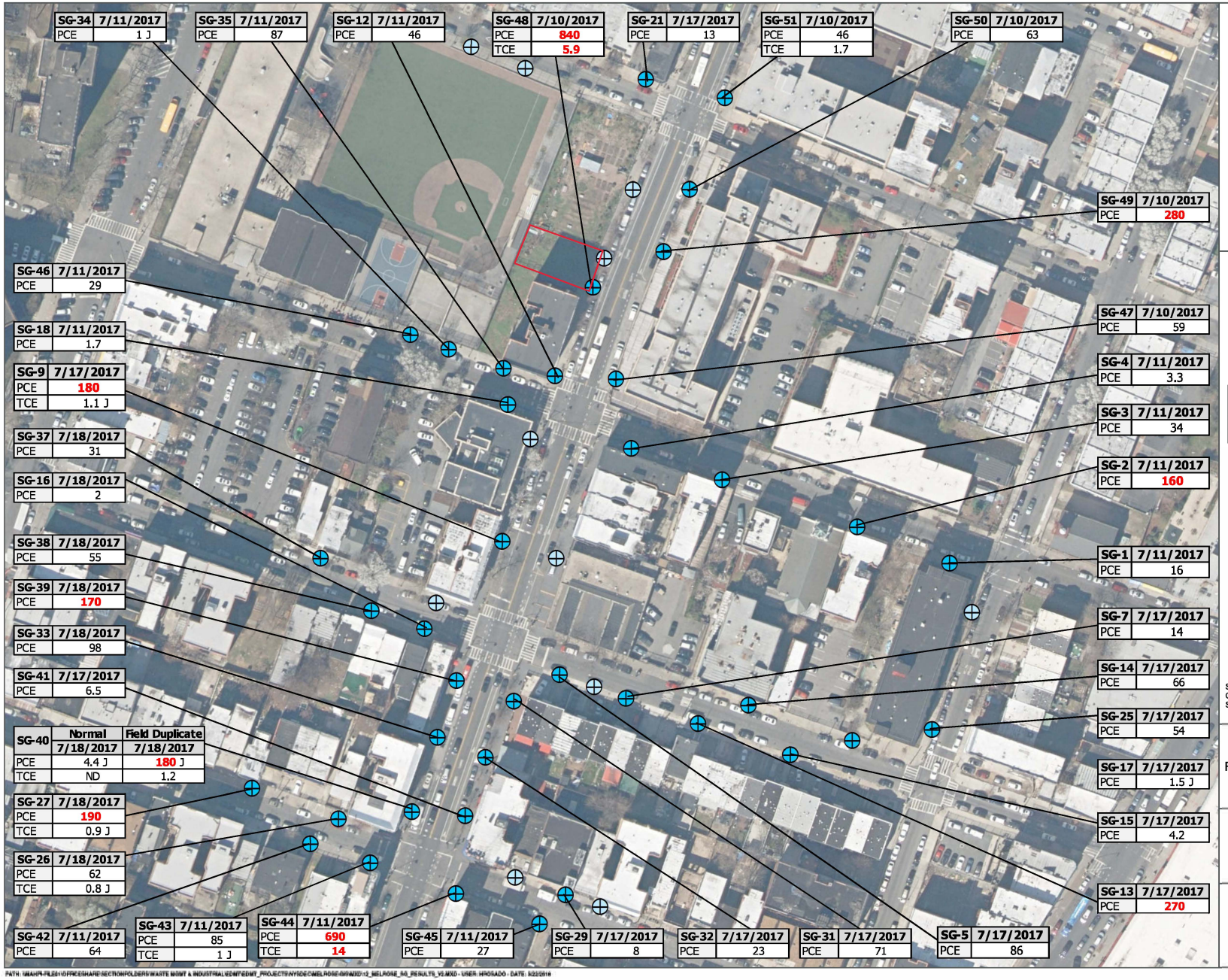
FIGURE 4



LEGEND

- Site Boundary
- Soil Gas Samples
- Soil Gas Locations Not Sampled

Analyte	Ambient Air Guidelines	Unit
Tetrachloroethylene (PCE)	100/1000	ug/m3
Trichloroethylene (TCE)	5/50/250	ug/m3

Notes:
1. Detections are shown for Tetrachloroethylene (PCE) and Trichloroethylene (TCE).
2. Results were compared to New York State Decision Matrix Concentration Range 2 for the respective chemical. No reported concentrations were within the Decision Matrix Concentration Range 3 for the respective chemicals.

SOIL VAPOR RESULTS

FORMER MELROSE AVENUE DRY CLEANERS
753 MELROSE AVENUE, BRONX, NY
SITE NO 203009

N

0 50 100
FEET

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FIGURE 5

LEGEND

- Monitoring Well
- Site Boundary
- Approximate GW flow direction
- Proposed Injection Locations
- Proposed ISCO Wells
- 7.5-ft Radius of Influence

Groundwater VOC Isoconcentrations 2018

- 50 ug/l
- 500 ug/l

Notes:

All results given in ug/l.

Results are the sum of target VOCs (cis-1,2-dichloroethene, tetrachloroethene, and trichloroethene) from the 2018 sampling round.

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

ALTERNATIVE 4
IN-SITU TREATMENT > 500 UG/L AND FORMER SOURCE-AREA

FORMER MELROSE AVENUE DRY CLEANER
753 MELROSE AVENUE, BRONX, NY
SITE NO 203009

0 50 100
FEET

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FIGURE 6