DECISION DOCUMENT

438 11th Avenue
Brownfield Cleanup Program
New York, New York County
Site No. C231095
July 2021

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

DECLARATION STATEMENT - DECISION DOCUMENT

438 11th Avenue
Brownfield Cleanup Program
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Site No. C231095
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Statement of Purpose and Basis

This document presents the remedy for the 438 11th Avenue site, a brownfield cleanup site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the 438 11th Avenue site and the public's input to the proposed remedy presented by the Department.

Description of Selected Remedy

The elements of the selected remedy are as follows:

1. Remedial Design

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

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

energy efficiency as an element of construction.

2. Excavation

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);
- non-aqueous phase liquids;
- soil with visual waste material or non-aqueous phase liquid; and
- soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G.

Excavation and off-site disposal of all on-site soils which exceed unrestricted soil cleanup objectives (SCOs), as defined by 6 NYCRR Part 375-6.8. If a Track 1 or Track 2 cleanup is achieved, a cover system will not be a required element of the remedy.

Approximately 10,600 cubic yards of contaminated soil will be removed from the site. Excavation and removal of any underground storage tanks (USTs), underground piping or other structures associated with a source of contamination.

3. Backfill

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

4. In-Situ Chemical Oxidation

In-situ chemical oxidation (ISCO) will be implemented to treat petroleum-related volatile organic compounds (VOCs) in groundwater. A chemical oxidant will be injected into the subsurface or applied directly to groundwater at the base of the remedial excavation to destroy contaminants within the central portion on tax lot 62 and the northeastern portion of tax lot 1. The method and depth of injection will be determined during the remedial design.

Prior to the full implementation of this technology, laboratory and on-site pilot scale studies will be conducted to more clearly define design parameters. Details regarding the number of injection wells (if selected), the type and frequency of injections, and the volume of chemical oxidant will be provided in a design document after the pilot study is completed.

5. Vapor Intrusion Evaluation

As part of the Track 1 remedy, a soil vapor intrusion evaluation will be completed. The evaluation will include a provision for implementing actions recommended to address exposures related to soil vapor intrusion.

6. Local Institutional Controls

If a Track 1 cleanup is achieved and thus no Environmental Easement (EE) or Site Management Plan (SMP) are needed to achieve soil, groundwater, or soil vapor remedial action objectives, then the following local use restriction will be relied upon to prevent ingestion of groundwater: Article

141 of the NYCDOH code, which prohibits potable use of groundwater without prior approval.

Conditional Track 1

The intent of the remedy is to achieve a Track 1 unrestricted use therefore, no environmental easement or site management plan is anticipated. If the soil vapor intrusion (SVI) evaluation is not completed prior to completion of the Final Engineering Report (FER), then an SMP and EE will be required to address the SVI evaluation and implement actions as needed; if a mitigation or monitoring action is needed, a Track 1 cleanup can only be achieved if the mitigation system or other required action is no longer needed within 5 years of the date of the Certificate of Completion (COC).

In the event that Track 1 unrestricted use is not achieved, including achievement of unrestricted SCOs or groundwater and soil vapor remedial objectives, the following contingent remedial elements will be required, and the remedy will achieve a Track 2 restricted residential cleanup.

Contingent Remedial Elements

7. Institutional Controls

Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

- require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allow the use and development of the controlled property for restricted residential use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or NYCDOH; and
- require compliance with the Department approved Site Management Plan.

8. Site Management Plan

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

a. an Institutional Control and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

   – Institutional Controls: The Environmental Easement discussed in Paragraph 7 above.

   This plan includes, but may not be limited to:

   - descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;
   - a provision for evaluation of the potential for soil vapor intrusion for any occupied buildings on the site, including provision for implementing actions recommended
     to address exposures related to soil vapor intrusion;

- 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. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:
- monitoring of groundwater to assess the performance and effectiveness of the remedy; and
- a schedule of monitoring and frequency of submittals to the Department; and
- monitoring of vapor intrusion for any buildings on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

Declaration

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

Date	Gerard Burke, Director Remedial Bureau B

DECISION DOCUMENT

438 11th Avenue
New York, New York County
Site No. C231095
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SECTION 1: SUMMARY AND PURPOSE

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

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

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

SECTION 2: CITIZEN PARTICIPATION

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

New York Public Library - Muhlenburg Branch
209 West 23rd Street
New York, NY 10011
Phone: 212-924-1585

Manhattan Community Board 4
330 West 42nd Street
Suite 2618
New York, NY 10036
Phone: 212-736-4536

DECInfo Locator - Web Application
https://gisservices.dec.ny.gov/gis/dil/index.html?rs=C231095

Receive Site Citizen Participation Information by Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The site is located in the Hell's Kitchen neighborhood of Manhattan and is bounded on the west by 11th Avenue, on the south by West 36th Street and on the north by West 37th Street. The eastern boundary of the site is defined by an Amtrak railroad easement.

Site Features: The 0.876-acre site consists of two tax lots with considerably different surface elevations. Lot 1 is an L-shaped parcel that lies approximately 18 feet below street grade with areas of exposed bedrock. The second lot (Lot 62) contains a vacant one-story building at street grade. A 100 square-foot portion of Lot 62 along West 37th Street and the Amtrak easement on Lot 1 are excluded from the BCP site.

Current Zoning and Land Use: The site is zoned C6-4 (commercial and mixed uses) and is currently unoccupied.

Past Use of the Site: Circa 1930s, Lot 1 was excavated to its current depth for construction of a railyard and a railroad spur that went westward beneath 11th Avenue. Lot 1 also contained a loading platform and a motor freight station. By 1996 the rail tracks and railyard structures were removed, and the property has since been used as a staging area for railroad construction and repair materials and equipment.

Since its construction in 1919, the building currently occupying Lot 62 had been utilized as an automotive repair garage, sanitation company garage, and warehouse. The building has been vacant since 2013.

Site Geology and Hydrogeology: Site soils were observed as historic fill material to a depth of approximately 5 feet below the surface, underlain with brown fine sand with silt which may or may not be native material. Where not exposed, bedrock is present directly below the fine sand/silt approximately 6 to 9 feet below the surface. The bedrock is a high-grade metamorphic rock consisting of a sequence of Cambrian and Ordovician age gneiss, schistose-gneiss, and marble. The bedrock is characterized by numerous faults and fractures, many of which contain groundwater.

The groundwater table is in bedrock across much of the site. Groundwater at the site is approximately two feet below grade in the lowest area of Lot 1 and flows west toward the Hudson River, located approximately a quarter mile away.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives that restrict the use of the site to restricted-residential use (which allows for commercial use and industrial use) as described in Part 375-1.8(g) were evaluated in addition to an alternative which would allow for unrestricted use of the site.

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

SECTION 5: ENFORCEMENT STATUS

The Applicants under the Brownfield Cleanup Agreement is are Volunteers. The Applicants do not have an obligation to address off-site contamination. However, the Department 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:

- 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. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a contaminant that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized below. Additionally, the RI Report contains a full discussion of the data. The contaminants of concern identified at this site are:

lead	vinyl chloride
mercury	1,2,4-trimethylbenzene
selenium	1,3,5-trimethylbenzene
silver	benzene
benzo(a)anthracene	ethylbenzene
benzo(a)pyrene	xylenes
benzo(b)fluoranthene	isopropylbenzene
benzo(k)fluoranthene	n-propylbenzene
chrysene	xylene (mixed)
tetrachloroethene (PCE)	cis-1,2-dichloroethene

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.

Nature and Extent of Contamination:
Soil and groundwater were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), pesticides, and per- and polyfluoroalkyl substances (PFAS). Soil vapor was analyzed for VOCs. The primary contaminants of concern are VOCs, SVOCs and metals in soil and groundwater and chlorinated VOCs in soil vapor.

Soil

Lot 1:
The soil contamination on Lot 1 is indicative of historic fill. Several SVOCs were detected to a depth of 8 feet below ground surface (bgs) at levels above unrestricted use soil cleanup objectives (UUSCOs) and/or restricted residential soil cleanup objectives (RRSCOs) including: benzo(a)anthracene up to 64.1 parts per million (ppm) (UUSCO and RRSCO of 1 ppm), benzo(a)pyrene up to 12.1 ppm (UUSCO and RRSCO of 1 ppm), benzo(b)fluoranthene up to 12.6 ppm (UUSCO and RRSCO of 1 ppm), benzo(k)fluoranthene up to 10.3 ppm (UUSCO of 0.8 ppm, RRSCO of 3.9 ppm), chrysene up to 54.4 ppm (UUSCO of 1 ppm, RRSCO of 3.9 ppm), dibenzo(a,h)anthracene up to 4.73 ppm (UUSCO and RRSCO of 0.33 ppm), indeno(1,2,3-cd)pyrene up to 8.05 ppm (UUSCO and RRSCO of 0.5), phenanthrene up to 119 ppm (UUSCO and RRSCO of 100 ppm), and pyrene up to 108 ppm (UUSCO and RRSCO of 100 ppm).

The following metals were detected to a depth of 8 feet bgs at levels exceeding UUSCOs and/or RRSCOs: cadmium up to 3.55 ppm (UUSCO of 2.5 ppm), copper up to 225 ppm (UUSCO of 50 ppm), lead up to 1,030 ppm (UUSCO of 63 ppm, RRSCO of 400 ppm), mercury up to 8.76 ppm (UUSCO of 0.18 ppm, RRSCO of 0.81 ppm), selenium up to 7.11 ppm (UUSCO of 3.9 ppm), silver up to 138 ppm (UUSCO of 2 ppm), zinc up to 615 ppm (UUSCO of 109 ppm).

The following pesticides were detected to depth of 2 feet bgs at levels exceeding UUSCOs: 4,4'-DDD up to 0.0057 ppm and 4,4'-DDT up to 0.0087 ppm, both with UUSCOs of 0.0033.Total PCBs were detected above the UUSCO in two locations (maximum 0.641 ppm compared to UUSCO of 0.1 ppm). No VOCs were detected above their respective UUSCOs. All pesticides, PCBs and VOC detections were below their respective RRSCOs.

Lot 62:
The following petroleum-related VOCs were detected to a depth of 8 feet bgs at levels exceeding UUSCOs and/or RRSCOs: 1,2,4-trimethylbenzene up to 54 ppm (UUSCO of 3.6 ppm, RRSCO of 52 ppm), 1,3,5-trimethylbenzene up to 23 ppm (UUSCO of 8.4 ppm), , chlorobenzene up to 1.6 ppm (UUSCO of 1.1 ppm), ethylbenzene up to 5.4 ppm (UUSCO is 1 ppm), n-propylbenzene up to 9.1 ppm (UUSCO of 3.9 ppm) and total xylenes up to 20 ppm (UUSCO of 0.26 ppm). All of the VOC exceedances were limited to one boring location in the center of the lot.

SVOCs were detected at levels exceeding UUSCOs and/or RRSCOs at one location, to a depth of 2 feet bgs, in the southwestern portion of the lot as follows: benzo(a)anthracene at 1.75 ppm (UUSCO and RRSCO of 1 ppm), benzo(a)pyrene at 1.31 ppm (UUSCO and RRSCO of 1 ppm), benzo(b)fluoranthene at 2.15 ppm (UUSCO and RRSCO of 1 ppm), benzo(k)fluoranthene at 1.66 ppm (UUSCO of 0.08 ppm), .

The following metals were detected to a depth of 8 feet bgs at levels exceeding UUSCOs and/or RRSCOs: arsenic up to 15.6 ppm (UUSCO of 13 ppm), barium up to 607 ppm (UUSCO of 350 ppm, RRSCO of 400 ppm), cadmium up to 2.74 ppm (UUSCO of 2.5 ppm), copper up to 151 ppm (UUSCO of 50 ppm), lead up to 611 (UUSCO of 63 ppm, RRSCO of 400 ppm), mercury up to 2.94 ppm (UUSCO of 0.18 ppm, RRSCO of 0.81 ppm), and zinc up to 362 (UUSCO of 109 ppm).

Pesticides and PCBs were not detected above their respective UUSCOs.

The data do not indicate any off-site impacts in soil related to this site.

<u>Groundwater</u>

Lot 1:
Two VOCs, benzene at 1.2 parts per billion (ppb) and cis-1,2-dichloroethene at 53 ppb, were detected above their Class GA Ambient Water Quality Standard (AWQS) of 1 ppb and 5 ppb, respectively. The dissolved metals manganese and sodium were detected in groundwater above AWQS but are considered naturally occurring. No PCBs, pesticides or SVOCs were detected above standards.

Lot 62:
Several VOCs were detected at levels exceeding AWQS as follows: 1,2,4-trimethylbenzene up to 59 ppb (5 ppb standard), 1,2-dichlorobenzene up to 3.9 ppb (3 ppb standard), 1,3,5-trimethylbenzene up to 35 ppb (5 ppb standard), 1,4-dichlorobenzene up to 3.3 ppb (3 ppb standard), benzene up to 250 ppb (1 ppb standard), chlorobenzene up to 56 ppb (5 ppb standard), ethylbenzene up to 94 ppb (5 ppb standard), isopropylbenzene up to 58 ppb (5 ppb standard), n-butylbenzene up to 30 ppb (5 ppb standard), n-propylbenzene up to 120 ppb (5 ppb standard), p-isopropyltoluene up to 13 ppb (5 ppb standard), sec-butylbenzene up to 19 ppb (5 ppb standard), toluene up to 18 ppb (5 ppb standard), mixed xylenes up to 65 ppb (5 ppb standard),and total xylenes up to 69 ppb (5 ppb standard). The SVOC naphthalene was detected up to 51.8 ppb (10 ppb standard). Selenium was detected as a dissolved metal above AWQS in one well (14 ppb compared to 10 ppb standard). The dissolved metals magnesium, manganese and sodium were also

detected in one well above AWQS but are considered naturally occurring. No PCBs or pesticides were detected above standards.

Sitewide:
For PFAS, perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) were reported at concentrations up to 99 parts per trillion (ppt) and 110 ppt, respectively, exceeding the Maximum Contaminant Level (MCL) (drinking water standard) of 10 ppt each in groundwater.

There are no public water supply wells within a half a mile and there is a municipal prohibition for use of groundwater at the site.

The data do not indicate any off-site impacts in groundwater related to this site.

Soil Vapor

Lot 1:
Ten soil vapor samples were collected and analyzed on Lot 1. Chlorinated VOC detections include: tetrachloroethene (PCE) up to 60 micrograms per cubic meter ($\mu g/m^3$), cis-1,2-dichloroethene in one location at 26 $\mu g/m^3$, and vinyl chloride in one location at 550 $\mu g/m^3$. The cis-1,2-dichloroethene and vinyl chloride detections were at the same location near the northern boundary of the site. Methylene chloride was detected in one location at 18 $\mu g/m^3$ and trichlorofluoromethane (Freon 11) was detected in six locations up to 400 $\mu g/m^3$.

Lot 62:
Five soil vapor samples were collected and analyzed on Lot 62. PCE was detected at four locations up to 120 $\mu g/m^3$ and methylene chloride was detected at 72 $\mu g/m^3$ at one location.

Several petroleum-related VOCs were detected throughout the site on both lots. The data do not indicate any off-site impacts in soil vapor related to this site.

6.4: Summary of Human Exposure Pathways

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

The site is enclosed by fencing, concrete walls, and adjoining structures, which restricts public access. Persons who enter the site could contact contaminants in the soil by walking on the site, digging or otherwise disturbing the soil. 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. Currently, there are no occupied buildings on-site. The potential exists for indoor air impacts via the soil vapor intrusion pathway on-site should the site building be re-occupied and/or if new construction and

occupancy occurs. Environmental sampling indicates soil vapor intrusion is not a concern for off-site structures.

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

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

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater 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 Conditional Track 1 remedy.

The selected remedy is referred to as the Excavation, Groundwater Treatment, and Soil Vapor Intrusion Evaluation 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 will include, at a minimum, a 20-mil vapor barrier/waterproofing membrane on the foundation to improve energy efficiency as an element of construction.

2. Excavation

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);
- non-aqueous phase liquids;
- soil with visual waste material or non-aqueous phase liquid; and
- soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G.

Excavation and off-site disposal of all on-site soils which exceed unrestricted soil cleanup objectives (SCOs), as defined by 6 NYCRR Part 375-6.8. If a Track 1 or Track 2 cleanup is achieved, a cover system will not be a required element of the remedy.

Approximately 10,600 cubic yards of contaminated soil will be removed from the site. Excavation and removal of any underground storage tanks (USTs), underground piping or other structures associated with a source of contamination.

3. Backfill

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

4. In-Situ Chemical Oxidation

In-situ chemical oxidation (ISCO) will be implemented to treat petroleum-related volatile organic compounds (VOCs) in groundwater. A chemical oxidant will be injected into the subsurface or applied directly to groundwater at the base of the remedial excavation to destroy contaminants within the central portion on tax lot 62 and the northeastern portion of tax lot 1. The method and depth of injection will be determined during the remedial design.

Prior to the full implementation of this technology, laboratory and on-site pilot scale studies will be conducted to more clearly define design parameters. Details regarding the number of injection wells (if selected), the type and frequency of injections, and the volume of chemical oxidant will be provided in a design document after the pilot study is completed.

5. Vapor Intrusion Evaluation

As part of the Track 1 remedy, a soil vapor intrusion evaluation will be completed. The evaluation will include a provision for implementing actions recommended to address exposures related to soil vapor intrusion.

6. Local Institutional Controls

If a Track 1 cleanup is achieved and thus no Environmental Easement (EE) or Site Management Plan (SMP) is needed to achieve soil, groundwater, or soil vapor remedial action objectives, then the following local use restriction will be relied upon to prevent ingestion of groundwater: Article 141 of the NYCDOH code, which prohibits potable use of groundwater without prior approval.

Conditional Track 1

The intent of the remedy is to achieve a Track 1 unrestricted use therefore, no environmental easement or site management plan is anticipated. If the soil vapor intrusion (SVI) evaluation is not completed prior to completion of the Final Engineering Report (FER), then an SMP and EE will be required to address the SVI evaluation and implement actions as needed; if a mitigation or monitoring action is needed, a Track 1 cleanup can only be achieved if the mitigation system or other required action is no longer needed within 5 years of the date of the Certificate of Completion (COC).

In the event that Track 1 unrestricted use is not achieved, including achievement of unrestricted SCOs or groundwater and soil vapor remedial objectives, the following contingent remedial elements will be required, and the remedy will achieve a Track 2 restricted residential cleanup.

Contingent Remedial Elements

7. Institutional Controls

Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

- require the remedial party or site owner to complete and submit to the Department a

periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allow the use and development of the controlled property for restricted residential use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or NYCDOH; and
- require compliance with the Department approved Site Management Plan.

8. Site Management Plan

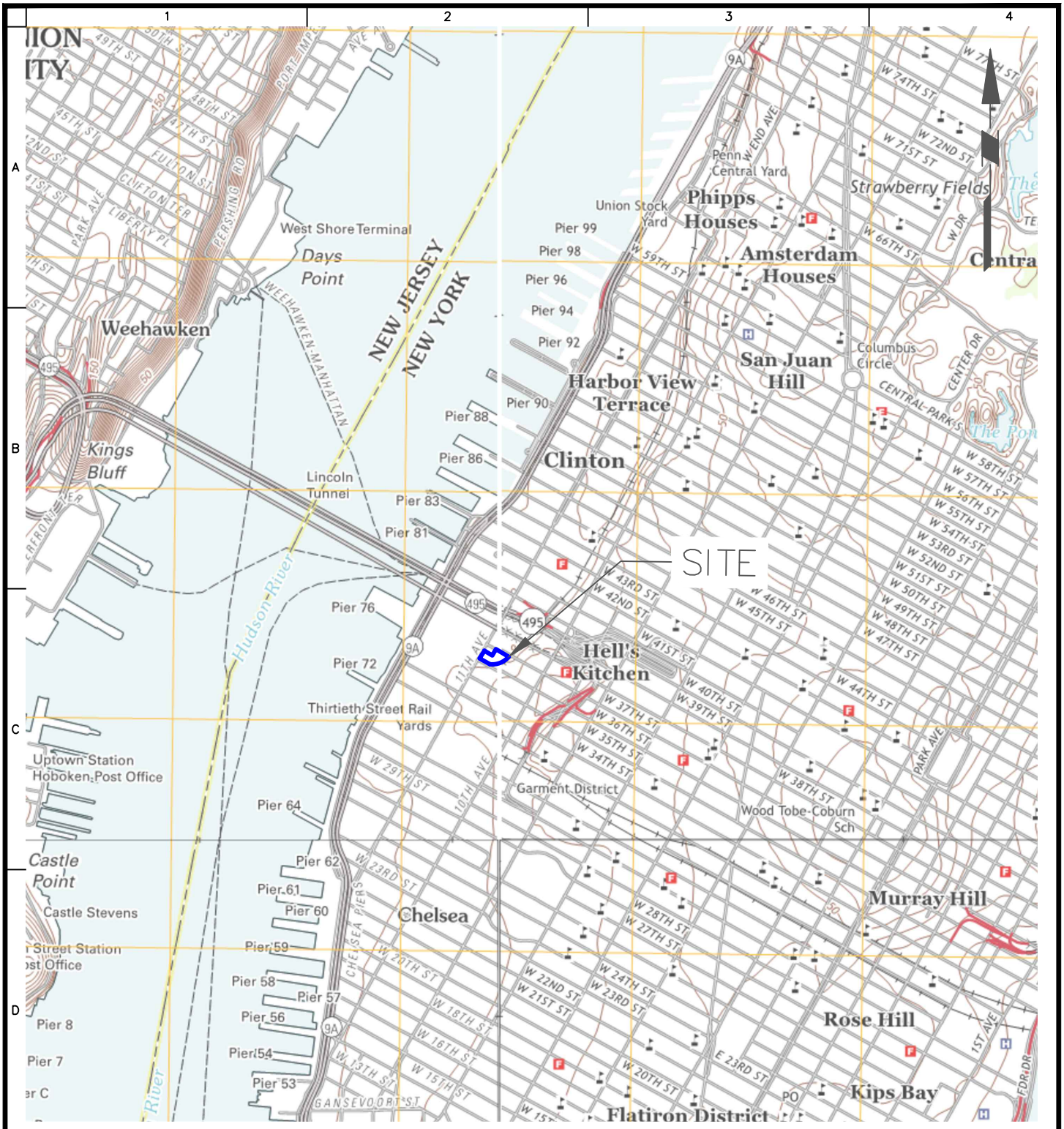
A Site Management Plan is required, which includes the following:

a. an Institutional Control and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 7 above.

This plan includes, but may not be limited to:
- descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any occupied buildings on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- 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. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:
- monitoring of groundwater to assess the performance and effectiveness of the remedy; and
- a schedule of monitoring and frequency of submittals to the Department; and
- monitoring of vapor intrusion for any buildings on the site, as may be required by the Institutional and Engineering Control Plan discussed above.



BASEMAP REFERENCE: USGS 7.5 MINUTE SERIES CENTRAL PARK, NY TOPOGRAPHIC QUANTRANGLE, 2013

- SITE LOCATION

2000 0 1000 2000

SCALE IN FEET

LANGAN

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

Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. S.A.
Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C.
Langan Engineering and Environmental Services, Inc.
Langan CT, Inc.
Langan International LLC
Collectively known as Langan

Project	438 11TH AVENUE BLOCK No. 708, LOT Nos. 1 and 62 NEW YORK NEW YORK
Figure Title	SITE LOCATION MAP
Project No.	170395001
Date	06/07/2017
Scale	1" = 1,200'
Drawn By / Checked By	KMS / SK
Submission Date	JUNE 2017
Figure No.	1
Sheet	1 of 8

Filename: \\langan.com\data\NY\data0\170395001\Cadd Data - 170395001\SheetFiles\Environmental\Lot 1\170395001-NI101-0103.dwg Date: 3/5/2019 Time: 15:17 User: kgarrett Style Table: Langan.stb Layout: ANSIA-BP

LEGEND

APPROXIMATE BCP SITE BOUNDARY

APPROXIMATE LOT 62 BOUNDARY

NOTES

1. BASEMAP REFERENCES: TOPOGRAPHIC, BOUNDARY AND UTILITY SURVEY PREPARED BY LANGAN, DATED 25 FEBRUARY 2011. AND ELEVATION SURVEY NO. 65178 PREPARED BY MONTROSE SURVEYING CO. LLP., DATED 26 JULY 2016.
2. ELEVATIONS SHOWN REFER TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)
3. BCP = BROWNFIELD CLEANUP PROGRAM

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.

50 0 25 50

SCALE: 1 INCH = 50 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	438 ELEVENTH AVENUE
	BLOCK No. 708, LOT Nos. 1 AND 62
	NEW YORK NEW YORK
Figure Title	SITE LAYOUT PLAN
Project No.	170395002
Date	3/5/2021
Drawn By	LE
Checked By	KS
Figure No.	2
Sheet	2 of 12

LEGEND

- APPROXIMATE BCP SITE BOUNDARY
- APPROXIMATE LOT 62 BOUNDARY
- APPROXIMATE AREA OF LOT 1 AT EXISTING SIDEWALK GRADE
- APPROXIMATE AREA OF REMEDIAL EXCAVATION TO 2 FEET BGS
- APPROXIMATE AREA OF REMEDIAL EXCAVATION TO THE SHALLOWER OF 4 FEET BGS OR BEDROCK
- APPROXIMATE AREA OF REMEDIAL EXCAVATION TO THE SHALLOWER OF 6 FEET BGS OR BEDROCK
- APPROXIMATE AREA OF REMEDIAL EXCAVATION TO THE SHALLOWER OF 7 FEET BGS OR BEDROCK
- APPROXIMATE AREA OF REMEDIAL EXCAVATION TO THE SHALLOWER OF 8 FEET BGS OR BEDROCK
- APPROXIMATE AREA OF REMEDIAL EXCAVATION TO 13 FEET BGS TO REMOVE OBSERVED PETROLEUM NUISANCE CONDITIONS (SEE NOTE 11)
- APPROXIMATE AREA OF REMEDIAL EXCAVATION TO 10 FEET BGS TO REMOVE OBSERVED PETROLEUM NUISANCE CONDITIONS (SEE NOTE 11)
- EL 7 — APPROXIMATE ELEVATION CORRESPONDING TO RESPECTIVE REMEDIAL EXCAVATION DEPTHS

NOTES

1. BASEMAP REFERENCES: TOPOGRAPHIC, BOUNDARY AND UTILITY SURVEY PREPARED BY LANGAN, DATED 25 FEBRUARY 2011. AND ELEVATION SURVEY NO. 65178 PREPARED BY MONTROSE SURVEYING CO. LLP., DATED 26 JULY 2016.
2. ELEVATIONS SHOWN REFER TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. THE ELEVATION OF CURRENT SITE GRADE IS ABOUT EL 9 ON LOT 1 AND EL 26 ON LOT 62.
4. THE SITE WILL BE EXCAVATED BETWEEN 5 AND 25 FEET BGS (ABOUT EL 1) FOR DEVELOPMENT PURPOSES.
5. BEDROCK WAS OBSERVED IN SOIL BORINGS AT DEPTHS BETWEEN 2 AND 16 FEET BGS DURING THE RI.
6. ELEVATIONS CORRESPONDING TO APPROXIMATE REMEDIAL EXCAVATION DEPTHS ARE DISPLAYED WITHIN EACH EXCAVATION AREA SHOWN.
7. BCP = BROWNFIELD CLEANUP PROGRAM
8. BGS = BELOW GRADE SURFACE
9. EL = ELEVATION
10. RI = REMEDIAL INVESTIGATION
11. NUISANCE CONDITIONS OBSERVED DURING PREVIOUS INVESTIGATIONS INCLUDE PETROLEUM-LIKE ODORS, STAINING AND/OR ORGANIC VAPORS ABOVE BACKGROUND LEVELS AS DETECTED USING A PHOTOIONIZATION DETECTOR (PID).

30 0 15 30

SCALE: 1 INCH = 30 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	438 ELEVENTH AVENUE BLOCK No. 708, LOT Nos. 1 AND 62 NEW YORK NEW YORK
Figure Title	ALTERNATIVE I - TRACK 1 CLEANUP
Project No.	170395002
Date	05/19/2021
Drawn By	LE
Checked By	KS
Figure No.	3

Filename: \\langan.com\data\NYC\data0\170395001\Cadd Data - 170395001\SheetFiles\Environmental\Lots 1 and 62\RAWP\Figure 7 - Alternative I - Track 1 Cleanup_2021.05.18.dwg Date: 5/19/2021 Time: 11:47 User: lesmail Style Table: Langan.stb Layout: Figure 7 - Alternative I - Track 1 Cleanup