

DECISION DOCUMENT

69-02 Queens Blvd
Brownfield Cleanup Program
Queens, Queens County
Site No. C241235
June 2020



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

DECLARATION STATEMENT - DECISION DOCUMENT

69-02 Queens Blvd
Brownfield Cleanup Program
Queens, Queens County
Site No. C241235
June 2020

Statement of Purpose and Basis

This document presents the remedy for the 69-02 Queens Blvd 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 69-02 Queens Blvd site and the public's input to the proposed remedy presented by the Department.

Description of Selected Remedy

The elements of the selected remedy are as follows:

1. Remedial Design

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

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and

- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings will include, at a minimum, a 20-mil vapor barrier/waterproofing membrane on the foundation to improve energy efficiency as an element of construction.

2. Excavation

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

- Grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- Soil exceeding the 6 NYCRR Part 371 hazardous criteria for lead;
- Excavation and removal of any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination.

Excavation and off-site disposal of all soils which exceed the restricted residential SCOs, as defined by 6 NYCRR Part 375-6.8, from the upper two feet of the Track 4 portion of the site.

Excavation and off-site disposal of all on-site soils which exceed unrestricted SCOs, as defined by 6 NYCRR Part 375-6.8 from the Track 1 portion of the site. If a Track 1 cleanup is achieved, a Cover System will not be a required element of the remedy for the Track 1 area of the site.

Approximately 12,811 cubic yards (cy) of contaminated soil and approximately 231 cy of contaminated soil that is classified as lead hazardous waste will be removed from the site.

3. Backfill

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to complete the backfilling of the excavation and establish the designed grades at the site.

4. In-Situ Chemical Oxidation

In-situ chemical oxidation (ISCO) will be implemented to treat petroleum related VOCs in groundwater. A self-activated persulfate oxidant (sodium persulfate, calcium peroxide) or similar material will be injected into the subsurface to destroy the contaminants in an approximately 1,100 square foot area in the vicinity of MW-9 located in the north-west portion of the site where petroleum-related compounds were elevated in the groundwater. The method and depth of injection will be determined during the remedial design. Monitoring will be required within the treatment zone. Monitoring will be conducted for VOCs upgradient and downgradient of the treatment zone.

5. Local Institutional Controls

If no EE or 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.

6. Vapor Intrusion Evaluation

As part of the 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.

7. Cover System

A site cover will be required to allow for restricted residential use of the site in the Track 4 areas of the site 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.

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 in-situ chemical oxidation discussed in paragraph 4, and the site cover system discussed 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 uses 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 6 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.

Conditional Track 1

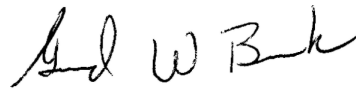
The intent of the remedy is to achieve a Track 1 unrestricted use remedy for a portion of the site; therefore, no environmental easement or site management plan is anticipated for that portion of the site. If the soil vapor intrusion (SVI) evaluation is not completed prior to completion of the Final Engineering Report, then a Site Management Plan (SMP) and Environmental Easement (EE) will be required for the entire site 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.

In the event that Track 1 unrestricted use is not achieved in the designated area of the site, including achievement of groundwater and soil vapor remedial objectives, the remedial elements listed in Paragraph 6, 7 and 8, above, will be required, and the remedy will achieve a Track 4 cleanup over the entire site.

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.

June 22, 2020



Date

Gerard Burke, Director
Remedial Bureau B

DECISION DOCUMENT

69-02 Queens Blvd
Queens, Queens County
Site No. C241235
June 2020

SECTION 1: SUMMARY AND PURPOSE

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

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

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

SECTION 2: CITIZEN PARTICIPATION

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

DECInfo Locator - Web Application
<https://gisservices.dec.ny.gov/gis/dil/index.html?rs=C241235>

Queens Public library - Woodside
54-22 Skillman Avenue
Woodside, NY 11377
Phone: (718) 429-4700

Queens Community Board 2
43-22 50th street
Woodside, NY 11377
Phone: (718) 533-8773

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 1.65-acre site is located in the Woodside section of Queens and is identified as Block 2432, Lots 8 and 9 (Formerly lots 8, 9, 21, 41, 44 and 50). The site is located between Queens Boulevard to the north, 70th Street to the east, 47th Avenue to the south and 69th Street to the west.

Site Features:

The site is relatively flat and there are no exposed soils on-site. All buildings and above ground structures have been demolished, with only the concrete building slabs and asphalt paving remaining.

Current Zoning and Land Use:

The site is currently inactive. The site is zoned R7x (residential) with a C2-3 (commercial) overlay. Adjacent land use includes commercial businesses to the west and north, new multi-story residential and mixed-use buildings to the east, and a church and LIRR tracks to the south. There are three schools located within 1,200 feet of the site including the St. Illuminator Armenian School located approximately 70 feet to the southeast, the Tiegerman Middle School located approximately 375 feet to the southeast, and PS 12 located approximately 1,150 feet to the northeast. There are no nursing homes or hospitals identified within 1,200 feet of the site.

Past Use of the Site:

Past operations at the site include a wood shop, an auto sales and repair structure, a sheet metal shop, a private garage, an office, a school, a truck repair and paint spraying shop, a motorcycle sales and service shop, an one story filling station, and several 1-2 story buildings which were used for commercial, industrial and residential purposes since 1897.

Site Geology and Hydrogeology:

Subsurface soils at the site consist of historic fill materials to a depth of approximately 5 to 20 feet below grade, followed by native silty-sand and clay. The elevation of the property is approximately

41 feet above mean sea level. The topography within the immediate area slopes gradually to the southeast. Groundwater occurs beneath the site at a depth of approximately 10.5 to 19.5 feet below grade. Based on groundwater elevation at the site, groundwater flow is to the southeast.

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, an alternative which allows for restricted residential use (which allows for commercial use and industrial use), as described in Part 375-1.8(g) were evaluated in addition to an alternative which would allow for unrestricted use of the site.

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

SECTION 5: ENFORCEMENT STATUS

The Applicant(s) under the Brownfield Cleanup Agreement is a/are Volunteer(s). The Applicant(s) does/do not have an obligation to address off-site contamination. However, the Department has determined that this site does not pose a significant threat to public health or the environment; accordingly, no enforcement actions are necessary.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A remedial investigation (RI) serves as the mechanism for collecting data to:

- characterize site conditions;
- determine the nature of the contamination; and
- assess risk to human health and the environment.

The RI is intended to identify the nature (or type) of contamination which may be present at a site and the extent of that contamination in the environment on the site or leaving the site. The RI reports on data gathered to determine if the soil, groundwater, soil vapor, indoor air, surface water or sediments may have been contaminated. Monitoring wells are installed to assess groundwater and soil borings, or test pits are installed to sample soil and/or waste(s) identified. If other natural resources are present, such as surface water bodies or wetlands, the water and sediment may be sampled as well. Based on the presence of contaminants in soil and groundwater, soil vapor will also be sampled for the presence of contamination. Data collected in the RI influence the development of remedial alternatives. The RI report is available for review in the site document repository and the results are summarized in section 6.3.

The analytical data collected on this site includes data for:

- groundwater
- soil
- soil vapor
- sub-slab 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:

| | |
|------------------------|-------------------------|
| 1,2,4-trimethylbenzene | barium |
| ethylbenzene | lead |
| xylene (mixed) | arsenic |
| benzo(a)anthracene | copper |
| benzo(a)pyrene | 1,3,5-trimethylbenzene |
| benzo(b)fluoranthene | naphthalene |
| chrysene | tetrachloroethene (PCE) |
| indeno(1,2,3-CD)pyrene | trichloroethene (TCE) |
| benzo(k)fluoranthene | 2,4-Dimethylphenol |

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.

Nature and Extent of Contamination:

A site wide investigation was conducted to delineate contamination in soil, groundwater, and soil vapor. Soil and groundwater samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), pesticides, the emerging contaminants per- and polyfluoroalkyl substances (PFAS), and 1,4 dioxane. Soil vapor was analyzed for VOCs. According to the most recent analytical results, the primary contaminants of concern at the site are metals, petroleum related VOCs and SVOCs in soil, and petroleum-related VOCs in groundwater. Results are summarized below. PCBs, pesticides and emerging contaminants were not detected above SCGs.

Soil:

Several petroleum related VOCs were detected in the subsurface that exceeded their applicable protection of groundwater soil cleanup objectives (PGSCOs); 1,2,4-trimethylbenzene was detected up to 110 parts per million (ppm) (PGSCO is 3.6 ppm) and m&p-xylenes were detected up to 110 ppm (PGSCO for total xylenes is 1.6 ppm).

Several SVOCs detected in the subsurface exceeded their respective unrestricted use SCOs (UUSCOs): benzo(a)anthracene was detected up to 12 ppm (UUSCO is 1 ppm); benzo(a)pyrene up to 10 ppm (UUSCO is 1 ppm); benzo(b)fluoranthene up to 11 ppm (UUSCO is 1 ppm); chrysene up to 11 ppm (UUSCO is 1 ppm); indeno(1,2,3-c,d)pyrene up to 8.2 ppm (UUSCO is 0.5 ppm); and benzo(k)fluoranthene up to 7.7 ppm (UUSCO is 0.8 ppm). Several metals exceeded their respective UUSCOs, including barium up to 1,340 ppm (UUSCO is 350 ppm), arsenic up to 19.6 ppm (UUSCO is 13 ppm), copper up to 305 ppm (UUSCO is 50 ppm), lead up to 7,780 ppm (UUSCO is 63 ppm). Lead was also detected at a concentration above the hazardous waste regulatory threshold in three soil borings, with a maximum Toxicity Characteristic Leaching Procedure (TCLP) concentration of 107 ppm (hazardous waste threshold for lead is 5 ppm).

Based on the sampling results, there is no indication that these contaminants have migrated off-site in soil.

Groundwater:

Several petroleum related VOCs were detected in on-site groundwater at levels exceeding their respective groundwater quality standards (GWQS); 1,2,4-trimethylbenzene up to 500 parts per billion (ppb), (GWQS is 5 ppb), 1,3,5-trimethylbenzene up to 120 ppb (GWQS is 5 ppb), ethylbenzene up to 200 ppb (GWQS is 5 ppb), o-xylene up to 190 ppb (GWQS is 5 ppb). Several

SVOCs were also detected; 2,4-Dimethylphenol up to 34 ppb (GWQS is 1 ppb), naphthalene up to 82 ppb (WGQS is 10 ppb), benzo(a)anthracene up to 0.04 (GWQS is 0.002 ppb).

Based on the sampling results, there is no indication that these contaminants have migrated off-site in groundwater.

Soil Vapor:

Based upon the remedial investigation results, petroleum-related VOCs such as benzene, toluene, ethylbenzene, and xylenes (BTEX) were detected in soil vapor samples. The level of total BTEX compounds ranged from about 7.15 micrograms per cubic meter (ug/m³) to 14.82 ug/m³. Chlorinated VOCs (CVOCs) were reported in all of the soil vapor samples at relatively low concentrations, with carbon tetrachloride ranging from about 0.26 ug/m³ to 0.51 ug/m³, tetrachloroethene (PCE) ranging from 0.58 ug/m³ to 37.1 ug/m³ and trichloroethene (TCE) reported in five samples ranging from 0.24 ug/m³ to 27.6 ug/m³. During the Phase II investigation, heptane and hexane were detected in soil vapor at elevated concentrations of 7,040 ug/m³ and 21,600 ug/m³, respectively.

Based on the soil vapor sampling results, soil vapor intrusion does not appear to be a concern for off-site buildings.

Sub-Slab Vapor:

Based upon the remedial investigation and Phase II investigation results, BTEX and CVOCs were reported in all of three sub-slab vapor samples at relatively low concentrations. Total BTEX compounds ranged from about 8.29 ug/m³ to 45.9 ug/m³. Tetrachloroethene (PCE) reported in all samples ranging from 1.62 ug/m³ to 4.34 ug/m³ and trichloroethene (TCE) reported in one sample ranging at 0.24 ug/m³.

Based on the sub-slab vapor sampling results, soil vapor intrusion does not appear to be a concern for off-site buildings.

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. However, persons who enter the site could contact contaminants in the soil by walking on the site, digging or otherwise disturbing the soil. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. Volatile organic compounds in soil vapor (air spaces within the soil) may move into buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Because the site is vacant, the inhalation of site-related contaminants due to soil vapor intrusion does not represent a current concern. Furthermore,

environmental sampling indicates soil vapor intrusion 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.
- 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 combined Dual Track 1 and Track 4 remedy.

The selected remedy is referred to as the Soil Excavation, Backfill, In-situ Groundwater Treatment and partial Cover System remedy.

The elements of the selected remedy, as shown in Figure 2, and Figure 3 are as follows:

1. Remedial Design

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

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

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- Excavation and removal of any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination.

Excavation and off-site disposal of all soils which exceed the restricted residential SCOs, as defined by 6 NYCRR Part 375-6.8, from the upper two feet of the Track 4 portion of the site.

Excavation and off-site disposal of all on-site soils which exceed unrestricted SCOs, as defined by 6 NYCRR Part 375-6.8 from the Track 1 portion of the site. If a Track 1 cleanup is achieved, a Cover System will not be a required element of the remedy for the Track 1 area of the site.

Approximately 12,811 cubic yards (cy) of contaminated soil and approximately 231 cy of contaminated soil that is classified as lead hazardous waste will be removed from the site.

3. Backfill

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to complete the backfilling of the excavation and establish the designed grades at the site.

4. In-Situ Chemical Oxidation

In-situ chemical oxidation (ISCO) will be implemented to treat petroleum related VOCs in groundwater. A self-activated persulfate oxidant (sodium persulfate, calcium peroxide) or similar material will be injected into the subsurface to destroy the contaminants in an approximately 1,100 square foot area in the vicinity of MW-9 located in the north-west portion of the site where petroleum-related compounds were elevated in the groundwater. The method and depth of injection will be determined during the remedial design. Monitoring will be required within the treatment zone. Monitoring will be conducted for VOCs upgradient and downgradient of the treatment zone.

5. Local Institutional Controls

If no EE or 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.

6. Vapor Intrusion Evaluation

As part of the 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.

7. Cover System

A site cover will be required to allow for restricted residential use of the site in the Track 4 areas of the site 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.

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 in-situ chemical oxidation discussed in paragraph 4, and the site cover system discussed in paragraph 6 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 uses 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 6 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

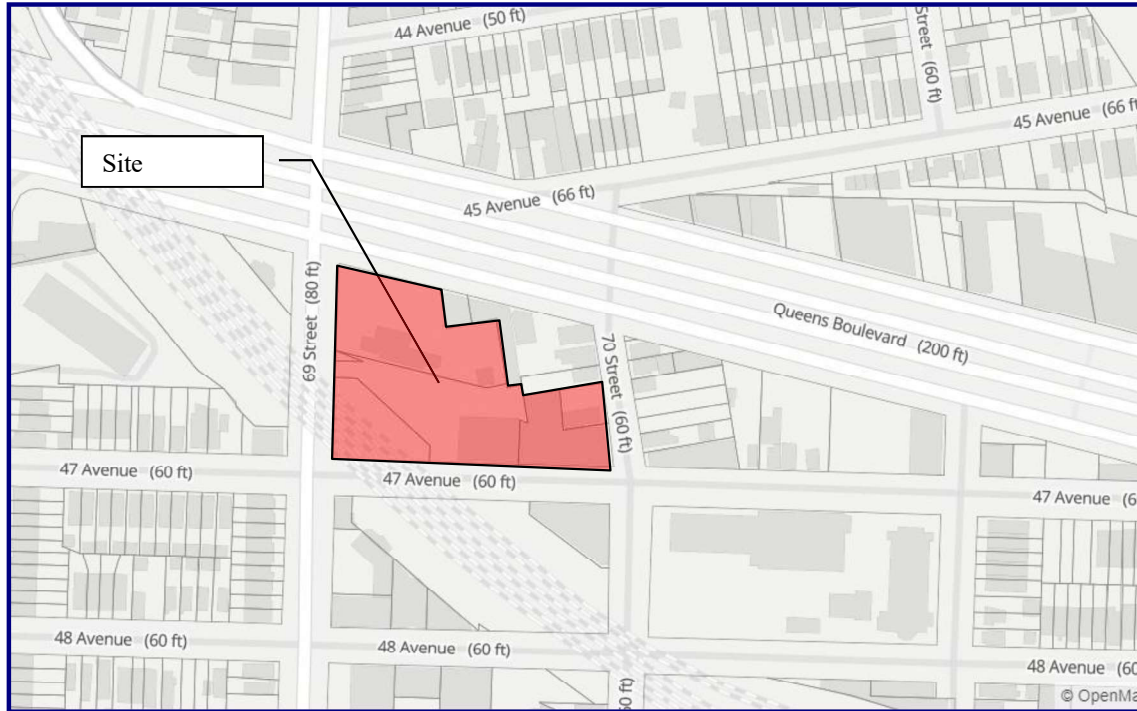
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 - A schedule of monitoring and frequency of submittals to the Department; and
 - Monitoring for vapor intrusion for any buildings on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

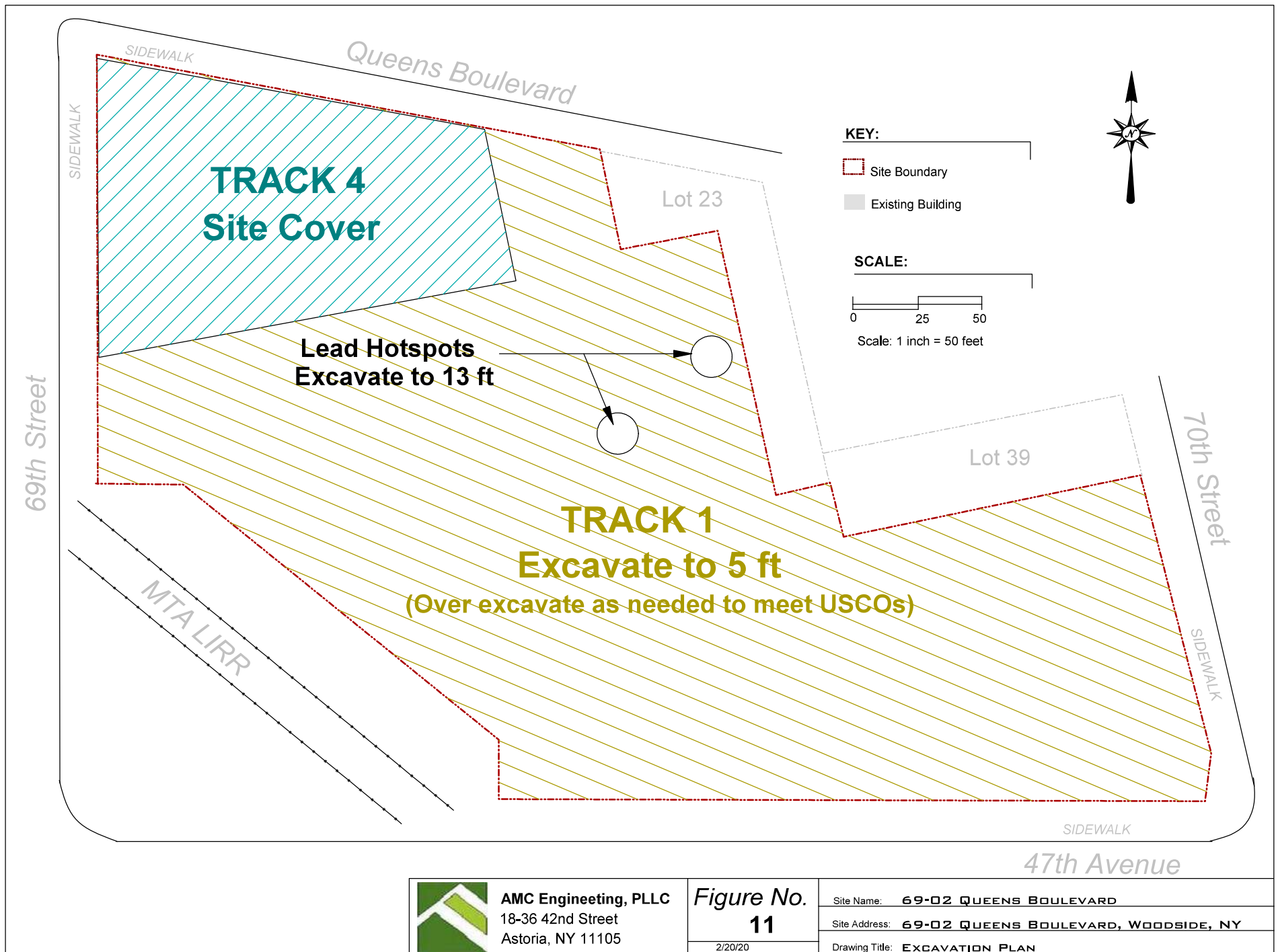
Conditional Track 1


The intent of the remedy is to achieve a Track 1 unrestricted use remedy for a portion of the site; therefore, no environmental easement or site management plan is anticipated for that portion of the site. 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.

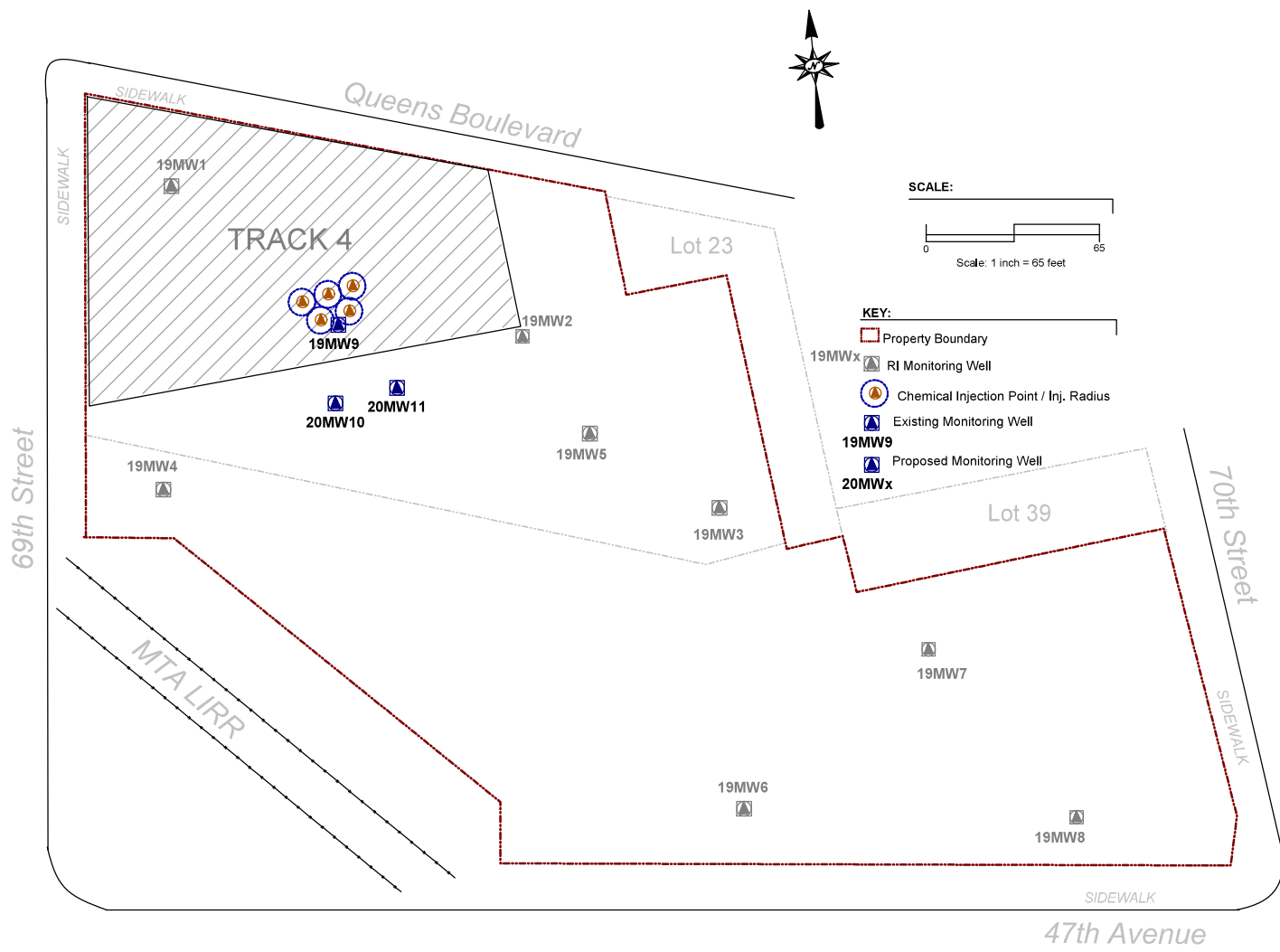
In the event that Track 1 unrestricted use is not achieved in the designated area of the site, including achievement of groundwater and soil vapor remedial objectives, the following remedial elements will be required, and the remedy will achieve a Track 4 cleanup over the entire site.

Appendix C - Site Location Map





| | | |
|--|--------------------------------|---|
|  AMC Engineering, PLLC 18-36 42nd Street Astoria, NY 11105 | Figure No. 11 | Site Name: 69-02 QUEENS BOULEVARD |
| | 2/20/20 | Site Address: 69-02 QUEENS BOULEVARD, WOODSIDE, NY |
| | | Drawing Title: EXCAVATION PLAN |



AMC Engineering, PLLC
18-36 42nd Street
Astoria, NY 11105

Figure No.
14

| | |
|----------------|---|
| Site Name: | 69-02 QUEENS BLVD. |
| Site Address: | 69-02 QUEENS BOULEVARD, WOODSIDE, NY |
| Drawing Title: | INSITU CHEMICAL OXIDANT INJECTION PLAN |