

DECISION DOCUMENT

840 5th Avenue
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224271
September 2018



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

DECLARATION STATEMENT - DECISION DOCUMENT

840 5th Avenue
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224271
September 2018

Statement of Purpose and Basis

This document presents the remedy for the 840 5th 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 840 5th 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

- 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. Excavation

Excavation and off-site disposal of soil that exhibits the hazardous waste characteristic of toxicity for lead in one hot spot area delineated to an approximately 16-foot by 35-foot area, extending to approximately 18 feet in depth, in the northeast part of the site. Additional excavation and off-site disposal of non-hazardous soil/fill which exceeds restricted residential SCOs, as defined by 6 NYCRR Part 375-6.8 in the upper 2 feet over the remainder of the site. (Refer to Figure 2). Excavation and removal of any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination. Approximately 600 tons of hazardous waste soil will be removed as part of the remediation. Removal of the remaining upper two feet of site soil, to accommodate a cover system (see below) will generate approximately 400 tons of material. Approximately 15,500 tons of non-hazardous soil will also be removed and disposed of off-site as part of Site development.

As necessary, clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to complete required backfilling of the excavation and establish the design grades at the site.

3. Cover System

A site cover will be required to allow for restricted residential use of the site in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a soil cover is to be used 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 for the use of the site as set forth in 6 NYCRR Part 375-6.7(d). Substitution of other materials and components may be allowed where such components already exist or are a component of the tangible property to be placed as part of site redevelopment. Such components may include, but are not necessarily limited to: pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs.

4. Vapor Mitigation

Any on-site buildings will be required to have an active sub-slab depressurization system, or other acceptable measures, to mitigate the migration of vapors into the building from soil and/or groundwater.

5. Institutional Controls

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

- require 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);
- allow the use and development of the controlled property for restricted residential use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or NYCDOH; and
- require compliance with the Department approved Site Management Plan.

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/or engineering controls remain in place and effective:

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

Engineering Controls: The site cover discussed in Paragraph 3 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 and groundwater use restrictions;
- 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 the cover system to assess the performance and effectiveness of the remedy;
- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;
- compliance inspection of the system(s) to ensure proper O&M as well as providing the data for any necessary reporting.

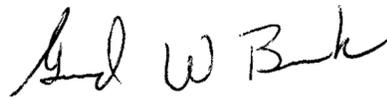
C. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

- procedures for operating and maintaining the remedy;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.

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 20, 2018



Date

Gerard Burke, Director
Remedial Bureau B

DECISION DOCUMENT

840 5th Avenue
Brooklyn, Kings County
Site No. C224271
September 2018

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:

Brooklyn Public Library - Sunset Library branch
5108 4th Ave.
Brooklyn, NY 11220
Phone: (718) 435-3648

Brooklyn Community Board 7
Attn: Daniel Murphy
4201 4th Avenue
Brooklyn, NY 11232
Phone: (718) 854-0003

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 site is located in Sunset Park, a mixed-use urban area of Brooklyn, New York, which includes residential, commercial, and industrial areas. The site consists of one lot (Lot 39) totaling approximately 19,605 square feet (sf).

Site Features: The site contains a two-story vacant building and the area north of the building is primarily asphalt-paved. North of the asphalt-paved area is a wooded area. The site is bounded to the north and northwest by Greenwood Cemetery maintenance facility; to the east and northeast by 5th Avenue followed by Greenwood Cemetery; to the south and southeast by 5th Avenue followed by the MTAs Jackie Gleason Bus Depot; to the south and southwest by 36th Street followed by a gasoline station, car wash and commercial offices; and to the west by a three-story residential building with a first floor church occupant. Surrounding property uses are commercial, residential, and institutional.

Current Zoning and Land Use: According to the New York City Department of City Planning (NYCDCP) Zoning Map 16B, the site is zoned for manufacturing use (M1-2) and is improved with a two-story building. The site is currently vacant.

Past Use of the Site: The eastern portion of the site was first known to be developed in 1903 with elevated train tracks and an elevated train car repair shop. By 1926, the train car repair shop was demolished and the lot was vacant with the exception of the elevated train tracks (on a platform). The current site building was constructed in approximately 1953, and used for manufacturing purposes including jewelry fabrication. By 1997, the second floor was utilized as a garment assembly facility and by 1998, the first floor was used as a nightclub. Since at least 2004 through 2017, the building has been used as a church. The paved area is fenced-in and was used for automobile sales and automobile parts scrapping operations until the New York City School Construction Authority (NYCSCA) purchased the property. The western portion of the site was developed with a four-story residential building from at least 1903 until 1951, when it was razed. Since approximately 1999 to 2017, a trailer has been present on the western portion of the lot and the unpaved area has been utilized for storage of automobiles. The site is listed in the Department's Petroleum Bulk Storage (PBS) tank database for one 1,500 gallon underground storage tank with a status of "closed prior to 03/1991". The PBS records indicate the tank is vaulted with no access for inspection.

Site Geology and Hydrogeology: Geological data obtained as part of the Remedial Investigation (RI) and from previous reports indicates the principal geological units, from top to bottom, are: 1) fill material consisting of reddish brown sand, silt, gravel, and miscellaneous debris (i.e., metal, glass, asphalt, slag, coal ash/ash, concrete, red brick, and wood) from the ground surface to depths ranging from 11.5 feet below ground surface (bgs) to 48 feet bgs and 2) reddish brown, dark brown, and light brown fine to medium sand, silt, and fine gravel beneath the fill to the terminal depths of the borings, which ranged up to 70 feet bgs. Bedrock is expected to be at greater than 200 feet bgs. Based on the two rounds of groundwater surface elevation measurements, the depth to groundwater ranges from 46 feet bgs to 53 feet bgs and the predominant direction of groundwater flow in the eastern portion of the site is towards the northeast.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

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

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

SECTION 5: ENFORCEMENT STATUS

The Applicant under the Brownfield Cleanup Agreement is a Volunteer. The Volunteer does 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
- 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. 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:

anthracene	copper
benzo(a)anthracene	lead
benzo(a)pyrene	mercury
benzo(b)fluoranthene	1,1,1-TCA
benzo[k]fluoranthene	chloroform
chrysene	cis-1,2-dichloroethene
dibenz[a,h]anthracene	methyl-tert-butyl ether (MTBE)
fluoranthene	toluene
indeno(1,2,3-CD)pyrene	formaldehyde
phenanthrene	vinyl chloride
pyrene	1,1-dichloroethene
arsenic	

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.

Soil and groundwater were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs) and pesticides.

Soil: The primary contaminants found in subsurface soils are polycyclic aromatic hydrocarbons (PAHs) and metals typically found in historic fill, which is generally present in the top 12 feet of the site. Eleven PAHs were detected in soils down to 12 feet below ground surface (bgs) during the RI, included but not limited to, anthracene at 150 parts per million (ppm) (restricted residential soil cleanup objective (RRSCO) is 100 ppm), benzo(a)anthracene at 200 ppm (RRSCO is 1 ppm), benzo(a)pyrene at 180 ppm (RRSCO is 1 ppm), benzo(b)fluoranthene at 210 ppm (RRSCO is 1 ppm), benzo (k) fluoranthene at 85 ppm (RRSCO is 3.9 ppm), chrysene at 190 ppm (RRSCO is

3.9 ppm), dibenzo(a,h)anthracene at 98 ppm (RRSCO is 0.33 ppm), fluoranthene at 490 ppm (RRSCO is 100 ppm), indeno(1,2,3-cd)pyrene at 98 ppm (RRSCO is 0.5 ppm), phenanthrene at 560 ppm (RRSCO is 100 ppm) and pyrene at 590 ppm (RRSCO is 100 ppm). Metals, including arsenic, copper, lead and mercury were found in site soils down to 12 feet bgs. Arsenic at 21 ppm (RRSCO is 16 ppm), copper at 1,300 ppm (RRSCO is 270 ppm), lead at 1,200 ppm (RRSCO is 400 ppm) and mercury at 1.5 ppm (RRSCO is 0.81 ppm). Two soil samples collected from the northeast portion of the site were characterized as hazardous waste for lead, exceeding the regulatory limit of 5 milligrams per liter (mg/L). It is currently unknown if the elevated lead in soil extends off-site. There were no VOCs, PCBs, pesticides or herbicides detected at concentrations exceeding the RRSCOs. Three surface soil samples collected from the northern portion of the site contained PAHs and metals slightly above their respective RRSCOs.

Groundwater: Six VOCs were detected in groundwater including 1,1,1-trichloroethane (TCA) at 7.9 parts per billion (ppb), (class GA standard of 5 ppb), chloroform at 25.9 ppb (class GA standard of 7 ppb), cis-1,2-DCE at 7.9 ppb (class GA standard of 5 ppb), MTBE at 2,200 ppb (class GA standard of 10 ppb), toluene at 9.1 ppb (class GA standard of 5 ppb) and formaldehyde at 2,700 ppb (class GA standard of 8 ppb). Three SVOCs were detected above standards as follows: benzo(a)anthracene at 3.7 ppb (class GA standard 0.002), bis(2-ethylhexyl)phthalate at 10 ppb (class GA standard 5 ppb) and chrysene at 3.4 ppb (class GA standard 0.002 ppb). No PCBs or metals of concern were detected in groundwater over standards.

Soil Vapor: Several VOCs, including petroleum-related and chlorinated, were detected in soil vapor. Chlorinated VOC detections included TCA at 6,200 micrograms per cubic meter (ug/m³), 1,1-dichloroethene at 28 ug/m³ and vinyl chloride at 400 ug/m³. Petroleum-related VOC detections included benzene at 4,000 ug/m³, ethylbenzene at 500 ug/m³, p/m-xylene at 330 ug/m³, o-xylene at 370 ug/m³ and toluene at 2,700 ug/m³. The VOCs detected in soil vapor are likely site-related from historical site activities or from the historic fill present beneath the site. Based on these results, more information is necessary to assess the potential for off-site soil vapor intrusion. Off-site soil vapor intrusion sampling will be performed during this coming heating season.

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*.

The site is completely fenced and portions are covered by an on-site building, which restricts public access. However, persons who enter the site could contact contaminants in the soil by walking on the site, digging or otherwise disturbing the soil. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not contaminated by the site. Additional investigation is needed to evaluate potential to come in contact with impacted soil and groundwater migrating off-site. Volatile organic compounds in soil vapor (air spaces within the soil) may move into nearby 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 onsite building is vacant, the inhalation of site-

related contaminants due to soil vapor intrusion does not represent a current concern in that structure. Additional investigation is needed to evaluate whether actions are needed to address soil vapor intrusion in off-site structures.

6.5: Summary of the Remediation Objectives

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

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water.

Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

Soil Vapor

RAOs for Public Health Protection

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

SECTION 7: 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 Track 4: Restricted use with site-specific soil cleanup objectives remedy.

The selected remedy is referred to as the Excavation and Site Cover 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
-
- 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. Excavation

Excavation and off-site disposal of soil that exhibits the hazardous waste characteristic of toxicity for lead in one hot spot area delineated to an approximately 16-foot by 35-foot area, extending to approximately 18 feet in depth, in the northeast part of the site. Additional excavation and off-site disposal of non-hazardous soil/fill which exceeds restricted residential SCOs, as defined by 6 NYCRR Part 375-6.8 in the upper 2 feet over the remainder of the site. (Refer to Figure 2). Excavation and removal of any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination. Approximately 600 tons of hazardous waste soil will be removed as part of the remediation. Removal of the remaining upper two feet of site soil, to accommodate a cover system (see below) will generate approximately 400 tons of material. Approximately 15,500 tons of non-hazardous soil will also be removed and disposed of off-site as part of Site development.

As necessary, clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to complete required backfilling of the excavation and establish the design grades at the site.

3. Cover System

A site cover will be required to allow for restricted residential use of the site in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a soil cover is to be used 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 for the use of the site as set forth in 6 NYCRR Part 375-6.7(d). Substitution of other materials and components may be allowed where such components already exist or are a component of the tangible property to be placed as part of site redevelopment. Such components may include, but are not necessarily limited to: pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs.

4. Vapor Mitigation

Any on-site buildings will be required to have an active sub-slab depressurization system, or other acceptable measures, to mitigate the migration of vapors into the building from soil and/or groundwater.

5. Institutional Controls

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

- require 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);
- allow the use and development of the controlled property for restricted residential use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or NYCDOH; and
- require compliance with the Department approved Site Management Plan.

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/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 4 above.

Engineering Controls: The soil cover discussed in Paragraph 3 above.

This plan includes, but may not be limited to:

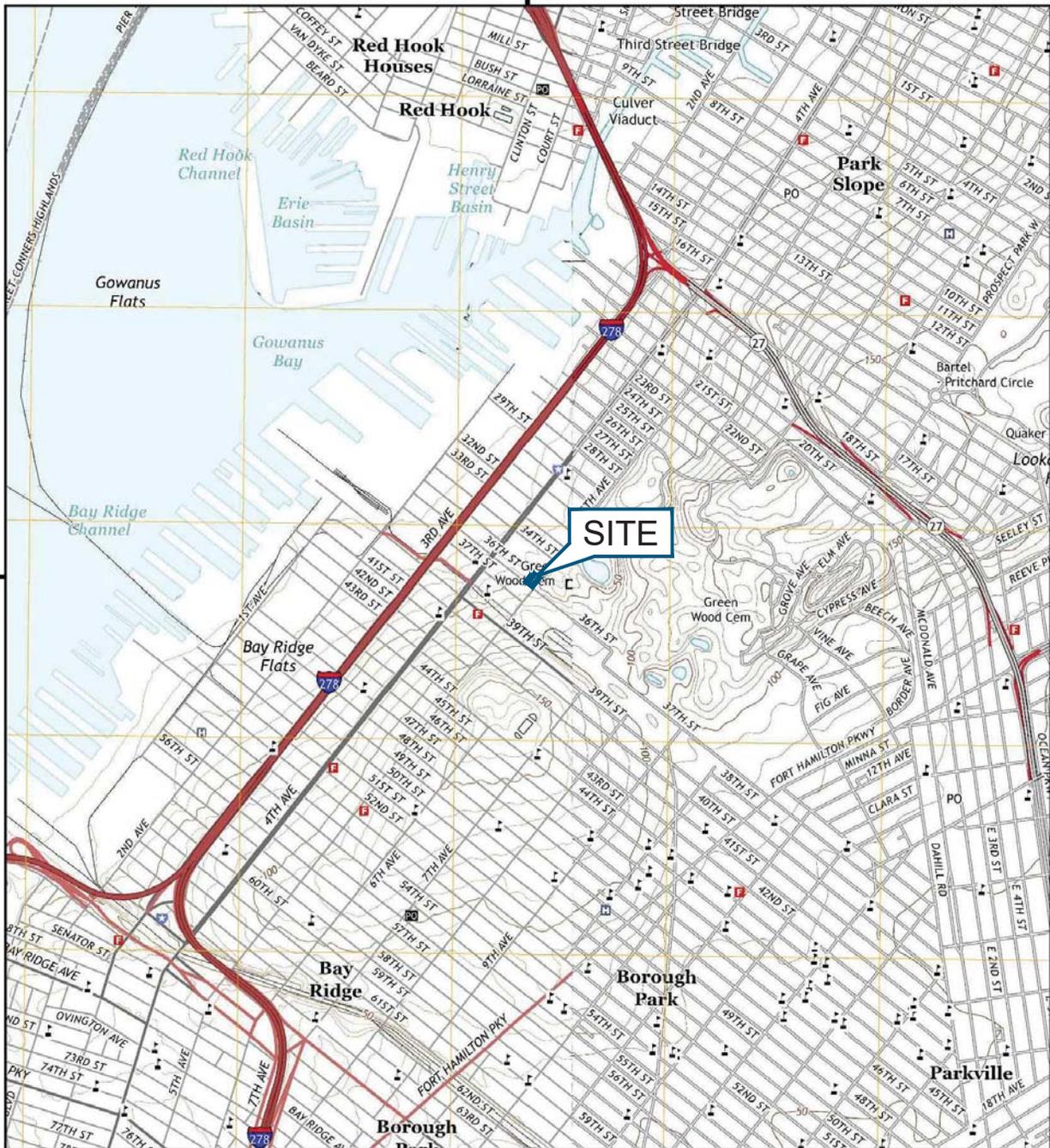
- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land and groundwater use restrictions;
- provisions for the management and inspection of the identified 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:

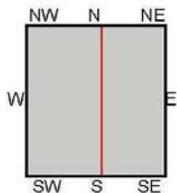
- monitoring of the cover system to assess the performance and effectiveness of the remedy;
- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;
- compliance inspection of the system(s) to ensure proper O&M as well as providing the data for any necessary reporting.

C. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

- procedures for operating and maintaining the remedy;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.



This report includes information from the following map sheet(s).



TP, Jersey City, 2014, 7.5-minute
NE, Brooklyn, 2013, 7.5-minute



SITE NAME: 840 5th Avenue
ADDRESS: 840 5th Avenue
Brooklyn, NY 11232



1430 Broadway
10th Floor
New York, NY 10018
Phone: 212.221.7822

PROJECT: **NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY
REMEDIAL ACTION WORK PLAN
840 5TH AVENUE
BLOCK: 693, LOT: 39
BROOKLYN, NEW YORK 11232**

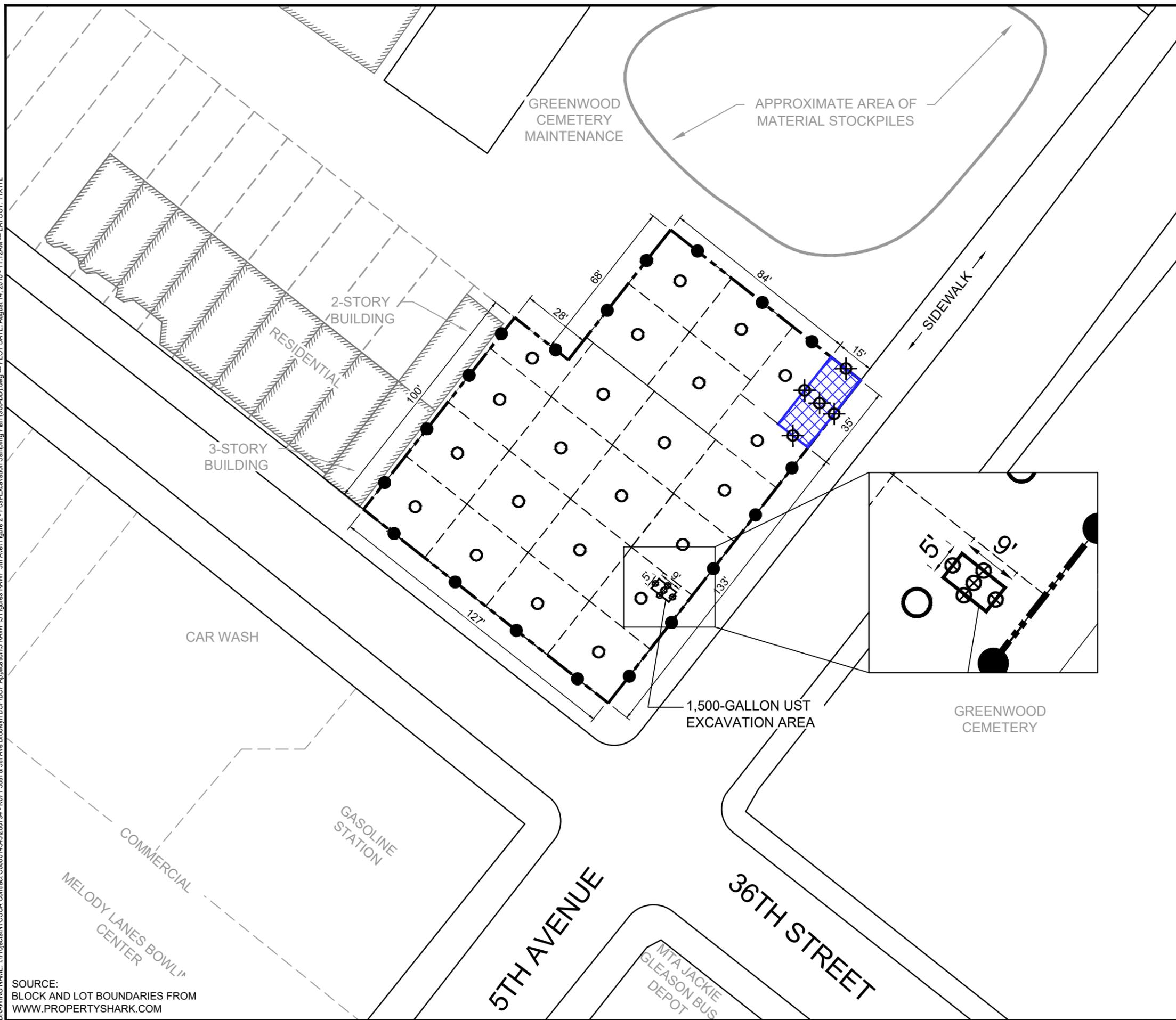
TITLE:

SITE LOCATION MAP

DRAWN BY:	H. DELGADO
CHECKED BY:	D. SCHMIDT
APPROVED BY:	D. GLASS
DATE:	MAY 2018
PROJ. NO.:	280794
FILE:	Figure 1 - Site Location Map.dwg

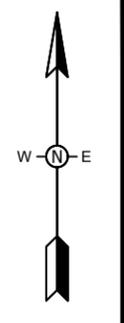
FIGURE 1

11X17 - ATTACHED REFS: Brooklyn: K090671-17825 - ATTACHED IMAGES: Drawing Name: I:\Projects\NYCSCA Contract C000014345\80794 - K671 36th & 5th Ave Brooklyn BCP\BCP Application\3 RAWP\3 Figures RAWP 5th Ave Figure 2 - Post-Excavation Sampling Plan (900-DD).dwg -- PLOT DATE: August 14, 2018 - 11:12AM -- LAYOUT: 11X17L



LEGEND (SYMBOLS NOT TO SCALE):

- SITE BOUNDARY
- BUILDING FOOTPRINT
- FENCE
- PROPOSED NON-HAZARDOUS SOIL REMOVAL POST-EXCAVATION SAMPLE LOCATION
- PROPOSED NON-HAZARDOUS SOIL REMOVAL POST-EXCAVATION SIDEWALL SAMPLE LOCATION
- PROPOSED HAZARDOUS LEAD SOIL REMOVAL POST-EXCAVATION SAMPLE LOCATION
- PROPOSED UST EXCAVATION AREA POST-EXCAVATION SAMPLE LOCATION
- HAZARDOUS LEAD EXCAVATION AREA (18' BELOW GROUND SURFACE)
- EXCAVATION AREA REPRESENTING APPROXIMATELY 900 SQUARE FEET OF NON-HAZARDOUS MATERIAL.



- NOTES:**
- LOCATIONS AND DIMENSIONS OF PHYSICAL FEATURES AND PROPERTY BOUNDARIES ARE APPROXIMATE.
 - THE PROPOSED HAZARDOUS SOIL EXCAVATION AREA IS APPROXIMATELY 525 SQUARE FEET. THE PROPOSED NON-HAZARDOUS SOIL EXCAVATION AREA IS APPROXIMATELY 19,000 SQUARE FEET.
 - HAZARDOUS SOIL EXCAVATION AND UST REMOVAL WILL BE COMPLETED INDEPENDENT FROM NON-HAZARDOUS SOIL EXCAVATION.
 - SHORING/SHEETING WILL BE INSTALLED ALONG THE MAJORITY OF THE PERIMETER OF THE SITE FOR EXCAVATION SUPPORT, WHICH MAY PREVENT COLLECTION OF SIDEWALL SOIL SAMPLES IN SOME AREAS. BEST EFFORTS WILL BE MADE TO COLLECT ONE SIDEWALL SAMPLE EVERY 30 LINEAR FEET.



PROJECT: NEW YORK CITY SCHOOL CONSTRUCTION AUTHORITY REMEDIAL ACTION WORK PLAN 840 5TH AVENUE BLOCK: 693, LOT: 39 BROOKLYN, NEW YORK 11232	
TITLE: PROPOSED POST-EXCAVATION SAMPLE LOCATION PLAN	
DRAWN BY: P. CASTELLANO	PROJ NO.: 280794
CHECKED BY: L. O'HARA	FIGURE 2
APPROVED BY: D. SCHMIDT	
DATE: AUGUST 2018	
1430 Broadway 10th Floor New York, NY 10018 Phone: 212.221.7822	
FILE NO.:	Figure 2 - Post-Excavation Sampling Plan (900-DD).dwg

SOURCE:
BLOCK AND LOT BOUNDARIES FROM
WWW.PROPERTYSHARK.COM