DECISION DOCUMENT

320 West Fordham Road
Brownfield Cleanup Program
Bronx, Bronx County
Site No. C203163
April 2025

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

DECLARATION STATEMENT - DECISION DOCUMENT

320 West Fordham Road
Brownfield Cleanup Program
Bronx, Bronx County
Site No. C203163
April 2025

Statement of Purpose and Basis

This document presents the remedy for the 320 West Fordham Road 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 320 West Fordham Road 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

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

- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- soil with visual waste material or non-aqueous phase liquid;
- any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination; and
- soil containing total SVOCs exceeding 500 ppm.

Conditional Track 1 Area

Excavation and off-site disposal of all on-site soils which exceed Unrestricted Use Soil Cleanup Objectives (UUSCOs) as defined by 6 NYCRR Part 375-6.8 to depths ranging between 8 and 23 feet below grade throughout the Conditional Track 1 portion of the site (north, central, and eastern parts of the site generally corresponding to the planned future building footprint).

Track 4 Area
All soils in the upper two feet which exceed the Restricted Residential SCOs (RRSCOs) will be excavated and transported off-site for disposal within the Track 4 portion of the site (western and southern part of the site).

A total of approximately 18,500 cubic yards of contaminated soil will be removed from the site.

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

To ensure proper handling and disposal of excavated material, waste characterization sampling will be completed for all identified contaminated site material. Waste characterization sampling will be performed exclusively for the purposes of off-site disposal in a manner suitable to 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 of 6 NYCRR Part 375-6.7(d) will be brought in to complete the backfilling of the excavation and establish the designed grades at the site.

4. Cover System

A site cover will be required for the Track 4 portion of the site 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.

5. In-Situ Chemical Oxidation

If post-excavation groundwater sampling indicates that petroleum-related volatile organic compounds (VOCs) or semi-volatile organic compounds (SVOCs) exceed groundwater standards, in-situ groundwater treatment will be implemented.

In-situ chemical oxidation (ISCO) will be implemented to treat VOCs and SVOCs in groundwater. A chemical oxidant will be injected into the subsurface to destroy the contaminants

in the northern portion of the site where petroleum-related compounds were elevated in groundwater. The method and depth of injection will be determined during the remedial design.

Groundwater monitoring will be required up-gradient and down-gradient of the treatment area to demonstrate the effectiveness of the remedy. Monitoring will be conducted for contaminants of concern (i.e., VOCs, SVOCs). At least three permanent monitoring wells will be installed to monitor groundwater.

6. Soil 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.

Conditional Track 1

The intent of the remedy is to achieve a Track 1 unrestricted use in the Track 1 area; therefore, no Environmental Easement (EE) or Site Management Plan (SMP) is anticipated for the Track 1 area. If the remedial action objectives (RAOs) for groundwater and soil vapor intrusion are not achieved prior to completion of the Final Engineering Report, then a SMP and EE will be required, and a Track 1 cleanup can only be achieved if the RAOs are achieved within 5 years of the date of the Certificate of Completion.

In the event that Track 1 unrestricted use is not achieved, the following contingent remedial elements will be required, and the remedy in the Track 1 area will achieve a Track 2 restricted residential cleanup at a minimum.

7. Institutional Controls

Imposition of an institutional control in the form of an environmental easement for the controlled property (Track 4 portion of the site or entire site should the Track 1 portion of the site fail to meet the requirements of Remedial Element 5 and 6 above) 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, commercial, or industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or NYCDOHMH; and
- require compliance with the NYSDEC approved Site Management Plan.

7. Site Management Plan

A Site Management Plan is required for the areas of the site that do not achieve a Track 1

cleanup, 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 7 above.

- Engineering Controls: The Cover System for the Track 4 portion of the site discussed in Remedy Element 4 above and the Monitoring Well Network discussed in Remedy Element 5.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land and groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any occupied buildings on the site, including provisions for implementing actions recommended to address exposures related to soil vapor intrusion.
- provisions for the management and inspection of the identified engineering controls;
- a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Remedial 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);
- 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;
- a schedule of monitoring and frequency of submittals to NYSDEC; and
- monitoring for vapor intrusion for any buildings on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

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.

April 8, 2025
Date

Scott Deyette, Director
Remedial Bureau B

DECISION DOCUMENT

320 West Fordham Road
Bronx, Bronx County
Site No. C203163
April 2025

SECTION 1: SUMMARY AND PURPOSE

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

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

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

SECTION 2: CITIZEN PARTICIPATION

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

DECInfo Locator - Web Application
https://gisservices.dec.ny.gov/gis/dil/index.html?rs=C203163

New York Public Library-Francis Martin Library
2150 University Avenue
Bronx, NY 10453
Phone: (718) 295-5287

Bronx Community Board 7
229-A East 204th Street
Bronx, NY 10458
Phone: (718) 933-5650

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 320 West Fordham Road Site is a 1.258-acre site located in the University Heights neighborhood of Bronx County along the east side of the Harlem River approximately a tenth of a mile south of the University Heights Bridge. The site is currently identified as the southeastern portion of Block 3231, Lot 265 on the Bronx Borough Tax Map. The site is bounded by the northern portion of Lot 265 to the north; a Metropolitan Transportation Authority (MTA) Metro North commuter railroad right-of-way to the east; a vacant, vegetated shorefront area to the south; and the Harlem River to the west.

Site Features: The site is currently vacant and contains no permanent structures. Site use currently consists of construction equipment staging areas and a parking area. The site is directly adjacent to the Harlem River and site topography generally slopes to the northwest.

Current Zoning and Land Use: The site is located in an R7-2 zoning district, which is a medium-density residential apartment house district. Land use within a half-mile radius includes commercial, residential, industrial, institutional, and public park use. An active commuter railway adjoins the eastern boundary of the site.

Past Use of the Site: The site was historically entirely seaward of the Harlem River shoreline. A timber bulkhead was constructed along the Harlem River shoreline by 1900, and the western shoreline was incrementally backfilled with material from an unknown source through about 1966. Historical site use included a rail yard (1915 to 1966), a manufacturing facility on the northern portion of the site (1974 to 1979), and equipment and commercial vehicle parking (1980 to 2017). The northern portion of the site has been used as a construction equipment staging facility since at least 2018. Chemical and petroleum storage and commercial vehicle staging were also noted on the southeastern portion of the site in 2018.

Site Geology and Hydrogeology: A layer of historic fill material extends from the surface to depths of between 5 feet to 20 feet below ground surface (bgs). The historic fill generally

consists of brown, fine- to coarse-grained sand with varying amounts of clay, gravel, brick, slag, glass, and organic material. Native soil consisting of brown, fine sand with varying amounts of silt, medium- to coarse-grained sand and gravel generally underlies the historic fill. Top of bedrock was encountered at about 51 feet bgs during a geotechnical investigation. The measured depth to groundwater is between about 7.5 feet and 11.5 feet bgs and groundwater flows to the northwest towards the Harlem River. Tidal effects likely result in temporal fluctuations in groundwater elevations across the site.

A site location map is attached as Figure 1.

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) were/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:

- 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 contaminant(s) of concern identified at this site is/are:

1,2,4-trimethylbenzene	arsenic
ethylbenzene	barium
xylene (mixed)	lead
acenaphthene	mercury
benzo(a)anthracene	selenium
benzo(b)fluoranthene	chromium
benzo(a)pyrene	nickel
chrysene	benzene
indeno(1,2,3-cd)pyrene	1,3,5-trimethylbenzene
naphthalene	isopropylbenzene
pyrene	toluene

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 samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), cyanide, pesticides, per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane. Soil vapor samples were analyzed for VOCs. Based upon the investigations conducted to date, the primary contaminants of concern for the site are VOCs, SVOCs and metals in soil and VOCs and SVOCs in groundwater.

Soil - Soil samples were collected from near surface and subsurface soils throughout the site. Soil data for VOCs and SVOCs were compared to Unrestricted Use Soil Cleanup Objectives (UUSCOs), Protection of Groundwater Soil Cleanup Objectives (PGSCOs) and Restricted Residential Soil Cleanup Objectives (RRSCOs), as applicable.

VOCs concentrations in soil exceeded respective UUSCOs and PGSCOs. Petroleum-related VOCs were encountered in soil samples mostly in the northeastern portion of the site at 15 to 16 ft bgs including maximum concentrations of 1,2,4-trimethylbenzene at 17 parts per million (ppm) (UUSCO/PGSCO is 3.6 ppm), ethylbenzene at 6 ppm (UUSCO/PGSCO is 1 ppm), and xylene at 7.9 ppm (UUSCO is 0.26 ppm, PGSCO is 1.6 ppm).

Several SVOCs exceed SCOs in site soils including maximum concentrations of acenaphthene at 157 ppm (UUSCO is 20 ppm, PGSCO is 98 ppm), benzo(a)anthracene at 44.4 ppm (UUSCO/PGSCO is 1 ppm), benzo(b)fluoranthene at 23.8 ppm (UUSCO is 1 ppm, PGSCO is 1.7 ppm), benzo(a)pyrene at 15.2 ppm (UUSCO is 1 ppm, PGSCO is 22 ppm), chrysene at 30.4 ppm (UUSCO/PGSCO is 3.9 ppm), indeno(1,2,3-cd)pyrene at 4.53 ppm (UUSCO is 1 ppm, PGSCO is 8.2 ppm), naphthalene at 167 ppm (UUSCO/PGSCO is 12 ppm), and pyrene at 142 ppm (UUSCO is 100 ppm, PGSCO is 1,000 ppm).

Soil data for metals, PCBs, cyanide, pesticides, and 1,4-dioxane were compared to UUSCOs and Restricted-Residential Soil Cleanup Objectives (RRSCOs).

Several metals exceed UUSCOs/RRUSCOs in site soils including maximum concentrations of arsenic at 49.7 ppm (UUSCO is 13 ppm, RRSCO is 16 ppm), barium at 466 ppm (UUSCO is 350 ppm, RRSCO is 400 ppm) and lead at 410 ppm (UUSCO is 63 ppm, RRSCO is 400 ppm). Other metals encountered in site soils exceeding UUSCOs but below RRSCOs include maximum concentrations of copper at 148 ppm (UUSCO is 50 ppm), mercury at 0.738 ppm (UUSCO is 0.18 ppm), trivalent chromium at90 ppm (UUSCO is 30 ppm), selenium at 21.8 ppm (UUSCO is 3.9 ppm), nickel at 43 ppm (UUSCO is 30 ppm) and zinc at 426 ppm (UUSCO is 109 ppm).

PCBs and 1,4-dioxane were not detected in site soils above UUSCOs and or RRSCOs.

Two pesticides were detected in site soils at concentrations above the UUSCOs but below the RRUSCOs including maximum concentrations of 4.4'-DDE at 0.0166 ppm (UUSCO is 0.0033 ppm) and 4.4'-DDT at 0.063 ppm (UUSCO is 0.0033 ppm).

Perfluorooctanesulfonic acid (PFOS) was detected in site soils at a maximum concentration of 1.11 parts per billion (ppb). The unrestricted use guidance value for PFOS is 0.88 ppb and the protection of groundwater guidance values for PFOS is 1.0 ppb. Perfluorooctanoic acid (PFOA) concentrations were below unrestricted guidance values of 0.66 ppb.

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

Groundwater - Several petroleum related VOCs were detected in groundwater over their respective ambient water quality standards and guidance values (AWQSGVs). These include maximum concentrations of 1,2,4-trimethylbenzene at 37 ppb (AWQSGV is 5 ppb), 1,3,5-trimethylbenzene at 12.2 ppb (AWQSGV is 5 ppb), benzene at 23.3 ppb (AWQSGV is 1 ppb), ethylbenzene at 62.6 ppb (AWQSGV is 5 ppb), isopropyl benzene at 21.1 ppb (AWQSGV is 5 ppb), xylene at 46.6 ppb (AWQSGV is 5 ppb) and toluene at 20.2 ppb (AWQSGV is 5 ppb).

SVOCs were detected in groundwater samples collected from the site exceeding AWQSGVs including maximum concentrations of 2,4-dichlorophenol at 26.5 ppb (AWQSGV is 1 ppb), 2,4-dimethylphenol at 1230 ppb (AWQSGV is 1 ppb), acenaphthene at 776 ppb (AWQSGV is 20 ppb), benzo(a)anthracene at 9.88 ppb (AWQSGV is 0.002 ppb), benzo(a)pyrene at 4.01 ppb (AWQS is 0.002 ppb), benzo(b)fluoranthene at 4.92 ppb (AWQSGV is 0.002 ppb), benzo(k)fluoranthene at 4.4 ppb (AWQSGV is 0.002 ppb), chrysene at 7 ppb (AWQSGV is 0.002 ppb), indeno(1,2,3-cd)pyrene at 0.894 ppb (AWQSGV is 0.002 ppb) and pyrene at 51.3 ppb (AWQSGV is 50 ppb).

Dissolved metals were detected in groundwater samples collected from the site exceeding AWQSGVs including maximum concentrations of antimony at 4.6 ppb (AWQSGV is 3 ppb), hexavalent chromium at 275 ppb (AWQSGV is 50 ppb), total chromium at 520 ppb (AWQSGV is 50 ppb), iron at 23,600 ppb (AWQSGV is 300 ppb), magnesium at 375,000 ppb (AWQSGV is 35,000 ppb), manganese at 2,300 ppb (AWQSGV is 300 ppb), selenium at 65.7 ppb (AWQSGV is 10 ppb), and sodium at 2,680,000 ppb (AWQSGV is 20,000 ppb). The presence of most of these metals in groundwater is likely due to entrained sediments.

During earlier investigation total PCBs was detected at a concentration of 0.13 ppb in one groundwater sample. The presence of PCBs in groundwater is likely due to entrained sediments in the groundwater sample. 1,4-Dioxane was not detected in groundwater samples above the 0.35 ppb screening level.

PFOS was detected at concentrations up to 15.2 ppt (parts per trillion) which exceeds its AWQSGV of 2.7 ppt. PFOA was detected at concentrations up to 28.7 ppt which also exceeds its AWQSGV of 6.7 ppt. PFOA and PFOS were found in most wells and appears to be coming from an off-site source.

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

Soil Vapor - Several petroleum-related VOCs were detected in soil vapor samples including maximum concentrations of benzene at 72 micrograms per cubic meter (ug/m3), ethylbenzene at 41 ug/m3, and toluene at 46 ug/m3. Chlorinated VOCs were also detected in soil vapor samples including maximum concentrations of tetrachloroethylene at28 ug/m3, trichloroethylene at 4 ug/m3 and methylene chloride at 23 ug/m3. Total VOCs in soil vapor ranged from 617 ug/m3 to 2,611 ug/m3.

Data does 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.*

Since the site is fenced and covered by asphalt or concrete, people will not come into contact with site-related soil and groundwater contamination unless 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. Currently there are no occupied buildings on the site. Volatile organic compounds in soil vapor may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Because the site is vacant, the inhalation of site-related contaminants due to soil vapor intrusion does not represent a current concern. However, the potential exists for the inhalation of site contaminants due to soil vapor intrusion for any future on-site development. Environmental sampling indicates soil vapor intrusion from site-related 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 chosen 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 water contamination.

Soil
RAOs for Public Health Protection
- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection
- Prevent migration of contaminants that would result in groundwater or surface water contamination.

Soil Vapor
RAOs for Public Health Protection
- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

SECTION 7: ELEMENTS OF THE SELECTED REMEDY

The alternatives developed for the site and the evaluation of the remedial criteria are presented in the Alternative Analysis. The remedy is selected pursuant to the remedy selection criteria set forth in DER-10, Technical Guidance for Site Investigation and Remediation and 6 NYCRR Part 375.

The selected remedy is a Multiple Cleanup Tracks remedy. A Track 1 unrestricted use cleanup will be implemented for majority of the site, and a Track 4 restricted-residential use cleanup will be implemented along the western and southern site borders.

The selected remedy is referred to as the Excavation, Cover System, Groundwater Treatment, and Vapor Intrusion Evaluation remedy.

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

1. Remedial Design:

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

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
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- 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

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

- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- soil with visual waste material or non-aqueous phase liquid;
- any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination; and
- soil containing total SVOCs exceeding 500 ppm.

Conditional Track 1 Area
Excavation and off-site disposal of all on-site soils which exceed Unrestricted Use Soil Cleanup Objectives (UUSCOs) as defined by 6 NYCRR Part 375-6.8 to depths ranging between 8 and 23 feet below grade throughout the Conditional Track 1 portion of the site (north, central, and eastern parts of the site generally corresponding to the planned future building footprint).

Track 4 Area
All soils in the upper two feet which exceed the Restricted Residential SCOs (RRSCOs) will be excavated and transported off-site for disposal within the Track 4 portion of the site (western and southern part of the site).

A total of approximately 18,500 cubic yards of contaminated soil will be removed from the site.

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

To ensure proper handling and disposal of excavated material, waste characterization sampling will be completed for all identified contaminated site material. Waste characterization sampling will be performed exclusively for the purposes of off-site disposal in a manner suitable to 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 of 6 NYCRR Part 375-6.7(d) will be brought in to complete the backfilling of the excavation and establish the designed grades at the site.

4. Cover System

A site cover will be required for the Track 4 portion of the site 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.

5. In-Situ Chemical Oxidation

If post-excavation groundwater sampling indicates that petroleum-related volatile organic compounds (VOCs) or semi-volatile organic compounds (SVOCs) exceed groundwater standards, in-situ groundwater treatment will be implemented.

In-situ chemical oxidation (ISCO) will be implemented to treat VOCs and SVOCs in groundwater. A chemical oxidant will be injected into the subsurface to destroy the contaminants in the northern portion of the site where petroleum-related compounds were elevated in groundwater. The method and depth of injection will be determined during the remedial design.

Groundwater monitoring will be required up-gradient and down-gradient of the treatment area to demonstrate the effectiveness of the remedy. Monitoring will be conducted for contaminants of concern (i.e., VOCs, SVOCs). At least three permanent monitoring wells will be installed to monitor groundwater.

6. Soil 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.

Conditional Track 1

The intent of the remedy is to achieve a Track 1 unrestricted use in the Track 1 area; therefore, no Environmental Easement (EE) or Site Management Plan (SMP) is anticipated for the Track 1 area. If the remedial action objectives (RAOs) for groundwater and soil vapor intrusion are not achieved prior to completion of the Final Engineering Report, then a SMP and EE will be required, and a Track 1 cleanup can only be achieved if the RAOs are achieved within 5 years of the date of the Certificate of Completion.

In the event that Track 1 unrestricted use is not achieved, the following contingent remedial elements will be required, and the remedy in the Track 1 area will achieve a Track 2 restricted residential cleanup at a minimum.

7. Institutional Controls

Imposition of an institutional control in the form of an environmental easement for the controlled property (Track 4 portion of the site or entire site should the Track 1 portion of the site fail to meet the requirements of Remedial Element 5 and 6 above) 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, commercial, or industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or NYCDOHMH; and
- require compliance with the NYSDEC approved Site Management Plan.

7. Site Management Plan

A Site Management Plan is required for the areas of the site that do not achieve a Track 1 cleanup, 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 7 above.

    - Engineering Controls: The Cover System for the Track 4 portion of the site discussed in Remedy Element 4 above and the Monitoring Well Network discussed in Remedy Element 5.

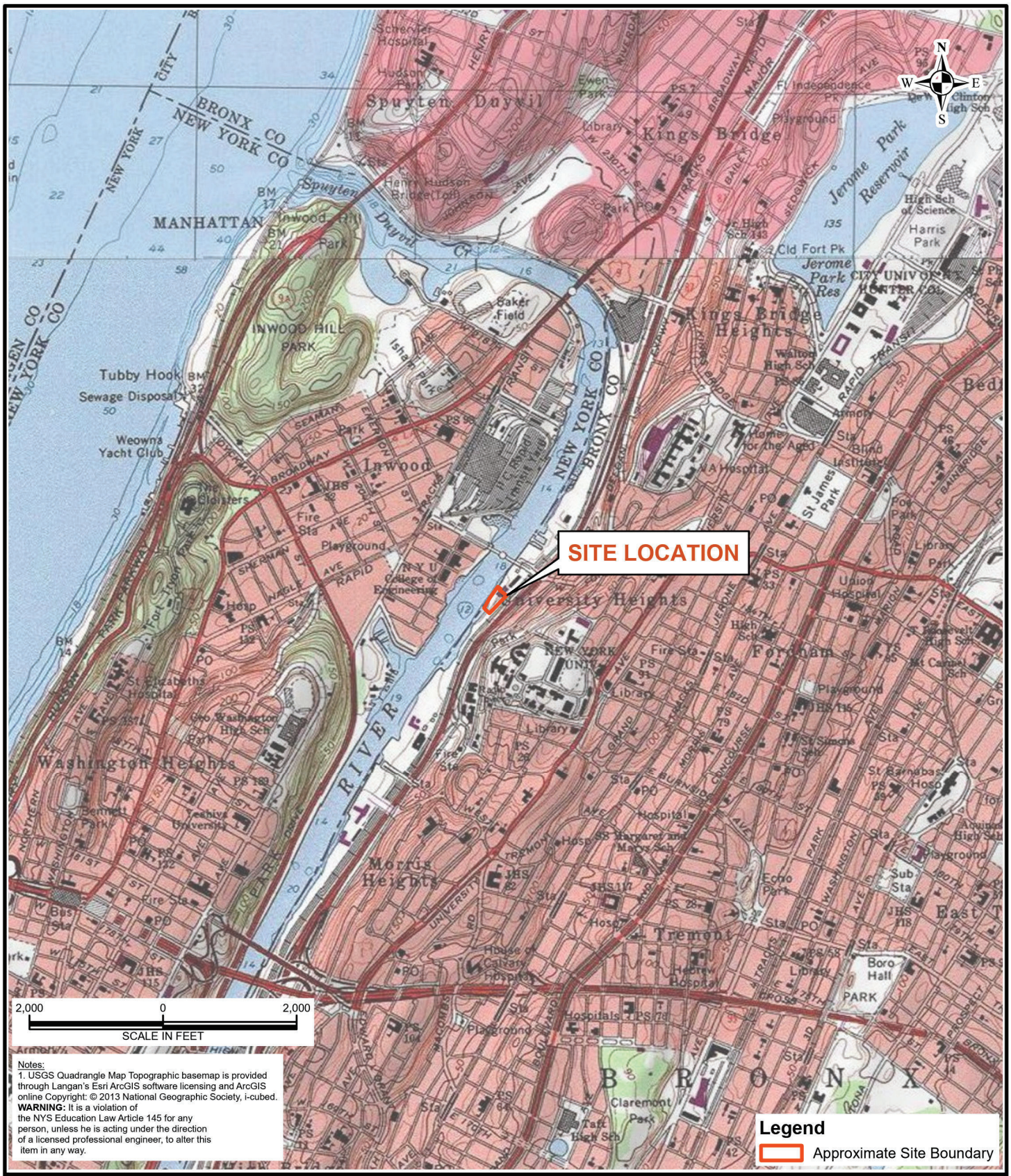
This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land and groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any occupied buildings on the site, including provisions for implementing actions recommended to address exposures related to soil vapor intrusion.
- provisions for the management and inspection of the identified engineering controls;
- a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Remedial 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);
- 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;
- a schedule of monitoring and frequency of submittals to NYSDEC; and
- monitoring for vapor intrusion for any buildings on the site, as may be required by the Institutional and Engineering Control Plan discussed above.



Notes:
1. USGS Quadrangle Map Topographic basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online Copyright: © 2013 National Geographic Society, i-cubed.
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.

LANGAN
Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
360 West 31st Street, 8th Floor
New York, NY 10001-2727
T: 212.479.5400 F: 212.479.5444
www.langan.com

Project	Figure Title	Project No.	Figure
320 WEST FORDHAM ROAD BLOCK NO. 3231, LOT NO. 265 BRONX COUNTY NEW YORK	**SITE LOCATION MAP**	170502904 Date 8/22/2023 Scale 1" = 2,000 feet Drawn By PDT	1

Path: \\langan.com\data\NYC\data9\170502901\Project Data\ArcGIS\APRX\170502901\170502901_RIR-2023\170502901_RIR-2023.aprx

Legend

- Proposed Post-Excavation Groundwater Monitoring Well
- Approximate Site Boundary
- Approximate Support of Excavation Boundary
- Approximate Track 1 Extent
- Approximate Track 4 Extent
- Excavation to 3 feet bgs
- Excavation to 6 feet bgs
- Excavation to 8 feet bgs
- Excavation to 11 feet bgs
- Excavation to 15 feet bgs
- Excavation to 17 feet bgs
- Excavation to 19 feet bgs
- Excavation to 21 feet bgs
- Excavation to 23 feet bgs

NOTES:
1. IMAGERY PROVIDED THROUGH LANGAN'S SUBSCRIPTION TO NEARMAP.COM. FLOWN ON 05/28/2023.
2. ALL LOCATIONS ARE APPROXIMATE.
3. BGS = BELOW GRADE SURFACE.
4. DEPTH AND DIMENSION OF REMEDIAL EXCAVATION AREAS ARE ESTIMATED BASED ON ANALYTICAL RESULTS EXCEEDING THE UNRESTRICTED USE SOIL CLEANUP OBJECTIVES IN THE TRACK 1 AREA AND THE TOP TWO FEET OF SOIL IN THE TRACK 4 AREA.

50 0 50
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
320 WEST FORDHAM ROAD
BLOCK No. 3231, LOT No. 265
BRONX COUNTY NEW YORK

Figure Title
ALTERNATIVE II - SPLIT TRACK 1/TRACK 4 REMEDY

Project No.	170502903
Date	7/19/2024
	1"=50'
Drawn By	MG
Figure No.	2

Path: \\langan.com\data\NY\data9\170502901\Project Data\ArcGIS\APRX\170502901\170502901_RAWP_South1-2023\170502901_RAWP_South1-2023.aprx Date: 7/19/2024 User: mgeorgalas Time: 9:28 AM