DECISION DOCUMENT

27-10 49th Avenue
Brownfield Cleanup Program
Long Island City, Queens County
Site No. C241219
September 2024

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

DECLARATION STATEMENT - DECISION DOCUMENT

27-10 49th Avenue
Brownfield Cleanup Program
Long Island City, Queens County
Site No. C241219
September 2024

Statement of Purpose and Basis

This document presents the remedy for the 27-10 49th Avenue brownfield cleanup site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the 27-10 49th Avenue site and the public's input to the proposed remedy presented by NYSDEC.

Description of Selected Remedy

The elements of the selected remedy are as follows:

1. Remedial Design

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

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse 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.

As part of the site management program, to promote implementation of 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 established for the site management activities, as appropriate. Further, progress with respect to green and sustainable remediation metrics will be tracked, and reported in periodic reports, as part of the site management program, and opportunities to further reduce the environmental footprint of the project will be identified as appropriate.

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. Cover System

A site cover currently exists in areas not occupied by buildings that will be maintained to allow for commercial use of the site. Any site redevelopment will maintain the existing site cover. The site cover may include paved surface parking areas, sidewalks or soil where the upper one foot of exposed surface soil meets the applicable soil cleanup objectives (SCOs) for commercial use. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6NYCRR part 375-6.7(d).

3. Soil Vapor Extraction

Modification and expansion of an existing soil vapor extraction (SVE) system will be implemented to remove volatile organic compounds (VOCs) from the subsurface and to prevent off-site migration of contaminated soil vapor. VOCs will be physically removed from the subsurface by applying a vacuum to wells that have been installed into the vadose zone (the area below the ground but above the water table). The vacuum draws air through the soil matrix which carries the VOCs from the soil to the SVE well. The air extracted from the SVE wells is then treated as necessary prior to being discharged to the atmosphere. The existing SVE system was installed as part of the interim remedial measure (IRM) discussed in Section 6.2 and the expansion will further prevent off-site migration of contaminated soil vapor.

4. Vapor Mitigation

Any on-site buildings will be required to have a sub-slab depressurization system, or other acceptable measures, to mitigate the migration of vapors into the building from the subsurface. An existing sub-slab depressurization system (SSDS) was installed as part of an Interim

Remedial Measure (IRM) which will continue operation.

5. Institutional Control

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

- require the remedial party or site owner to complete and submit to the NYSDEC a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allow the use and development of the controlled property for commercial 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 NYCDOHMH; and
- require compliance with the NYSDEC approved Site Management Plan.

6. Site Management Plan

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

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

- Institutional Controls: The Environmental Easement discussed in Remedy Element 5 above.
- Engineering Controls: The cover system discussed in Remedy Element 2, the SVE system discussed in Remedy Element 3, and the SSDS discussed in Remedy Element 4, 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 that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Remedy Element 2 above will be placed in any areas where the upper one foot of exposed surface soil exceeds the applicable soil cleanup objectives (SCOs)
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and NYSDEC notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

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

- monitoring of soil vapor to assess the performance and effectiveness of the remedy; and
- a schedule of monitoring and frequency of submittals to NYSDEC.

c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

- procedures for operating and maintaining the remedy;
- compliance monitoring of treatment systems, including the SVE in Remedial Element 3 and the SSDS in Remedial Element 4, to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintaining site access controls and NYSDEC notification; and
- providing NYSDEC access to the site and O&M records.

Declaration

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

September 30, 2024

Date

R. Scott Deyette, Director
Remedial Bureau B

DECISION DOCUMENT

27-10 49th Avenue
Long Island City, Queens County
Site No. C241219
August 2024

SECTION 1: SUMMARY AND PURPOSE

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

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

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

SECTION 2: CITIZEN PARTICIPATION

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

DECInfo Locator - Web Application
https://gisservices.dec.ny.gov/gis/dil/index.html?rs=C241219

Queens Library at Long Island City
37-44 21st Street
Long Island City, NY 11101
Phone: 718-752-3700

Queens Community Board 2
43-22 50th Street, 2nd Floor
Woodside, NY 11377
Phone: 718-533-8773

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 0.866-acre site is comprised of a single tax lot (Block 113, Lot 35) located at the intersection of 49th Avenue (a.k.a. Hunters Point Avenue) and 27th Street within a commercial and industrial area of Long Island City, Queens County, NY. The property is bound to the west by 27th Street, to the south by a commercial property, to the north by 49th Avenue and to the east by the Dutch Kills, a tributary to Newtown Creek.

Site Features:
The site is relatively flat and is developed with a two-story commercial building on the western side of the site and a paved parking lot located on the eastern side of the site. The building is currently occupied by a ride share company, Lyft, and is used for office space and storage.

Current Zoning and Land Use:
The site is zoned as an Industrial Business Zone (IBZ)/Manufacturing (M3-2), which allows for industrial and commercial uses. Surrounding parcels are currently utilized for commercial, industrial, and manufacturing purposes. The nearest residential area is approximately 0.4 miles to the north.

Past Use of the Site:
Prior to the site's current use as office and storage space by tenant Lyft, the site was most recently used as a warehouse for mixing, repackaging and distribution of petroleum products with a limousine company utilizing the building for office space. Prior to these operations, the site was used by courier companies for distribution. Potential sources of contamination on the site were petroleum spills associated with the operations of a lubricant company, repair operations associated with the former courier companies, piping associated with several floor drains and placement of historic fill. There are two petroleum bulk storage (PBS) facility registration numbers associated with the site. PBS Facility No. 2-483192 is inactive, and the seven (7) associated underground storage tanks (USTs) are listed as converted to non-regulated

use. PBS Facility No. 2-452335 is active and lists five (5) USTs as closed prior to 03/1991, two (2) USTs as closed-in-place, and two (2) above ground storage tanks (ASTs) as in-service.

Site Geology and Hydrogeology:
The site is generally flat and slopes gently towards the Dutch Kills which is located along the eastern boundary of the site. The shallow soils at the site are classified as urban land. The soil surface textures include silt loam, loamy sand, sandy loam, and fine sandy loam. Deeper soils consist of stratified sandy loams, and gravels underlain by metamorphic rock. Soils on the site consist of approximately nine feet of fill material containing brick, concrete, fly ash, slag, fine silty sands, clay, and fine gravels. Native material consisting of fine to medium sands with some silt was observed at depths greater than nine feet below ground surface (bgs). Groundwater is approximately 9-13 feet bgs at the subject property and flows in an easterly direction towards the Dutch Kills, which flows into Newtown Creek (approximately 0.25 miles to the south of the site).

A site location map is attached as Figure 1, and a site plan is attached as Figure 2.

SECTION 4: LAND USE AND PHYSICAL SETTING

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

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

SECTION 5: ENFORCEMENT STATUS

The Applicant under the Brownfield Cleanup Agreement is a Volunteer. The Applicant does not have an obligation to address off-site contamination. NYSDEC has determined that this site poses a significant threat to public health or the environment and there may be off-site impacts that require remedial activities; accordingly, enforcement actions are necessary.

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

6.1.2: RI Results

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

contaminants of concern identified at this site are:

tetrachloroethene (PCE) trichloroethene (TCE)

The contaminants of concern exceed the applicable SCGs for:

- 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.

The following IRM has been completed at this site based on conditions observed during the RI.

Excavation, Soil Vapor Extraction, and Sub Slab Depressurization System IRM

Excavation/ Removals
Hydraulic lifts and an oil/water separator were exposed, cleaned, removed, and properly disposed of off-site. Limited excavation and off-site disposal of on-site soils occurred to a depth of approximately 8.5 feet below ground surface (bgs) in the areas of the hydraulic lifts and oil/water separator removal and SSDS/SVE system installation described below. Approximately 372 tons of soil were excavated during the IRM. Documentation samples were collected and analyzed to document remaining conditions.

Backfill
Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) was brought in to replace the excavated soil at the site.

Soil Vapor Extraction Systems
A soil vapor extraction (SVE) system was installed beneath the parking lot in the eastern half of the site as well as one extraction well under the building slab to remove chlorinated volatile organic compounds (VOCs) from the subsurface of the site. The SVE system consists of a network of three branches of perforated PVC pipe installed within the vadose zone approximately two feet below the ground surface. The extraction well was installed in the vadose zone under the building and is screened 4 to 8 feet below the top of the slab.

Sub-Slab Depressurization System
A sub-slab depressurization system (SSDS) was installed to mitigate the migration of vapors into the on-site building from the subsurface. The SSDS consists of:

- Installation of trenches excavated to approximately two feet bgs;
- Three separate trunk lines of horizontal perforated pipes installed within a 16-inch layer of crushed stone immediately beneath the building slab;
- Restoration of the building floor slab with six inches of concrete on top of crushed stone;
- Vertical header pipes that discharge vapors above the building roof line with vents located a minimum of 10 feet from any window or HVAC intake points; and

- Five sub-slab soil vacuum monitoring points installed within the floor slab of the building to monitor and evaluate the effectiveness of the system.
- Indoor air samples collected after system startup indicated concentrations of contaminants had decreased and were below NYSDOH Decision Matrices.

The IRM commenced in April 2019 and is documented in the approved December 2021 IRM Construction Completion Report (CCR). An IRM excavation areas map is attached as Figure 3.

6.3: Summary of Environmental Assessment

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

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

Soil:
Several SVOCs indicative of historic fill were detected at levels exceeding their respective Commercial Use Soil Cleanup Objectives (CSCOs) including: benzo(a)anthracene up to 49.1 parts per million (ppm) (CSCO of 5.6 ppm), benzo(a)pyrene up to 47.3 ppm (CSCO of 1 ppm), benzo(b)fluoranthene up to 39.4 ppm (CSCO of 5.6 ppm), chrysene up to 48.4 ppm (CSCO of 56 ppm), dibenzo(a,h)anthracene up to 8.71 ppm (CSCO of 0.56 ppm), and indeno(1,2,3-cd)pyrene up to 29.5 ppm (CSCO of 5.6 ppm).

The historic fill present site-wide is also the likely source of the following metals detected at levels exceeding their respective CSCOs: arsenic up to 78.4 ppm (CSCO of 16 ppm), barium up to 1,540 ppm (CSCO of 400 ppm), copper up to 1,870 ppm (CSCO of 270 ppm), lead up to 3,420 ppm (CSCO of 1,000 ppm), mercury up to 4.78 ppm (CSCO of 2.8 ppm), nickel up to 2,330 ppm (CSCO of 310 ppm) and zinc up to 14,600 ppm (CSCO of 10,000 ppm).

Two chlorinated VOCs were detected in soil beneath the building; however, both were under their respective CSCOs: tetrachloroethene (PCE) up to 61.6 ppm (CSCO of 150 ppm) and trichloroethene (TCE) up to 0.956 ppm (CSCO of 200 ppm).

No pesticides or PCBs were detected above their respective CSCOs. PFAS were not detected in soil, with the exception of one compound which was detected slightly above the reporting limit.

Following removal of the oil/water separator and impacted soil in May 2019, five documentation soil samples were collected from the excavation in the form of one bottom sample and four side

wall samples at approximately 8.5 to 9.0 feet bgs. Endpoint samples were analyzed for VOCs and SVOCs, all of which were detected below their respective CSCOs.

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

Groundwater:
SVOCs were detected above their respective Class GA Ambient Water Quality Standards and Guidance Values (AWQSGV) during the 2019 RI, however turbidity levels and laboratory reporting limits were both unusually high. Five groundwater wells were resampled for SVOCs in 2024 using low-flow sampling methods, the results of which were all below their respective AWQSGV. It is believed the SVOC exceedances of AWQSGVs in 2019 were likely due to the presence of entrained sediment as a result of high turbidity and are not representative of actual site conditions.

PFAS detected at concentrations exceeding their respective AWQSGVs include perfluorooctanesulfonic acid (PFOS) up to 15 parts per trillion (ppt) (AWQGV of 2.7 ppt) and perfluorooctanoic acid (PFOA) up to 110 ppt (AWQSGV of 6.7 ppt). There are no public water supply wells within a half mile and there is a municipal prohibition for use of groundwater at the site.

The VOCs PCE and TCE were detected in groundwater up to 3.3 ppb and 0.36 ppb, respectively, below the AWQSGV of 5 ppb for each. No pesticides or PCBs were detected at concentrations exceeding their respective AWQSGV. Excluding naturally occurring metals, such as manganese and sodium, no dissolved metals were detected above standards in site groundwater.

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

Soil Vapor:
Prior to the IRM, PCE and TCE were detected in soil vapor under the parking lot at elevated concentrations up to 42,000 micrograms per cubic meter ($\mu g/m^3$) and 4,200 $\mu g/m^3$, respectively, and in vapor beneath the building up to 11,000 $\mu g/m^3$ and 1,100 $\mu g/m^3$, respectively.

Post IRM sampling shows operation of the soil vapor extraction system has significantly reduced on-site soil vapor concentrations of PCE and TCE to a maximum of 197 ug/m^3 and 13.7 ug/m^3, respectively. Post- IRM off-site sampling detected concentrations of PCE and TCE in the sidewalk along 49th Avenue up to 1,400 ug/m^3 and 4.1 ug/m^3, respectively. The modification and expansion of the SVE system will further prevent off-site migration of soil vapor. Additionally, a BCP off-site investigation will be conducted under New York State Superfund project C241219A.

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, concrete, and the on-site building, people will not come into contact with site-related soil and groundwater contamination unless they dig below the surface. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. Volatile organic compounds in soil vapor (air spaces within the soil) may move into buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Sub-slab depressurization systems (systems that ventilate/remove the air beneath the building) have been installed in the on-site building to prevent the indoor air quality from being affected by the contamination in soil vapor beneath the buildings. Sampling indicates off-site migration of contaminated vapor is a potential concern. Additional sampling to assess the potential for off-site exposures to contaminated soil vapor will be conducted under site C241219A.

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.

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 Cover System, Soil Vapor Extraction and Soil Vapor Mitigation remedy. The elements of the selected remedy, as shown in Figure 4 and Figure 5, 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 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.

As part of the site management program, to promote implementation of 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™ (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 established for the site management activities, as appropriate. Further, progress with respect to green and sustainable remediation metrics will be tracked, and reported in periodic reports, as part of the site management program, and opportunities to further reduce the environmental footprint of the project will be identified as appropriate.

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. Cover System

A site cover currently exists in areas not occupied by buildings that will be maintained to allow for commercial use of the site. Any site redevelopment will maintain the existing site cover. The site cover may include paved surface parking areas, sidewalks or soil where the upper one foot of exposed surface soil meets the applicable soil cleanup objectives (SCOs) for commercial use. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6NYCRR part 375-6.7(d).

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4. Vapor Mitigation

Any on-site buildings will be required to have a sub-slab depressurization system, or other acceptable measures, to mitigate the migration of vapors into the building from the subsurface. An existing sub-slab depressurization system (SSDS) was installed as part of an Interim Remedial Measure (IRM) which will continue operation.

5. Institutional Control

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

- require the remedial party or site owner to complete and submit to the NYSDEC a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allow the use and development of the controlled property for commercial 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 NYCDOHMH; and
- require compliance with the NYSDEC approved Site Management Plan.

6. Site Management Plan

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

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

- Institutional Controls: The Environmental Easement discussed in Remedy Element 5 above.
- Engineering Controls: The cover system discussed in Remedy Element 2, the SVE system discussed in Remedy Element 3, and the SSDS discussed in Remedy Element 4, 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 that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Remedy Element 2 above will be placed in any areas where the upper one foot of exposed surface soil exceeds 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 soil vapor to assess the performance and effectiveness of the remedy; and
- a schedule of monitoring and frequency of submittals to NYSDEC.

c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

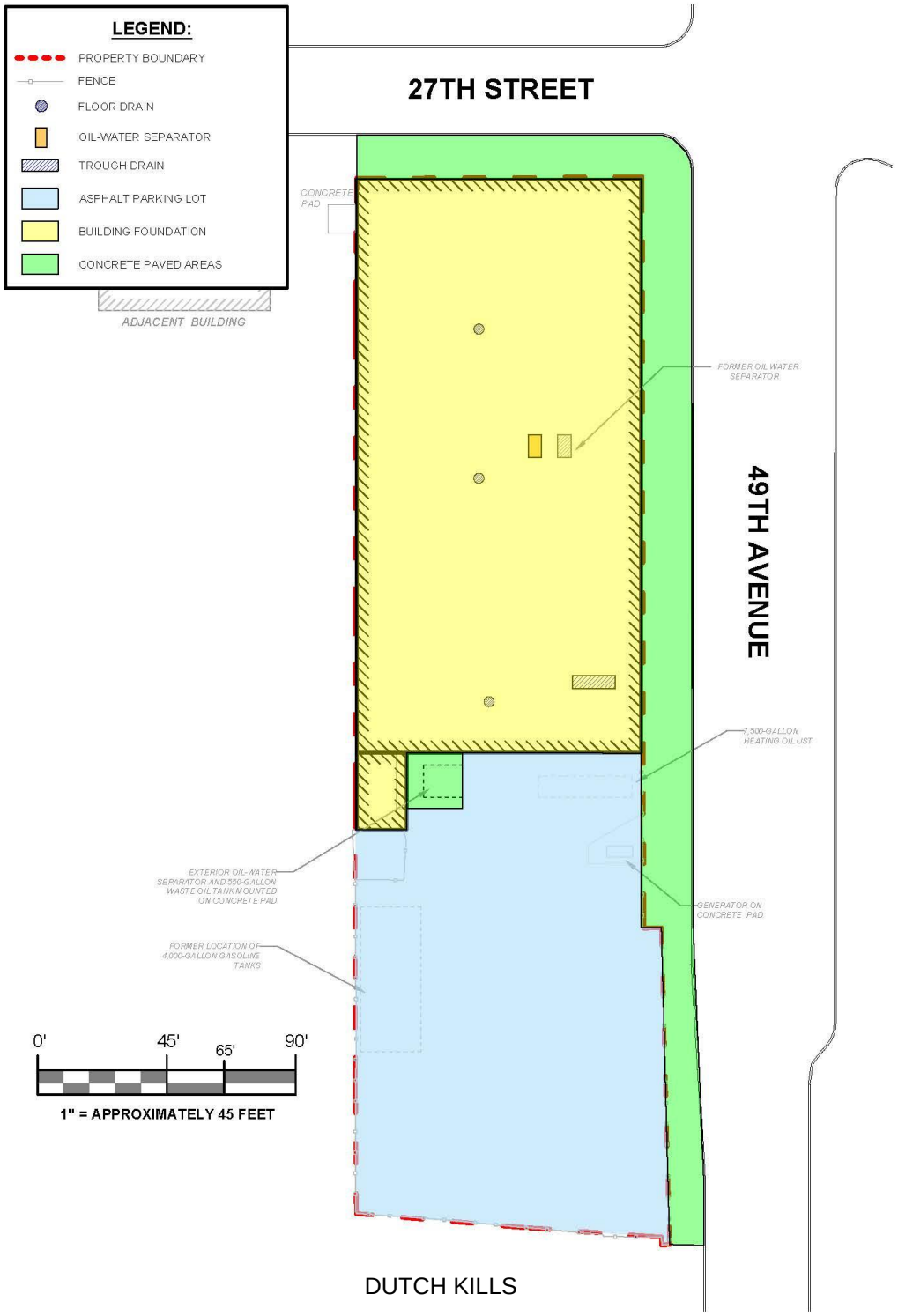
- procedures for operating and maintaining the remedy;
- compliance monitoring of treatment systems, including the SVE in Remedial Element 3 and the SSDS in Remedial Element 4, to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintaining site access controls and NYSDEC notification; and
- providing NYSDEC access to the site and O&M records.

N

0 200 400
Feet

27-10 49th Avenue
Site No. C241219
Long Island City, Queens County, NY

Figure 1
Site Map



Title:

SITE COVER SYSTEM PLAN

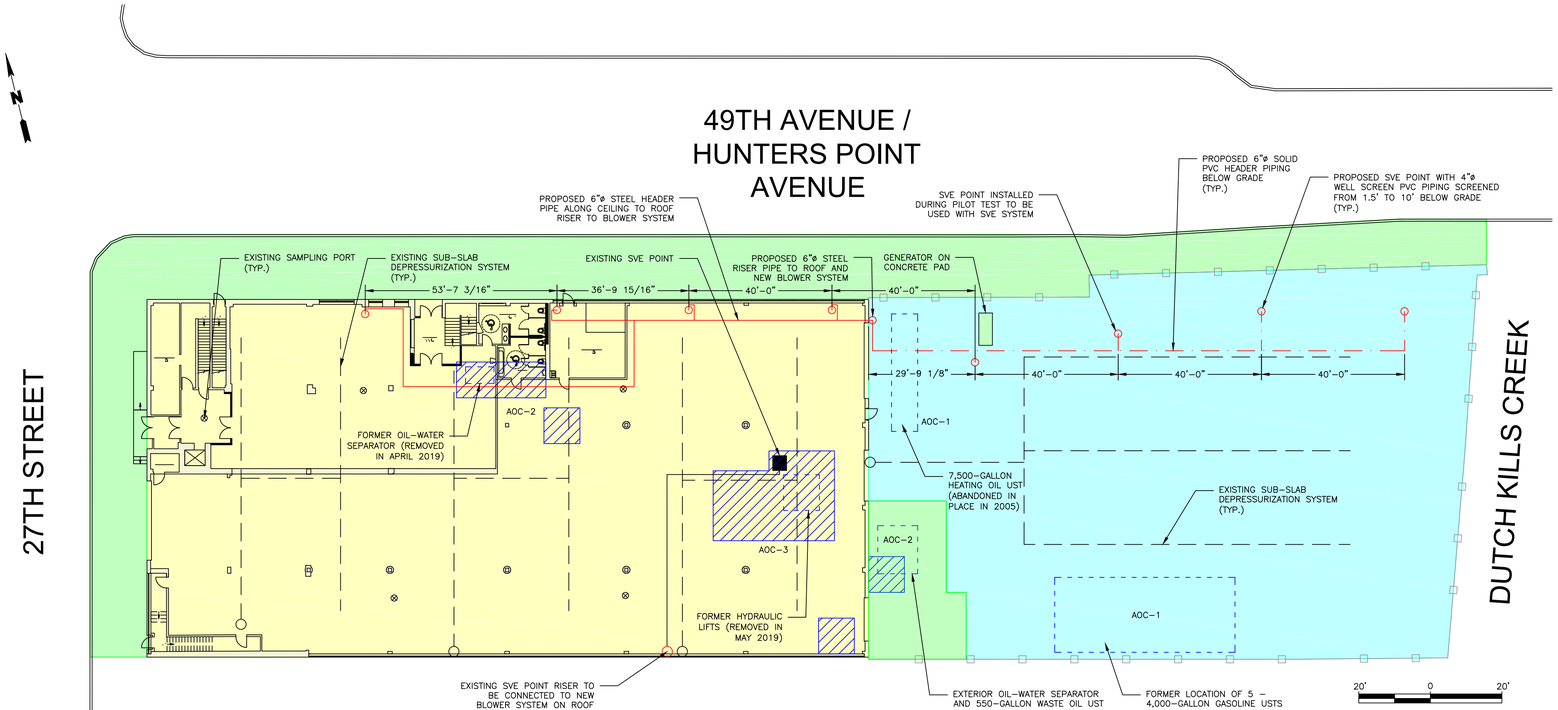
27-10 49TH AVENUE
LONG ISLAND CITY, NY

Prepared for:

HUNTERS POINT SG, LLC

ROUX	Compiled by: R.M.	Date: 11/23/2021	FIGURE
	Prepared by: M.S.R.	Scale: AS SHOWN	2
	Project Mgr: R.L.	Project: 3446.0008Y000	
	File: 3446.0008Y101.ppt		

**FIGURE ADAPTED FROM DRAWINGS BY ATLANTIC ENVIRONMENTAL SOLUTIONS INC.*



SITE PLAN

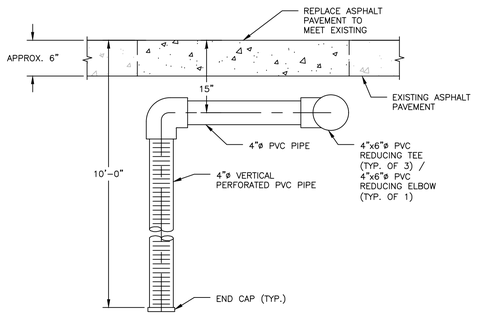
SCALE: 1" = 20'

LEGEND

- BUILDING FOUNDATION
- ASPHALT PARKING LOT
- CONCRETE PAVED AREA
- FENCE
- APPROXIMATE EXCAVATION AREAS (AS PER ATLANTIC ENVIRONMENTAL SOLUTIONS, INC.)
- APPROXIMATE TANK AREAS (AS PER ATLANTIC ENVIRONMENTAL SOLUTIONS, INC.)
- EXISTING SAMPLING PORT
- BUILDING COLUMN

SUB-SLAB DEPRESSURIZATION SYSTEM NOTES

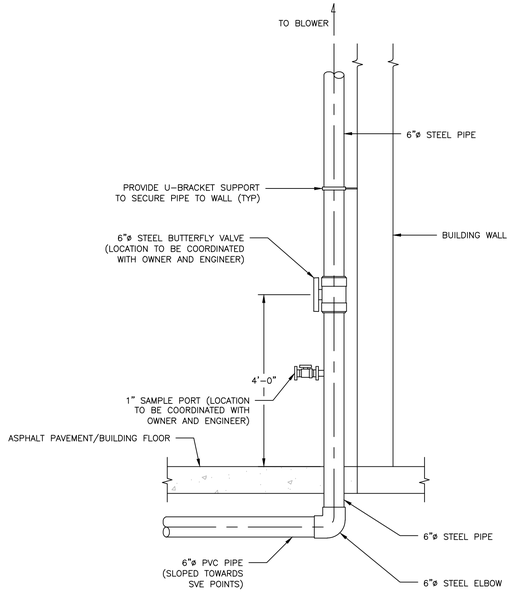
1. CONTRACTOR SHALL COORDINATE WITH PLUMBING, MECHANICAL, CIVIL AND ELECTRICAL CONTRACTORS FOR ALL UTILITY CROSSINGS.
2. THIS SOIL VAPOR EXTRACTION SYSTEM WAS DESIGNED TO MINIMIZE CROSSINGS OF ONSITE FEATURES AND STRUCTURAL FEATURES. FIELD VERIFICATION OF LOCATIONS SHOULD BE MADE TO ENSURE CROSSINGS ARE MINIMIZED.



PROFILE VIEW

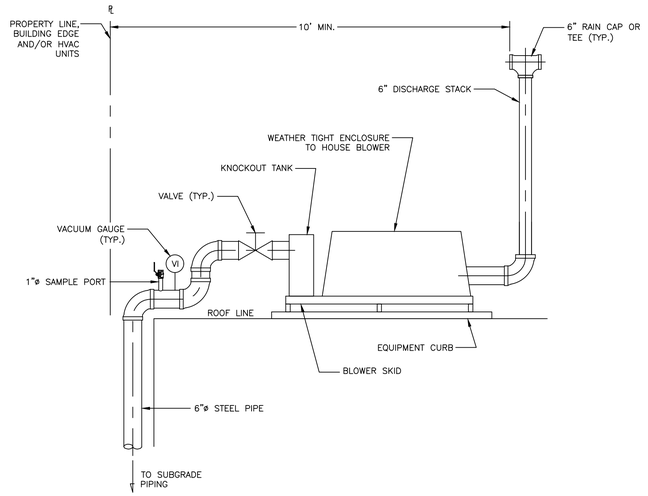
1 SOIL VAPOR EXTRACTION POINT DETAIL

SCALE: NOT TO SCALE



2 RISER DETAIL

SCALE: NOT TO SCALE



BLOWER NOTES

1. PROVIDE ELECTRICAL/CONTROL CONDUIT TO BLOWERS. COORDINATE WITH ELECTRICAL CONTRACTOR.
2. ELECTRICAL CONDUIT SHALL BE SIZED FOR 230/460 VOLT, THREE PHASE, 60 HZ, FOR THE BLOWER MOTOR.
3. SVES VENT EXHAUST SHALL BE OFFSET A MINIMUM OF 10 FEET FROM PROPERTY LINES, BUILDING EDGES, HVAC/AIR INTAKES, OPERABLE OPENINGS AND ANY OUTDOOR RECREATIONAL SPACES IN ACCORDANCE WITH NYC PLUMBING CODE CHAPTER 9 VENTS.
4. THE BLOWER SHALL BE A 10.0 HP, ATLANTIC BLOWERS AB-850 OR APPROVED EQUAL.
5. THE BLOWER SHALL BE PROVIDED WITH A WEATHER TIGHT ALUMINUM CUSTOM ENCLOSURE OR APPROVED EQUAL.
6. THE BLOWER SKID SHALL INCLUDE A WEATHER TIGHT ENCLOSURE, KNOCKOUT TANK (WITH HIGH LEVEL ALARM), VACUUM RELIEF VALVE, LOW VACUUM SWITCH, GAUGES, AND INTERCONNECTING PIPING/FITTINGS.
7. A CONTROL PANEL SHALL BE PROVIDED WITH THE BLOWER SKID. THE CONTROL PANEL SHALL HAVE GREEN OPERATING LIGHTS AND RED ALARM LIGHTS. THE CONTROL PANEL SHALL HAVE AN ALARM FOR WATER LEVEL IN KNOCKOUT TANK, LOW VACUUM AND NO POWER. THE ALARM SIGNAL SHALL BE SENT TO AN APPROPRIATE LOCATION IN THE PROPOSED BUILDING (I.E., SUPERINTENDENT'S OFFICE) AND SHALL ALSO BE AUDIBLE. THE ALARM SHALL BE A MCMASTER-CARR SIGNAL LIGHT WITH AUDIBLE ALARM (PART NO. 5753T71) OR APPROVED EQUAL.
8. PROVIDE ALL NECESSARY PIPE SUPPORTS FOR RISERS FROM THE ASPHALT PAVEMENT AND INSIDE THE BUILDING TO THE BLOWER ON THE ROOF.

3 TYPICAL BLOWER DETAIL

SCALE: NOT TO SCALE

NO.	DATE	REVISION DESCRIPTION	INT.
2	8/21/24	ADD SVE POINTS IN BUILDING	D.E.K.
1	7/29/24	ADD EXCAVATION AREAS, AOCS, LOCATIONS OF TANKS	D.E.K.

PROJ. ENGINEER: D.E.K.		DRAWN BY: D.E.K.	
DESIGNED BY: D.E.K.		CHECKED BY: N.C.	
DRAWING SCALE: AS SHOWN		PLOT SCALE: 1:1	
DRAWING DATE: 8/21/24		PRINT TYPE: COLOR	
OFFICE: NY		PAPER SIZE: ARCH D	
PROJECT NO.: 3446.0008Y000			
DRAWING FILE: 3446.0008Y106.05-REV2.DWG			

ROUX
Roux Environmental Engineering and Geology, D.P.C.
209 SHAFTER STREET ISLANDIA NEW YORK 11749
(631) 232-2600

PROJECT NAME:
27-10 49TH AVENUE, QUEENS, NY
NYSDEC BCP SITE NO. C241219

PROJECT FOR:
HUNTERS POINT SG, LLC
10 W FOREST AVENUE, ENGLEWOOD, NJ

TITLE:
SOIL VAPOR EXTRACTION SYSTEM EXPANSION PLAN AND DETAILS

DRAWING NO.
1
DRAWING 1 OF 1

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