

# DECISION DOCUMENT

---

145-165 Wolcott Street  
Brownfield Cleanup Program  
Brooklyn, Kings County  
Site No. C224256  
July 2025



**Department of  
Environmental  
Conservation**

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

# DECLARATION STATEMENT - DECISION DOCUMENT

---

145-165 Wolcott Street  
Brownfield Cleanup Program  
Brooklyn, Kings County  
Site No. C224256  
July 2025

## **Statement of Purpose and Basis**

This document presents the remedy for the 145-165 Wolcott Street 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 (NYSDEC) for the 145-165 Wolcott Street site and the public's input to the proposed remedy presented by NYSDEC.

## **Description of Selected Remedy**

The elements of the selected remedy are as follows:

### **1. Remedial Design**

A remedial design program as may be required, 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<sup>(TM)</sup> (available in the Sustainable Remediation Forum [SURF] library) or similar NYSDEC 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, including:

- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- soil exceeding the 6 NYCRR Part 371 hazardous criteria for lead;
- concentrated solid or semi-solid hazardous substances present at the site as per 6 NYCRR Part 375-1.2(au)(1) or describe any site-specific waste material;
- non-aqueous phase liquids;
- oil with visual waste material or non-aqueous phase liquid;
- soil containing total SVOCs exceeding 500 ppm;
- soils which exceed the protection of groundwater soil cleanup objectives (PGWSCOs), as defined by 6 NYCRR Part 375-6.8 for those contaminants found in site groundwater above standards; and
- soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G.

All soils in the upper foot which exceed the industrial SCOs as defined by 6 NYCRR Part 375-6.8 will be excavated and transported off-site for disposal. In addition, on-site soils will be excavated to depths between 4 and 16 feet below ground surface (bgs) in the northern,

northwestern, eastern, and central parts of the site to remove soil with petroleum and tar-like impacts.

Approximately 15,450 cubic yards of contaminated soil will be removed from the site and, as necessary, treated prior to disposal using soil stabilization treatment technology. 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 NYSDEC, submit the sample results and, in consultation with NYSDEC, 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 and meeting the requirements of the receiving facilities and in conformance with applicable federal, state and local laws, rules, and regulations and facility-specific permits.

Backfill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to complete the backfilling of the excavation and establish the designed grades at the site.

### **3. Cover System**

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

### **4. Petroleum Recovery**

Operation of petroleum recovery system via Vacuum Enhanced Fluid Recovery (VEFR) wells on the north central side of the site in monitoring wells MW2, MW8, MW12 and MW13 will continue to remove potentially mobile light non-aqueous phase liquids from the subsurface. Additional number, depth, type and spacing of the recovery wells will be determined as necessary. Petroleum will be collected periodically from each well; however, if wells are determined by the NYSDEC to accumulate large quantities of petroleum over extended time periods, they can be converted to automated collection.

### **5. 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.

## **6. Soil Vapor Extraction**

Soil vapor extraction (SVE) will be implemented to remove volatile organic compound (VOC) vapors from the subsurface and prevent off-site migration of contaminated vapor. VOCs will be physically removed from the subsurface by applying a vacuum to wells that have been installed into the vadose zone (the area below the ground but above the water table). The vacuum draws air through the soil matrix which carries the VOC vapors from the soil to the SVE well. The air extracted from the SVE wells is then treated as necessary prior to being discharged to the atmosphere.

## **7. Groundwater Dewatering and Treatment**

Groundwater extraction and treatment will be implemented to facilitate the remedial excavation outlined in Remedy Element 2. The extraction system will create a depression of the water table so that contaminated groundwater is directed toward the extraction wells within the excavation area. The extracted groundwater will be treated prior to discharge to the municipal sewer system in accordance with all applicable permits.

## **8. In-Situ Chemical Oxidation**

In-situ chemical oxidation (ISCO) will be implemented to treat contaminants in groundwater and saturated soils. A chemical oxidant will be injected into the subsurface to destroy the contaminants in the northern, northwestern, central, and eastern portions of the site *via* infiltration galleries and/or direct application in the open excavated areas. The method and depth of injection will be determined during the remedial design.

Prior to the full implementation of this technology, laboratory and on-site pilot scale studies will be conducted to more clearly define design parameters.

Monitoring will be required up-gradient, down-gradient and within the treatment zone of the ISCO for contaminants of concern. The treatment zone will be monitored for dissolved oxygen and oxidation/reduction potential.

## **9. Treatment Remedy Shutdown**

The operation of the components of the remedy will continue until the remedial objectives have been achieved, or until the NYSDEC determines that continued operation is technically impracticable or not feasible.

## **10. 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 NYSDEC 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 industrial 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 NYCDOHMH; and
- require compliance with the NYSDEC approved Site Management Plan.

## 11. 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 Remedy Element 10 above.
  - Engineering Controls: The Cover System, Petroleum Recovery System, Vapor Mitigation System, Soil Vapor Extraction System, and ISCO monitoring wells discussed in Remedy Elements 3, 4, 5, 6, and 8 above.

This plan includes, but may not be limited to:

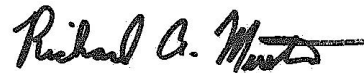
- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
  - a provision should redevelopment occur to ensure no soil exceeding protection of groundwater concentrations will remain below storm water retention basin or infiltration structures;
  - descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions.
  - a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Remedy Element 3 above will be placed in any areas where the upper one foot 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 NYSDEC 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, soil vapor and LNAPL to assess the performance and effectiveness of the remedy;
    - a schedule of monitoring and frequency of submittals to the NYSDEC; and
    - monitoring for vapor intrusion for any buildings 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 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 NYSDEC notification; and
- providing the NYSDEC 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.

July 21, 2025



---

Date

---

Richard A. Mustico, Director  
Remedial Bureau A

# DECISION DOCUMENT

145-165 Wolcott Street  
Brooklyn, Kings County  
Site No. C224256  
July 2025

---

## **SECTION 1: SUMMARY AND PURPOSE**

The New York State Department of Environmental Conservation (NYSDEC), 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.

NYSDEC 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**

NYSDEC 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 NYSDEC 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=C224256>

Red Hook Library  
Attn: Sandra Sutton  
7 Wolcott Street  
Brooklyn, NY 11231  
Phone: (718) 935-0203

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

### **Receive Site Citizen Participation Information By Email**

Please note that NYSDEC's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The 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 located at 145-165 Wolcott Street within an urban, mixed-use area of Brooklyn, New York. The site is bound by Ferris Street followed by commercial properties to the northwest; Wolcott Street followed by mixed-use commercial and light industrial properties to the northeast; Conover Street followed by mixed-use institutional and commercial properties to the southeast; and mixed-use residential and commercial buildings followed by Dikeman Street and mixed-use residential and industrial buildings to the southwest. The area surrounding the site consists of residential, commercial, institutional, and industrial properties.

**Site Features:** At present, the 1.94 acre-square-foot site is comprised of 3 separate tax parcels identified on the Kings County Tax Map as Tax Block 574, Lots 1, 30, and 31. Lot 1 is a 80,150-square-foot (1.4-acre) parcel that also includes former lots 23 and 24. These 3 parcels were later combined into a revised Lot 1. Lot 1 currently consists of asphalt-paved parking and a concrete floor slab of the recently demolished one-story light industrial building. Lot 1 occupies the northwestern part of the site, and Lots 30 and 31 occupy the southeastern part of the site.

**Current Zoning and Land Use:** The site is currently vacant and is in a M2-1 manufacturing zoning district. According to the New York City Department of City Planning, M2-1 zoning districts are defined as medium manufacturing districts with commercial and industrial uses within industrial areas. Additionally, the site falls within the Southwest Brooklyn Industrial Business Zone (IBZ). IBZs were established in 2006 through the Federal Opportunity Zone program to preserve existing manufacturing districts, cultivate economic development, and encourage industrial growth across the city. Land use within a half-mile radius is urban and includes industrial, commercial, institutional, utility/transportation, and residential buildings along with public parks. The nearest ecological receptor is the Buttermilk Channel, which is located about 600 feet to the west. The proposed use is consistent with applicable zoning laws and maps.

**Past Use of the Site:** The site has an extensive history of industrial and commercial usage, including oil resin manufacturing (1886), engine manufacturing and boiler repair (1904), transformer use (1915), commercial vehicle and school bus repair and petroleum bulk storage (1938-2016), lumber storage (1950-1992), and commercial waste recycling (1993-2012). Historical records indicate that the site contained 14 historical petroleum aboveground storage tanks and underground storage tanks. The site was also used as a vehicle disassembly facility in the early 1940s, during which military vehicles were coated with the petroleum-based wax sealant Cosmoline prior to overseas shipment. Residences were located on Lots 23 and 24 between 1886 and 1969. The site was also used for school bus parking and maintenance, which occurred between 2002 and 2016 and has most recently been used for new passenger vehicle storage and by a moving company for short-term vehicle storage. The industrial and vehicle repair building remained vacant from 2016 until demolition in 2022. Lots 30 and 31 contain residential units that are currently being demolished.

**Site Geology and Hydrogeology:** Grades generally slope down from west to east across the site. The highest elevations along Wolcott and Dikeman Streets are in the middle of each block, with the grade generally sloping down toward Conover Street and Ferris Street. The stratigraphy of the site consists of a non-native fill layer that extends between 6 and 15 feet below ground surface (bgs). The fill predominantly consists of dark brown to black, fine- to medium-grained sand with varying amounts of gravel, asphalt, brick, coal/bituminous ash, concrete, tar, resin, and wood. Native soil underlies the non-native fill to depths of at least 70 feet bgs, and predominantly consists of brown, gray, and black, fine-to-medium sand with varying amounts of clay, gravel, organics, and silt. Bedrock was not encountered during previous investigations and is estimated to be at least 110 feet bgs.

Groundwater was observed at depths between 6.75 and 11.99 feet bgs, in various monitoring wells over the course of the remedial investigation. Groundwater is inferred to generally flow toward the northeast towards Buttermilk Channel, which is located about 600 feet to the west; however, groundwater flow direction and gradient may be influenced by tidal fluctuations and therefore varies.

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**

NYSDEC 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 that restricts the use of the site to industrial use as described in Part 375-1.8(g) 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 current applicant under the Brownfield Cleanup Agreement is a Volunteer. The Applicant does not have an obligation to address off-site contamination. However, NYSDEC has determined that this site poses a significant threat to public health and the environment and there are off-site impacts that require remedial activities; accordingly, enforcement actions are necessary.

NYSDEC has sought 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). NYSDEC has attempted to 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, NYSDEC 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 as detailed on figure 3. 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
- indoor air
- sub-slab vapor

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

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

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. NYSDEC 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 contaminants of concern identified at this site are:

trichloroethene (TCE)	indeno(1,2,3-cd) pyrene
tetrachloroethene (PCE)	chrysene
benzene	petroleum products
toluene	naphthalene
xylene (mixed)	lead
benzo(a)anthracene	arsenic
benzo(a)pyrene	mercury
benzo(b)fluoranthene	

The contaminants of concern exceed the applicable SCGs for:

- groundwater
- soil
- soil vapor intrusion

### **6.2: Interim Remedial Measures**

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Decision Document.

The following IRMs have been completed at this site based on conditions observed during the RI.

### Light Non-Aqueous Phase Liquid (LNAPL) Recovery IRM

Vacuum enhanced fluid recovery (VEFR), also known as dual-phase extraction or multi-phase extraction, is a remediation technology that uses a vacuum system to remove various combinations of contaminated groundwater, separate-phase petroleum products such as gasoline, diesel, fuel oil and hydrocarbon vapors from the subsurface. VEFR technology has been implemented for removing LNAPL beneath the former garage building. Four rounds of VEFR have occurred at the site. Continued monitoring and the use of absorbent socks indicates the VEFR technology has been successful at removing most of the LNAPL. However, additional rounds of VEFR extraction may be required as necessary based on the continued monitoring. Documentation of the IRM will be included in the FER.

### Above Ground Storage Tank (AST) Removal IRM

Four inactive 275-gallon fuel oil ASTs and one inactive 275-gallon kerosene AST were located inside the former one-story light industrial/vehicle repair building. One concrete-encased 4,000-gallon diesel AST was located on the northern portion of the site. All the above ground storage tanks (ASTs) were removed from the site. The IRM activities are documented in the approved June 26, 2023, Construction Completion Report.

### **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. Groundwater was also analyzed for per- and polyfluoroalkyl substances (PFAS). Soil vapor, indoor air and sub-slab vapor were analyzed for VOCs. Based upon investigations conducted to date, the primary contaminants of concern for the site include polycyclic aromatic hydrocarbons (PAHs), which are a subset of SVOCs, metals (*i.e.*, arsenic, lead and mercury) and VOCs such as trichloroethene (TCE), tetrachloroethene (PCE), benzene and aromatic forms of benzene such as trimethylbenzene.

A closed 6,000-gallon underground storage tank (UST), one 500-gallon and four 550-gallon USTs were previously closed in place.

**Soils:** Concentrations of contaminants are present in excess of industrial use soil cleanup objectives (IUSCO) and/or the protection of groundwater soil cleanup objectives (PGSCO). Maximum concentrations for petroleum related VOCs include benzene at 520 parts per million, or ppm (PGSCO of 0.06 ppm), ethylbenzene at 37 ppm (PGSCO of 1 ppm), 1,2,4-trimethylbenzene at 160 ppm (PGSCO of 3.6 ppm), and naphthalene at 450 ppm (PGSCO of 12

ppm). For SVOCs, this includes the maximum value for benzo(a)pyrene of 684 ppm (IUSCO of 1.1 ppm; PGWSCO of 22 ppb). The maximum values for metals include arsenic at 31.4 ppm (IUSCO of 16 ppm) and mercury at 15.8 ppm (IUSCO of 5.7 ppm). Lead was detected at 1,700 ppm which does not exceed the IUSCO of 3,900 ppm; however, some waste characterization sampling results failed Toxicity Characteristic Leaching Procedure (TCLP) testing for lead at concentrations as high as 569 milligrams per liter (mg/L) above the hazardous waste level of 5 mg/L. Pesticides and PCBs were not detected above industrial SCOs. PFOA and PFOS were not sampled during the RI but will be analyzed as part of the remedy.

Data does not indicate off-site impacts in soil related to the site.

**Groundwater:** Shallow groundwater has been impacted by petroleum light non-aqueous phase liquids (LNAPL) in the area of an interior floor drain. Groundwater concentrations of VOCs exceeding the Ambient Water Quality Standards and Guidance Values (AWQSGV) include maximum concentrations of 1,2,4-trimethylbenzene at 140 parts per billion (ppb) compared to the AWQSGV of 5 ppb; benzene at 520 ppb (AWQSGV of 1 ppb); ethylbenzene at 230 ppb (AWQSGV of 5 ppb); acetone at 120 ppb (AWQSGV of 50 ppb); and naphthalene at 150 ppb (AWQSGV of 10 ppb).

SVOCs in groundwater above AWQSGVs include benzo(a)anthracene up to 330 ppb, benzo(b)fluoranthene up to 350 ppb, benzo(k)fluoranthene up to 37 ppb, chrysene up to 380 ppb, indeno (1,2,3-cd) pyrene up to 220 ppb (AWQSGV of 0.002 ppb for each compound) and benzo(a)pyrene up to 560 ppb (AWQSGV of ND).

Dissolved metals were not detected or detected below applicable groundwater standards except for iron, magnesium, manganese and sodium which are ubiquitous to the area and are not site related.

PCBs and pesticides were generally not detected or detected below applicable groundwater standards and are not contaminants of concern in groundwater at the site.

Perfluorooctanoic acid (PFOA) concentrations were fairly consistent from upgradient to downgradient of the site, at a maximum concentration of 112 parts per trillion (ppt) compared to the AWQSGV of 6.7 ppt. Perfluorooctane sulfonic acid (PFOS) was also consistent from upgradient to downgradient of the site, at a maximum concentration of 68 ppt (AWQSGV of 2.7 ppt).

Data does not indicate off-site impacts in groundwater related to the site.

**Soil Vapor, Sub-Slab Soil Vapor, and Indoor Air:** Sub-slab soil vapor concentrations for PCE were detected at up to 2,250 micrograms per cubic meter ( $\text{ug}/\text{m}^3$ ) and in indoor air up to 60.8  $\text{ug}/\text{m}^3$ . Trichloroethene (TCE) was detected at up to 0.414  $\text{ug}/\text{m}^3$  in sub-slab soil vapor and in indoor air up to 0.258  $\text{ug}/\text{m}^3$ . Benzene was detected in soil vapor at 27.6  $\text{ug}/\text{m}^3$ , benzyl chloride at 18,400  $\text{ug}/\text{m}^3$ , 1,3,5-trimethylbenzene at 6.78  $\text{ug}/\text{m}^3$ , toluene at 96.1  $\text{ug}/\text{m}^3$ , and acetone 599  $\text{ug}/\text{m}^3$ .

Data does indicate off-site impacts in soil vapor related to 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 the soil is unlikely because the majority of the site is covered with buildings and pavement. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. Volatile organic compounds in soil vapor (air spaces within the soil) may move into buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Because the site is vacant, soil vapor intrusion is not a current exposure concern. Environmental sampling indicates that the potential exists for people to inhale site contaminants in indoor air due to soil vapor intrusion both in off-site buildings and for any buildings occupied in the future on-site.

#### **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 Track 4: Restricted Industrial use with site-specific soil cleanup objectives remedy.

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

The elements of the selected remedy, as shown in Figure 4, are as follows:

### **1. Remedial Design**

A remedial design program as may be required, 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<sup>(TM)</sup> (available in the Sustainable Remediation Forum [SURF] library) or similar NYSDEC 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, including:

- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- soil exceeding the 6 NYCRR Part 371 hazardous criteria for lead;
- concentrated solid or semi-solid hazardous substances present at the site as per 6 NYCRR Part 375-1.2(au)(1) or describe any site-specific waste material;
- non-aqueous phase liquids;
- oil with visual waste material or non-aqueous phase liquid;
- soil containing total SVOCs exceeding 500 ppm;
- soils which exceed the protection of groundwater soil cleanup objectives (PGWSCOs), as defined by 6 NYCRR Part 375-6.8 for those contaminants found in site groundwater above standards ; and
- soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G.

All soils in the upper foot which exceed the industrial SCOs as defined by 6 NYCRR Part 375-6.8 will be excavated and transported off-site for disposal. In addition, on-site soils will be excavated to depths between 4 and 16 feet below ground surface (bgs) in the northern, northwestern, eastern, and central parts of the site to remove soil with petroleum and tar-like impacts.

Approximately 15,450 cubic yards of contaminated soil will be removed from the site and, as necessary, treated prior to disposal using soil stabilization treatment technology. 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 NYSDEC, submit the sample results and, in consultation with NYSDEC, 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 and meeting the requirements of the receiving facilities and in conformance with applicable federal, state and local laws, rules, and regulations and facility-specific permits.

Backfill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to complete the backfilling of the excavation and establish the designed grades at the site.

### **3. Cover System**

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

### **4. Petroleum Recovery**

Operation of petroleum recovery system via Vacuum Enhanced Fluid Recovery (VEFR) wells on the north central side of the site in monitoring wells MW2, MW8 MW12 and MW13 will continue to remove potentially mobile light non-aqueous phase liquids from the subsurface. Additional number, depth, type and spacing of the recovery wells will be determined as necessary. Petroleum will be collected periodically from each well; however, if wells are determined by the NYSDEC to accumulate large quantities of petroleum over extended time periods, they can be converted to automated collection.

### **5. 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.

### **6. Soil Vapor Extraction**

Soil vapor extraction (SVE) will be implemented to remove volatile organic compound (VOC) vapors from the subsurface and prevent off-site migration of contaminated vapor. VOCs will be

physically removed from the subsurface by applying a vacuum to wells that have been installed into the vadose zone (the area below the ground but above the water table). The vacuum draws air through the soil matrix which carries the VOC vapors from the soil to the SVE well. The air extracted from the SVE wells is then treated as necessary prior to being discharged to the atmosphere.

## **7. Groundwater Dewatering and Treatment**

Groundwater extraction and treatment will be implemented to facilitate the remedial excavation outlined in Remedy Element 2. The extraction system will create a depression of the water table so that contaminated groundwater is directed toward the extraction wells within the excavation area. The extracted groundwater will be treated prior to discharge to the municipal sewer system in accordance with all applicable permits.

## **8. In-Situ Chemical Oxidation**

In-situ chemical oxidation (ISCO) will be implemented to treat contaminants in groundwater and saturated soils. A chemical oxidant will be injected into the subsurface to destroy the contaminants in the northern, northwestern, central, and eastern portions of the site *via* infiltration galleries and/or direct application in the open excavated areas. The method and depth of injection will be determined during the remedial design.

Prior to the full implementation of this technology, laboratory and on-site pilot scale studies will be conducted to more clearly define design parameters.

Monitoring will be required up-gradient, down-gradient and within the treatment zone of the ISCO for contaminants of concern. The treatment zone will be monitored for dissolved oxygen and oxidation/reduction potential.

## **9. Treatment Remedy Shutdown**

The operation of the components of the remedy will continue until the remedial objectives have been achieved, or until the NYSDEC determines that continued operation is technically impracticable or not feasible.

## **10. 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 NYSDEC 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 industrial 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 NYCDOHMH; and
- require compliance with the NYSDEC approved Site Management Plan.

## **11. Site Management Plan**

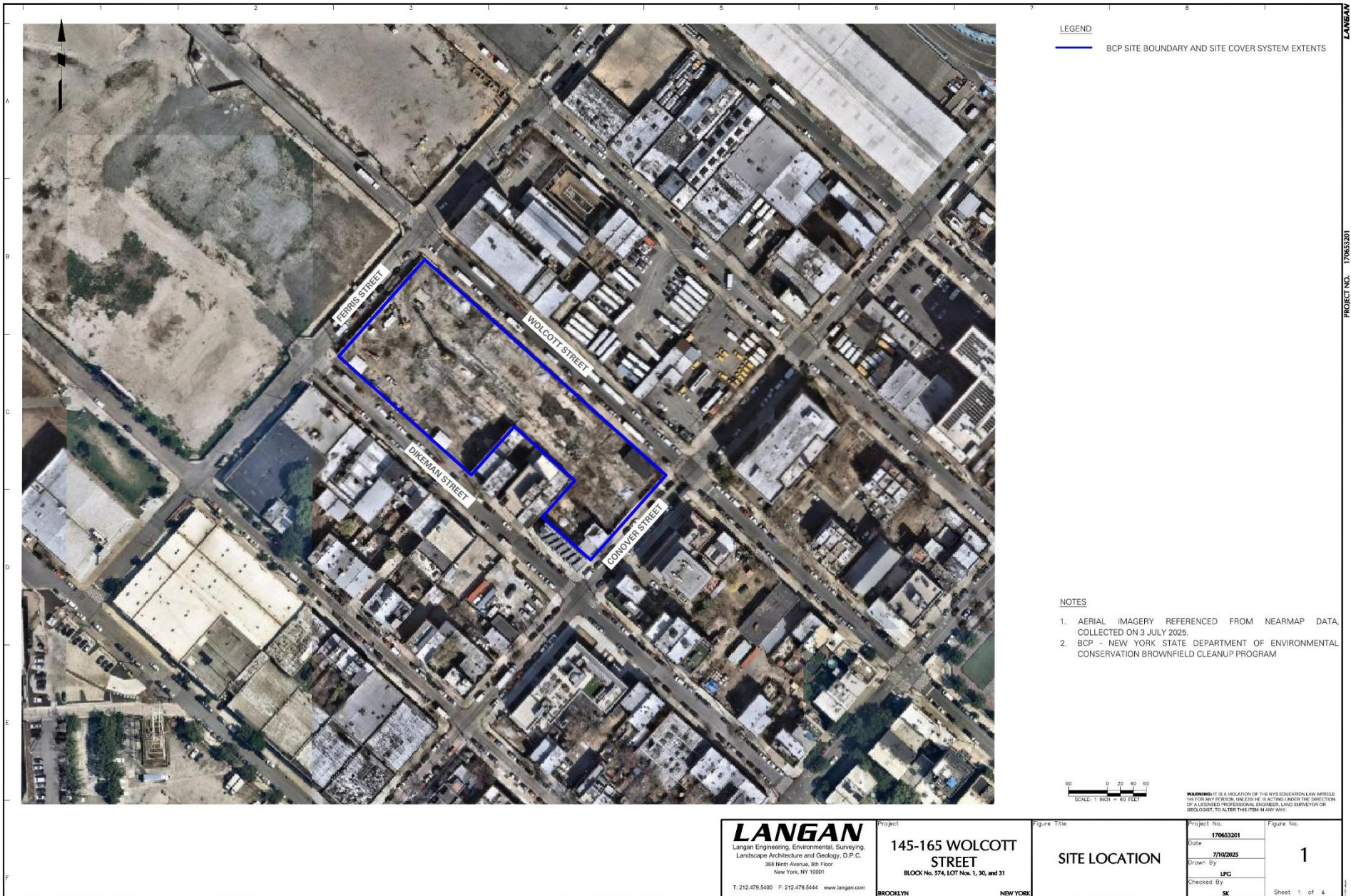
A Site Management Plan is required, which includes the following:

- 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 Remedy Element 10 above.
  - Engineering Controls: The Cover System, Petroleum Recovery System, Vapor Mitigation System, Soil Vapor Extraction System, and ISCO monitoring wells discussed in Remedy Elements 3, 4, 5, 6, and 8 above.

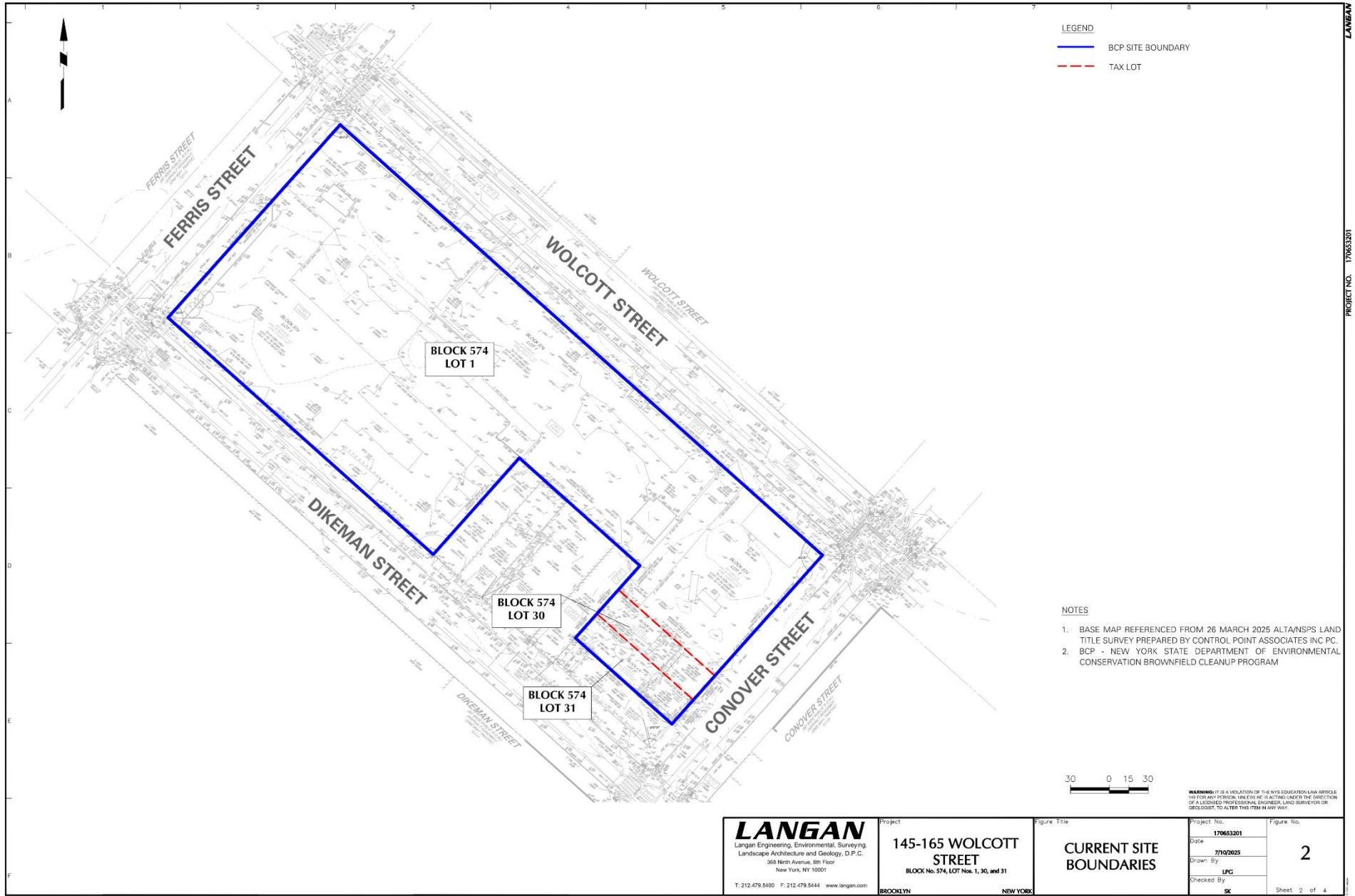
This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
  - a provision should redevelopment occur to ensure no soil exceeding protection of groundwater concentrations will remain below storm water retention basin or infiltration structures;
  - descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions.
  - a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Remedy Element 3 above will be placed in any areas where the upper one foot 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 NYSDEC 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, soil vapor and LNAPL to assess the performance and effectiveness of the remedy;
  - a schedule of monitoring and frequency of submittals to the NYSDEC; and
  - monitoring for vapor intrusion for any buildings 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 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 NYSDEC notification; and
  - providing the NYSDEC access to the site and O&M records.

# Figure 1: Site Location

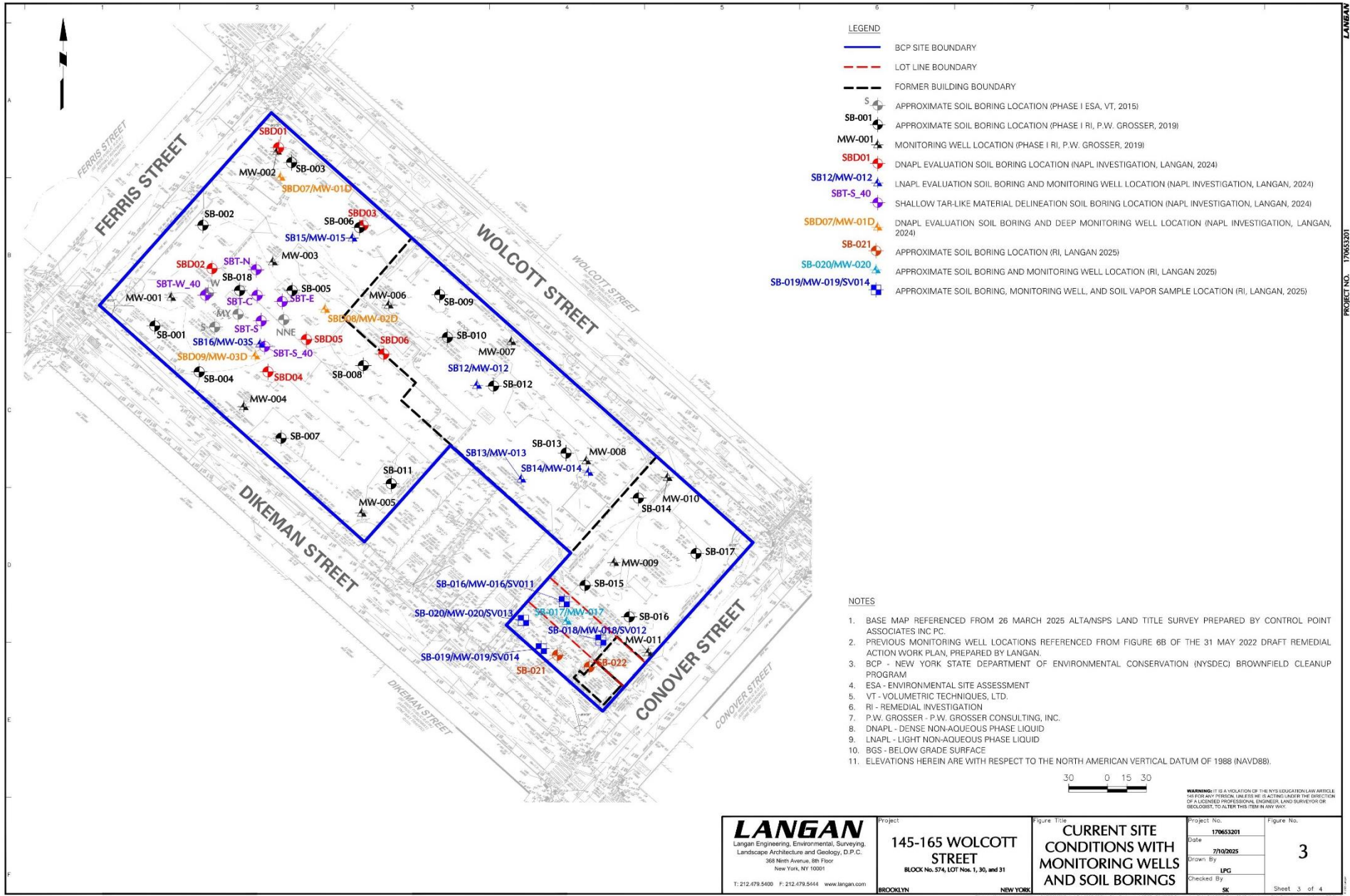


# Figure 2: Current Site Boundaries



PROJECT NO. 170653201 LANGAN

# Figure 3: Current Site Conditions with Monitoring Wells and Soil Borings



# Figure 4: Elements of the Remedy

