DECISION DOCUMENT

224 3rd Avenue
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224373
December 2024

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

DECLARATION STATEMENT - DECISION DOCUMENT

224 3rd Avenue
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224373
December 2024

Statement of Purpose and Basis

This document presents the remedy for the 224 3rd Avenue 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 224 3rd Avenue 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^{TM} (available in the Sustainable Remediation Forum [SURF] library) or similar NYSDEC accepted tool. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial design program, as appropriate. The project design specifications will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial design program.

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

2. Excavation:

The existing on-site building will be demolished and materials which cannot be beneficially reused on site will be taken off-site for proper disposal in order to implement the remedy.

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

- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- soil exceeding the 6 NYCRR Part 371 hazardous criteria for lead;
- soil with visual waste material or non-aqueous phase 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;
- any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination; and
- soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G.

All soils in the upper two feet which exceed the restricted residential SCOs will be excavated and

transported off-site for disposal.

Approximately 2,000 cubic yards of contaminated soil will be removed from the site. Collection and analysis of confirmation samples at the remedial excavation depth will be used to verify that SCOs for the site have been achieved. If confirmation sampling indicates that SCOs were not achieved at the stated remedial depth, the Applicant must notify NYSDEC, submit the sample results and, and in consultation with NYSDEC, determine if further remedial excavation is necessary. Further excavation for development will proceed after confirmation samples demonstrate that SCOs for the site have been achieved.

3. Backfill:

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.

4. Cover System:

A site cover will be required in areas where the upper two feet of exposed surface soil will exceed the applicable 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.

5. Vapor Mitigation:

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

6. 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 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 NYCDOHMH; and
- require compliance with the NYSDEC approved Site Management Plan.

7. 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 6 above.
   - Engineering Controls: The Cover System discussed in Remedy Element 4 and the Vapor Mitigation System discussed in Remedy Element 5 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 Remedy Element 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 NYSDEC notification; and
   - the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

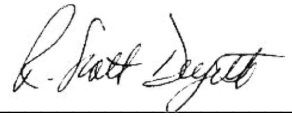
b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:
   - monitoring for vapor intrusion to assess the performance and effectiveness of the remedy; and
   - a schedule of monitoring and frequency of submittals to the NYSDEC.

c. 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(s). The plan includes, but is not limited to:
   - procedures for operating and maintaining the system(s); and
   - compliance inspection of the system(s) 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 NYSDEC guidance, as appropriate. The remedy is protective of public health and the environment.

December 19, 2024



Date

Scott Deyette, Director
Remedial Bureau B

DECISION DOCUMENT

224 3rd Avenue
Brooklyn, Kings County
Site No. C224373
December 2024

SECTION 1: SUMMARY AND PURPOSE

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

The New York State Brownfield Cleanup Program (BCP) is a voluntary program. The goal of the BCP is to enhance private-sector cleanups of brownfields and to reduce development pressure on "greenfields." A brownfield site is real property, where a contaminant is present at levels exceeding the soil cleanup objectives or other health-based or environmental standards, criteria or guidance, based on the reasonably anticipated use of the property.

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

SECTION 2: CITIZEN PARTICIPATION

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

DECInfo Locator - Web Application
https://gisservices.dec.ny.gov/gis/dil/index.html?rs=C224373

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

Brooklyn Public Library - Pacific Branch
25 4th Avenue
Brooklyn, NY 11217
Phone: (718) 638-1531

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

Location:

The site is located at 224 3rd Avenue (Tax Block 426, Lot 36) in the Gowanus neighborhood of Brooklyn, New York. The site is bordered by a parking lot and a commercial building followed by Degraw Street to the north, 3rd Avenue to the east, Sackett Street to the south, and commercial buildings, 563 Sackett Street Brownfield Cleanup Site, the K-Fulton Manufactured Gas Plant Parcels IV and III site (NYSDEC Site No. 224051) followed by Nevins Street to the west.

Site Features:

The site occupies an area of 8,470 square feet (0.19± acres) and is improved with a one-story building with a partial cellar. The site is vacant but was most recently occupied by A & A Brake Services Company Inc. (an automobile repair shop) and Mack Truck Parts (an automobile parts retailer).

Current Zoning and Land Use:

The site is located partially in an M1-4/R7X/G district and partially in an M1-4/R6X/G district. M1 districts typically include light industrial uses, such as woodworking shops, repair shops, and wholesale service and storage facilities. Offices, hotels and most retail uses are also permitted. R7 districts are medium-density apartment house districts; and R6 districts are typically seen in built-up, medium density areas. The Special Gowanus Mixed Use District (G) surrounds the Gowanus Canal and promotes affordable housing growth and reinvestment in the neighborhood consistent with the existing mix of commercial, manufacturing, and cultural uses. The proposed use is consistent with applicable zoning laws and maps.

Past Use of the Site:

A review of historical data revealed that the site was in a densely developed urban area,

characterized by commercial and industrial uses as early as 1886. Historical records indicate the site was improved with multiple dwellings by 1886. Around 1915, the dwellings appear to have been replaced by two buildings used as a laundry and a bottle cleaning & storage facility, and a portion of a third building is indicated as bottle storage. By 1938, the two buildings appear to have been removed and a new single structure (circa 1930) is constructed for use as a garage with a 550-gallon underground storage tank. The site use as a garage/auto repair facility appears unchanged between 1938 and present day.

Site Geology and Hydrogeology:

The site is located in a developed area of Brooklyn, New York that is generally covered with paved roads, public walkways and buildings. The built environment is generally underlain by uncontrolled fill used for construction and development since the 1800s. The area surrounding the Gowanus Canal, including the site, was originally part of the former Gowanus Creek and associated wetlands.

According to the USGS 7.5-Minute Quadrangle Map, the site is at an elevation of about 17 feet above mean sea level. The site cover (i.e., concrete slabs, asphalt pavement) is underlain by fill characterized by gray to brown sand with varying amounts of brick fragments, coal fragments, and coal ash extending to depths from about 16 to 18 feet below grade surface (bgs). The fill was underlain by apparent native alluvial deposits consisting of fine sand and silt. Bedrock was not encountered during the investigations, however, depth to bedrock is estimated to be greater than 100 feet bgs.

Groundwater was observed between 13 and 15 feet bgs. Based on the general topography of the surrounding area, inferred groundwater flow is generally to the west, towards the Gowanus Canal, located about 720 feet west of the site.

A site location map is attached as Figure 1 and a site plan 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 use (which allows for commercial use and industrial use) as described in Part 375-1.8(g) was evaluated in addition to an alternative which would allow for unrestricted use of the site.

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

SECTION 5: ENFORCEMENT STATUS

The Applicant under the Brownfield Cleanup Agreement is a Volunteer. The Applicant does not have an obligation to address off-site contamination. However, NYSDEC has determined that this

site does not pose a significant threat to public health or the environment; accordingly, 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:

- soil,
- groundwater
- soil vapor intrusion.

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
indeno(1,2,3-cd)pyrene
arsenic
barium
lead
tetrachloroethene (PCE)
trichloroethene (TCE)

The contaminants of concern exceed the applicable SCGs for:

- groundwater
- soil
- soil vapor intrusion

6.2: Interim Remedial Measures

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

There were no IRMs performed at this site during the RI.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water. The RI report presents a detailed discussion of any existing and potential impacts from the site to fish and wildlife receptors.

Nature and Extent of Contamination:

Soil and groundwater were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), per- and polyfluoroalkyl substances (PFAS), and pesticides. Soil vapor, sub-slab soil vapor, and indoor air samples were analyzed for VOCs. Based upon investigations conducted to date, the primary contaminants of concern are non-aqueous phase liquid (NAPL), grossly contaminated media (GCM), VOCs and SVOCs in soil and groundwater, and VOCs in soil vapor.

Soil: Soil samples were analyzed from seventeen soil borings and exceedances of the restricted residential soil cleanup objectives (RRSCOs) and the protection of groundwater soil cleanup objective (PGSCOs) were found. For SVOCs, the most notable exceedances included maximum concentrations of benzo(a)anthracene at 79.2 parts per million (ppm) (PGSCO: 1 ppm), benzo(a)pyrene at 78.1 ppm (PGSCO: 22 ppm), benzo(b)fluoranthene at 90.7 ppm (PGSCO: 1.7

ppm), benzo(k)fluoranthene at 25.6 ppm (PGSCO: 1.7 ppm), chrysene at 75.1 ppm (PGSCO: 1 ppm), indeno(1,2,3-cd)pyrene at 59 ppm (PGSCO: 8.2 ppm), phenanthrene at 158 ppm (RRSCO: 100 ppm), and pyrene at 145 ppm (RRSCO: 100 ppm) For metals, the most notable exceedances include maximum concentrations of arsenic at 40.4 ppm (RRSCO: 16 ppm), barium at 495 ppm (RRSCO: 16 ppm), and lead at 2,700 ppm (RRSCO: 400 ppm).

No VOCs, PCBs, PFAS or pesticides were detected at concentrations exceeding the RRSCOs.

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

Groundwater: Groundwater samples were collected from seven on-site locations and exceedances of the applicable NYS Ambient Water Quality Standards and Guidance Values (AWQSGVs) were found. Maximum concentrations of VOCs include chloromethane at 20.5 parts per billion (ppb) (AWQSGV 5 ppb). Maximum concentrations of SVOCs include benzo(a)anthracene at 1.19 ppb (AWQSGV 0.002 ppb), benzo(a)pyrene at 1.44 ppb (AWQSGV: .002 ppb), benzo(b)fluoranthene at 1.24 ppb (AWQSGV: 0.002 ppb), chrysene at 1.77 ppb (AWQSGV: 0.002 ppb), and indeno(1,2,3-cd)pyrene at 1.78 ppb (AWQSGV: 0.002 ppb). PFOS was detected at a maximum concentration of 9.88 parts per trillion (ppt) and PFOA was detected at a maximum concentration of 96.1 ppt (AWQSGV 2.7 and 6.7 ppt respectively). No metals or pesticides were detected above AWQSGVs.

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

Sub-Slab Soil Vapor and Indoor Air: The site is currently unoccupied. Seven sub-slab vapor/indoor air samples were collected from the building on-site. Maximum concentrations for trichloroethene were 61 micrograms per cubic meter (ug/m3) in sub-slab vapor, and 1.1 ug/m3 in indoor air. Maximum concentrations for tetrachloroethylene were 13,000 ug/m3 in sub-slab vapor, and 23 ug/m3 in indoor air.

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

6.4: Summary of Human Exposure Pathways

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

People are not expected to come into contact with contaminated soil or groundwater since the site is covered with buildings and pavement. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. Volatile organic compounds in soil vapor (air spaces within the soil) may move into buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. The site is vacant so inhalation of site contaminants in indoor air via vapor intrusion is not a current concern. However, the potential exists for inhalation of site contaminants due to soil vapor intrusion for any

future on-site development. Environmental sampling indicates soil vapor intrusion from site contamination is not a concern for off-site buildings.

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 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.

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, 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^{TM} (available in the Sustainable Remediation Forum [SURF] library) or similar NYSDEC accepted tool. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial design program, as appropriate. The project design specifications will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial design program.

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

2. Excavation:

The existing on-site building will be demolished and materials which cannot be beneficially reused on site will be taken off-site for proper disposal in order to implement the remedy.

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

- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- soil exceeding the 6 NYCRR Part 371 hazardous criteria for lead;
- soil with visual waste material or non-aqueous phase 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;
- any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination; and
- soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G.

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

Approximately 2,000 cubic yards of contaminated soil will be removed from the site. Collection and analysis of confirmation samples at the remedial excavation depth will be used to verify that SCOs for the site have been achieved. If confirmation sampling indicates that SCOs were not achieved at the stated remedial depth, the Applicant must notify NYSDEC, submit the sample results and, and in consultation with NYSDEC, determine if further remedial excavation is necessary. Further excavation for development will proceed after confirmation samples demonstrate that SCOs for the site have been achieved.

3. Backfill:

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.

4. Cover System:

A site cover will be required in areas where the upper two feet of exposed surface soil will exceed the applicable 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.

5. Vapor Mitigation:

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

6. 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 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 NYCDOHMH; and
- require compliance with the NYSDEC approved Site Management Plan.

7. 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 6 above.
   - Engineering Controls: The Cover System discussed in Remedy Element 4 and the Vapor Mitigation System discussed in Remedy Element 5 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 Remedy Element 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 NYSDEC notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

e. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:
   - monitoring for vapor intrusion to assess the performance and effectiveness of the remedy; and
   - a schedule of monitoring and frequency of submittals to the NYSDEC.

f. 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(s). The plan includes, but is not limited to:
   - procedures for operating and maintaining the system(s); and
   - compliance inspection of the system(s) to ensure proper O&M as well as providing the data for any necessary reporting.

Legend

Approximate Site Boundary

2,000 0 2,000

SCALE IN FEET

Notes:

1. Basemap adapted from United States Geological Survey (USGS) 7.5-Minute Series Topographical Maps, Brooklyn and Jersey City, New York and New Jersey, Quadrangles, 2019.

LANGAN

360 West 31st Street, 8th Floor
New York, NY 10001-2727
T: 212.479.5400 F: 212.479.5444 www.langan.com

Langan Engineering & Environmental Services, Inc.
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
Langan International LLC

Collectively known as Langan

Project

224 3RD AVENUE

BLOCK No. 426, LOT No. 36

BROOKLYN NEW YORK

Figure Title

SITE LOCATION MAP

Project No.	Figure No.
170758101	1
Date: 9/6/2023	
Scale: 1"=2,000'	
Drawn By: MG	
Submission Date:	

Path: \\Langan.com\data\NYC\data1\170758101\Project Data\ArcGIS\APRX\170758101\170758101_PRO3.0.aprx Date: 9/6/2023 User: mgeorgalas Time: 2:33 PM

Notes:
1. Imagery provided through Langan's subscription to Nearmap.com, flown on 05/28/2023.
2. Tax parcel data provided by the New York City Department of City Planning.

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.

30 0 30
SCALE IN FEET

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
360 West 31st Street, 8th Floor
New York, NY 10001
T: 212.479.5400 F: 212.479.5444 www.langan.com

Project
224 3RD AVENUE
BLOCK No. 426, LOT No. 36
BROOKLYN NEW YORK

Figure Title
SITE PLAN

Project No.	Figure No.
170758101	2
Date: 9/6/2023	
Scale: 1"=30'	
Drawn By: MG	

Legend

- Soil Boring Location
- Soil Boring, Monitoring Well, Sub-Slab Vapor Point, and Indoor Air Sample Location
- Approximate Site Boundary
- Excavation to 2 feet bgs
- Excavation to 8 feet bgs
- Excavation to 14 feet bgs
- Composite Cover and Sub-Slab Depressurization System

Notes:
1. Imagery provided through Langan's subscription to Nearmap.com, flown on 05/28/2023.
2. Tax parcel data provided by the New York City Department of City Planning.
3. BGS = below grade surface
4. Depth and dimension of remedial excavation areas are estimated based on analytical results exceeding the track 4 soil cleanup levels.

20 0 20
SCALE IN FEET

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Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
360 West 31st Street, 8th Floor
New York, NY 10001
T: 212.479.5400 F: 212.479.5444 www.langan.com

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BROOKLYN NEW YORK

Figure Title
ELEMENTS OF REMEDY

Project No.	Figure No.
170758101	**3**
Date: 5/3/2024	
Scale: 1"=20'	
Drawn By: PDT	

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