

DECISION DOCUMENT

Astoria Steel Site
Brownfield Cleanup Program
Astoria, Queens County
Site No. C241155
May 2019



**Department of
Environmental
Conservation**

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

DECLARATION STATEMENT - DECISION DOCUMENT

Astoria Steel Site
Brownfield Cleanup Program
Astoria, Queens County
Site No. C241155
May 2019

Statement of Purpose and Basis

This document presents the remedy for the Astoria Steel 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 Astoria Steel site and the public's input to the selected 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 on-site unsaturated soil which exceeds restricted-residential use soil cleanup objectives (SCOs) or protection of groundwater SCOs (for contaminants present in groundwater) as defined by 6 NYCRR Part 375-6.8(b), or create a nuisance condition as defined in Commissioner Policy CP-51 Section G, to achieve a Track 4 restricted residential remedy.

The areas targeted for soil removal are depicted in Figure 2. Approximately 10,000 cubic yards (CY) of soil exhibiting nuisance characteristic and/or exceeding applicable SCOs would be excavated and transported off-site for disposal. On-site soil which does not exceed the excavation criteria may be used to backfill the excavation to establish the designed grades at the site below the cover system described in remedy element 3. If necessary, clean fill meeting the requirements of Part 375-6.7(d) will be brought in to replace excavated soil and establish the designed grades at the site.

In addition to the impacted soils noted above, the following will also be performed either to facilitate remedial site excavation or as part of remedial site excavation activities:

- on-site buildings will be demolished and materials which can't be beneficially reused on site will be taken off-site for proper disposal in order to implement the remedy;
- all building materials exhibiting concentrations of PCBs in excess of 50 parts per million (ppm) will be disposed of in accordance with the Toxic Substance Control Act (TSCA) and 40 CFR 761;
- complete removal of a buried concrete bunker, underground storage tank, drainage manholes, floor drains and associated pipes; and
- In-situ enhanced biodegradation will be employed to treat contaminants in groundwater following the removal of the source area. The biological breakdown of contaminants through aerobic respiration will be enhanced by the placement of agricultural grade gypsum in the bottoms of the excavations that extend to the water table.

3. 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.

4. In-Situ Chemical Reduction

In-situ chemical reduction (ISCR) will be implemented to treat trichloroethene and degradation products (e.g., cis-1,2-dichloroethene, trans-1,2-dichloroethene and vinyl chloride) in groundwater. A chemical reducing agent, such as sodium lactate, will be injected into the subsurface to destroy the contaminants in three separate areas located in the northwestern, northeastern, and southern portion of the site, as depicted on Figure 2, where chlorinated volatile organic compounds were elevated in the groundwater. The method and depth of injection will be determined during the remedial design.

5. 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 contaminated soil and/or contaminated groundwater.

6. Institutional Control

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

- requires 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);
- allows the use and development of the controlled property for restricted-residential, commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts 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
- requires 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 remedy element 6 above.

Engineering Controls: The Cover System discussed in remedy element 3 and vapor mitigation systems discussed in remedy element 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;
- 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 3 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:

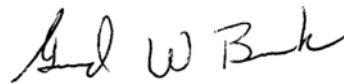
- monitoring of groundwater to assess the performance and effectiveness of the remedy; and
- a schedule of monitoring and frequency of submittals to the Department.

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.

May 20, 2019

Date



Gerard Burke, Director
Remedial Bureau B

DECISION DOCUMENT

Astoria Steel Site
Astoria, Queens County
Site No. C241155
May 2019

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 selected 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:

Queens Library at Astoria
14-01 Astoria Boulevard
Long Island City, NY 11102
Phone: 718-278-2220

Queens Community Board 1
45-02 Ditmars Boulevard
LL Suite 125
Astoria, NY 11105
(718) 626-1021

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 Brownfield Cleanup Program (BCP) site is located at 3-15 26th Avenue in Astoria, Queens County. The site is located on the East River north of 26th Avenue. To the west is a complex with filming sets and production offices, beyond that is an athletic field and to the east are various commercial businesses.

Site Features: The site consists of one 3.67-acre parcel. The site formerly consisted of three buildings and an associated paved parking lot. The buildings include a one-story metal warehouse, a one-story brick manufacturing building, and a two-story brick office building. The buildings were demolished in 2018, but the concrete slabs remain. The site is relatively level with minor elevation variations, the ground surface elevation averages approximately 20 feet above mean sea level. Surface water drainage is generally toward the East River. The site resides within a flood zone.

Current Zoning and Land Use: The site is located within a manufacturing district (M 1-1). The existing land uses and zoning in the surrounding area are primarily manufacturing (M 1-1) and residential (R6).

Past Use of the Site: The site has a 100-year history of heavy industrial operations such as a steel operation, a foundry to melt down and scrap iron, and most recently a lumber operation. The original industrial use of the site was as a steel facility.

Site Geology and Hydrogeology: The site is underlain by 5 to 15 feet of historic fill consisting predominantly of gray/brown medium sands and medium gravels with some fines, rock fragments, coal ash, asphalt, concrete, brick, and black/dark gray sands. Native soils beneath the fill layer consist of gray medium sand and fine silty sand with medium gravel and some crushed rock. The depth to bedrock varies from approximately 13 feet below surface (fbs) at the southern end of the site to 27 fbs at the northern end of the site, by the East River.

The depth to groundwater at the site is approximately 6 to 8 fbs near the East River and approximately 6 fbs inland. Groundwater is tidally influenced, but generally flows north-northwest toward the East River.

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

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

SECTION 5: ENFORCEMENT STATUS

The Applicant under the Brownfield Cleanup Agreement is a Volunteer. The Applicant does not have an obligation to address off-site contamination. 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.

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 by any PRPs, 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

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:

lead	benzene
chromium	toluene
xylene (mixed)	trichloroethene (TCE)
naphthalene	tetrachloroethene (PCE)
PCB Aroclor 1260	

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.

The following IRMs have been completed at this site based on conditions observed during the RI.

Soil Piles and Debris Off-site Disposal

Initial cleanup activities were completed in 2014 and 2015. The primary purpose of the initial cleanup activities was to facilitate additional remedial investigation. These activities included sampling and disposal of: three (3) soil piles; water from a concrete vault and its internal tanks; and various other materials including construction and demolition debris, asphalt, concrete, trash, and vegetation.

PCB Emergency Cleanup Measure

Following a small fire set by trespassers in May 2016, PCB Emergency Measures were implemented to further secure the site and minimize hazards to site visitors. The work included removal of surficial soil and debris, trees, and other ground-cover vegetation; covering of remaining exposed surficial soil; and installation of a site perimeter security fence.

Building Demolition

Demolition of PCB-impacted above-grade structures took place in 2018. The work also included scarification and removal of PCB-impacted ground surfaces. A small portion of one building was decontaminated and will remain in place to serve as bracing for an adjacent off-site building.

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), and pesticides. Based upon investigations conducted to date, the primary contaminants of concern at the site include lead, chromium, PCBs, SVOCs, and VOCs.

Soil - Data results from soils sampling reported a number of metals, PCBs (Aroclor 1260), petroleum VOCs (benzene, toluene, and xylene), and SVOCs. The SVOCs and most metals contamination in soils are likely related to the presence of historic fill. Maximum detections in comparison to applicable restricted-residential or protection of groundwater soil cleanup objectives (RRSCO/PGWSCO) are as follows: lead at 2,480 ppm vs. 400 ppm, chromium at 1,140 ppm vs. 180 ppm, benzene at 69 ppm vs. 4.8 ppm, toluene at 37 ppm vs. 0.7 ppm, total

xylene at 8.9 ppm vs. 1.6 ppm, and PCBs at 420,000 ppm vs. 1 ppm. Data does not indicate any off-site impacts in soil related to this site.

Groundwater - Sampling indicates SVOCs, VOCs (specifically benzene, tetrachloroethene or PCE, trichloroethene or TCE), and metal (lead) are present at concentrations exceeding the Class GA groundwater standards. Some metals were found at relatively low levels in groundwater and are likely related to the presence of particles of historic fill in the samples. Maximum groundwater detections in comparison to standards are as follows: lead at 80 parts per billion (ppb) vs. 25 ppb, benzene at 1.5 ppb vs. 1 ppb, PCE at 20 ppb vs. 5 ppb, TCE at 160 ppb vs. 5 ppb, and naphthalene at 38 ppb vs. 10 ppb. Data available to date does not indicate any off-site impacts in groundwater related to this site.

Soil Vapor - Soil vapor sampling investigation did not find any VOCs at levels of concern. Furthermore, environmental data does not indicate any off-site impacts in soil vapor related to this site.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure*.

Since the site is fenced, direct contact with contaminated soils or contaminated groundwater is not likely because the majority of the site is covered with former building slabs and concrete pavement and site access is limited. 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 contaminated soil or contaminated 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. The inhalation of site-related contaminants due to soil vapor intrusion does not represent a current concern because the site is vacant. The potential exists for people to inhale site contaminants in indoor air due to soil vapor intrusion in the event the site is re-occupied. Environmental sampling indicated that 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 Track 4: Restricted use with site-specific soil cleanup objectives remedy.

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

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

1. Remedial Design

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

remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- 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 on-site unsaturated soil which exceeds restricted-residential use soil cleanup objectives (SCOs) or protection of groundwater SCOs (for contaminants present in groundwater) as defined by 6 NYCRR Part 375-6.8(b), or create a nuisance condition as defined in Commissioner Policy CP-51 Section G, to achieve a Track 4 restricted residential remedy.

The areas targeted for soil removal are depicted in Figure 2. Approximately 10,000 cubic yards (CY) of soil exhibiting nuisance characteristic and/or exceeding applicable SCOs would be excavated and transported off-site for disposal. On-site soil which does not exceed the excavation criteria may be used to backfill the excavation to establish the designed grades at the site below the cover system described in remedy element 3. If necessary, clean fill meeting the requirements of Part 375-6.7(d) will be brought in to replace excavated soil and establish the designed grades at the site.

In addition to the impacted soils noted above, the following will also be performed either to facilitate remedial site excavation or as part of remedial site excavation activities:

- on-site buildings will be demolished and materials which can't be beneficially reused on site will be taken off-site for proper disposal in order to implement the remedy;
- all building materials exhibiting concentrations of PCBs in excess of 50 ppm will be disposed of in accordance with the Toxic Substance Control Act (TSCA) and 40 CFR 761;
- complete removal of a buried concrete bunker, underground storage tank, drainage manholes, floor drains and associated pipes; and
- In-situ enhanced biodegradation will be employed to treat contaminants in groundwater following the removal of the source area as described in remedy element 2. Agricultural

grade gypsum will be placed in the bottoms of the excavations that extend to the water table to promote/enhance the in-situ biodegradation of residual petroleum impacts below the water table.

3. 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.

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In-situ chemical reduction (ISCR) will be implemented to treat trichloroethene and degradation products (e.g., cis-1,2-dichloroethene, trans-1,2-dichloroethene and vinyl chloride) in groundwater. A chemical reducing agent, such as sodium lactate, will be injected into the subsurface to destroy the contaminants in three separate areas located in the northwestern, northeastern, and southern portion of the site, as depicted on Figure 2, where chlorinated volatile organic compounds were elevated in the groundwater. The method and depth of injection will be determined during the remedial design.

5. 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 contaminated soil and/or contaminated groundwater.

6. Institutional Control

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

- requires 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);
- allows the use and development of the controlled property for restricted-residential, commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts 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
- requires 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 remedy element 6 above.

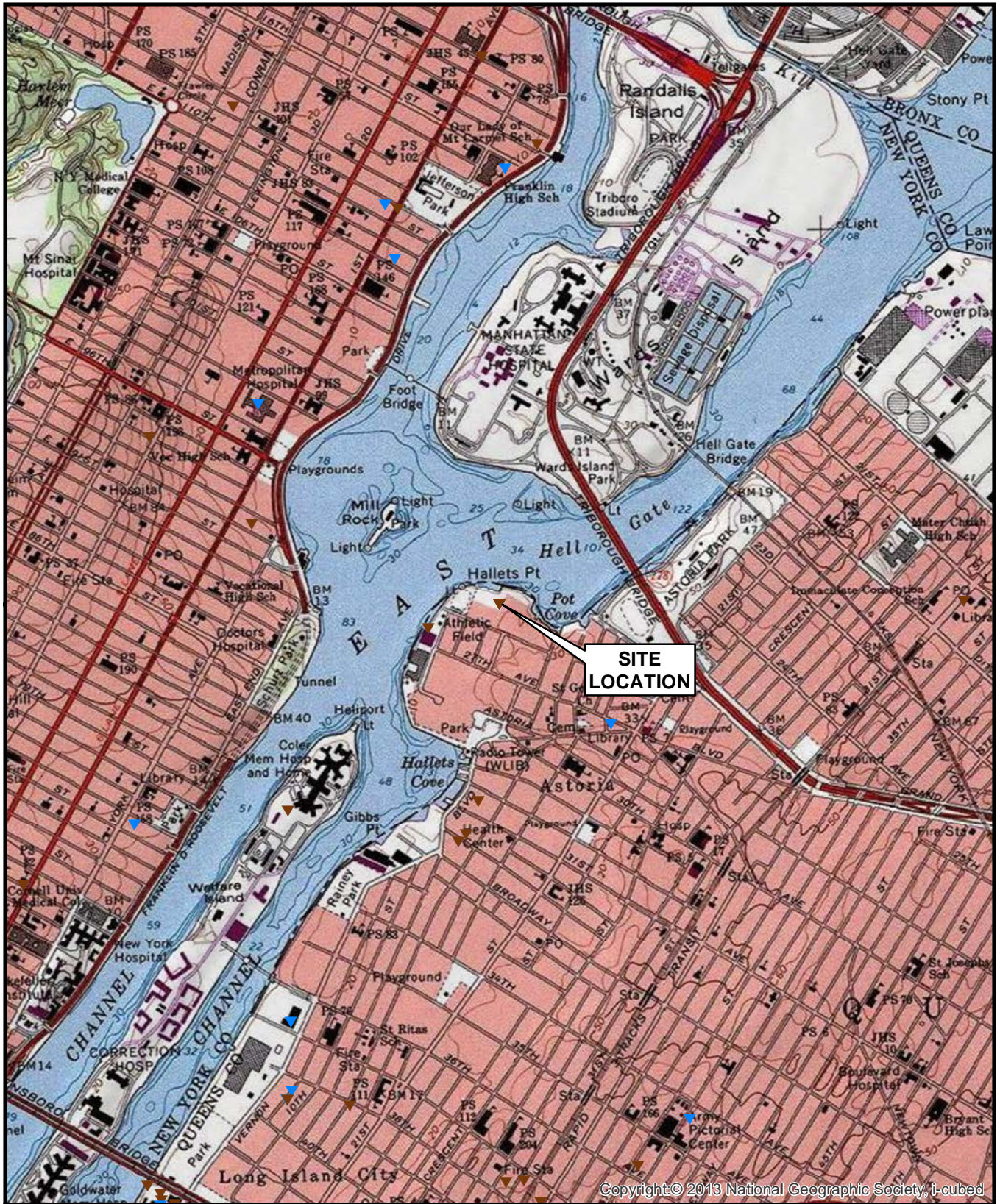
Engineering Controls: The Cover System discussed in remedy element 3 and vapor mitigation systems discussed in remedy element 5 above.

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;
- 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 3 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; and
- a schedule of monitoring and frequency of submittals to the Department.



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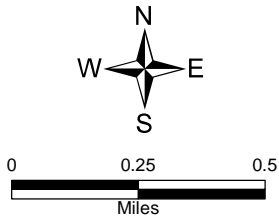
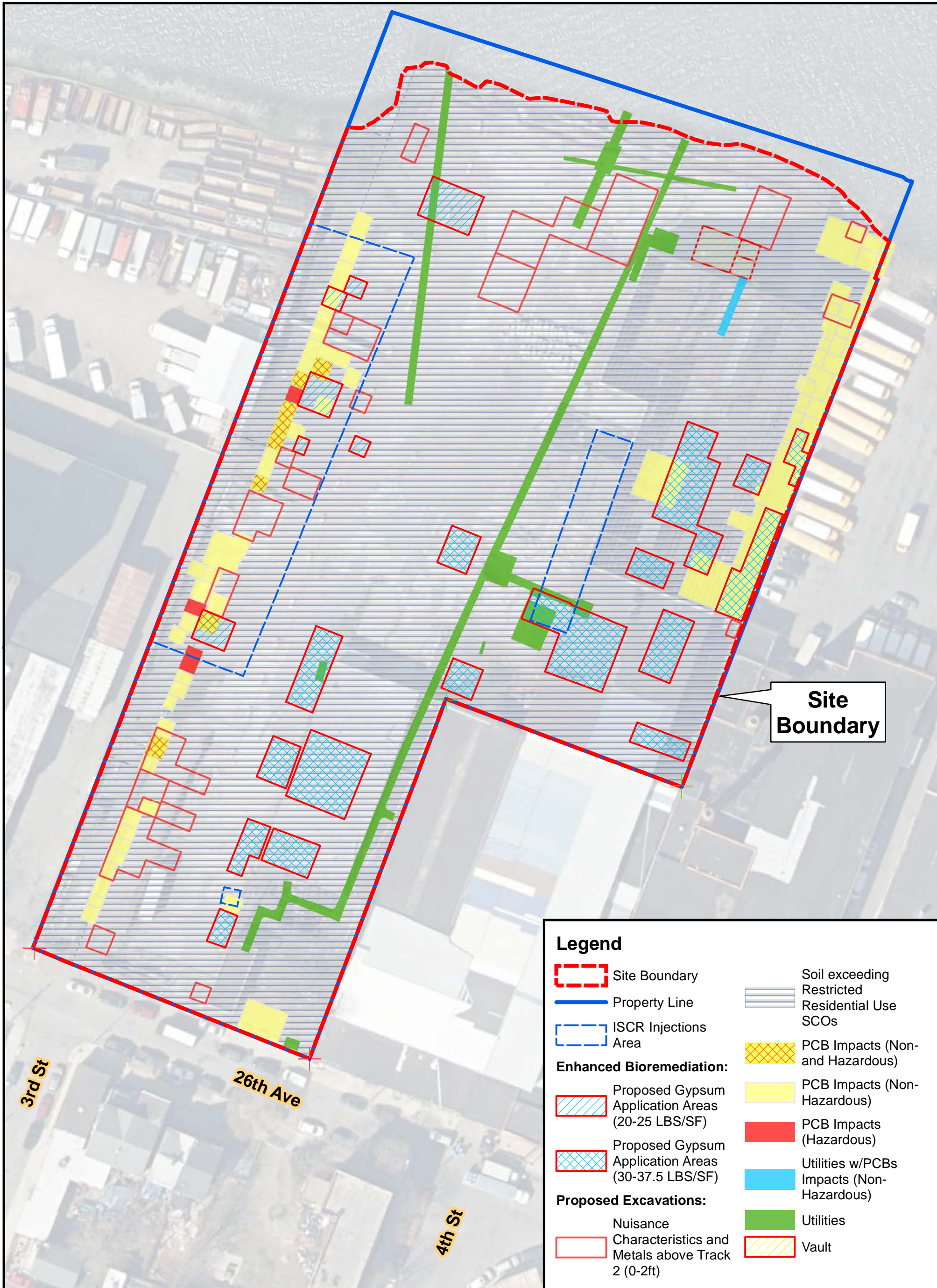


Figure 1
 Site Location Map
 Astoria Steel
 Astoria, Queens County
 Site No. C241155



Site Boundary

Legend

- Site Boundary
- Property Line
- ISCR Injections Area
- Proposed Gypsum Application Areas (20-25 LBS/SF)
- Proposed Gypsum Application Areas (30-37.5 LBS/SF)
- Proposed Excavations: Nuisance Characteristics and Metals above Track 2 (0-2ft)
- Soil exceeding Restricted Residential Use SCOs
- PCB Impacts (Non-Hazardous)
- PCB Impacts (Non-Hazardous)
- PCB Impacts (Hazardous)
- Utilities w/PCBs Impacts (Non-Hazardous)
- Utilities
- Vault

3rd St

26th Ave

4th St

Figure 2
Final Remedy

Astoria Steel Site
Astoria, Queens County
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