

# DECISION DOCUMENT

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335 Bond Street  
Brownfield Cleanup Program  
Brooklyn, Kings County  
Site No. C224225  
October 2023



**Department of  
Environmental  
Conservation**

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

# **DECLARATION STATEMENT - DECISION DOCUMENT**

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335 Bond Street  
Brownfield Cleanup Program  
Brooklyn, Kings County  
Site No. C224225  
October 2023

## **Statement of Purpose and Basis**

This document presents the remedy for the 335 Bond Street 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 335 Bond Street 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;
- 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 shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

As part of the remedial design program, to evaluate the remedy with respect to green and sustainable remediation principles, an environmental footprint analysis will be completed. The environmental footprint analysis will be completed using an accepted environmental footprint analysis calculator such as SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA), SiteWise™ (available in the Sustainable Remediation Forum [SURF] library) or similar Department accepted tool. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial design program, as appropriate. The project design specifications will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial design program.

Additionally, the remedial design program will include a climate change vulnerability assessment, to evaluate the impact of climate change on the project site and the proposed remedy. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress and drought), flooding, and sea level rise will be identified, and the remedial design program will incorporate measures to minimize the impact of climate change on potential identified vulnerabilities.

## **2. Excavation**

Excavation and off-site disposal of contaminant source areas ranging in depth from 8 to 21 feet below grade surface (bgs), including:

- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- non-aqueous phase liquids (NAPL);
- soil with visual waste material or NAPL;
- soils which exceed the protection of groundwater soil cleanup objectives (PGSCOs), as defined by 6 NYCRR Part 375-6.8 for those contaminants found in site groundwater above standards;
- soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G; and
- any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination.

In addition, all soils in the upper two feet which exceed the restricted residential SCOs will be excavated and transported off-site for disposal.

Approximately 1,400 cubic yards of contaminated soil will be removed from the site. Collection

and analysis of confirmation samples at the remedial excavation depth will be used to verify that SCOs for the site have been achieved. If confirmation sampling indicates that SCOs were not achieved at the stated remedial depth, the Applicant must notify the Department, submit the sample results and, and in consultation with the Department, determine if further remedial excavation is necessary. Further excavation for development will proceed after confirmation samples demonstrate that SCOs for the site have been achieved.

To ensure proper handling and disposal of excavated material, waste characterization sampling will be completed for all identified contaminated site material. Waste characterization sampling will be performed exclusively for the purposes of off-site disposal in a manner suitable to receiving facilities and in conformance with applicable federal, state and local laws, rules, and regulations and facility-specific permits.

### **3. Backfill**

Clean fill meeting the requirements for 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site.

### **4. Cover System**

A site cover currently exists in areas not occupied by buildings and will be maintained to allow for restricted residential use of the site. Any site redevelopment will maintain the existing site cover. The site cover may include paved surface parking areas, sidewalks or soil placed over a demarcation layer where the upper two feet of exposed surface soil meets the applicable soil cleanup objectives (SCOs) for restricted residential use. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6NYCRR part 375-6.7(d).

### **5. Groundwater Treatment**

#### In-Situ Chemical Oxidation or Reduction

Following site dewatering necessary for redevelopment excavation, monitoring wells will be installed in the northwest part of the site and will be sampled after the dewatering system is turned off to confirm whether contaminants remain in groundwater. If these results indicate implementation of in-situ groundwater treatment is warranted, in-situ chemical oxidation (ISCO) will be implemented to treat Chlorinated Volatile Organic Compounds (CVOCs) in the groundwater. A Hydrogen Release Compound ® will be injected into the subsurface, via an infiltration gallery, to destroy the contaminants in an approximately 4,000 square foot area located in the northwest portion of the site where CVOCs were elevated in the groundwater. The method and depth of injection will be determined during the remedial design.

#### In-Situ Treatment using Activated Carbon

If treatment is warranted, Plumestop® will also be added to the subsurface to capture and prevent the migration of CVOCs. Plumestop® will be added to the subsurface in an approximately 4,000 square foot area located in the northwest portion of the site where CVOCs were elevated in the

groundwater via an infiltration gallery.

Monitoring will be required for CVOCs downgradient and within the treatment zone. The treatment zone will also be monitored for dissolved oxygen and oxidation/reduction potential.

## **6. Vapor Mitigation**

Any on-site buildings will be required to have a sub-slab depressurization system, or other acceptable measures, to mitigate the migration of vapors into the building from the subsurface.

## **7. Engineering and Institutional Controls**

Imposition of an institutional control in the form of an environmental easement and a Site Management Plan, as described below, will be required. The remedy will achieve a Track 4 restricted residential cleanup at a minimum and will include imposition of a site cover and vapor mitigation system as engineering controls.

### **Institutional Control**

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.

## **8. 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 7 above.
  - Engineering Controls: The soil cover discussed in Paragraph 4 and the sub-slab depressurization system discussed in Paragraph 6 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;

- a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Paragraph 4 above will be placed in any areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives (SCOs)
  - 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. 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/indoor air to assess the performance and effectiveness of the remedy; and
  - a schedule of monitoring and frequency of submittals to the Department.
- 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;
  - 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.

**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.

October 10, 2023

Date



R. Scott Deyette  
Director, Remedial Bureau B

# DECISION DOCUMENT

335 Bond Street  
Brooklyn, Kings County  
Site No. C224225  
October 2023

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## **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, where a contaminant is present at levels exceeding the soil cleanup objectives or other health-based or environmental standards, criteria or guidance, based on the reasonably anticipated use of the property.

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:

DECInfo Locator - Web Application  
<https://gisservices.dec.ny.gov/gis/dil/index.html?rs=C224225>

Carroll Gardens Branch Library  
396 Clinton Street  
Brooklyn, NY 11231  
Phone: 718-596-6972

Brooklyn Community Board 6  
Attn: Craig Hammerman  
250 Baltic Street  
Brooklyn, NY 11201  
Phone: (718) 643-3027

### **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 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 in an urban area in the Gowanus neighborhood of Brooklyn. The site is bounded by a two-story residential building and an industrial lot to the north; BCP site C224221, President Street Properties, to the east; Carroll Street to the south; and Bond Street to the west.

**Site Features:** The site is approximately 0.36-acre site is currently vacant with no structures.

**Current Zoning/Use:** The site is currently zoned as M1-4 (manufacturing)/R7-2 (residential). Prior to the zoning change that went into effect in November 2021, the site was zoned M2-1. The M2-1 designation is a district characterized as between light and heavy industrial areas. The surrounding parcels are zoned either R6 or have also been re-zoned and presently are within the M1-4/R7-2 designation as well.

**Historic Use:** Past uses include a masonry materials, lath and lumber yard from 1886 to 1922, a garage with possible auto servicing and gasoline storage from 1925 to 1938, a commercial delivery service from 1969 to 1980, manufacturing from 1981 to 1996, and a commercial car/livery service from 2002 to March 2023.

**Site Geology and Hydrogeology:** Subsurface strata at the site consists of fill material characterized by loose, brown, fine to coarse sand with some brick and concrete fragments, and traces of coal ash. The fill layer extends to depths ranging from approximately 4 feet below ground surface (bgs) to 8.5 feet bgs and is intersected by layers of degraded concrete and brick at varying depths. The fill layer is underlain by native soil characterized by sands and silty sands. Bedrock was not encountered in the upper 15 feet at the site. Groundwater occurs at depths ranging from approximately 6 to 8.5 feet bgs.

A site location map is attached as Figure 1 and a site layout 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 (or an alternative) that restrict(s) the use of the site to as described in Part 375-1.8(g) were/was evaluated in addition to an alternative which would allow for restricted residential 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 Applicant does not have an obligation to address off-site contamination. However, the Department has determined that this site does pose a significant threat to public health and the environment. The Department will seek to identify any parties (other than the Volunteer(s)) 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:

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

### **6.1.1: Standards, Criteria, and Guidance (SCGs)**

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

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. 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:

tetrachloroethene (PCE)	benzo(a)pyrene
vinyl chloride	benzo(b)fluoranthene
trichloroethene (TCE)	benzo(k)fluoranthene
1,2-dichloroethene	chrysene
mercury	indeno(1,2,3-C,D)Pyrene
benzo(a)anthracene	

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

- groundwater
- soil
- soil vapor intrusion
- indoor air

## **6.2: Interim Remedial Measures**

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the 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), per- and polyfluoroalkyl substances (PFAS), and pesticides. Soil vapor was analyzed for VOCs. Based on the investigations conducted to date the primary contaminants of concern are coal tar grossly contaminated material (GCM), SVOCs and metals in soil; SVOCs and metals in groundwater; and VOCs in soil vapor.

Soil – VOCs, SVOCs and metals were found at concentrations exceeding the applicable restricted residential soil cleanup objectives (RRSCOs) and protection of groundwater soil cleanup objectives (PGSCOs) including mercury (max of 4.36 parts per million (ppm); RRSCO is 0.81 ppm), benzo(a)anthracene (max of 4.72 ppm; RRSCO is 1 ppm), benzo(a)pyrene (max of 4.90 ppm; RRSCO is 1 ppm), benzo(b)fluoranthene (max of 4.5 ppm; RRSCO is 1 ppm), benzo(k)fluoranthene (max of 3.97 ppm; RRSCO is 3.9 ppm), chrysene (max of 4.58 ppm; RRSCO is 3.9 ppm a), indeno(1,2,3-C,D)Pyrene (max of 2.90 ppm; RRSCO is 0.5 ppm), and tetrachloroethylene (PCE) (max of 43 ppm; RRSCO is 19 ppm and PGSCO is 1.3 ppm)

Perfluorooctanoic acid (PFOA) (proposed restricted residential guidance value is 33 ppb and PGSCO is 11 ppb) and perfluorooctanesulfonic acid (PFOS) (proposed restricted residential guidance value is 44 ppb and PGSCO is 4.7 ppb) were reported at concentrations below soil cleanup guidance values for restricted residential use and protection of groundwater. Data does not indicate any off-site impacts in soil related to this site.

Groundwater - Exceedances of the ambient groundwater quality standards and Guidance Values (AWQSGVs) for VOCs, SVOCs and metals including benzo(a)anthracene (max of 0.514 parts per billion (ppb); AWQS of 0.002 ppb), benzo(a)pyrene (max of .434 ppb; AWQS of 0.002 ppb), benzo(b)fluoranthene (max of 0.423 ppb; AWQS of 0.002 ppb), benzo(k)fluoranthene (max of 0.389 ppb; AWQS of 0.002 ppb), chrysene (max of .640 ppb; AWQS of 0.002 ppb), indeno(1,2,3-C,D)pyrene (max of 0.171 ppb; AWQS of 0.002 ppb), tetrachloroethylene (PCE) (max of 140 ppb; AWQS of 5 ppb), trichloroethylene (TCE) (max of 142 ppb; AWQS of 5 ppb), and vinyl chloride (max of 1,270 ppb; AWQS of 2 ppb). PFOS was detected at a maximum concentration of 34 parts

per trillion (ppt) (AWQSGV of 6.7 ppt) and PFOA was detected at a maximum concentration of 99 ppt (AWQSGV of 2.7 ppt). Groundwater impacts have the potential to migrate off-site.

Soil Vapor, Sub-Slab Soil Vapor, and Indoor Air – Prior to demolition of the on-site building(s), two subslab vapor/indoor air samples and three soil vapor samples were collected which identified elevated concentrations of chlorinated VOCs. The maximum concentration of TCE was 4.2 micrograms per cubic meter (ug/m<sup>3</sup>), and PCE was 280 ug/m<sup>3</sup> in sub-slab vapor, 3.5 ug/m<sup>3</sup> in indoor air. Data indicates there is potential for off-site impacts in soil vapor related to this 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 soil is unlikely because the majority of the site is covered with buildings and pavement. 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 the 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. The potential exists for people to inhale site contaminants in indoor air due to soil vapor intrusion for future development on-site. The potential exists for indoor air quality impacts offsite.

#### **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.

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

## **Soil**

### **RAOs for Public Health Protection**

- Prevent ingestion/direct contact with contaminated 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 Track 4: Restricted use with generic soil cleanup objectives remedy.

The selected remedy is referred to as the Excavation, Groundwater Treatment and Vapor Mitigation remedy.

The elements of the selected remedy, as shown in Figure 3, 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 shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

As part of the remedial design program, to evaluate the remedy with respect to green and sustainable remediation principles, an environmental footprint analysis will be completed. The environmental footprint analysis will be completed using an accepted environmental footprint analysis calculator such as SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA), SiteWise™ (available in the Sustainable Remediation Forum [SURF] library) or similar Department accepted tool. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial design program, as appropriate. The project design specifications will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial design program.

Additionally, the remedial design program will include a climate change vulnerability assessment, to evaluate the impact of climate change on the project site and the proposed remedy. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress and drought), flooding, and sea level rise will be identified, and the remedial design program will incorporate measures to minimize the impact of climate change on potential identified vulnerabilities.

## **2. Excavation**

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- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
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- soils which exceed the protection of groundwater soil cleanup objectives (PGSCOs), as defined by 6 NYCRR Part 375-6.8 for those contaminants found in site groundwater above standards;
- soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G; and
- any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination.

In addition, all soils in the upper two feet which exceed the restricted residential SCOs will be

excavated and transported off-site for disposal.

Approximately 1,400 cubic yards of contaminated soil will be removed from the site. Collection and analysis of confirmation samples at the remedial excavation depth will be used to verify that SCOs for the site have been achieved. If confirmation sampling indicates that SCOs were not achieved at the stated remedial depth, the Applicant must notify the Department, submit the sample results and, in consultation with the Department, determine if further remedial excavation is necessary. Further excavation for development will proceed after confirmation samples demonstrate that SCOs for the site have been achieved.

To ensure proper handling and disposal of excavated material, waste characterization sampling will be completed for all identified contaminated site material. Waste characterization sampling will be performed exclusively for the purposes of off-site disposal in a manner suitable to receiving facilities and in conformance with applicable federal, state and local laws, rules, and regulations and facility-specific permits.

### **3. Backfill**

Clean fill meeting the requirements for 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site.

### **4. Cover System**

A site cover currently exists in areas not occupied by buildings and will be maintained to allow for restricted residential use of the site. Any site redevelopment will maintain the existing site cover. The site cover may include paved surface parking areas, sidewalks or soil placed over a demarcation layer where the upper two feet of exposed surface soil meets the applicable soil cleanup objectives (SCOs) for restricted residential use. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6NYCRR part 375-6.7(d).

### **5. Groundwater Treatment**

#### In-Situ Chemical Oxidation or Reduction

Following site dewatering necessary for redevelopment excavation, monitoring wells will be installed in the northwest part of the site and will be sampled after the dewatering system is turned off to confirm whether contaminants remain in groundwater. If these results indicate implementation of in-situ groundwater treatment is warranted, in-situ chemical oxidation (ISCO) will be implemented to treat Chlorinated Volatile Organic Compounds (CVOCs) in the groundwater. A Hydrogen Release Compound ® will be injected into the subsurface, via an infiltration gallery, to destroy the contaminants in an approximately 4,000 square foot area located in the northwest portion of the site where CVOCs were elevated in the groundwater. The method and depth of injection will be determined during the remedial design.

#### In-Situ Treatment using Activated Carbon

If treatment is warranted, Plumestop® will also be added to the subsurface to capture and prevent the migration of CVOCs. Plumestop® will be added to the subsurface in an approximately 4,000 square foot area located in the northwest portion of the site where CVOCs were elevated in the groundwater via an infiltration gallery.

Monitoring will be required for CVOCs downgradient and within the treatment zone. The treatment zone will also be monitored for dissolved oxygen and oxidation/reduction potential.

## **6. Vapor Mitigation**

Any on-site buildings will be required to have a sub-slab depressurization system, or other acceptable measures, to mitigate the migration of vapors into the building from the subsurface.

## **7. Engineering and Institutional Controls**

Imposition of an institutional control in the form of an environmental easement and a Site Management Plan, as described below, will be required. The remedy will achieve a Track 4 restricted residential cleanup at a minimum and will include imposition of a site cover and vapor mitigation system as engineering controls.

### **Institutional Control**

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.

## **8. Site Management Plan**

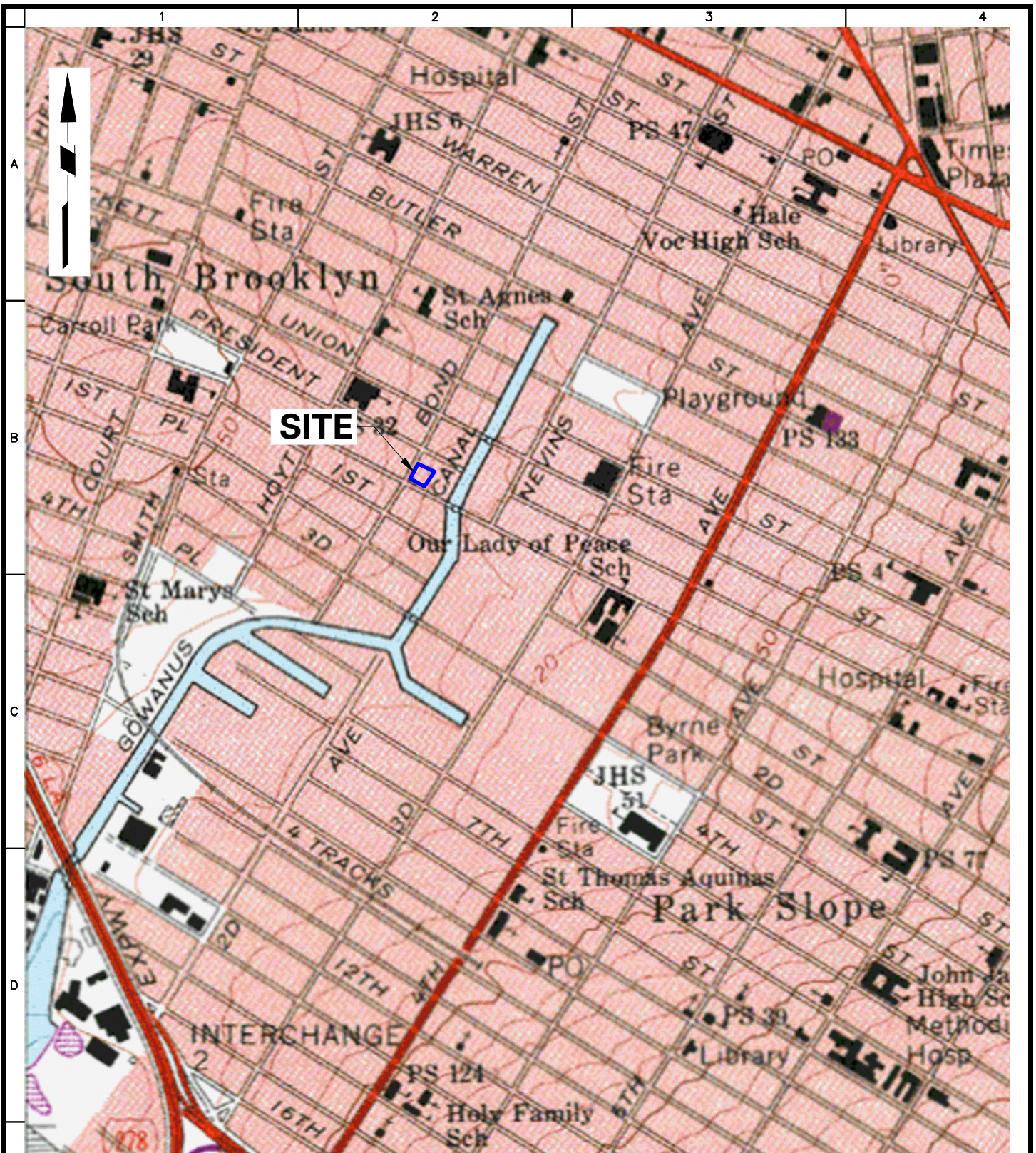
A Site Management Plan is required, which includes the following:

- d. 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 7 above.
  - Engineering Controls: The soil cover discussed in Paragraph 4 and the sub-slab depressurization system discussed in Paragraph 6 above.



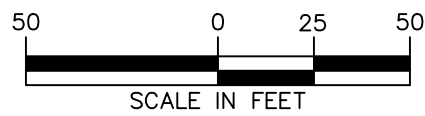
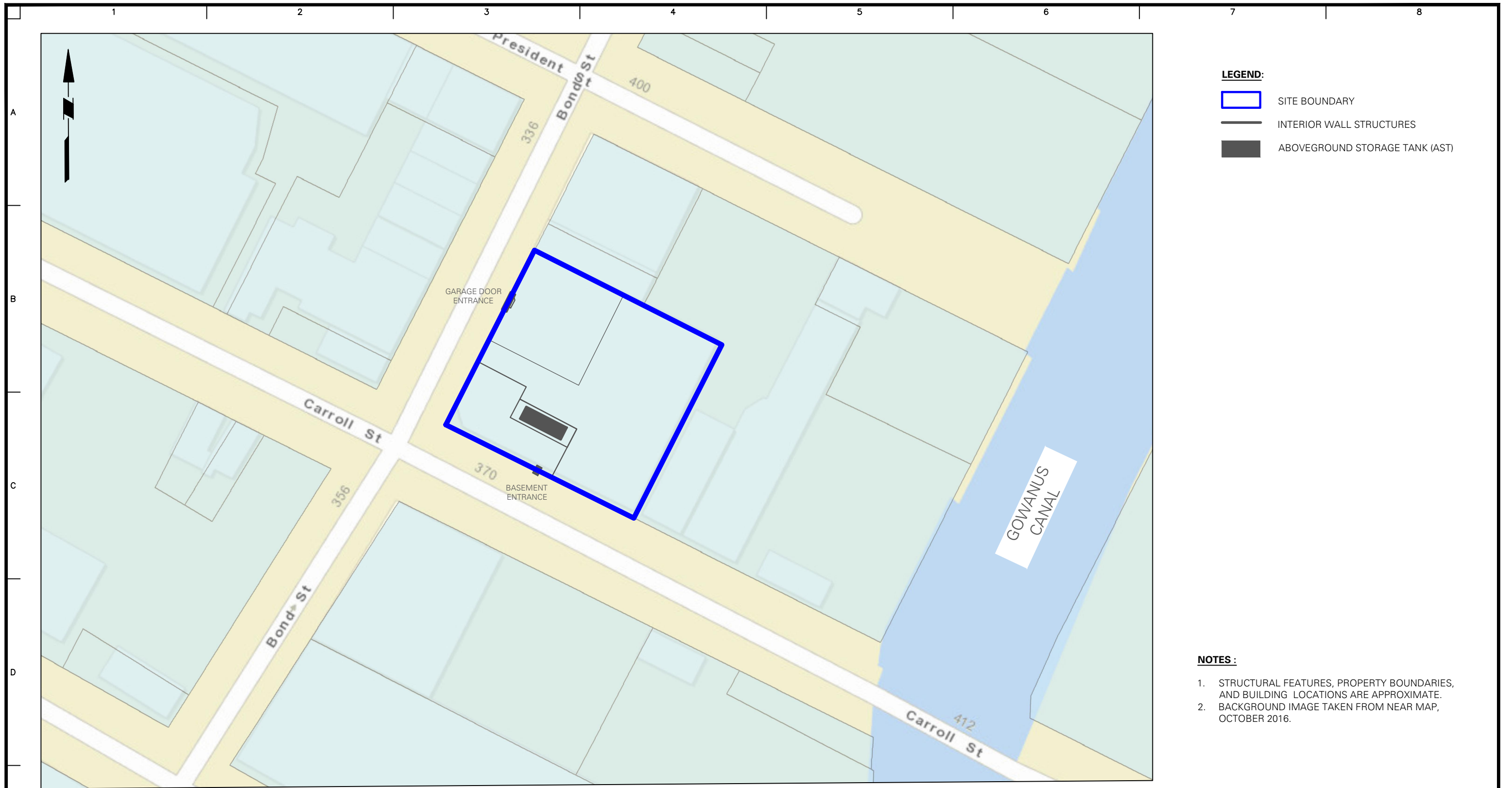
This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
  - a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Paragraph 4 above will be placed in any areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives (SCOs)
  - 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.
- e. 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/indoor air to assess the performance and effectiveness of the remedy; and
  - a schedule of monitoring and frequency of submittals to the Department.
- f. 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;
  - 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.



MAP REFERENCE: USGS 7.5-MINUTE BROOKLYN, N.Y., TOPOGRAPHIC QUADRANGLE, DATED 1967, REVISED 1979

<p>21 Penn Plaza, 360 West 31st Street, 8th Floor New York, NY 10001 T: 212.479.5400 F: 212.479.5444 www.langan.com</p> <p>Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. Langan Engineering and Environmental Services, Inc. Langan CT, Inc. Langan International LLC Collectively known as Langan</p>	Project	Figure Title	Project No.	Figure  <b>1</b>  Sheet 1 of 12
	<b>335 BOND STREET</b>	<b>SITE LOCATION MAP</b>	170362501	
	BLOCK No. 445, LOT No. 1 BROOKLYN		Date 09/13/2019	
	KINGS NEW YORK		Scale NTS	
			Drawn By KDC	
			Submission Date	



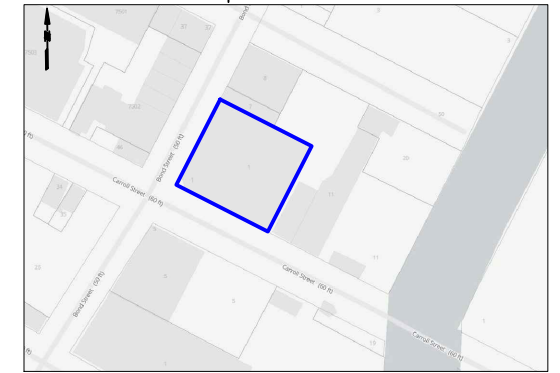
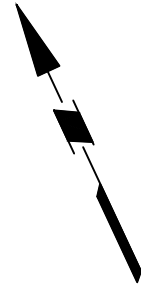
**LANGAN**

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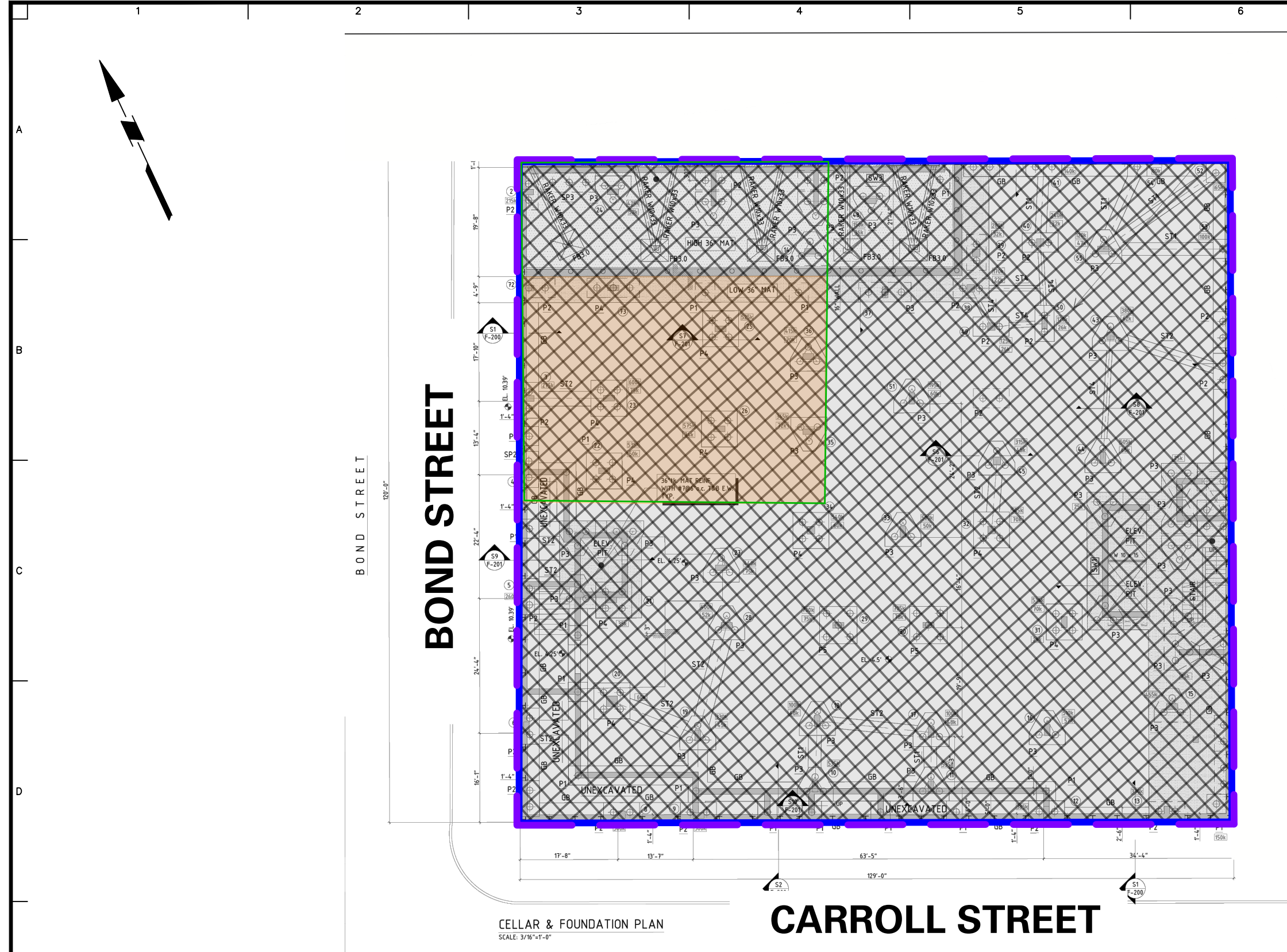
Project  
**335 BOND STREET**  
 BLOCK No. 445, LOT No. 1  
 BROOKLYN  
 KINGS NEW YORK

Figure Title  
**SITE PLAN**

Project No. 170362501	Figure No.
Date 09/13/2019	<b>2</b>
Scale 1" = 50'	
Drawn By KN	
Submission Date	Sheet 2 of 12









**SITE KEY**  
SCALE: 1" = 250'



**CELLAR & FOUNDATION PLAN**  
SCALE: 3/16"=1'-0"

# CARROLL STREET

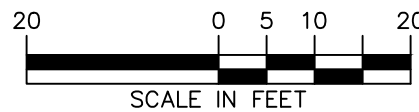
**LEGEND:**

-  SITE BOUNDARY
-  AREA OF EXCAVATION UP TO 2 FEET BELOW GRADE SURFACE
-  SUSPECT CVOC SOURCE EXCAVATION TO ABOUT 5 FEET BELOW GRADE SURFACE
-  APPROXIMATE PROPOSED EXTENT OF 8 TO 12 INCH FOUNDATION SLAB COVER
-  AREA OF VAPOR MITIGATION SYSTEM
-  APPROXIMATE CONTINGENT IN-SITU GROUNDWATER TREATMENT LOCATION

**NOTES:**

1. SITE KEY BASE MAP IS TAKEN FROM THE NEW YORK CITY DEPARTMENT OF PLANNING ZONING AND LAND USE MAP.
2. BASE MAP IS TAKEN FROM "CELLAR FLOOR PLAN & FOUNDATION" PREPARED BY STUDIO V ARCHITECTURE, DATED NOVEMBER 3, 2022.
3. LOCALIZED EXCAVATIONS WILL BE COMPLETED WITHIN THE SITE BOUNDARY TO ACCOMMODATE PILE CAP EXCAVATIONS.
4. CVOC = CHLORINATED VOLATILE ORGANIC COMPOUND

**WARNING:** IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, LAND SURVEYOR OR GEOLOGIST, TO ALTER THIS ITEM IN ANY WAY.



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Project  
**335 BOND STREET**  
BLOCK No. 445, LOT No. 1  
BROOKLYN NEW YORK  
KINGS

Figure Title  
**SELECTED  
REMEDIAL  
ELEMENTS**

Project No.  
170362501  
Date  
09/01/2023  
Drawn By  
MA  
Checked By  
JA

Figure No.  
**3**