DECISION DOCUMENT

175 Roger Avenue
Brownfield Cleanup Program
Inwood, Nassau County
Site No. C130164
October 2021

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

DECLARATION STATEMENT - DECISION DOCUMENT

175 Roger Avenue
Brownfield Cleanup Program
Inwood, Nassau County
Site No. C130164
October 2021

Statement of Purpose and Basis

This document presents the remedy for the 175 Roger 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 175 Roger 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 would 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

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

- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- 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; and
- soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G.

Approximately 1,735 cubic yards of contaminated soil will be removed from the site. Also, any underground storage tanks (USTs), fuel dispensers, underground piping or other structures encountered during the remedial program will be excavated, removed and properly disposed of. Excavations will extend to the water table, approximately seven to 11 feet below ground surface.

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 excavations and to establish the designed grades at the site.

4. Groundwater

In-situ chemical reduction (ISCR) will be implemented to treat volatile organic compounds (VOCs) in site groundwater. A chemical reducing agent will be applied directly into the base of the open excavations during the remedial phase to destroy the contaminants. Excavations will extend to the water table, approximately seven to 11 feet below ground surface. Once excavation activities are completed, a program will be implemented to monitor site groundwater. If required, where monitoring results do not show a bulk reduction and asymptotic trend over time, additional remedial action will occur to address elevated levels of any residual VOCs that remain in site groundwater, such as ISCR.

Monitoring of groundwater will be required up-gradient, down-gradient and within the areas of excavation and treatment zones. Monitoring will be conducted for, but not limited to, VOCs.

5. 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 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.

6. Engineering and Institutional Controls

Imposition of an institutional control in the form of an environmental easement and a site Management Plan, as described below, will be required. The remedy will achieve a Track 4 restricted residential cleanup at a minimum.

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 or commercial or industrial 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 County DOH; and
- require compliance with the Department approved Site Management Plan.

7. Site Management Plan

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

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

- Institutional Controls: The Environmental Easement discussed in Paragraph 6 above.
- Engineering Controls: The soil cover discussed in Paragraph 5 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- a provision should redevelopment occur to ensure no soil exceeding protection of groundwater concentrations will remain below storm water retention basin or infiltration structures;
- 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 consistent with that described in Paragraph 4 above will be placed in any areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives (SCOs);
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b) 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.

October 13, 2021
Date

Richard A. Mustico, Director
Remedial Bureau A

DECISION DOCUMENT

175 Roger Avenue
Inwood, Nassau County
Site No. C130164
October 2021

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 repository:

DECInfo Locator - Web Application
https://gisservices.dec.ny.gov/gis/dil/index.html?rs=C130164

Peninsula Public Library
Attn: Peninsula Public Library
280 Central Avenue
Lawrence, NY 11559
Phone: 516-239-3236 extension 214

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 175 Roger Avenue site is a 4.85-acre parcel located in a light industrial and residential urban area. The site is bordered to the north by Roger Avenue, with a parking lot (former oil terminal) to the northwest, a gravel/soil recycling facility, and an entertainment production studio to the northeast. The site is less than 150 yards south of the Joseph Sanford Jr. channel, a waterway to Jamaica Bay. Bordering the site to the south are residential properties, followed by Bayview Avenue. The site is bordered to the east by Gates Avenue, followed by commercial buildings. Immediately west of the site is a freight and cargo company.

Site Features

The site is flat and includes the foundation of a former 155,000 square foot, one-story, warehouse building with a partial mezzanine which was demolished in February 2019. The remainder of the site consists of asphalt and concrete paved driveway/parking area with limited areas of grass.

Current Zoning and Land Use

This site, which is currently zoned for industrial use, is currently inactive and is located at the southwest corner of the intersection of Roger Avenue and Gates Avenue in a light industrial and residential urban area.

Past Use of the Site

The former site building was used as a warehouse and office from 1954 until around 1961, when it began operation as a sheet metal fabrication factory. Rockaway Metal Products occupied the site from approximately 1971 to 1987, when they abandoned the site and reportedly left hazardous waste improperly stored and disposed of on-site. The site was used largely as a warehouse by various tenants from 1990 to 2004. Other enterprises included an auto repair shop and a party supply rental company.

In June 1992, the United States Environmental Protection Agency (EPA) conducted a site inspection and discovered approximately 240, 55-gallon deteriorated and/or leaking drums, a 5,000-gallon tanker trailer, underground storage tanks (USTs), and dry wells containing sludge. In

order to address the hazardous condition, the EPA conducted an Emergency Removal Action beginning in August 1993 (SEMS EPA ID NYD002059202). The drums, tanker trailer, one (1) 1,000-gallon heating oil UST, and UST piping were removed.

The site was acquired by Nassau County Department of Real Estate in 1995 due to nonpayment of taxes and has remained vacant since approximately 2004.

In 2005, a previous BCP applicant (Cargo Ventures LLC), was accepted into the Brownfield Cleanup Program (BCP #C130164). After completing the remedial investigation phase of the project, the Applicant elected to terminate the Brownfield Cleanup Agreement (BCA) and cease participation in the Brownfield Cleanup Program. The BCA was terminated in March 2013 and the Department issued a withdrawal acceptance letter.

The warehouse building on site was damaged in a fire in February 2011 and was subsequently condemned. In October 2018, Nassau County, in concurrence with the Department, began demolition of site buildings, which was completed in February 2019.

Site Geology and Hydrogeology

The upper five feet of soil beneath the site generally consist of brown to yellow, fine to medium sands, with some gravel and trace silt. Native sands and gravels are present to a depth of approximately 35 feet below ground surface (bgs) where a clay confining layer is present.

The ground surface of the site is approximately 10 feet above mean sea level and is generally flat with a gentle slope towards the northwest. The site contains no areas classified as wetlands. Depth to groundwater throughout the site ranges from four to six feet bgs and appears to be tidally influenced. A groundwater divide appears to run through the center of the site, with an apparent groundwater flow direction towards both the northwest and southeast. As the site is on a peninsula, groundwater flowing in both directions discharge into Motts Basin, which discharges into Jamaica Bay. No public or private groundwater supply wells are located within one-half mile nor downgradient of the site.

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 or 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 Applicants under the Brownfield Cleanup Agreement is are Volunteers. The Volunteers do not have an obligation to address off-site contamination. The Department has determined that this site poses a significant threat to human health and the environment and there are off-site impacts that require remedial activities; accordingly, enforcement actions are necessary.

An investigation to determine the extent of off-site impacts has not been conducted. The Department will seek to identify any parties (other than the Volunteer) known or suspected to be responsible for contamination at or emanating from the site, referred to as Potentially Responsible Parties (PRPs). The Department will bring an enforcement action against the PRPs. If an enforcement action cannot be brought or does not result in the initiation of a remedial program, the Department will evaluate the off-site contamination for action under the State Superfund. The PRPs are subject to legal actions by the State for recovery of all response costs the State incurs or has incurred.

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:

xylene (mixed)	trichloroethene (TCE)
lead	benzo(a)anthracene
toluene	benzo(b)fluoranthene
ethylbenzene	indeno(1,2,3-cd)pyrene
tetrachloroethene (PCE)	arsenic
cadmium	chromium
mercury	cis-1,2-dichloroethene (cis-1,2-DCE)

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.

Soil and groundwater were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), per- and polyfluoroalkyl substances (PFAS; groundwater only), and pesticides. Based upon investigations conducted to date, the primary contaminants of concern include chlorinated and non-chlorinated VOCs and metals. The media impacted include soil, soil vapor and groundwater.

Soil: Soil impacts appear to be limited to the area immediately surrounding the abandoned USTs in the northeast area of the site and the dry wells on the western portion of the site. Shallow soil samples located in the south-central area of the site were found to contain levels of SVOCs slightly above the restricted residential soil cleanup objectives (RRSCOs) and included benzo(a)anthracene (1.070 part per million (ppm)), benzo(b)fluoranthene (1.060 ppm), and 1,2,3-indeno(cd)pyrene (0.584 ppm), compared to their respective RRSCOs of 1 ppm, 1 ppm, and 0.500 ppm. VOCs were generally below detection limits.

Non-chlorinated VOCs were detected above the Protection of Groundwater SCOs (PGWSCO). Ethylbenezene and xylenes were above the PGWSCO of 1.0 ppm and 1.6 ppm, respectively, in four samples collected in the UST area. Ethylbenzene was detected at 72 ppm and xylenes was detected at 354 ppm. Toluene was also detected above the PGWSCO of 0.7 ppm in the same location at 6.2 ppm.

The principal detected chlorinated VOCs were PCE and TCE at depths greater than 26 feet below grade. All chlorinated VOCs in soils were below the RRSCOs. However, PCE and TCE were detected above their respective PGWSCOs of 1.3 ppm and 0.47 ppm in five samples, four of which are in the UST area and one near the southern site boundary at concentrations of up to 7.3 ppm and 0.9 ppm, respectively.

Elevated levels of metals were detected in site drywells. The principal elevated metals in drywell soils include cadmium, chromium, lead, and mercury. Cadmium ranged from non-detect to 29 ppm which exceeds the RRSCO of 4.3 ppm. Lead ranged from non-detect to 1,730 ppm, which exceeds the RRSCO of 400 ppm. Chromium results ranged from 1.7 ppm to 286 ppm, which exceeds the RRSCO of 180 ppm. Mercury was detected as high as 4.1 ppm, which exceeds the RRSCO of 0.81 ppm. Arsenic detections ranged from 16.4 ppm to 18.5 ppm, which exceeds the RRSCO of 16.0 ppm. No off-site soil sampling has been performed to date; however, soil sampling performed from areas of the site near the property boundary does not suggested any impacts to off-site soil related to this site.

Groundwater: VOC contamination was found in groundwater and is highest in the area of the abandoned USTs. Xylenes in this area ranged from non-detect to 48,700 parts per billion (ppb), exceeding the groundwater standard of 5 ppb, but the majority of xylene results were 10 ppb or lower. Detection of toluene range from 2.3 ppb to 21,800 ppb, exceeding the groundwater standard of 5 ppb. Ethylbenzene detections ranged from less than 1.0 ppb to 9,470 ppb, exceeding the groundwater standard of 5 ppb. VOC contamination in groundwater does extend off-site near the northeast section of the site, and possibly to the north and east at depths less than 20 feet below ground surface (bgs).

Chlorinated VOC contamination in groundwater has been detected throughout the site. PCE ranges in concentration from non-detect to 7,610 ppb, compared to its 0.7 ppb groundwater standard. TCE ranges in concentration from non-detect to 5,440 ppb, compared to its groundwater standard of 5 ppb. Cis-1,2-Dichloroethane detections ranged from 7.3 to 3,510 ppb, compared to its 0.6 ppb groundwater standard. The concentrations of these VOCs are highest near the abandoned USTs. The highest concentrations of chlorinated VOCs are at depths greater than 20 feet bgs.

Metals at the site were not found in groundwater at concentrations exceeding groundwater standards.

One groundwater sample was analyzed for emerging contaminants during the RI. Sample results were non-detect for 1,4-dioxane. Perfluorooctanoic acid (PFOA) was detected at 46.6 parts per trillion (ppt) and perfluorooctanesulfonic acid (PFOS) was detected at 16.4 ppt, exceeding the drinking water standards of 10 ppt for each chemical. During a separate investigation conducted prior to the RI, and as part of the statewide review of sites for emerging contaminants, two groundwater monitoring wells were sampled in 2018. From the previous investigation, the detection of PFOA ranged 25 ppt to 41 ppt. PFOS ranged from 10 ppt to 19 ppt. 1,4-dioxane was also non-detect in those wells.

Soil Vapor: The maximum detected methylene chloride soil vapor concentration is 21.0 micrograms per cubic meter (µg/m^3). For PCE, the VOC with the highest historic groundwater levels, three of the 17 sample locations had elevated results. The samples with elevated levels were found on the eastern side of the site. TCE ranged from 6.4 to 55.4 µg/m^3. PCE ranged from 43 to 548 µg/m^3. The highest concentrations were located near the site's eastern boundary. Other detected VOC compounds include chloromethane at 0.91 µg/m3, 1-2-dichloroethane at 3.6 µg/m^3, 2-butanone at 10 µg/m^3 and acetone at 375 µg/m^3. The results for a significant portion of the VOCs are below detection limits or are at low levels.

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 completely fenced, which restricts public access, and the site is largely covered by asphalt and concrete. Direct contact with contaminants in the soil is unlikely. Contaminated groundwater at the site is not used for drinking or other purposes and the site is served by a public water supply that obtains water from a different source not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn 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 there is no on-site building, 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 the inhalation of site contaminants due to

soil vapor intrusion for any future on-site development. Furthermore, sampling indicates soil vapor intrusion is a potential concern for off-site buildings.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

RAOs for Environmental Protection

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

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure 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 Track 4: Restricted use with site-specific soil cleanup objectives remedy.

The selected remedy is referred to as the Excavation, In-situ Chemical Reduction, and Site Cover

remedy.

The elements of the selected remedy, as shown in Figure 3, are as follows:

1. Remedial Design

A remedial design program would 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

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

- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- 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; and
- soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G.

Approximately 1,735 cubic yards of contaminated soil will be removed from the site. Also, any underground storage tanks (USTs), fuel dispensers, underground piping or other structures encountered during the remedial program will be excavated, removed and properly disposed of. Excavations will extend to the water table, approximately seven to 11 feet below ground surface.

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 excavations and to establish the designed grades at the site.

4. Groundwater

In-situ chemical reduction (ISCR) will be implemented to treat volatile organic compounds (VOCs) in site groundwater. A chemical reducing agent will be applied directly into the base of the open excavations during the remedial phase to destroy the contaminants. Excavations will extend to the water table, approximately seven to 11 feet below ground surface. Once excavation activities are completed, a program will be implemented to monitor site groundwater. If required, where monitoring results do not show a bulk reduction and asymptotic trend over time, additional remedial action will occur to address elevated levels of any residual VOCs that remain in site groundwater, such as ISCR.

Monitoring of groundwater will be required up-gradient, down-gradient and within the areas of excavation and treatment zones. Monitoring will be conducted for, but not limited to, VOCs.

5. 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 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.

6. Engineering and Institutional Controls

Imposition of an institutional control in the form of an environmental easement and a site Management Plan, as described below, will be required. The remedy will achieve a Track 4 restricted residential cleanup at a minimum.

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 or commercial or industrial 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 County DOH; and
- require compliance with the Department approved Site Management Plan.

7. Site Management Plan

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

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

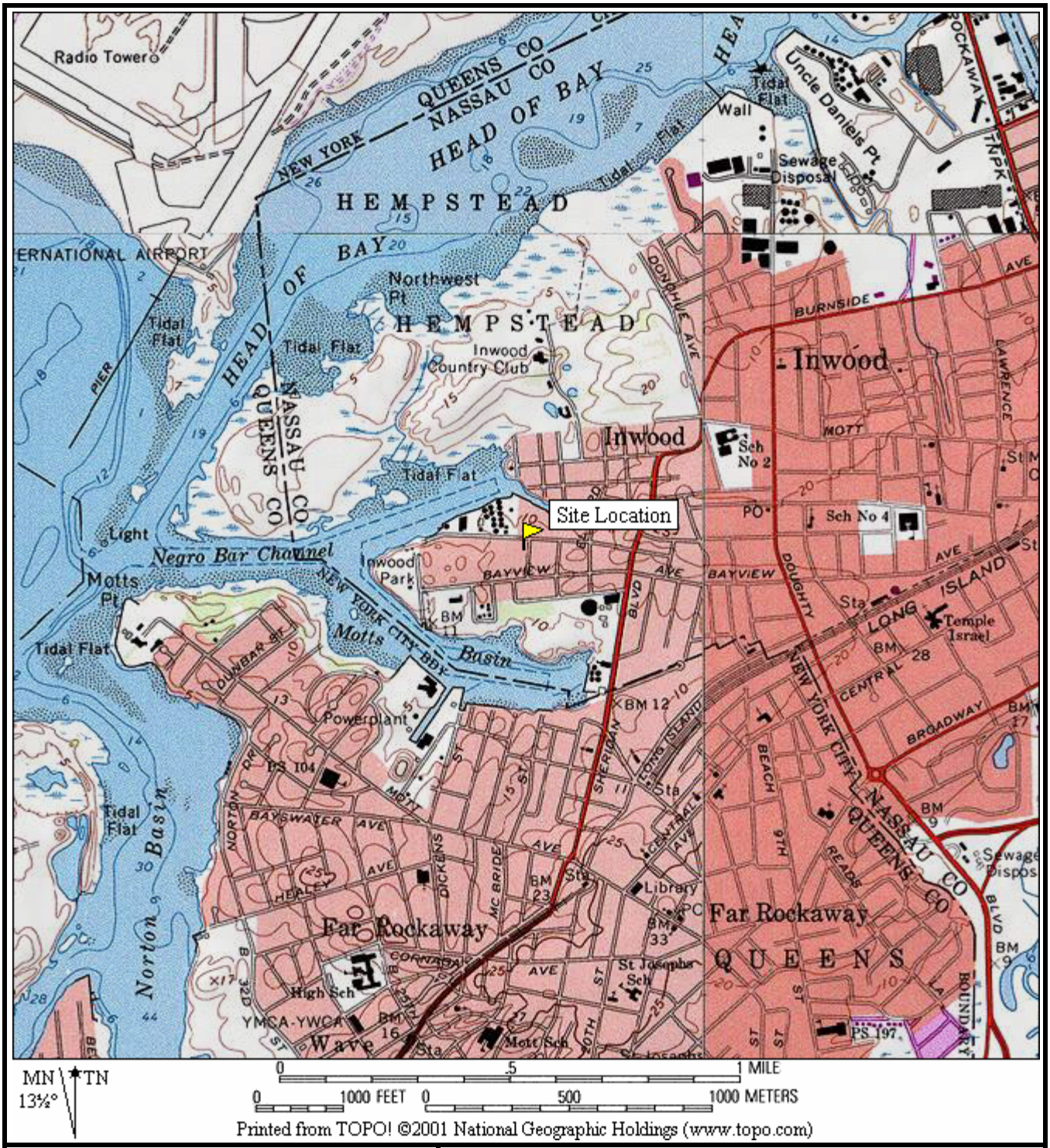
- Institutional Controls: The Environmental Easement discussed in Paragraph 6 above.
- Engineering Controls: The soil cover discussed in Paragraph 5 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- a provision should redevelopment occur to ensure no soil exceeding protection of groundwater concentrations will remain below storm water retention basin or infiltration structures;
- 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 consistent with that described in Paragraph 4 above will be placed in any areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives (SCOs);
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b) 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.



ATC ASSOCIATES INC.
104 East 25th Street, 8th Floor
New York, NY 10010-2917
Phone (212) 353-8280 * Fax (212) 979-8447

TOPO!
@2001 National Geographic Holding

FIGURE 1 – SITE LOCATION MAP

CLIENT: 175 Roger Avenue, LLC
SITE: 175 Roger Avenue
Inwood, NY 11096
PROJECT #:
SCALE: As indicated

FIGURE 2 - SITE PLAN

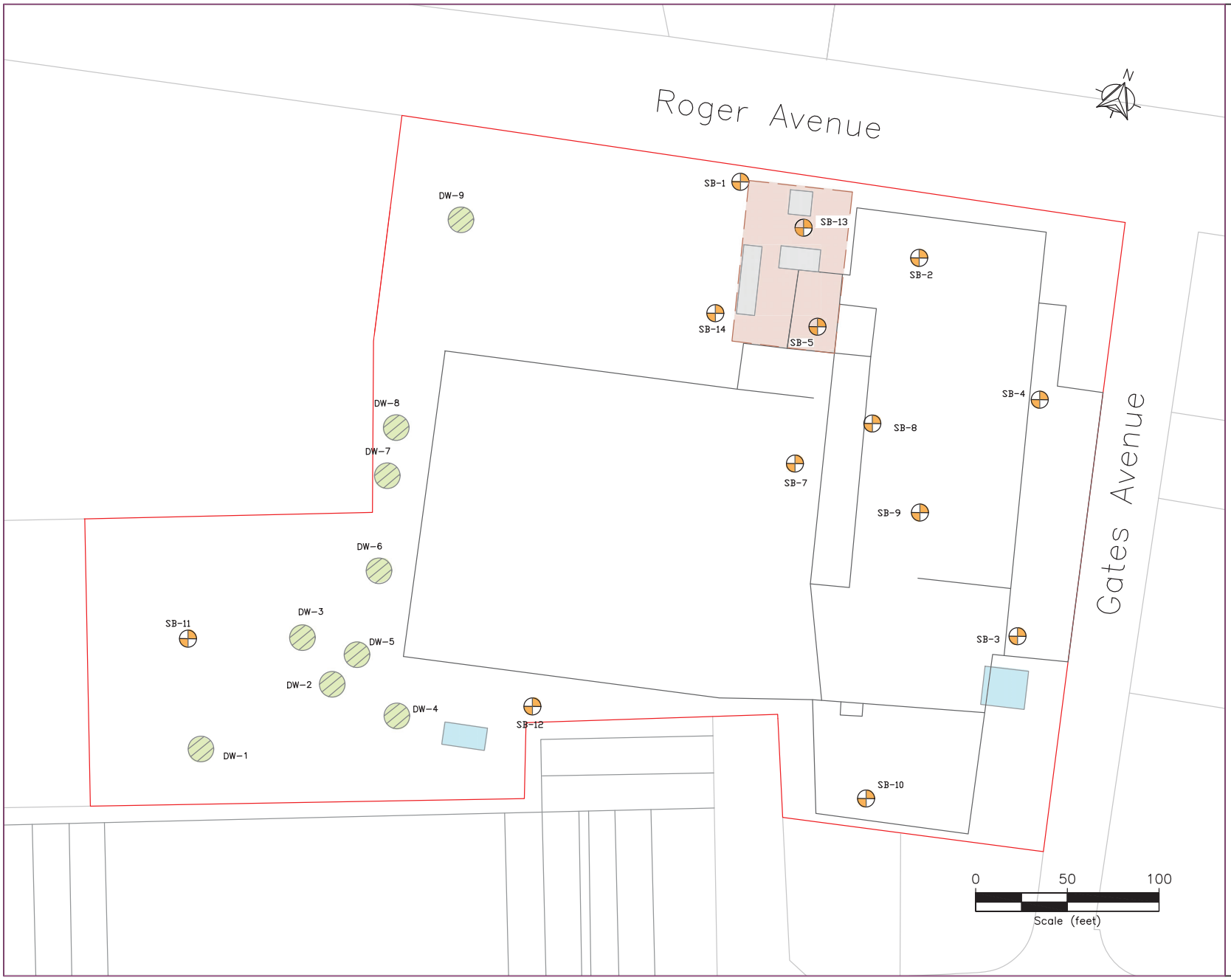
ATC ASSOCIATES INC.
104 East 25th Street, 8th Floor
New York, NY 10010-2917
Phone (212) 353-8280 * Fax (212) 979-8447

LEGEND:

Site Boundary

N

SITE:	175 Roger Avenue Inwood, NY
CLIENT:	175 Roger Avenue LLC
ATC PROJECT #:	15.75316.0006
SCALE:	As Indicated



FILE: /Users/shall/Desktop/Jordan/Figure 9 - Environmental Cut Depths.dwg DATE: 8/28/2020

Fleming Lee Shue
Environmental Management & Consulting

158 West 29th Street, 9th Fl.
New York, NY 10001

175 Roger Avenue
Inwood, NY 11096
BCP No. 130164

Figure 3

Selected Rmedy Soil Remediation Areas

September 2020

Project Number
10188-017

LEGEND

- Former Warehouse Building and Room Outlines
- BCP Boundary
- Soil Boring Sample Location
- Underground Storage Tank (UST)
- Dry Well Excavate to 8 – 10 ft. bgs.
- UST Area Excavate to 7 – 11 ft. bgs.
- Probe for UST Cut Depth TBD (if applicable)

Notes:
bgs. – below ground surface