DECISION DOCUMENT

131-05 & 131-15 Fowler Avenue
Brownfield Cleanup Program
Flushing, Queens County
Site No. C241161
September 2015

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

DECLARATION STATEMENT - DECISION DOCUMENT

131-05 & 131-15 Fowler Avenue
Brownfield Cleanup Program
Flushing, Queens County
Site No. C241161
September 2015

Statement of Purpose and Basis

This document presents the remedy for the 131-05 & 131-15 Fowler Avenue site, a brownfield cleanup site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the 131-05 & 131-15 Fowler Avenue site and the public's input to the proposed remedy presented by the Department.

Description of Selected Remedy

The elements of the selected 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. Excavation

All on-site soils which exceed unrestricted use SCOs (UUSCOs), as defined by 6 NYCRR Part 375-6.8, will be excavated and transported off-site for disposal. Approximately 9,180 cubic yards (CY) of soil will be removed from the site. On-site soil which does not exceed SCOs for the unrestricted use of the site may be used to backfill the excavation to establish the designed grades. If necessary, clean fill meeting the requirements of Part 375-6.7(d) will be brought in to replace excavated soil and establish the designed grades at the site. Should UUSCOs not be achieved, a Track 4 restricted-residential cleanup at a minimum would be achieved.

In addition to the impacted soils noted above, the following will also be performed either to facilitate remedial site excavation or as part of remedial site excavation activities:

- on-site buildings will be demolished and materials which can't be beneficially reused on site will be taken off-site for proper disposal in order to implement the remedy;
- all building materials exhibiting concentrations of PCBs in excess of 50 ppm will be disposed of in accordance with 40 CFR 761;
- complete removal of existing underground storage tank, drainage manholes, floor drains and associated piping; and
- dewatering of the site to allow excavation up to 10 feet below the water table and treatment of the extracted groundwater.

3. In-Situ Chemical Treatment Contingency

Excavation of the majority of the source of groundwater contamination is expected to improve groundwater conditions across the site. Also, a chemical treatment agent will be placed in the bottom of the excavation that extends to the water table and intermixed with the saturated soils to promote in-situ treatment (breakdown) of remaining chlorinated volatile organic compounds (e.g., tetrachloroethene, trichloroethene) in site groundwater. In addition, all infrastructure necessary to perform post-construction in-situ treatment agent injections will be installed in the lowest level of any future structures to facilitate future in-situ treatment if necessary. If groundwater monitoring does not reveal sufficient reduction in groundwater contamination, chemical treatment agent injections will be conducted within one year of source removal. This treatment must demonstrate bulk reduction in groundwater contamination within 5 years as required in 6 NYCRR Part 375-3.8(e)(1)(iv) to attain a Track 1 cleanup.

4. Vapor Intrusion Evaluation

As part of the Track 1 remedy, a soil vapor intrusion evaluation will be completed. The evaluation will include a provision for implementing actions recommended to address exposures related to soil vapor intrusion.

Contingent Track 1:

The intent of the remedy is to achieve a Track 1 unrestricted use, therefore, no environmental easement (EE) or site management plan (SMP) is anticipated. If the soil vapor intrusion (SVI) evaluation is not completed prior to completion of the Final Engineering Report or post-construction in-situ treatment chemical injections are necessary, then a SMP and EE will be required to address the SVI evaluation and implement remedial actions as needed; if a remedial action is needed, a Track 1 cleanup can only be achieved if the mitigation system can be shut down

and/or bulk reduction in groundwater concentrations is demonstrated within 5 years of the date of the Certificate of Completion.

If a sub-grade parking garage is constructed beneath the entire on-site future building, then the soil vapor remedial action objectives will be achieved through compliance with the New York City Mechanical Code, which requires proper ventilation.

If no EE or SMP is needed to achieve soil, groundwater, or soil vapor remedial action objectives, then 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.

In the event that Track 1 unrestricted use is not achieved, including achievement of groundwater and soil vapor remedial objectives, the following contingent remedial elements will be required and the remedy will achieve a Track 4 restricted-residential cleanup at a minimum.

Contingent Remedial Elements:

5. Site Cover

A site cover will be required to allow for Track 4 restricted residential use of the site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of two feet 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 as set forth in 6 NYCRR Part 375-6.7(d).

6. Institutional Control

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

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

7. Site Management Plan

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

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

Institutional Controls: The Environmental Easement discussed in Paragraph 6 above.
Engineering Controls: The site cover discussed in Paragraph 5 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;
- descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any occupied existing or future buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

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

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

c) an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the active vapor mitigation system(s), if an SSDS is required following the vapor intrusion evaluation. The plan includes, but is not limited to:

- procedures for operating and maintaining the system(s); and
- compliance inspection of the system(s) to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting.

Declaration

The remedy conforms with promulgated standards and criteria that are directly applicable, or that are relevant and appropriate and takes into consideration Department guidance, as appropriate. The remedy is protective of public health and the environment.

September 30, 2015

Date

Robert Cozzy, Director
Remedial Bureau B

DECISION DOCUMENT

131-05 & 131-15 Fowler Avenue
Flushing, Queens County
Site No. C241161
September 2015

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of contaminants at the site has resulted in threats to public health and the environment that would be addressed by the remedy. The disposal or release of contaminants at this site, as more fully described in this document, has contaminated various environmental media. Contaminants include hazardous waste and/or petroleum.

The New York State Brownfield Cleanup Program (BCP) is a voluntary program. The goal of the BCP is to enhance private-sector cleanups of brownfields and to reduce development pressure on "greenfields." A brownfield site is real property, the redevelopment or reuse of which may be complicated by the presence or potential presence of a contaminant.

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

SECTION 2: CITIZEN PARTICIPATION

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

Queens Public Library
Attn: Donna Ciampa-Lauria
41-17 Main Street
Flushing, NY 11355
Phone: 718-611-1200

NYSDEC - Region 2
47-40 21st Street
Long Island City, NY 11101
Phone: 718-482-4599

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: This is located at 131-05 and 131-15 Fowler Avenue in the Flushing section of Queens, on Block 5076 Lot 31.

Site Features: The site consists of approximately 0.53 acres. The site is improved with two connected single-story concrete block buildings with basements. The buildings are currently vacant. Concrete walkways are located adjacent to the north, south and east of the buildings.

Current Zoning and Land Use: The site is in C2-6A districts which are commercial districts that are predominantly residential in character. The site is proposed for mixed-use residential and commercial. The site is surrounded by recreational, residential and commercial properties. Current uses of adjoining properties include retail facilities to the north; a mixed use of commercial and residential buildings to the east; recreational facilities to the south; and a retail factory and metal working facility to the west.

Past Use of the Site: The subject site was initially developed as early as the late 1800s and utilized as a residence through at least the 1930s. The existing buildings were constructed by the 1950s after which the site was occupied by Radio Filter which manufactured radio frequency interface filters from the building construction through the 1980s. In 2000, 131-15 Fowler Avenue was occupied by a dental laboratory. The buildings were occupied by furniture outlets (western building) and a sewing factory (eastern building) through December 2014. The western building was vacated in December 2014 and the eastern building in June 2015.

Site Geology and Hydrogeology: The Site is underlain by fill material consisting of yellowish-brown to grey, coarse to fine sand with varying amounts of silt and gravel and occasional brick fragments extending to a depth of approximately 10 feet below existing grade. Beneath the existing fill materials, native soils consisting of yellowish-brown, coarse to fine sand with variable amounts of gravel, silt and clay were encountered to depths ranging between 65 to 70 feet below grade (bg). Beneath the sand, a natural massive clay stratum that generally consisted of brown clay with trace amounts of fines was encountered at a depth of approximately 95 feet below the existing grade. Bedrock was not encountered during the investigation, which extended to a maximum depth of approximately 102 feet below grade.

Groundwater was encountered throughout the site at depths ranging between 18 feet bg and 20 feet bg. The Site topography is generally level. Surface water drainage is expected to flow into storm water drains located in the Site loading dock and adjacent street. The groundwater flow direction is generally toward the southeast.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, an alternative which allows for unrestricted use of the site was evaluated.

A comparison of the results of the Remedial Investigation (RI) against unrestricted use standards, criteria and guidance values (SCGs) for the site contaminants is available in the RI Report.

SECTION 5: ENFORCEMENT STATUS

The Applicant(s) under the Brownfield Cleanup Agreement is a/are Volunteer(s). The Applicant(s) does/do not have an obligation to address off-site contamination. The Department has determined that this site poses a significant threat to human health and the environment and there are off-site impacts that require remedial activities; accordingly, enforcement actions are necessary.

The Department will seek to identify any parties (other than the Volunteer) known or suspected to be responsible for contamination at or emanating from the site, referred to as Potentially Responsible Parties (PRPs). The Department will bring an enforcement action against the PRPs. If an enforcement action cannot be brought, or does not result in the initiation of a remedial program by any PRPs, the Department will evaluate the off-site contamination for action under the State Superfund. The PRPs are subject to legal actions by the State for recovery of all response costs the State incurs or has incurred.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A remedial investigation (RI) serves as the mechanism for collecting data to:

- characterize site conditions;
- determine the nature of the contamination; and
- assess risk to human health and the environment.

The RI is intended to identify the nature (or type) of contamination which may be present at a site and the extent of that contamination in the environment on the site, or leaving the site. The RI reports on data gathered to determine if the soil, groundwater, soil vapor, indoor air, surface water or sediments may have been contaminated. Monitoring wells are installed to assess groundwater

and soil borings or test pits are installed to sample soil and/or waste(s) identified. If other natural resources are present, such as surface water bodies or wetlands, the water and sediment may be sampled as well. Based on the presence of contaminants in soil and groundwater, soil vapor will also be sampled for the presence of contamination. Data collected in the RI influence the development of remedial alternatives. The RI report is available for review in the site document repository and the results are summarized in section 6.3.

The analytical data collected on this site includes data for:

- groundwater
- soil
- soil 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. 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 contaminant 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 below. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

Polycyclic Aromatic Hydrocarbons (PAHs), Total	PCB (aroclor 1254)
trichloroethene (TCE)	lead
benzo(a)pyrene	tetrachloroethene (PCE)

The contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- soil

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 Decision Document.

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

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water. The RI report presents a detailed discussion of any existing and potential impacts from the site to fish and wildlife receptors.

Nature and Extent of Contamination:

Soil and groundwater were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), and pesticides. The primary contaminants of concern at the site include metals, PCBs, SVOCs, and VOCs. Previous environmental investigation in the area revealed concentrations of metals, PCBs, SVOCs, and VOCs exceeding Standards, Criteria, and Guidance values in the soil and/or groundwater.

Soil: Based upon investigations to date, sub-surface soils are contaminated with metals, PCBs, SVOCS, and VOCs. Data results from soils sampling reported metals (primarily lead), PCBs (aroclor 1254), SVOCs (polyaromatic hydrocarbons or PAHs) and VOCs (trichloroethene). The PAHs and metals contamination in soils is likely related to the presence of historic fill. Maximum detections vs. applicable unrestricted use or protection of groundwater soil cleanup objectives (UUSCO/PGWSCO) are as follows: lead at 1,400 ppm vs. 63 ppm, aroclor 1254 at 552 ppm vs. 0.1 ppm, several PAHs including benzo(a)pyrene at 2.6 ppm vs. 1 ppm, and trichloroethene (TCE) at 70 ppm vs. 0.47 ppm. Site-related soil contamination is not expected to extend off-site based on the available data.

Groundwater: Groundwater sampling indicates total metals, PCBs, SVOCs (specifically PAHs) and VOCs contamination above Class GA groundwater standards. Some PAHs and metals were found in relative low levels in groundwater and are likely related to the presence of historic fill. Maximum groundwater detections vs. standards are as follows: aroclor 1254 at 18.9 parts per billion (ppb) vs. 0.09 ppb, tetrachloroethene (PCE) at 52 ppb vs. 5 ppb, and TCE at 440 ppb vs. 5 ppb. PCE (up to 12 ppb) was detected in off-site downgradient groundwater at MW-1.

Soil Vapor: Elevated levels of VOCs were detected in soil vapor. The maximum concentrations of PCE and TCE in soil vapor were detected in the central/southwestern portion of the site at the respective concentrations of 1,020 micrograms per cubic meter (ug/m3) and 13,900 ug/m3. Sampling indicates that contaminated soil vapor extends off-site with PCE and TCE were detected up to 26,320 ug/m3 and 22,023 ug/m3, respectively. Additional sampling is needed to determine whether actions are needed to address soil vapor intrusion off-site.

Significant Threat:

The elevated levels of PCE, TCE and PCBs in soil, groundwater and/or soil vapor represent a significant threat to human health and/or the environment. Groundwater was observed between 18-20 feet below ground surface and determined to be generally flowing toward the southeast. VOC contamination has been detected in soil vapor off-site and in groundwater downgradient from 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.*

Direct contact with contaminants in subsurface soil is unlikely because the site is covered with a building. People are not drinking contaminated groundwater because the area is served by a public water supply that is 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 the 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 should the buildings become reoccupied. Furthermore, environmental sampling indicates that soil vapor intrusion is a concern for off-site structures and additional sampling is necessary.

6.5: Summary of the Remediation Objectives

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

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

Soil Vapor

RAOs for Public Health Protection

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

SECTION 7: ELEMENTS OF THE SELECTED REMEDY

The alternatives developed for the site and the evaluation of the remedial criteria are presented in the Alternative Analysis. The remedy is selected pursuant to the remedy selection criteria set forth in DER-10, Technical Guidance for Site Investigation and Remediation and 6 NYCRR Part 375.

The selected remedy is a Conditional Track 1 remedy.

The selected remedy is referred to as the excavation and groundwater treatment remedy.

The elements of the selected remedy, as shown in Figure 2, 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. Excavation

All on-site soils which exceed unrestricted use SCOs (UUSCOs), as defined by 6 NYCRR Part 375-6.8, will be excavated and transported off-site for disposal. Approximately 9,180 cubic yards (CY) of soil will be removed from the site. On-site soil which does not exceed SCOs for the unrestricted use of the site may be used to backfill the excavation to establish the designed grades. If necessary, clean fill meeting the requirements of Part 375-6.7(d) will be brought in to replace excavated soil and establish the designed grades at the site. Should UUSCOs not be achieved, a Track 4 restricted-residential cleanup at a minimum would be achieved.

In addition to the impacted soils noted above, the following will also be performed either to facilitate remedial site excavation or as part of remedial site excavation activities:

- on-site buildings will be demolished and materials which can't be beneficially reused on site will be taken off-site for proper disposal in order to implement the remedy;
- all building materials exhibiting concentrations of PCBs in excess of 50 ppm will be disposed of in accordance with 40 CFR 761;
- complete removal of existing underground storage tank, drainage manholes, floor drains and associated piping; and
- dewatering of the site to allow excavation up to 10 feet below the water table and treatment of the extracted groundwater.

3. In-Situ Chemical Treatment Contingency

Excavation of the majority of the source of groundwater contamination is expected to improve groundwater conditions across the site. Also, a chemical treatment agent will be placed in the bottom of the excavation that extends to the water table and intermixed with the saturated soils to promote in-situ treatment (breakdown) of remaining chlorinated volatile organic compounds (e.g., tetrachloroethene, trichloroethene) in site groundwater. In addition, all infrastructure necessary to perform post-construction in-situ treatment agent injections will be installed in the lowest level of any future structures to facilitate future in-situ treatment if necessary. If groundwater monitoring does not reveal sufficient reduction in groundwater contamination, chemical treatment agent injections will be conducted within one year of source removal. This treatment must demonstrate bulk reduction in groundwater contamination within 5 years as required in 6 NYCRR Part 375-3.8(e)(1)(iv) to attain a Track 1 cleanup.

4. Vapor Intrusion Evaluation

As part of the Track 1 remedy, a soil vapor intrusion evaluation will be completed. The evaluation will include a provision for implementing actions recommended to address exposures related to soil vapor intrusion.

Contingent Track 1:

The intent of the remedy is to achieve a Track 1 unrestricted use, therefore, no environmental easement (EE) or site management plan (SMP) is anticipated. If the soil vapor intrusion (SVI) evaluation is not completed prior to completion of the Final Engineering Report or post-construction in-situ treatment chemical injections are necessary, then a SMP and EE will be required to address the SVI evaluation and implement remedial actions as needed; if a remedial action is needed, a Track 1 cleanup can only be achieved if the mitigation system can be shut down

and/or bulk reduction in groundwater concentrations is demonstrated within 5 years of the date of the Certificate of Completion.

If a sub-grade parking garage is constructed beneath the entire on-site future building, then the soil vapor remedial action objectives will be achieved through compliance with the New York City Mechanical Code, which requires proper ventilation.

If no EE or SMP is needed to achieve soil, groundwater, or soil vapor remedial action objectives, then 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.

In the event that Track 1 unrestricted use is not achieved, including achievement of groundwater and soil vapor remedial objectives, the following contingent remedial elements will be required and the remedy will achieve a Track 4 restricted-residential cleanup at a minimum.

Contingent Remedial Elements:

5. Site Cover

A site cover will be required to allow for Track 4 restricted residential use of the site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of two feet 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 as set forth in 6 NYCRR Part 375-6.7(d).

6. Institutional Control

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

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

7. Site Management Plan

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

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

Institutional Controls: The Environmental Easement discussed in Paragraph 6 above.
Engineering Controls: The site cover discussed in Paragraph 5 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;
- descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any occupied existing or future buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

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

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

c) an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the active vapor mitigation system(s), if an SSDS is required following the vapor intrusion evaluation. The plan includes, but is not limited to:

- procedures for operating and maintaining the system(s); and
- compliance inspection of the system(s) to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting.

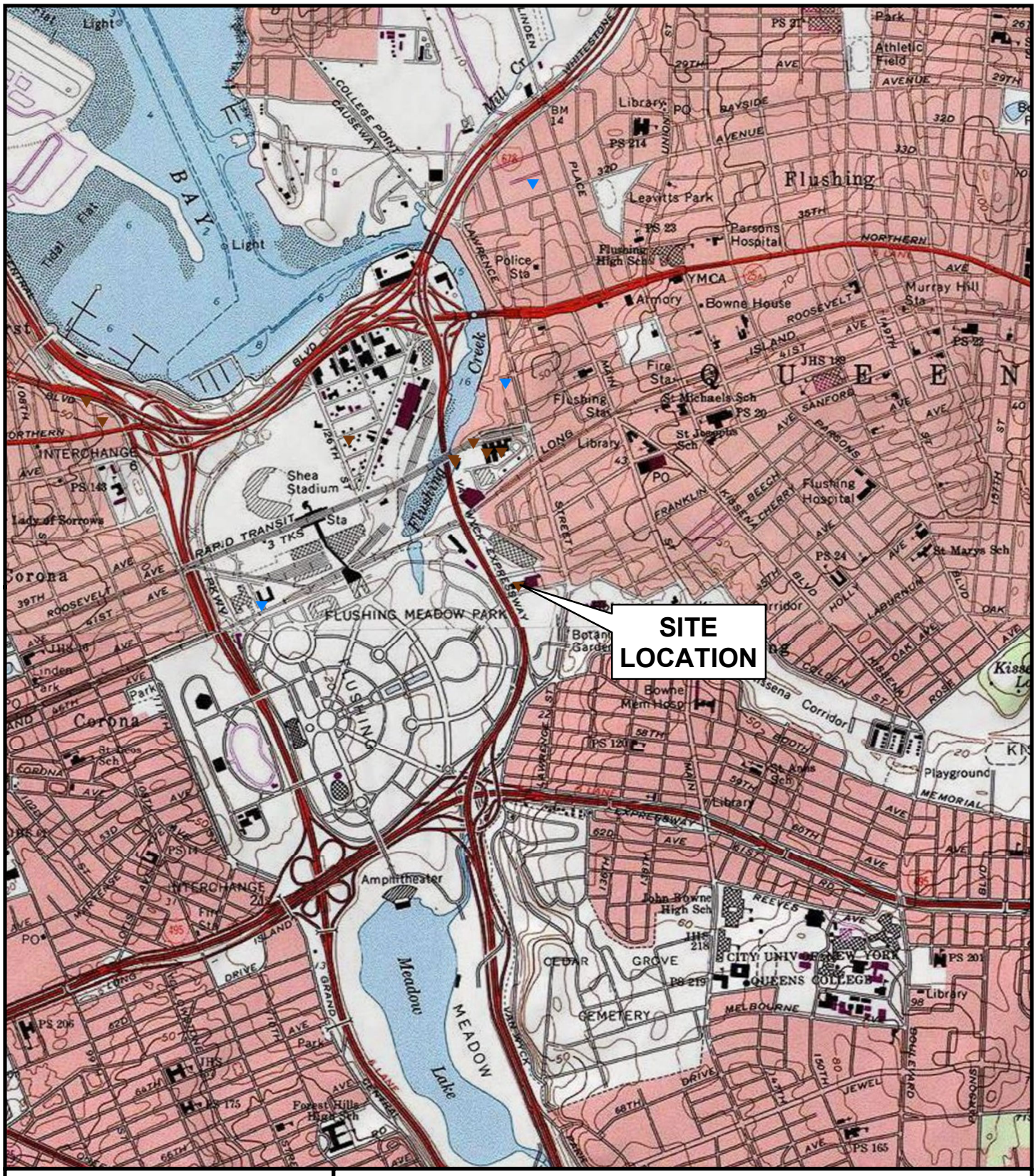
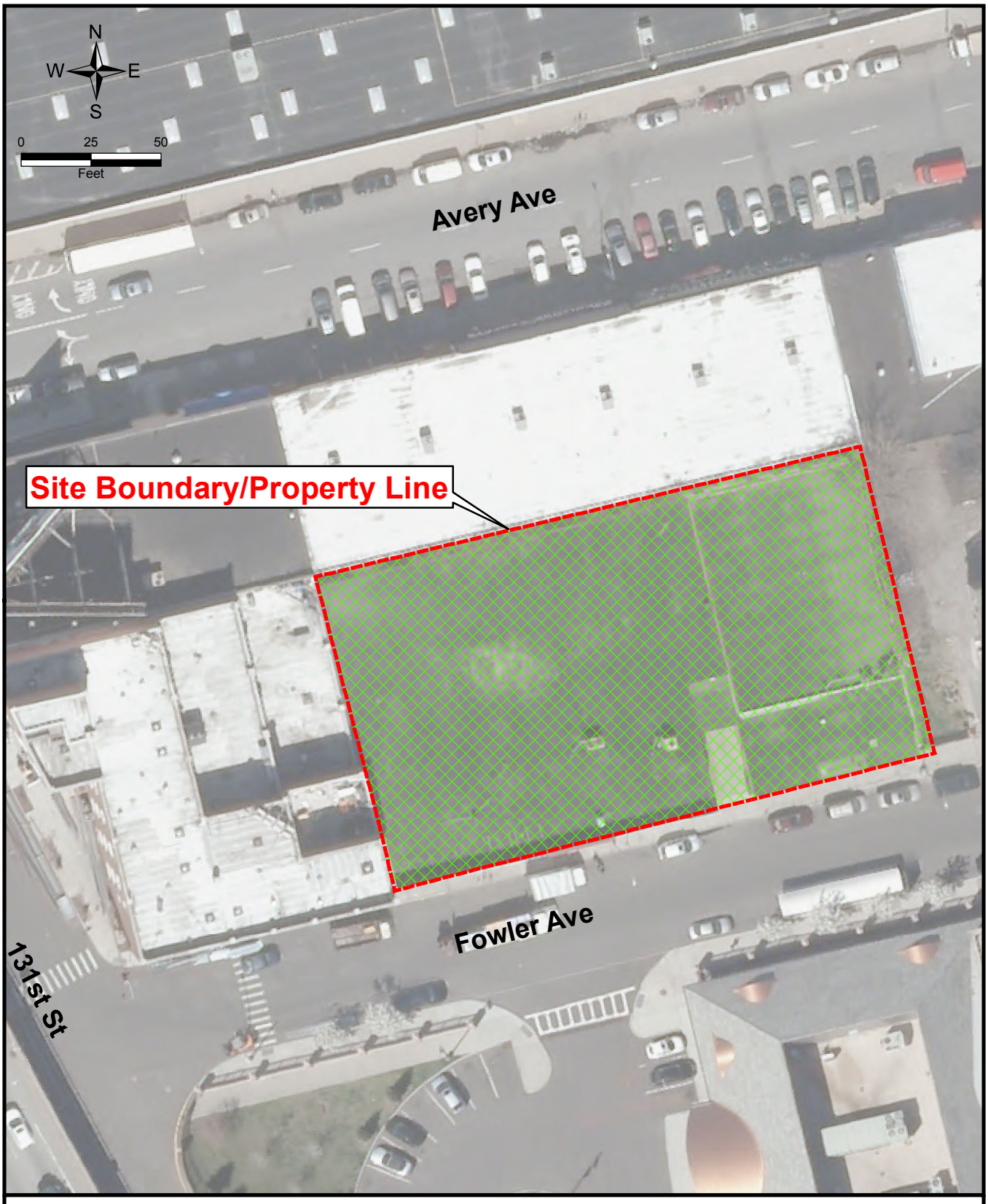


Figure 1

Site Location Map

131-05 & 131-15 Fowler Avenue Site
Flushing, Queens County
Site No. C241161



Legend

- Property Line
- Excavation Area

Figure 2

Site Map

131-05 &131-15 Fowler Avenue
Flushing, Queens County
Site No. C241161