AMENDED DECISION DOCUMENT

459 Smith Street (Citizens MGP Parcel III)
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224012B
March 2026

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

DECLARATION STATEMENT – AMENDED DECISION DOCUMENT

459 Smith Street (Citizens MGP Parcel III)
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224012B
March 2026

Statement of Purpose and Basis

This document presents the remedy for the 459 Smith Street (Citizens MGP Parcel III) 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 459 Smith Street (Citizens MGP Parcel III) 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 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 2 to 14 feet below grade surface (ft 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, in addition to several hot spots exceeding

PGSCOs across the site to depths up to 14 ft bgs. If NAPL is encountered, additional excavation will be required to remove NAPL-saturated material in areas that will not be addressed through in-situ solidification/stabilization discussed in Remedy Element 5, below. Any grossly contaminated material generating nuisance odors will be managed by the odor control plan outlined in the Remedial Action Work Plan.

Approximately 48,500 cubic yards of contaminated soil will be removed from the site. Collection and analysis of documentation samples at the remedial excavation depth will be used to document the remedy.

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 will be required in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs), to allow for future restricted residential use of the site. 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.

Where the soil cover is required over the in-situ treatment areas discussed in Remedy Element 5, it will consist of a minimum of four feet of soil meeting the SCOs for cover material for the use of the site as set forth in 6 NYCRR Part 375-6.7(d). For areas where solidified material underlies the cover, the solidified material itself will serve as the demarcation layer due to the nature of the material.

5. Solidification/Stabilization

In-Situ Solidification

In-situ solidification (ISS) will be evaluated for implementation in an approximately 0.9-acre area located in the north central portion of the site. The treatment zone will be in areas where grossly contaminated material and non-aqueous phase liquid (GCM/NAPL) consisting of coal tar is present below the groundwater table to a terminal depth of approximately -23 feet NAVD88 (approximately 35 ft bgs). ISS is a process that binds the soil particles in place creating a low permeability mass. The contaminated soil will be mixed in place together with solidifying agents (typically Portland cement) or other binding agents using an excavator or augers. The soil and binding agents are mixed to produce a solidified mass resulting in a low permeability monolith. The solidified mass will then be covered with a cover system as described in Remedy Element 4 to prevent direct exposure to the solidified mass. The resulting solid matrix reduces or eliminates mobility of contamination and reduces or eliminates the matrix as a source of groundwater contamination.

In-Situ Geochemical Stabilization

In areas where obstructions limit the implementation of ISS, alternative stabilization methods such as In-situ Geochemical Stabilization (ISGS) will be evaluated for feasibility in an approximately 0.4-acre area located along the Bond Lorraine Sewer and the portion of the site along the bulkhead. The treatment zone will be in areas where GCM/NAPL is present below the groundwater table to a terminal depth of approximately -23 feet NAVD88 (approximately 35 ft bgs). The contaminated soil will be mixed in place with the reagents using an excavator or augers. The treated soil will then be covered with a cover system as described in Paragraph 4 to prevent direct exposure. This treatment changes the contamination from a soluble form to a stable, insoluble compound to reduce or eliminate the matrix as a source of groundwater contamination. Any grossly contaminated material generating nuisance odors will be managed by the odor control plan outlined in the Remedial Action Work Plan.

6. NAPL Recovery

A sealed sheet pile wing wall will be installed along the southern boundary of the site along Huntington Street to mitigate the migration of NAPL remaining below and outside of the ISS and ISGS area. Installation and operation of recovery wells will be installed across the remaining NAPL horizon along the bulkhead on the eastern boundary and along Huntington Street on the southern boundary of the site to remove potentially mobile NAPL from the subsurface. The number, depth, type and spacing of the recovery wells will be determined during the design phase of the remedy. NAPL will be collected periodically from each well; however, if wells are determined by the Department to accumulate large quantities of coal tar over extended time periods, they can be converted to automated collection.

7. 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.

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.

8. 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 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 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 NYSDEC approved Site Management Plan.

9. 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 8 above.
   - Engineering Controls: The cover system discussed in Remedy Element 4, the wing wall and NAPL recovery system discussed in Remedy Element 6, and the sub-slab depressurization system discussed in Remedy Element 7 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 NAPL, 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 NYSDEC.

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 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 NYSDEC guidance, as appropriate. The remedy is protective of public health and the environment.

March 11, 2026
Date

Scott Deyette, Director
Remedial Bureau B

DECISION DOCUMENT

459 Smith Street (Citizens MGP Parcel III)
Brooklyn, Kings County
Site No. C224012B
March 2026

SECTION 1: SUMMARY AND PURPOSE

This document presents the amended remedy for the 459 Smith 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. 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.

This decision is based on the Administrative Record of NYSDEC for the 459 Smith Street site and the public's input to the proposed remedy presented by NYSDEC.

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=C224012B

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

Brooklyn Community Board 6
250 Baltic Street
Brooklyn, NY 11201-8410
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 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

The site is located at 459 Smith Street adjacent to the Gowanus Canal in Brooklyn, NY.

The site was initially in the NYSDEC Voluntary Cleanup Program (VCP) and was part of what was known as the K-Citizens Manufactured Gas Plant – Carroll Gardens site (V00360). The site transitioned into the state's Brownfield Cleanup Program (BCP) in 2009, as part of the Citizens MGP Site (C224012). In 2019, Parcel III of that site became a standalone site known as the 459 Smith Street site (C224012B).

On April 23, 2007, NYSDEC issued a Decision Document (DD) which selected a remedy for the Carroll Gardens VCP site. This DD remained the governing cleanup document when the site transitioned into the BCP. The DD required the removal of all remaining former manufactured gas plant (MGP) structures and soil contamination present in areas adjacent to these structures. In addition, the DD required removal of any coal tar impacted soil present within the top eight feet across the site. In August 2020, an Explanation of Significant Differences (ESD) was issued to add a requirement for a site cover system, consistent with NYSDEC requirements for a track 4 restricted residential use cleanup.

The 459 Smith Street site will be remediated to achieve a Track 4 restricted residential cleanup under the Brownfield Cleanup Program. The remedial goal for a Track 4 cleanup is to remove, treat, or encapsulate identified source material to the extent feasible, install a site cover, and manage remaining contamination under a long-term Site Management Plan. The changes put forth in this document meet the requirements of a Track 4 cleanup.

Location:
The site occupies approximately 3.81 acres (165,840 square feet) and is identified as Block 471, Lot 200 on the Kings County tax map. The Gowanus Canal, a USEPA Superfund site, adjoins the site to the east and is hydraulically connected to 459 Smith Street pending construction of an

impermeable bulkhead along the shoreline. The site is located on the southern portion of Block 471 and is bounded by Lot 1 followed by 5th Street to the north, the Gowanus Canal to the east, Huntington Street to the south, and Smith Street to the west.

Site Features:
Most of the site is unpaved except for the eastern part of the site, between the bulkhead and the foundation wall of the former warehouse. The site is not improved with any structures. The site elevation (el) ranges from about el 10 feet (North American Vertical Datum of 1988 [NAVD88]) along the Gowanus Canal to between el 17 and 22 along Smith Street (sloping up from south to north).

Current Zoning and Land Use:
The site is located in an M3-1 manufacturing district. The surrounding area includes commercial, industrial, residential, and transportation/utility buildings, as well as vacant lots, construction sites, and open space.

Past Use of the Site:
The site was occupied by a fertilizer plant from as early as 1886 until some point between 1904 and 1915. The Former Citizens MGP was constructed on the adjoining properties to the north around the 1860s and expanded to include this site between 1904 and 1915. The MGP operation on the site continued to expand between 1915 and 1948 and included a tar separator, tar handling facilities, oil storage tanks, and a 1-million-gallon oil tank. The MGP site was demolished in the early 1960s.

Site Geology and Hydrogeology:
During the 2005 remedial investigation historic fill was identified from surface grade to about 8 to 15 feet below grade surface (bgs) across the site, and predominately consisted of loose, non-cohesive silt, sand, and gravel with brick, concrete, coal, wood, metal, ash, slag, and clinkers. Native alluvial/marsh deposits generally consisting of grey to brown clay, silt and organic silts were observed beneath the fill layer. Glacial till generally consisting of brown, fine to medium sand with varying amounts of silt, clay, and gravel was observed beneath the alluvial/marsh deposit. Bedrock was not encountered during the previous investigations but is expected to be approximately 150 feet below grade in this area of Brooklyn.

The groundwater flow direction for the area surrounding the site is tidally influenced. Shallow, intermediate, and deep groundwater flow was generally observed flowing to the south-southwest. Groundwater underlying the site was observed at elevations ranging from about 7 to 0 NAVD88 (approximately 10 to 17 ft 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

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 restricted residential 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

One or more of the Applicants under the Brownfield Cleanup Agreement is a Participant. NYSDEC, in consultation with NYSDOH, has determined that this site poses a significant threat to public health and the environment. However, since the Applicant has an obligation to address on-site and off-site contamination, no enforcement actions are necessary.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

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

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

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

The analytical data collected on this site includes data for:

- Groundwater
- Soil
- Soil Vapor

6.1.1: Standards, Criteria, and Guidance (SCGs)

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

To determine whether the contaminants identified in various media are present at levels of

concern, the data from the RI were compared to media-specific SCGs. 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:

benzo(a)anthracene
benzo(a)pyrene
benzo(b)fluoranthene
benzo(k)fluoranthene
chrysene
benzene
ethylbenzene
toluene
xylenes (mixed)
cyanide
tetrachloroethene (PCE)
trichloroethene (TCE)
cis-1,2-dichlorethene
vinyl chloride
naphthalene
arsenic
lead
coal tar

The contaminants of concern exceed the applicable SCGs for:

- soil
- groundwater

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.

Remediation is Underway:

An initial remedial effort has been completed to begin to address the potential migration of MGP contamination to the Gowanus Canal. Additional remediation, as documented in the following sections, will be completed to address the remaining the contamination onsite.

The site was originally a fertilizer plant from the late 1800s until the early 1900s. The property became part of the Citizens MGP site when the MGP's operations expanded in the early 1900s. The site continued to be utilized as an MGP for approximately 50 years until the 1960s, when plant's operations ended. As a result of these operations, the site is contaminated with MGP residuals, including coal tar and petroleum products. Coal tar contains various volatile organic compounds (VOCs), primarily benzene, toluene, ethylbenzenes, and xylenes (BTEX). A family of semi-volatile organic compounds (SVOCs) referred to polycyclic aromatic hydrocarbons (PAHs) are also contaminants of concern associated with MGP coal tar. During site investigations, coal tar has been observed across the site and the adjacent Citizens MGP site, at various depths ranging from approximately seven to one hundred fifty feet below grade. On the 459 Smith Street site, soil contamination was present in the area of the former tar separator.
Groundwater at the site has been impacted with BTEX and PAH compounds associated with the coal tar. Contamination has migrated off-site impacting both the soil and groundwater, as well as the adjacent Gowanus Canal. Chlorinated VOCs (CVOCs) were detected on-site in soil vapor. No CVOCs were detected in the on-site groundwater, and only one detection of PCE was found in onsite soils exceeding unrestricted use soil cleanup objectives. Off-site contamination will be fully delineated under an existing consent order with National Grid.

Thus far, former MGP structures, including gas holders, a tar separator and various associated MGP piping have been removed along with a significant amount of coal tar and petroleum impacted soils to depths up to 26 ft bgs. Approximately 11, 913 cubic yards of contaminated soil and MGP infrastructure have been excavated and properly disposed of off-site. A new sealed bulkhead/barrier wall has been installed to a depth of 43 feet NAVD88 (approximately 53 ft bgs) to prevent migration of remaining contamination into the Gowanus Canal. A coal tar NAPL collection system has also been installed behind the sealed bulkhead/barrier wall to capture and remove residual NAPL at depth. This recovery system along with the sealed bulkhead/barrier wall has been designed to prevent off-site migration of residual NAPL.

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 media (GCM), VOCs, SVOCs and metals in soil; coal tar non-aqueous phase liquid (NAPL), SVOCs and metals in groundwater; and VOCs in soil vapor.

Soil:
GCM and/or NAPL associated with MGP coal tar contamination has been encountered in on-site borings and delineated along the bulkhead and inland on the western and northern portion of the site. 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 benzene (max of 200 parts per million (ppm); RRSCO is 4.8 ppm and PGSCO is 0.06 ppm), ethylbenzene (max of 330 ppm; RRSCO is 41 ppm and PGSCO is 1 ppm), toluene (max of 570 ppm; RRSCO is 100 ppm and PGSCO is 0.7 ppm), xylenes (mixed) (max of 970 ppm; RRSCO is 100 ppm and PGSCO is 1.6 ppm), benzo(a)anthracene (max of 810 ppm; RRSCO is 1 ppm and PGSCO is 1 ppm), benzo(a)pyrene (max of 730 ppm; RRSCO is 1 ppm and PGSCO is 22 ppm), tetrachloroethene (PCE) (max of 1.6 ppm; RRSCO is 19 ppm and UUSCO is 1.3 ppm), trichloroethene (TCE) (max of 0.14 ppm; RRSCO is 21 ppm and UUSCO is 0.47 ppm), benzo(b)fluoranthene (max of 630 ppm; RRSCO is 1 ppm and PGSCO is 1.7 ppm), benzo(k)fluoranthene (max of 290 ppm; RRSCO is 3.9 ppm and PGSCO is 1.7 ppm), chrysene (max of 790 ppm; RRSCO is 3.9 ppm and PGSCO is 1 ppm), ethylbenzene (max of 330 ppm; RRSCO is 41 ppm and PGSCO is 1 ppm), naphthalene (max of 5,800 ppm; RRSCO is 100 ppm and PGSCO is 12 ppm), arsenic (max is 164 ppm; RRSCO is 16 ppm and PGSCO is 16 ppm), cyanide (max of 52.9 ppm; RRSCO is 3.9) and lead (max of 2,900; RRSCO is 400 ppm). GCM and NAPL were encountered in soil borings throughout the site.

Perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) 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 (AWQS) for VOCs, SVOCs, pesticides, PFAS and metals include benzene (max of 29,000 parts per billion (ppb); AWQS of 1 ppb), ethylbenzene (max of 4,100 ppb; AWQS of 5 ppb), toluene (max of 13,000 ppb; AWQS of 5 ppb), benzo(a)anthracene (max of 58 ppb; AWQS of 0.002 ppb), benzo(a)pyrene (max of 67 ppb; AWQS of 0.002 ppb), benzo(b)fluoranthene (max of 45 ppb; AWQS of 0.002 ppb), benzo(k)fluoranthene (max of 12 ppb; AWQS of 0.002 ppb), chrysene (max of 46 ppb; AWQS of 0.002 ppb), naphthalene (max of 9,500 ppb; AWQS of 10 ppb), and dissolved arsenic (max of 106 ppb; AWGS of 25 ppb). NAPL was encountered during monitoring well development and groundwater sampling. No PCBs exceeded applicable AWQS. Groundwater impacts have the potential to migrate off-site into the Gowanus Canal.

Soil Vapor:
Three soil vapor samples were collected on-site which identified elevated concentrations of chlorinated VOCs. The maximum concentration of trichloroethylene (TCE) was 22,000 micrograms per cubic meter (ug/m3), and tetrachloroethylene (PCE) was 89,000 ug/m3, cis-1,2-dichlorethene was 86,000 ug/m3, and vinyl chloride was 3,800 ug/m3. Data indicate soil vapor intrusion from site contaminants is not a concern for off-site properties.

Special Resources Impacted/Threatened:
The nearest environmental receptor is the Gowanus Canal, where significant discharges of coal tar from the site have been documented in the past. As part of previous remedial activities, a sealed bulkhead/barrier wall and NAPL collection system was installed along the site boundary with the Gowanus Canal.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure.*

The site is fenced with partial asphalt cover. People could come in contact with contaminated soil and groundwater if they dig below the surface. 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 soil vapor (air spaces within the soil) may move into buildings and affect the indoor air quality. Because the site is vacant soil vapor intrusion is not a current concern. The potential for indoor air impacts via the soil vapor intrusion pathway exists for any future on-site buildings. Environmental sampling indicates that soil vapor intrusion from site contaminants is not a concern for off-site properties.

6.5: Summary of Amended Remedy:

This Amended Decision Document (ADD) is issued to describe the selection of additional treatment technologies that were not contemplated in the 2007 Decision Document or the 2020 Explanation of Significant Difference, specifically the use of in-situ solidification and stabilization to treat source material in the form of coal tar NAPL/GCM from the former Citizens MGP site to reduce the occurrence and severity of contamination to groundwater from that material.

This ADD will become part of the Administrative Record for the 459 Smith Street site. The information here is a summary of what can be found in greater detail in documents that have been placed in the following repositories:

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

Carroll Gardens Library
396 Clinton Street
Brooklyn, NY 11231
(718) 596-6972

Information can also be found at DEC Info Locator at:
https://www.dec.ny.gov/data/DecDocs/C224012B/

Description of the Original Remedy

The elements of the selected remedy in the 2007 DD include:

1. Removal of MGP related structures, their contents and nearby associated contaminated soil.
2. Removal of impacted soil to a depth of approximately eight ft bgs across the site.
3. Installation of a sealed bulkhead/barrier wall along the Gowanus Canal to prevent the further off-site migration of NAPL.
4. Installation of NAPL recovery wells along the sealed bulkhead/barrier wall to collect mobile tar for disposal.
5. Development of a Site Management Plan (SMP) to manage the institutional and engineering controls placed on the site, including long-term monitoring and maintenance activities.
6. Placement of an environmental easement that requires compliance with the SMP and limits the future use of the site to restricted residential.

The major element of the 2020 ESD included the requirement of a site-wide cover system to allow for restricted residential use of the site.

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

- Prevent the discharge of contaminants to surface water.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation exposure to contaminants volatilizing from 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.

6.6: Description of Significant Difference:

6.6.1 New Information

The site has been deemed a significant threat to human health and the environment due to the migration of coal tar and dissolved phase contaminants in groundwater to off-site receptors including the Gowanus Canal National Priority List (NPL) site. As part of the design, additional study and analysis was undertaken that demonstrated the coal tar source areas were limited to areas in the immediate vicinity of the former MGP structures and acted as a source of groundwater contamination migrating from the site. As such, the remedial excavation and in-situ remediation of contaminants acting as a source of groundwater contamination would effectively mitigate on-going migration. With the addition of a site cover, this would render the site suitable for restricted residential use, consistent with the 6NYCRR Part 375 requirements for BCP track 4 remedies.

6.6.2 Comparison of Changes with Original Remedy

A remedial action work plan has been developed for the site to address the migration of contamination from source material. Based on the new information discussed above, a change is proposed to the remedy to remediate the source of groundwater contamination through remedial excavation and in-situ treatment technologies. Since areas of shallow soil contamination remain across the site at concentrations above restricted residential use cleanup objectives, a site cover will be required to ensure that the remedy is protective of human health and the environment. Contamination that may be encountered in these areas during future ground intrusive activities would be addressed as part of the long-term Site Management Plan (SMP).

Figure 3 shows the areas of remediation at the site. The original remedy documented in the 2007 DD and the 2020 ESD will be supplemented with the following new requirements:

- Contamination in soils (both MGP and non-MGP) which have been identified as a source of groundwater contamination and which cannot be excavated will be remediated through in-situ solidification (ISS) or in-situ geochemical stabilization (ISGS).
- All future on-site structures will be required to have an active sub-slab depressurization system, or other acceptable measures, to mitigate any potential for indoor air impacts from contaminants in soil vapor.
-

6.6.3 Schedule and More Information

Remedial activities are expected to begin in 2026.Upon completion of the remediation, a Final Engineering Report will be developed, documenting the work performed and that the remedial objectives have been met. A Site Management Plan (SMP) will also be developed to address the long-term obligations including monitoring, maintenance and periodic certification that all engineering controls and institutional controls remain in place and effective. Upon successfully

meeting the remedial requirements of the BCP, a Certificate of Completion (COC) will be issued for the site.

If you have questions or need additional information you may contact any of the following:

Technical Questions
Aaron Fischer, P.E.
NYSDEC
625 Broadway, Albany
(518) 402-9805
aaron.fischer@dec.ny.gov

Health Related Questions
Michele Dolan
NYSDOH
Corning Tower, Rm 1787, Albany
(518) 402-7860
beei@health.ny.gov

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 Residential use with site-specific soil cleanup objectives remedy.

The selected remedy is referred to as the Excavation, Bulkhead/Barrier Wall, ISS/ISGS, NAPL Recovery, Vapor Mitigation, and Cover System 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

Excavation and off-site disposal of contaminant source areas ranging in depth from 2 to 14 feet below grade surface (ft 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, in addition to several hot spots exceeding PGSCOs across the site to depths up to 14 ft bgs. If NAPL is encountered, additional excavation will be required to remove NAPL-saturated material in areas that will not be addressed through in-situ solidification/stabilization discussed in Remedy Element 5, below. Any grossly contaminated material generating nuisance odors will be managed by the odor control plan outlined in the Remedial Action Work Plan.

Approximately 48,500 cubic yards of contaminated soil will be removed from the site. Collection and analysis of documentation samples at the remedial excavation depth will be used to document the remedy.

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 will be required in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs), to allow for future restricted residential use of the site. 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.

Where the soil cover is required over the in-situ treatment areas discussed in Remedy Element 5, it will consist of a minimum of four feet of soil meeting the SCOs for cover material for the use of the site as set forth in 6 NYCRR Part 375-6.7(d). For areas where solidified material underlies the cover, the solidified material itself will serve as the demarcation layer due to the nature of the material.

5. Solidification/Stabilization

In-Situ Solidification

In-situ solidification (ISS) will be evaluated for implementation in an approximately 0.9-acre area located in the north central portion of the site. The treatment zone will be in areas where grossly contaminated material and non-aqueous phase liquid (GCM/NAPL) consisting of coal tar is present below the groundwater table to a terminal depth of approximately -23 feet NAVD88 (approximately 35 ft bgs). ISS is a process that binds the soil particles in place creating a low permeability mass. The contaminated soil will be mixed in place together with solidifying agents (typically Portland cement) or other binding agents using an excavator or augers. The soil and binding agents are mixed to produce a solidified mass resulting in a low permeability monolith. The solidified mass will then be covered with a cover system as described in Remedy Element 4 to prevent direct exposure to the solidified mass. The resulting solid matrix reduces or eliminates mobility of contamination and reduces or eliminates the matrix as a source of groundwater contamination.

In-Situ Geochemical Stabilization

In areas where obstructions limit the implementation of ISS, alternative stabilization methods such as In-situ Geochemical Stabilization (ISGS) will be evaluated for feasibility in an approximately 0.4-acre area located along the Bond Lorraine Sewer and the portion of the site along the bulkhead. The treatment zone will be in areas where GCM/NAPL is present below the groundwater table to a terminal depth of approximately -23 feet NAVD88 (approximately 35 ft bgs). The contaminated soil will be mixed in place with the reagents using an excavator or augers. The treated soil will then be covered with a cover system as described in Paragraph 4 to prevent direct exposure. This treatment changes the contamination from a soluble form to a stable, insoluble compound to reduce or eliminate the matrix as a source of groundwater contamination. Any grossly contaminated material generating nuisance odors will be managed by the odor control plan outlined in the Remedial Action Work Plan.

6. NAPL Recovery

A sealed sheet pile wing wall will be installed along the southern boundary of the site along Huntington Street to mitigate the migration of NAPL remaining below and outside of the ISS and ISGS area. Installation and operation of recovery wells will be installed across the remaining NAPL horizon along the bulkhead on the eastern boundary and along Huntington Street on the southern boundary of the site to remove potentially mobile NAPL from the subsurface. The number, depth, type and spacing of the recovery wells will be determined during the design phase of the remedy. NAPL will be collected periodically from each well; however, if wells are determined by the Department to accumulate large quantities of coal tar over extended time periods, they can be converted to automated collection.

7. 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.

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.

8. 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 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 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 NYSDEC approved Site Management Plan.

9. 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:

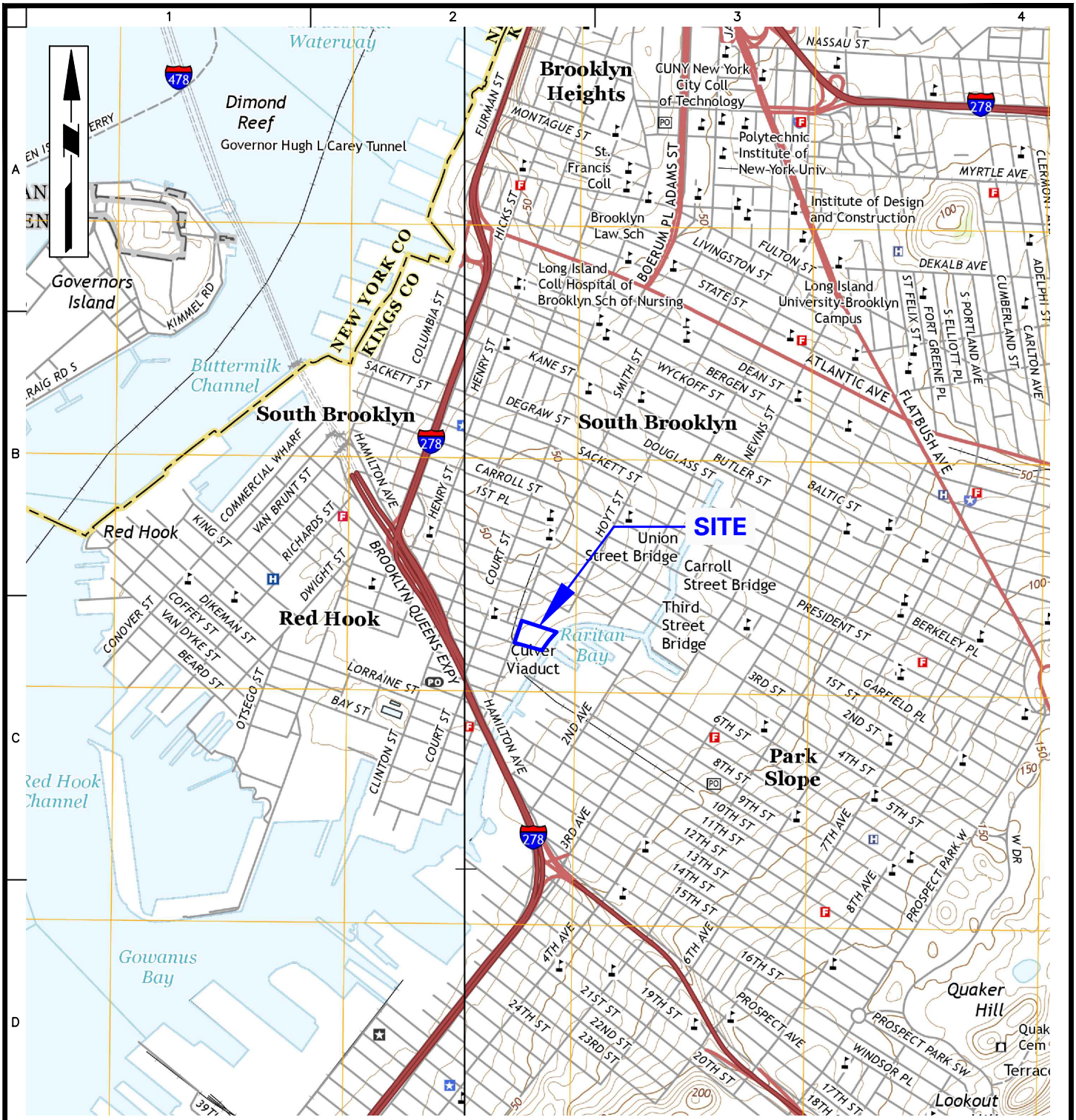
   – Institutional Controls: The Environmental Easement discussed in Remedy Element 8 above.
   – Engineering Controls: The cover system discussed in Remedy Element 4, the wing wall and NAPL recovery system discussed in Remedy Element 6, and the sub-slab depressurization system discussed in Remedy Element 7 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 NAPL, 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 NYSDEC.

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 NYSDEC notification; and
   - providing the Department access to the site and O&M records.



LEGEND

APPROXIMATE SITE BOUNDARY

NOTES

BASE MAP IS REFERENCED FROM THE UNITED STATES GEOLOGICAL SURVEY (USGS) 7.5 MINUTE SERIES BROOKLYN, N.Y. QUADRANGLE MAP, DATED 2016.

2000 0 1000 2000

SCALE: 1 INCH = 2000 FEET

LANGAN

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.

21 Penn Plaza, 360 West 31st Street, 8th Floor
New York, NY 10001

T: 212.479.5400 F: 212.479.5444 www.langan.com

Project

459 SMITH STREET

NYSDEC BCP No. C224012B

BLOCK No. 471, LOT No. 200

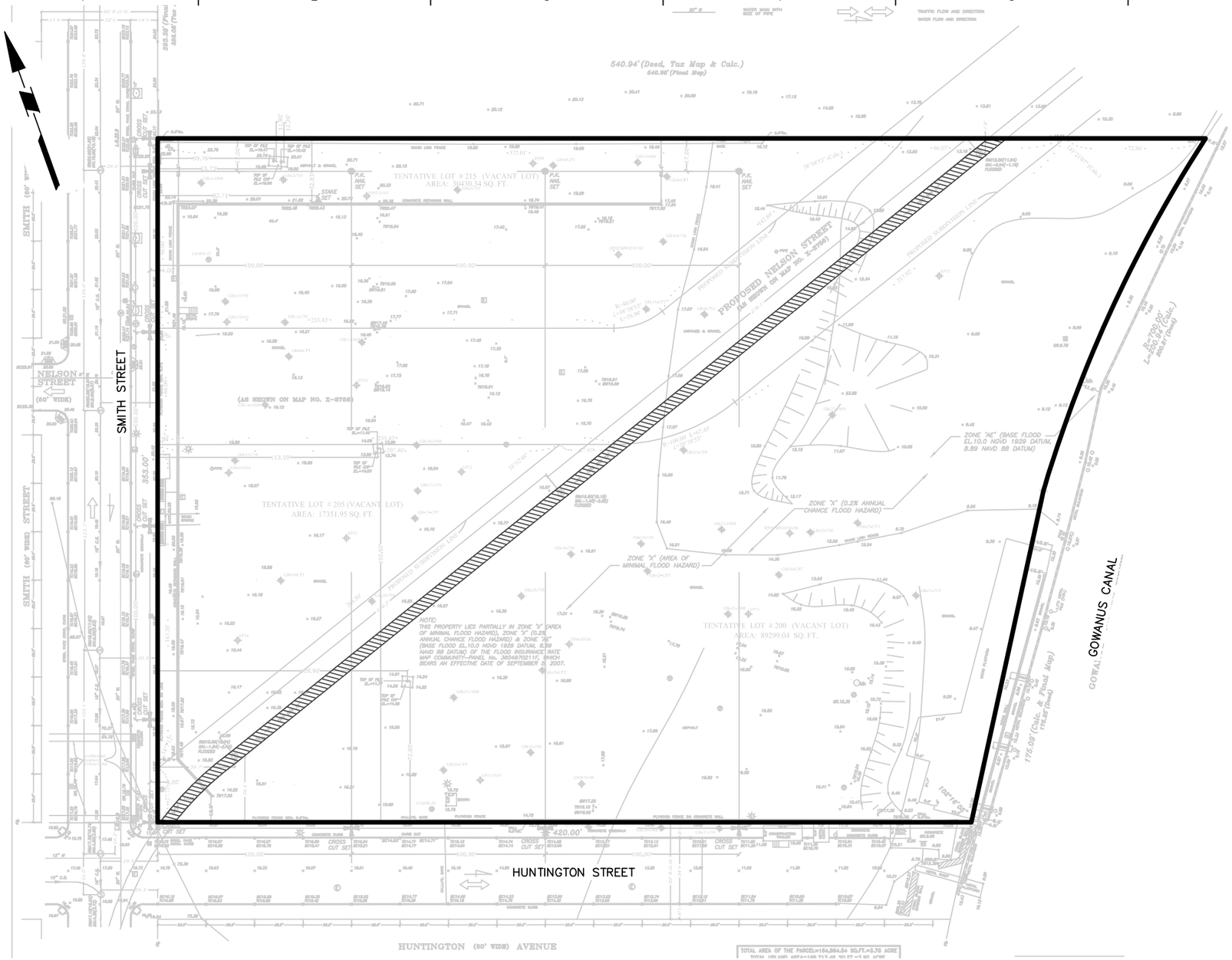
KINGS NEW YORK

Figure Title

SITE LOCATION MAP

Project No.	Figure No.
170420201	1
Date: 12/13/2022	
Drawn By: MA	
Checked By: PM	

Filename: \\langan.com\data\NYC\data2\170420201\Cadd Data - 170420201\SheetFiles\Environmental\SRDWP\Figure 1 - Site Location Map.dwg Date: 1/8/2025 Time: 07:56 User: ssimpson Style Table: Langan.stb Layout: Figure 1 - Site Location Map



NOTES:

1. BASE MAP REFERENCED FROM DRAWING ENTITLED "ARCHITECTURAL SURVEY" PREPARED BY LEONARD J. STRANDBERG AND ASSOCIATES, CONSULTING ENGINEERS AND LAND SURVEYORS, P.C., LAST UPDATED JUNE 01, 2022.
2. ALL ELEVATIONS SHOWN HEREIN REFERENCE THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. NYCDEP = NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
368 Ninth Avenue, 8th Floor
New York, NY 10001
T: 212.479.5400 F: 212.479.5444 www.langan.com

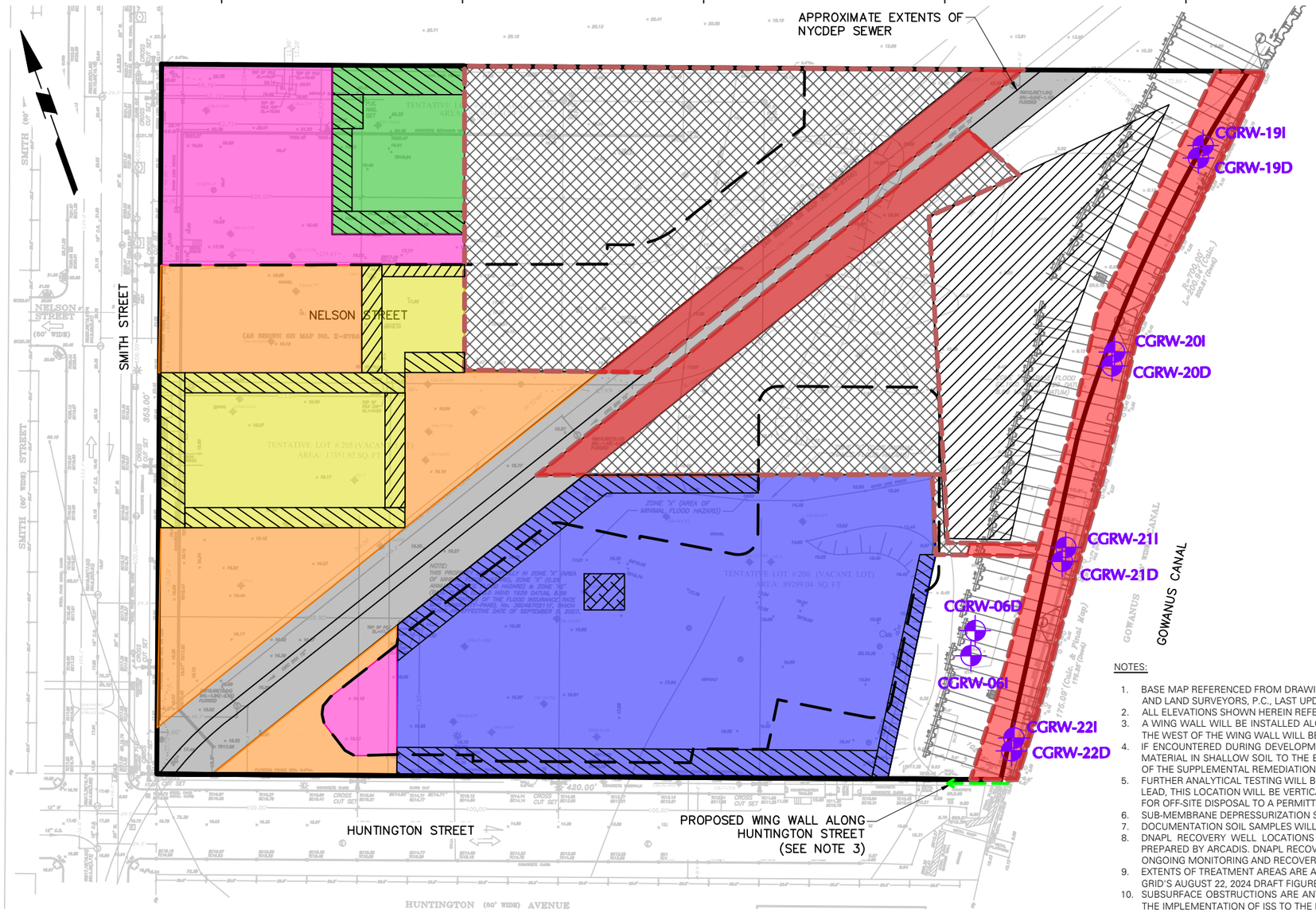
Project
459 SMITH STREET
NYSDEC BCP No. C224012B
BLOCK No. 471, LOT No. 200
KINGS NEW YORK

Figure Title
CURRENT SITE LAYOUT

Project No.	170420201
Date	01/09/2026
Drawn By	MA
Checked By	PM

Figure No. **2**

Filename: \\langan.com\data\NYC\data2\170420201\Cadd Data - 170420201\SheetFiles\Environmental\SRDWP\170420201-BL101-0102 - DD - Current Site Layout.dwg Date: 1/10/2026 Time: 18:11 User: vkanagaratnam Style Table: Langan.stb Layout: Figure 2-Site Plan



LEGEND:

- APPROXIMATE PROPERTY LINE
- APPROXIMATE EXTENTS OF SUPPLEMENTAL REMEDIATION AREA
- APPROXIMATE EXTENTS OF PROPOSED BUILDINGS, VAPOR BARRIER MEMBRANE, AND SUB-MEMBRANE DEPRESSURIZATION SYSTEM
- NYCDEP BOND-LORRAINE SEWER EASEMENT
- PREVIOUS EXCAVATION AREA TO ABOUT EL -10 FEET
- APPROXIMATE EXTENTS OF PROPOSED ISGS TREATMENT
- EXCAVATION AS NEEDED FOR COMPOSITE COVER SYSTEM CONSISTING OF UP TO 2 FEET OF IMPORTED FILL MEETING THE LOWER OF THE PROTECTION OF GROUNDWATER AND RESTRICTED USE RESTRICTED-RESIDENTIAL SOIL CLEANUP OBJECTIVES
- EXCAVATION TO THE GROUNDWATER TABLE (EL ±3 TO EL ±6 OR ABOUT 7 TO 14 FEET BGS)
- EXCAVATION TO THE GROUNDWATER TABLE (EL ±5 TO EL ±6 OR ABOUT 10 TO 12 FEET BGS)
- EXCAVATION TO THE GROUNDWATER TABLE (EL ±5 TO EL ±6 OR ABOUT 10 TO 15 FEET BGS)
- EXCAVATION TO BETWEEN ABOUT 2 AND 6 FEET BGS FOR INSTALLATION OF SVI MITIGATION SYSTEM BENEATH FUTURE BUILDINGS (SEE NOTE 6)
- APPROXIMATE EXTENTS OF PROPOSED ISS INCLUDING PRE-EXCAVATION TO ABOUT 5 FEET BGS
- EXCAVATION SLOPE 1:1
- EXCAVATION TO ABOUT 14 FEET BGS (SEE NOTE 5)
- APPROXIMATE EXTENT OF PROPOSED WING WALL (SEE NOTE 3)
- CGRW-19I — APPROXIMATE LOCATION OF DNAPL RECOVERY WELL TO BE PROTECTED DURING CONSTRUCTION OR REPLACED IN COORDINATION WITH NYSDEC

NOTES:

1. BASE MAP REFERENCED FROM DRAWING ENTITLED "ARCHITECTURAL SURVEY" PREPARED BY LEONARD J. STRANDBERG AND ASSOCIATES, CONSULTING ENGINEERS AND LAND SURVEYORS, P.C., LAST UPDATED JUNE 01, 2022.
2. ALL ELEVATIONS SHOWN HEREIN REFERENCE THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. A WING WALL WILL BE INSTALLED ALONG A PORTION OF THE SOUTHERN BOUNDARY (LENGTH TO BE DETERMINED DURING REMEDIAL DESIGN). EXCAVATION TO THE WEST OF THE WING WALL WILL BE SLOPED ALONG THE SOUTHERN BOUNDARY TO FACILITATE THE REMEDIAL EXCAVATION.
4. IF ENCOUNTERED DURING DEVELOPMENT-RELATED EXCAVATION, ADDITIONAL EXCAVATION MAY BE REQUIRED FOR THE REMOVAL OF VISIBLE NAPL-SATURATED MATERIAL IN SHALLOW SOIL TO THE EXTENT FEASIBLE (I.E., WITHOUT THE NEED FOR ADDITIONAL SUPPORT-OF-EXCAVATION OR DEWATERING) IN AREAS OUTSIDE OF THE SUPPLEMENTAL REMEDIATION AREAS.
5. FURTHER ANALYTICAL TESTING WILL BE PERFORMED DURING THE FORTHCOMING WASTE CHARACTERIZATION. IF THE SOIL IS DETERMINED TO BE HAZARDOUS FOR LEAD, THIS LOCATION WILL BE VERTICALLY AND HORIZONTALLY DELINEATED FOR TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) LEAD, AND EXCAVATED FOR OFF-SITE DISPOSAL TO A PERMITTED FACILITY.
6. SUB-MEMBRANE DEPRESSURIZATION SYSTEM DESIGNS WILL BE SUBMITTED TO THE NYSDEC FOR APPROVAL PRIOR TO INSTALLATION.
7. DOCUMENTATION SOIL SAMPLES WILL BE COLLECTED IN ACCORDANCE WITH SECTION 4.3.6 OF THE REMEDIAL ACTION WORK PLAN.
8. DNAPL RECOVERY WELL LOCATIONS ARE APPROXIMATE AND REFERENCED FROM JULY 18, 2022 POST-REMEDIATION DNAPL MONITORING STATUS REPORT, PREPARED BY ARCADIS. DNAPL RECOVERY WELLS NOTED IN THIS DRAWING MUST BE PROTECTED AND/OR REPLACED DURING CONSTRUCTION TO ACCOMMODATE ONGOING MONITORING AND RECOVERY ACTIVITIES IN COORDINATION WITH NATIONAL GRID.
9. EXTENTS OF TREATMENT AREAS ARE APPROXIMATE AND ARE BASED ON THE TREATMENT AREAS OUTLINED IN NYSDEC'S AUGUST 27, 2024 RESPONSE TO NATIONAL GRID'S AUGUST 22, 2024 DRAFT FIGURE, TITLED 'PROPOSED SUPPLEMENTAL REMEDIATION PLAN' FOR PARCEL III.
10. SUBSURFACE OBSTRUCTIONS ARE ANTICIPATED TO REMAIN WITHIN THE FOOTPRINTS OF THE FORMER OIL TANKS AND WILL BE EXCAVATED AND REMOVED FOR THE IMPLEMENTATION OF ISS TO THE EXTENT FEASIBLE. IF ISS CANNOT BE IMPLEMENTED, ALTERNATIVE REMEDIAL MEASURES WILL BE EVALUATED AS DESCRIBED IN THE REMEDIAL ACTION WORK PLAN.
11. REMEDIAL DESIGN ELEMENTS OUTLINED IN THIS FIGURE ARE APPROXIMATE AND SUBJECT TO CHANGE BASED ON THE FORTHCOMING REMEDIAL DESIGN DOCUMENTS.
12. NYCDEP = NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
13. NYSDEC = NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
14. NYCDOB = NEW YORK CITY DEPARTMENT OF BUILDINGS
15. CVOC = CHLORINATED VOLATILE ORGANIC COMPOUND
16. EL = ELEVATION
17. ISS = IN-SITU SOLIDIFICATION/STABILIZATION
18. ISGS = IN-SITU GEOCHEMICAL STABILIZATION
19. BGS = BELOW GRADE SURFACE
20. DNAPL = DENSE NON-AQUEOUS PHASE LIQUID
21. NAPL = NON-AQUEOUS PHASE LIQUID
22. SVI = SOIL VAPOR INTRUSION

60 0 30 60
SCALE: 1 INCH = 60 FEET

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
368 Ninth Avenue, 8th Floor
New York, NY 10001
T: 212.479.5400 F: 212.479.5444 www.langan.com

Project
459 SMITH STREET
NYSDEC BCP No. C224012B
BLOCK No. 471, LOT No. 200
KINGS NEW YORK

Figure Title
ELEMENTS OF REMEDY

Project No.	Figure No.
170420201	3
Date 11/18/2025	
Drawn By VK	
Checked By PM	

Filename: \\langan.com\data\NYC\data2\170420201\Cadd Data - 170420201\SheetFiles\Environmental\SRDWP\DD Figure 3.dwg Date: 1/13/2026 Time: 14:39 User: vkanagaratnam Style Table: Langan.stb Layout: FIGURE 3 DD