DECISION DOCUMENT

210 Greenpoint Avenue Redevelopment
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224348
February 2023

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

DECLARATION STATEMENT - DECISION DOCUMENT

210 Greenpoint Avenue Redevelopment
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224348
February 2023

Statement of Purpose and Basis

This document presents the remedy for the 210 Greenpoint Avenue Redevelopment 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 210 Greenpoint Avenue Redevelopment 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, 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 gas 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 buildings 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); and
- 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.

Excavation and off-site disposal of all on-site soils which exceed unrestricted soil cleanup objectives (SCOs), as defined by 6NYCRR Part 375-6.8. If a Track 1 cleanup is achieved, a Cover System will not be a required element of the remedy. 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/documentation sampling indicates that SCOs were not achieved at the stated remedial depth, the Applicant must notify DEC, submit the sample results and, in consultation with DEC, 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.

Approximately 4,000 cubic yards of contaminated soil will be removed from the site. Excavation and removal of any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination.

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 NYCRRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site.

4. In-Situ Chemical Oxidation

In-situ chemical oxidation (ISCO) may be implemented:

a. to treat semi volatile organic compounds (SVOCs) in the saturated soils if excavation confirmation samples exceed PGWSCOs. A chemical oxidant will be injected into the subsurface to destroy the contaminants in an approximately 100 square foot area located in the western portion of the site where USTs are located. Soil samples must be collected and analyzed to assure SCOs are met prior to certificate of completion (COC) issuance for the site to achieve a Track 1 cleanup.
b. to treat volatile organic compounds (VOCs) in groundwater if the post-remedial groundwater sampling discussed in remedial element 9(b) indicates VOC levels in groundwater have not been adequately reduced.

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 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 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, then a Site Management Plan (SMP) and Environmental Easement (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 a Track 1 unrestricted use is not achieved, including achievement of soil, groundwater and soil vapor remedial objectives, the following contingent remedial elements will be required, and the remedy will achieve a Track 4 restricted residential cleanup.

7. Cover System

A site cover will be required to allow for restricted residential use of the site in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a soil cover is to be used it will be a minimum of two feet of soil placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetative layer. Soil cover material, including any fill material brought to the site, will meet the SCOs f or 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.

8. Institutional Control

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

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

9. Site Management Plan

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

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:
   - Institutional Controls: The environmental easement discussed in Paragraph 8 above.
   - Engineering Controls: The cover system described in paragraph 7 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- 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;
- a provision that should a building foundation or building slab be removed in the future, a cover system will be placed in any areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives (SCOs)
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

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

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

February 15, 2023

Date

Jane O'Connell, Regional Remediation Engineer, Region 2

DECISION DOCUMENT

210 Greenpoint Avenue Redevelopment
Brooklyn, Kings County
Site No. C224348
February 2023

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, 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.

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

SECTION 2: CITIZEN PARTICIPATION

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

DECInfo Locator - Web Application
https://gisservices.dec.ny.gov/gis/dil/index.html?rs=C224348

Greenpoint Library
107 Norman Avenue
Brooklyn, NY 11222
Phone: (718) 389-4394

Brooklyn Community Board 1
435 Graham Avenue
Brooklyn, NY 11211
Phone: (718) 389-0009

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

Site Location:
The 0.31-acrea site is located in a mixed-use residential and commercial section of the Greenpoint neighborhood of Brooklyn on the south side of Greenpoint Avenue between McGuinness Boulevard and Eckford Street. The site is bounded by Greenpoint Avenue followed by mixed-use commercial and residential buildings to the north, McGuinness Boulevard followed by a grocery store to the east, a mixed-use commercial and residential building to the south, and a residential apartment building to the west. The East River is approximately 0.5 miles to the west of the site and Newtown Creek is approximately 0.5 miles to the north.

Site Features:
The site has been vacant since early 2022 and most recently operated as a Speedway gasoline service station. The property houses two one-story slab-on-grade buildings; one of which was utilized for storage, and the other as a retail building/office space. There are five 4,000-gallon gasoline/ethanol gasoline underground storage tanks (USTs) and one 550-gallon USTs registered under petroleum bulk storage number 2-297550.

Current Zoning and Land Use:
The site is currently vacant and zoned R7-A and R6-B for residential use with a commercial C2-4 overlay. Surrounding properties are primarily commercial and residential, with the nearest residences directly adjoining the site to the south and west.

Past Land Use:
The site was developed in the late 1800s and was occupied by commercial and residential properties until the early 1940s. From the early 1940s to the late 1970s the site operated as several auto-related facilities, and from the late 1970s through the present a gasoline filling station has occupied the site. The gas station operation ceased in May 2022.

Site Geology and Hydrogeology:
The site stratigraphy from the surface down, consists of historic fill (immediately below asphalt and concrete cover) generally consisting of light to dark brown, medium to fine silty sand with varying amounts of gravel, brick, concrete, wood, and asphalt to depths of approximately12 feet below grade (ftbg). The historic fill layer is underlain by a potential native later consisting of light brown to black medium to fine silty sand and sand with varying amounts of silt and gravel. The native interval was observed up to the terminal depth of each soil boring ranging from 15 to 50 ftbg, and the depth to bedrock is estimated at approximately 80 to 100 ftbg.

The ground level elevation of the site is between approximately 15 to 20 feet above mean sea level. Groundwater was encountered at depths ranging from approximately 4 to 9 ftbg, with the highest groundwater elevations observed in the central region of the site and the lowest in the northern region. Groundwater is inferred to flow from the east-southeast to the west-northwest.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) 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, 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 contaminant(s) of concern identified at this site is/are:

benzene
ethylbenzene
xylene (mixed)
isopropylbenzene
naphthalene
n-propylbenzene
toluene
1,2,4-trimethylbenzene
1,3,5-trimethylbenzene
benzo(a)anthracene
benzo(b)fluoranthene
chrysene
indeno(1,2,3-cd)pyrene
lead
mercury

The contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- soil

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 was analyzed for VOCs. The primary contaminants of concern include petroleum-related VOCs, SVOCs, and metals.

Soil - Exceedances of the unrestricted use soil cleanup objectives (UUSCOs) and in some cases Protection of Groundwater Soil Cleanup Objective (PGWSCOs) were primarily found in the historic fill layer which extends from 9 to 13 feet across the site. In general, the highest concentrations were detected in the upper 10 feet of site soils. However, elevated concentrations of VOCs and metals did extend into deeper soils (28 - 30 ft.) at SB-1 in the western portion of the site.

VOCs detected at concentrations exceeding their respective UUSCOs and/or PGWSCOs include benzene up to 1.4 parts per million (ppm) compared to the UUSCO and PGWSCO of 0.6 ppm, ethylbenzene up to 74 ppm (UUSCO of 1 ppm, PGWSCO of 5.5 ppm), isopropylbenzene up to 16 ppm (PGWSCO of 2.3 ppm), naphthalene up to 69 ppm (PGWSCO of 13 ppm), n-butylbenzene up to 13 ppm (PGWSCO of 12 ppm), n-propyl benzene up to 40 ppm (PGWSCO of 3.7 ppm), toluene up to 12 ppm (PGWSCO of 1.5 ppm), 1,3,5-trimethylbenzene up to 140 ppm (PGWSCO of 3.3 ppm), 1,2,4-trimethylbenze up to 340 ppm (PGWSCO of 13 ppm), and xylenes up to 320 ppm (PGWSCO of 1.2 ppm).

SVOCs detected at concentrations exceeding their respective UUSCOs and/or PGWSCOs include benzo(a)anthracene up to 7.5 ppm (PGWSCO of 3 ppm), benzo(a)pyrene up to 6.2 ppm (PGWSCO 1.1 ppm), benzo(b)fluoranthene up to 6.3 ppm (PGWSCO of 1.1 ppm), benzo(k)fluoranthene up to 1.6 ppm (PGWSCO of 1.1 ppm), chrysene up to 5.8 ppm (PGWSCO

of 0.4 ppm), dibenzo(a,h)anthracene up to 0.76 ppm (UUSCO of 0.33 ppm), indeno(1,2,3-cd)pyrene up to 3.8 ppm (PGWSCO of 3.2 ppm), and naphthalene up to 21 ppm (PGWSCO of 13 ppm).

Metals detected at concentrations exceeding their respective UUSCOs include arsenic up to 13.2 ppm (UUSCO of 13 ppm), copper up to 77.2 ppm (UUSCO of 50 ppm), lead up to 590 ppm (UUSCO of 63 ppm), mercury up to 2.67 ppm (UUSCO of 0.18 ppm), zinc up to 1,230 ppm (UUSCO of 109 ppm).

The PFAS compound perfluorooctanoic acid (PFOA) was detected at concentrations in soil up to 0.695 parts per billion (ppb), above the unrestricted use guidance value of 0.66 ppb.

PCBs and pesticides were not detected above UUSCOs in soil.

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

Groundwater - VOCs detected above Class GA Ambient Water Quality Standards (AWQS) include benzene up to 240 ppb, ethylbenzene up to 5,100 ppb, isopropyl benzene up to 320 ppb, naphthalene up to 660 ppb, n-propyl benzene in one sample at 540 ppb, o-xylene up to 6,800 ppb, p/m-xylene up to 18,000 ppb, sec-butylbenzene up to 11 ppb, tert-butylbenzene up to 6.3 ppb, toluene up to 9,100 ppb, 1.2.4-tetramethylbenzene in one sample at 140 ppb, 1,2,4-trimethylbenzene up to 3,300 ppb, and 1,3,5-trimethylbenzene in one sample at 790 ppb, all with an AWQS of 5 ppb standard except benzene which has an AWQS of 1 ppb.

SVOCs detected above AWQS include acenaphthene in one sample at 110 ppb (AWQS is 20 ppb), naphthalene up to 470 ppb (AWQS is 10 ppb), and benzo(a)anthracene up to 0.27 benzo(a)anthracene, benzo(a)pyrene up to 0.13 benzo(a)pyrene, benzo(b)fluoranthene up to 0.19 ppb benzo(k)fluoranthene up to 0.06 ppb, chrysene up to 0.15 ppb, and indeno(1,2,3-c,d)pyrene up to 0.09 ppb, all with AWQS of 0.002 ppb.

Aside from naturally occurring minerals such as sodium and manganese, no dissolved metals were detected above their respective AWQS. No pesticides or PCBs were detected above their AWQS.

PFOA and PFOS were reported at concentrations up to 92.2 parts per trillion (ppt) and 55 ppt, respectively, exceeding the Maximum Contaminant Levels (MCL, or drinking water standard) of 10 ppt each in groundwater. The compound 1,4- dioxane was not detected above the MCL of 1 ppb. 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.

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

Soil Vapor - Various petroleum-related VOCs were detected in soil vapor samples collected throughout the site. The total cumulative maximum concentration for benzene, toluene, ethylbenzene, and xylenes (BTEX) compounds was 190.7 micrograms per cubic meter (ug/m3). The most elevated concentrations detected were collected from SG-1 near the former USTs on

the west side of the site. This includes n-hexane, benzene, cyclohexane, 2,2,4-trimethylpentane, and heptane which were detected with maximum concentrations of 356,000 ug/m3, 45,400 ug/m3, 328,000 ug/m3, 2,120,000 ug/m3, and 107,000 ug/m3 respectively.

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.*

Access to the site is restricted by a fence. The site is covered by concrete foundation slabs and pavement so people are not expected to come in contact with site contaminants in soil. However, persons who enter the site could contact contaminants in the soil by digging below the surface/site cover or otherwise disturbing the soil. Contaminated groundwater is not used for drinking and the site and surrounding areas are served by a public water supply that obtains water from a different source not affected by this contamination. Volatile organic compounds in soil vapor (air spaces within the soil) may move into buildings and affect the indoor air quality. 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, inhalation of site contaminants in indoor air due to soil vapor intrusion does not represent a concern for the site in its current condition. 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.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Remove the source of groundwater 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 Conditional Track 1 remedy.

The selected remedy is referred to as the Excavation, Soil Treatment and Soil Vapor 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, 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 gas 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 buildings 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); and
• 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.

Excavation and off-site disposal of all on-site soils which exceed unrestricted soil cleanup objectives (SCOs), as defined by 6NYCRR Part 375-6.8. If a Track 1 cleanup is achieved, a Cover System will not be a required element of the remedy. 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/documentation sampling indicates that SCOs were not achieved at the stated remedial depth, the Applicant must notify DEC, submit the sample results and, in consultation with DEC, 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.

Approximately 4,000 cubic yards of contaminated soil will be removed from the site. Excavation and removal of any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination.

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 NYCRRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site.

4. In-Situ Chemical Oxidation

In-situ chemical oxidation (ISCO) may be implemented:

a. to treat semi volatile organic compounds (SVOCs) in the saturated soils if excavation confirmation samples exceed PGWSCOs. A chemical oxidant will be injected into the subsurface to destroy the contaminants in an approximately 100 square foot area located in the western portion of the site where USTs are located. Soil samples must be collected

and analyzed to assure SCOs are met prior to certificate of completion (COC) issuance for the site to achieve a Track 1 cleanup.

b. to treat volatile organic compounds (VOCs) in groundwater if the post-remedial groundwater sampling discussed in remedial element 9(b) indicates VOC levels in groundwater have not been adequately reduced.

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 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 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, then a Site Management Plan (SMP) and Environmental Easement (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 a Track 1 unrestricted use is not achieved, including achievement of soil, groundwater and soil vapor remedial objectives, the following contingent remedial elements will be required, and the remedy will achieve a Track 4 restricted residential cleanup.

7. Cover System

A site cover will be required to allow for restricted residential use of the site in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a soil cover is to be used it will be a minimum of two feet of soil placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetative layer. Soil cover material, including any fill material brought to the site, will meet the SCOs f or 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.

8. Institutional Control

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

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

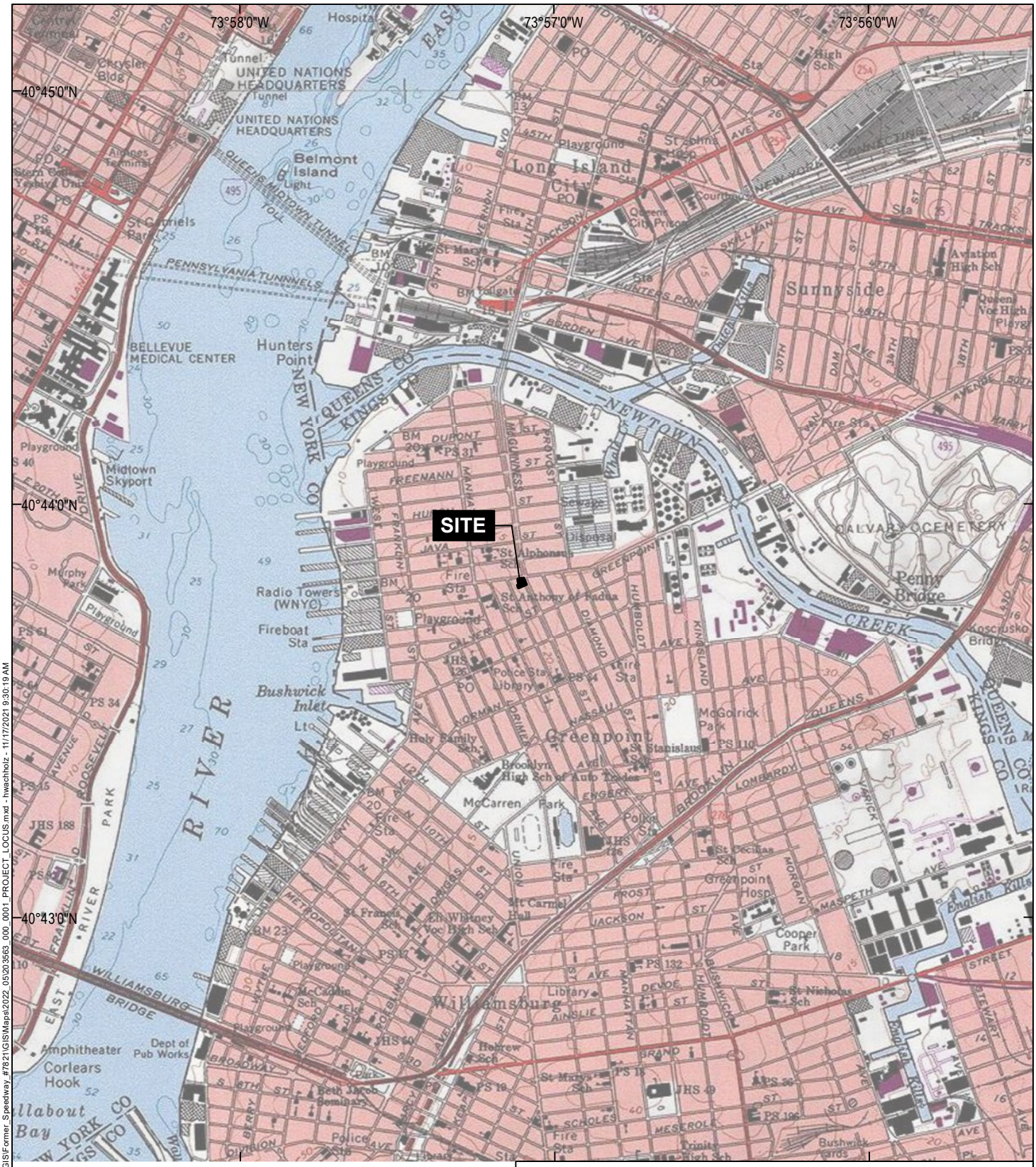
9. Site Management Plan

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

b. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:
   - Institutional Controls: The environmental easement discussed in Paragraph 8 above.
   - Engineering Controls: The cover system described in paragraph 7 above.

This plan includes, but may not be limited to:
- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- 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;
- a provision that should a building foundation or building slab be removed in the future, a cover system will be placed in any areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives (SCOs)
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

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



HALEY ALDRICH

REMEDIAL ACTION WORK PLAN
210 GREENPOINT AVENUE REDEVELOPMENT SITE
210 GREENPOINT AVENUE
BROOKLYN, NEW YORK

SITE LOCATION MAP

MAP SOURCE: USGS
SITE COORDINATES: 40°43'48"N, 73°57'06"W

APPROXIMATE SCALE: 1 IN = 2000 FT
SEPTEMBER 2022

FIGURE 1

GIS: \\haleyaldrich.com\share\CFI\Projects\02035631\GIS\Former_Speedway_#7\21\GIS\Maps\2022_05\203563_000_0001_PROJECT_LOCUS.mxd - hwachholz - 11/17/2021 9:30:19 AM

LEGEND

- EXCAVATION TO 12 FT BGS
- EXCAVATION TO 32 FT BGS
- EXCAVATION TO 7 FT BGS
- PARCEL BOUNDARY
- SITE BOUNDARY
- APPROXIMATE LOCATION OF UST EXCAVATION (TO 12 FT BGS)

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. BGS = BELOW GRADE SURFACE
3. ASSESSOR PARCEL DATA SOURCE: NYC DEPARTMENT OF CITY PLANNING
4. AERIAL IMAGERY SOURCE: NEARMAP, 19 JULY 2022

N

0 30 60

SCALE IN FEET

HALEY ALDRICH

REMEDIAL ACTION WORK PLAN
210 GREENPOINT AVENUE REDEVELOPMENT SITE
210 GREENPOINT AVENUE
BROOKLYN, NEW YORK

ALTERNATIVE I EXCAVATION PLAN

SEPTEMBER 2022

FIGURE 3

GIS FILE PATH: \\haleyaldrich.com\share\CF\Groups\nyc\GIS\Maps\2022_09_205127\206125_000_0008_ALTERNATIVE_I_EXCAVATION_PLAN.mxd — USER: hwachholz — LAST SAVED: 9/20/2022 10:56:48 AM