DECISION DOCUMENT

President Street Portfolio
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224309
February 2021

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

DECLARATION STATEMENT - DECISION DOCUMENT

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Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224309
February 2021

Statement of Purpose and Basis

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

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the President Street Portfolio 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 will include, at a minimum, a 20-mil vapor barrier/waterproofing membrane on the foundation to improve energy efficiency as an element of construction.

2. Excavation

Excavation and off-site disposal of contaminant source areas, including:

- Grossly contaminated soil, as defined in 6NYCRR Part 375-1.2(u)
- Soil with visual waste material or non-aqueous liquid

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. These source areas are generally found at depths of 7 to 10 feet in the northeastern corner of the site. In addition, all soils in the upper two feet which exceed the restricted residential soil cleanup objectives (SCOs) will be excavated and transported off-site for disposal. Approximately 2,500 cubic yards of contaminated soil will be removed from the site. Excavation and removal of any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site.

3. Cover System

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

4. Air Sparge with Soil Vapor Extraction (AS/SVE)

An AS/SVE pilot test will be conducted prior to full-scale remedial system design to assess the feasibility and effectiveness of the technology and to collect site-specific design parameters. If the pilot test is successful, the AS/SVE system will be installed to address the groundwater plume contaminated by petroleum-related volatile organic compounds (VOCs) and chlorinated organic compounds (CVOCs). VOCs and CVOCs will be physically removed from the groundwater and soil below the water table (saturated soil) by injecting air into the subsurface. The injected air rising through the groundwater will volatilize and transfer the VOCs and CVOCs from the groundwater and/or soil into the injected air. The VOCs and CVOCs are carried with the injected air into the vadose zone (the area below the ground surface but above the water table) where a soil vapor extraction (SVE) system designed to remove the injected air will be installed. The SVE

system will apply a vacuum to wells that have been installed into the vadose zone to remove the VOCs and CVOCs along with the air introduced by the sparging process. The air extracted from the SVE wells will be treated as necessary prior to being discharged to the atmosphere. The AS/SVE system will also mitigate the migration of vapors into the on-site building from soil and groundwater.

5. In-Situ Chemical Reduction (ISCR)
The pilot study will also evaluate other in-situ remedial alternatives, including in-situ chemical reduction. In-situ chemical reduction (ISCR) will be implemented to treat contaminants in groundwater, if the pilot test determines that AS/SVE is not fully effective. A chemical reducing agent will be injected into the subsurface to destroy the contaminants in an area located throughout the site where petroleum-related and chlorinated VOCs, including TCE and its degradation byproducts, were elevated in the groundwater. The method and depth of injection will be determined during the remedial design.

6. Vapor Mitigation
Any on-site buildings will be required to have a sub-slab depressurization system (SMD) or other acceptable measures, to mitigate the migration of vapors into the building from soil and groundwater.

7. 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 NYCDOHMH; 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 cover system discussed in Paragraph 3, the AS/SVE system discussed in Paragraph 4, In-Situ Chemical Reduction discussed in Paragraph 5, and the vapor mitigation 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;
- 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 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.

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

- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;

3. An Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, inspection, and reporting of any mechanical or physical components of the active vapor mitigation system. The plan includes, but is not limited to:

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

Declaration

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

February 17, 2021

Date

Gerard Burke, Director
Remedial Bureau B

DECISION DOCUMENT

President Street Portfolio
Brooklyn, Kings County
Site No. C224309
February 2021

SECTION 1: SUMMARY AND PURPOSE

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

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

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

SECTION 2: CITIZEN PARTICIPATION

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

DECInfo Locator - Web Application
https://gisservices.dec.ny.gov/gis/dil/index.html?rs=C224309

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

Brooklyn Public Library - Carroll Gardens Branch
396 Clinton Street

Brooklyn, NY 11231
Phone: (718) 596-6972

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 0.73-acre site is located in an urban area in the Gowanus neighborhood of Brooklyn and consists of two non-contiguous parcels on Brooklyn Borough Tax Block 440: the E Waste Parcel and the Pontone Parcel. The two parcels are separated by BCP site No. C224220, 473 President Street. The two primary addresses associated with the site are 469 President Street and 532-542 Union Street. The site is located on the block bounded by Union Street to the north, 3rd Street to the east, President Street to the south, and Nevins Street to the west. The Gowanus Canal, a National Priorities List (NPL) site, is located about 275 feet west of the E Waste Parcel.

Site Features: The E-Waste Parcel is a one-story brick and concrete building which had been occupied by an electronics recycling facility. The ground floor of the E-Waste Parcel was used as a warehouse and an office, and a partial second floor level was used for office space. The Pontone Parcel consists of an interconnected one- to three-story brick building which had been occupied by a casket manufacturer and had offices on the second and third floors.

Current Zoning and Land Use: According to the New York City (NYC) Planning Commission Zoning Map 16c, the site is located in an M1-2 manufacturing zoning district. M1 districts typically include light industrial uses, such as woodworking shops, repair shops, and wholesale and storage facilities. Offices, hotels and most retail uses are also permitted in M1 districts. The 30 January 2019 draft Gowanus zoning proposal by the NYC Department of City Planning (DCP), if approved, would rezone the site to a mixed-use district that permits residential uses (M1(3)/R6A and M1(3)/R7A). Surrounding properties include single and multi-story buildings occupied by industrial, commercial and residential tenants.

Past and Current Use of the Site: The site has been occupied by commercial and industrial facilities since as early as 1886. The E-Waste Parcel was used as a blacksmithery, rag storage facility, dental manufacturing facility, parking area, warehouse, and electronics recycling facility. The E-Waste Parcel is currently unoccupied. The Pontone Parcel was used as a factory, woodworking and engraving facility, auto repair shop, painting place, and casket manufacturing facility. The Pontone Parcel is currently unoccupied. Proposed development calls for demolition of existing structures and construction of a mixed-use residential and commercial building with ground floor.

Site Geology and Hydrogeology: Soil and bedrock stratigraphy throughout Brooklyn typically consists of a layer of historic fill material that overlies glacial till, decomposed unconsolidated bedrock, and bedrock. Based on a previous study at a neighboring property, bedrock is present at about 200 feet below grade surface (bgs). Site stratigraphy consists of historic fill material underlain by native soil generally characterized as fine- to medium-grained sand with varying amounts of silt, clay, and gravel. Historic fill material, characterized as unconsolidated, fine-grained sand with varying amounts of gravel, brick, coal, concrete, glass, slag, organics, tar-like material, white ashy material, and silt, was encountered beneath the site to depths ranging from about 6 to 14 feet bgs. Groundwater at the site was encountered at elevations ranging from about 9 to 13 feet bgs. The inferred groundwater flow direction is generally to the west-northwest toward the Gowanus Canal and former Mill Pond. Groundwater flow is restricted by predominantly fine-grained deposits (silt) to the west of the Pontone Parcel. These fines create a localized rise in groundwater elevation that drops as grain size coarsens towards the E-Waste Parcel, continuing towards the Gowanus Canal.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restricts the use of the site to restricted-residential use (which allows for commercial use and industrial use) as described in Part 375-1.8(g) were 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 Applicants under the Brownfield Cleanup Agreement are Volunteers. The Volunteers do not have an obligation to address off-site contamination. The Department and the NYSDOH have determined that this site does not pose a significant threat to human health and the environment. Since the Volunteer owns the building adjoining the site and the site poses a significant threat to human health and the environment, the Department has required the Volunteer to perform a Soil Vapor Intrusion investigation in that building.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

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

- characterize site conditions;
- determine the nature of the contamination; and

- assess risk to human health and the environment.

The RI is intended to identify the nature (or type) of contamination which may be present at a site and the extent of that contamination in the environment on the site, or leaving the site. The RI reports on data gathered to determine if the soil, groundwater, soil vapor, indoor air, surface water or sediments may have been contaminated. Monitoring wells are installed to assess groundwater and soil borings or test pits are installed to sample soil and/or waste(s) identified. If other natural resources are present, such as surface water bodies or wetlands, the water and sediment may be sampled as well. Based on the presence of contaminants in soil and groundwater, soil vapor will also be sampled for the presence of contamination. Data collected in the RI influence the development of remedial alternatives. The RI report is available for review in the site document repository and the results are summarized in section 6.3.

The analytical data collected on this site includes data for:

- groundwater
- soil
- soil vapor
- 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:

benzene
polycyclic aromatic hydrocarbons (PAHS), total
arsenic
lead
trichloroethene (TCE)
tetrachloroethene (PCE)
mercury
barium
cadmium

copper	cis-1,2-dichloroethene
manganese	vinyl chloride
magnesium	1,1 dichloroethene

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 was analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, emerging contaminants, and metals. Groundwater was analyzed for VOCs, SVOCs, pesticides, emerging contaminants, and metals. Based upon investigations conducted to date, the primary contaminants of concern for the site include VOCs, polycyclic aromatic hydrocarbons (PAHs - a class of SVOCs), lead, mercury, copper, and arsenic.

Soil: Several SVOCs (specifically, polycyclic aromatic hydrocarbons, or PAHs) were detected including benzo(a)anthracene at a maximum concentration of 120 parts per million, or ppm, exceeding its restricted residential soil cleanup objective (RRSCO) of 1 ppm, benzo(a)pyrene at a maximum concentration of 90 ppm (RRSCO is 1 ppm), benzo(b)fluoranthene at a maximum concentration of 130 ppm (RRSCO is 1 ppm), benzo(k)fluoranthene at a maximum concentration of 38 ppm (RRSCO is 3.9 ppm, chrysene at a maximum concentration of 100 ppm (RRSCO is 3.9 ppm), dibenz(a,h)anthracene at a maximum concentration of 16 ppm (RRSCO is 0.33 ppm), indeno(1,2,3-cd)pyrene at a maximum concentration of 63 ppm (RRSCO is 0.5 ppm), fluoranthene at a maximum concentration of 260 ppm (RRSCO is 100 ppm), and pyrene at a maximum concentration of 200 ppm (RRSCO is 100 ppm). Metals found include arsenic at a maximum concentration of 126 ppm (RRSCO is 16 ppm), barium at a maximum concentration of 497 ppm (RRSCO is 400 ppm), lead at a maximum concentration of 8,220 ppm (RRSCO is 400 ppm),

mercury at a maximum concentration of 6.58 ppm (RRSCO is 0.81 ppm), copper at a maximum concentration of 41,900 ppm (RRSCO is 270 ppm), cadmium at a maximum concentration of 13.9 ppm (RRSCO is 4.3 ppm), and zinc at a maximum concentration of 25,400 ppm (RRSCO is 10,000 ppm). Tar-like material was encountered in the soil at depths ranging from 7 to 10 feet bgs. This material encompasses an area of about 400 square feet and is located in the northeast portion of the Pontone Parcel. No VOCs, PCBs or pesticides were detected at concentrations exceeding their respective RRSCOs. Data does not indicate any off-site impacts in soil related to this site.

Groundwater: Several VOCs were detected in groundwater. Trichloroethene (TCE) and its associated degradation products were found in groundwater on the western half of the site at levels exceeding the Ambient Water Quality Standard (AWQS) for TCE of 5 parts per billion, or ppb with a maximum concentration of 2,400 ppb. Benzene was found at a maximum concentration of 1.3 ppb (AWQS is 1 ppb). Cis-1,2-dichloroethene (Cis-1,2-DCE) was found at a maximum concentration of 2,500 ppb (AWQS is 5 ppb). 1,1-Dichloroethene (1,1-DCE) was found at a maximum concentration of 29 ppb (AWQS is 5 ppb). The following SVOCs were found at concentrations exceeding their respective standards: benzo(a)anthracene at a maximum concentration of 0.96 ppb (AWQS is 0.002 ppb); benzo(a)Pyrene at a maximum concentration of 0.87 ppb; benzo(b)fluoranthene at a maximum concentration of 1.1 ppb (AWQS is 0.002 ppb); benzo(k)fluoranthene at a maximum concentration of 0.45 ppb (AWQS is 0.002 ppb); chrysene at a maximum concentration of 0.84 ppb (AWQS is 0.002 ppb); and indeno(1,2,3-c,d)pyrene at a maximum concentration of 0.58 ppb (AWQS is 0.002 ppb). Perfluorooctanoic Acid (PFOA) was found exceeding its maximum contaminant level (MCL) of 10 ppt at a maximum concentration of 119 ppt. Perfluorooctanesulfonic Acid (PFOS) was found exceeding its MCL of 10 ppt at a maximum concentration of 27.3 ppt. Data does not indicate any off-site impacts in groundwater related to this site.

Soil Vapor and Indoor Air: TCE was detected at a maximum concentration of 1,730 micrograms per cubic meter (ug/m3) in the soil vapor, and 31.3 ug/m3 in indoor air. DCE was detected at a maximum concentration of 139 ug/m3 in the soil vapor and was not detected in indoor air. 1,1-DCE was detected at a maximum concentration of 8.05 ug/m3 in the soil vapor and was not detected in indoor air. Environmental sampling indicates that mitigation is warranted for on-site buildings to address potential exposures to site contamination via the soil vapor intrusion pathway. Data does not indicate that there is the 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.*

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. People will not come into contact with contaminated soil or groundwater since the site is covered with buildings and concrete unless they dig below the ground surface. 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. Environmental sampling indicates that the potential exists for the inhalation of site contaminants due to soil vapor intrusion for the existing buildings onsite as well as any future on-site development.

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 use with site-specific soil cleanup objectives remedy.

The selected remedy is referred to as the Excavation, Soil Vapor Mitigation, In-Situ Chemical Reduction, and Cover System remedy.

The elements of the selected remedy, as shown in Figure 2, are as follows:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings will include, at a minimum, a 20-mil vapor barrier/waterproofing membrane on the foundation to improve energy efficiency as an element of construction.

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Excavation and off-site disposal of contaminant source areas, including:

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underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site.

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An AS/SVE pilot test will be conducted prior to full-scale remedial system design to assess the feasibility and effectiveness of the technology and to collect site-specific design parameters. If the pilot test is successful, the AS/SVE system will be installed to address the groundwater plume contaminated by petroleum-related volatile organic compounds (VOCs) and chlorinated organic compounds (CVOCs). VOCs and CVOCs will be physically removed from the groundwater and soil below the water table (saturated soil) by injecting air into the subsurface. The injected air rising through the groundwater will volatilize and transfer the VOCs and CVOCs from the groundwater and/or soil into the injected air. The VOCs and CVOCs are carried with the injected air into the vadose zone (the area below the ground surface but above the water table) where a soil vapor extraction (SVE) system designed to remove the injected air will be installed. The SVE system will apply a vacuum to wells that have been installed into the vadose zone to remove the VOCs and CVOCs along with the air introduced by the sparging process. The air extracted from the SVE wells will be treated as necessary prior to being discharged to the atmosphere. The AS/SVE system will also mitigate the migration of vapors into the on-site building from soil and groundwater.

5. In-Situ Chemical Reduction (ISCR)

The pilot study will also evaluate other in-situ remedial alternatives, including in-situ chemical reduction. In-situ chemical reduction (ISCR) will be implemented to treat contaminants in groundwater, if the pilot test determines that AS/SVE is not fully effective. A chemical reducing agent will be injected into the subsurface to destroy the contaminants in an area located throughout the site where petroleum-related and chlorinated VOCs, including TCE and its degradation byproducts, were elevated in the groundwater. The method and depth of injection will be determined during the remedial design.

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7. 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 NYCDOHMH; 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:

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This plan includes, but may not be limited to:

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

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

- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;

3. An Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, inspection, and reporting of any mechanical or physical components of the active vapor mitigation system. The plan includes, but is not limited to:

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

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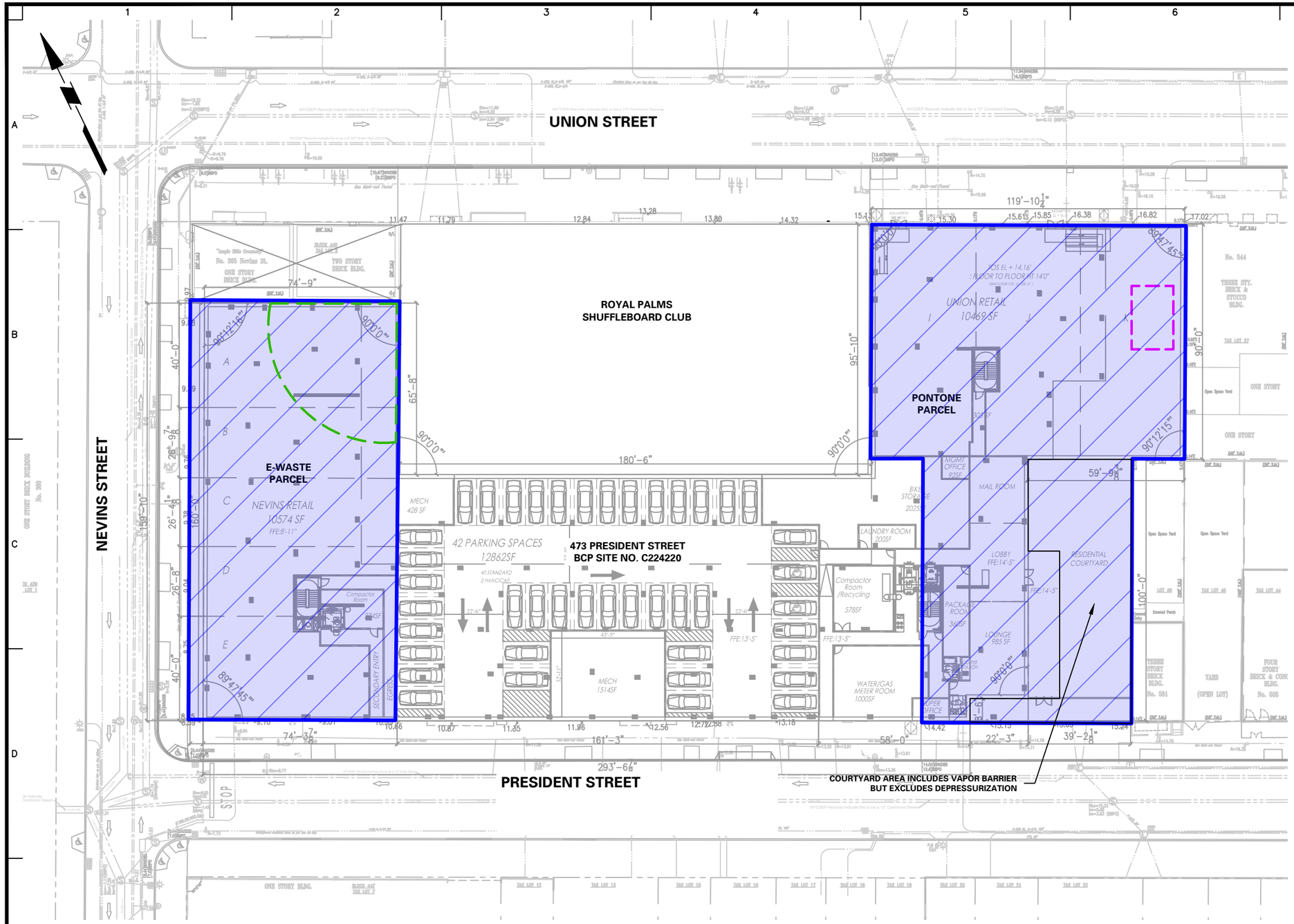
Site Map

President Street Portfolio

469 President Street and 532 Union Street
City of Brooklyn, Kings County
Site No. C224309

NEW YORK STATE OF OPPORTUNITY
Department of Environmental Conservation



LEGEND:

- SITE BOUNDARY
- EXTENT OF COMPOSITE COVER SYSTEM AND EXCAVATION TO ABOUT 2 FEET BGS
- EXTENT OF SMD SYSTEM WITH VAPOR BARRIER
- EXTENT OF REMEDIAL EXCAVATION TO ABOUT 9 FEET BGS
- EXTENT CVOC-IMAPCTED GROUNDWATER TREATMENT

COURTYARD AREA INCLUDES VAPOR BARRIER BUT EXCLUDES DEPRESSURIZATION

NOTES:

1. GROUND FLOOR DEVELOPMENT PLAN ADAPTED FROM 14 APRIL 2020 473 PRESIDENT STREET SCHEMATIC DESIGN, PROVIDED BY 473 PRESIDENT LLC.
2. BASE MAP ADAPTED FROM SURVEY BY NEW YORK CITY LAND SURVEYORS, PC, DATED 14 JUNE 2019.
3. BCP = BROWNFIELD CLEANUP PROGRAM
4. BGS = BELOW GRADE SURFACE

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, TO ALTER THIS ITEM IN ANY WAY.

40 0 10 25 40

SCALE: 1 INCH = 40 FEET

LANGAN

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Project
469 PRESIDENT STREET AND 532 UNION STREET
BLOCK No. 440, p/o LOT No. 1
BROOKLYN
KINGS NEW YORK

Figure Title
ALTERNATIVE II: TRACK 4 REMEDY

Project No. 170361303	Figure No. 9
Date 04/23/2020	
Drawn By TG	
Checked By PM	Sheet 10 of 12

Filename: \\langan.com\data\NY\data3\170361301\Cadd Data - 170361301\SheetFiles\Environmental\E-Waste and Pontone RAWP\Figure 9 - Alternative II - Track 4 Remedy.dwg Date: 12/15/2020 Time: 10:36 User: vdepaula Style Table: Langan.stb Layout: ANSIB-BL