DECISION DOCUMENT

Hunts Point Parcel A-2
Brownfield Cleanup Program
Bronx, Bronx County
Site No. C203094
July 2018

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

DECLARATION STATEMENT - DECISION DOCUMENT

Hunts Point Parcel A-2
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Statement of Purpose and Basis

This document presents the remedy for the Hunts Point Parcel A-2 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 Hunts Point Parcel A-2 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; and
   - Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Excavation

Excavation and off-site disposal/treatment of contaminated source areas, including:

- On-site soil and off-site soil with visual waste material including coal tar material or non-aqueous phase liquid. The off-Site area is located on a portion of the adjacent Hunts Point Parcel A, OU1 (Site No. V00233) as shown on Figure 2;
- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- coal tar-impacted material containing total PAHs exceeding 500 ppm.

Approximately 5,900 cubic yards of coal tar impacted soil will be removed from the on-Site and off-Site areas and blended with soil from the existing soil stockpile (which was generated from previous site activities on adjacent former Hunts Point Voluntary Cleanup Program sites) on the northern portion of the Site at a ratio of 1:1 by volume prior to disposal using off-Site thermal treatment. Any coal tar not removed will be treated as described in Paragraph 4 below.

3. Backfill

On-site soil (including the existing on-site soil stockpile located in the northern portion of the Site) which does not exceed the above excavation criteria may be used below the cover system described in Paragraph 6 below to backfill the excavation to the extent that a sufficient volume of on-site soil is available and establish the design grades at the Site.

Clean fill meeting the lower of the commercial SCOs and the groundwater protection SCOs, as required by 6 NYCRR 375-6.7(d), will be brought in as necessary to replace the excavated soil or complete backfilling of the excavation and establish design grades at the Site.

4. In-Situ Solidification

In-situ solidification (ISS) is a process that binds the soil particles in place creating a low permeability mass. ISS will be implemented in an approximately 0.6-acre purifier waste area located in the central to northern portion of the Site, as indicated on Figure 3. The upper 4 to 10 feet of overburden material in the ISS treatment zone which does not exceed the excavation criteria described in Paragraph 2 above will be removed and may be used below the cover system described in Paragraph 6 below. The treatment zone in the purifier waste area will extend from approximately 4 feet below grade to approximately 22 feet below grade, or 2 feet into the clay layer. If ISS of coal tar waste is undertaken, the treatment zone in the coal tar waste area will extend from approximately 4 feet below grade to at least the bottom of the coal tar layer. The purifier waste or coal tar waste will be mixed in place with solidifying agents (typically Portland cement) or other binding agents (such as the underlying clay) using an excavator or augers to produce a solidified mass resulting in a low permeability monolith. The solidified mass will then be covered with a cover system as described in Paragraph 6 to prevent direct exposure to the solidified mass. The resulting solid matrix reduces or eliminates mobility of contamination and reduces or

eliminates the matrix as a source of groundwater contamination.

5. Barrier Wall

A perimeter soil-bentonite wall will be installed, as indicated on Figure 3 to enclose the purifier waste solidification area. The upper 10 feet of overburden material along the footprint of the barrier wall which does not exceed the excavation criteria described in Paragraph 2 above will be removed and may be used below the cover system described in Paragraph 6 below. The soil-bentonite wall will extend to approximately 5 feet into the clay layer. The barrier wall will provide a necessary barrier to groundwater flow and prevent on-site contamination from migrating off-site.

6. Cover System

A site cover will be required to allow for commercial use of the Site in areas where the upper one foot of exposed soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is to be used it will be a minimum of one foot of soil placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetation layer. Soil cover material, including any fill material brought to the Site, will meet the SCOs for soil 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. Where the soil cover is required over the ISS treatment area, it will consist of a minimum of four feet of soil meeting the SCOs for commercial use. For areas where solidified material underlies the cover, the solidified material itself will serve as the demarcation layer due to the nature of the material.

7. In-Situ Liquid Phase Adsorption using GAC-coated Gravel

Groundwater exposed during the performance of excavation activities described in Paragraph 2 will be treated in-situ ("in-place") with gravel coated with granular activated carbon (GAC), as necessary, to remove volatile contaminants from groundwater by adsorption. The GAC-coated gravel will be blended with granular backfill and placed in those areas where the excavation extends below the groundwater table, as indicated on Figure 4. A demarcation barrier will be placed over these areas to prevent disturbance of the GAC-coated gravel during any future redevelopment.

8. Dewatering and Treatment Prior to Discharge

Contaminated groundwater encountered during excavation dewatering will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Liquids discharged into the New York City sewer system will be addressed through approval by the New York City Department of Environmental Protection. Alternatively, fluids generated during dewatering of excavations will be treated to meet the

Generic Effluent Criteria for Groundwater Discharges developed by the Department's Division of Water prior to discharge on-Site.

9. Institutional Controls

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

- 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 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 NYCDOH; and
- requires compliance with the Department approved Site Management Plan for the on-Site area.
- requires compliance with the Department approved Site Management Plan for Hunts Point Parcel A, OU1 for the off-Site area discussed in Paragraph 2 above.

10. 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 9 above.

Engineering Controls: The ISS discussed in Paragraph 4, the barrier wall discussed in Paragraph 5, and the cover system discussed in Paragraph 6.

This plan includes, but may not be limited to:

- o an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- o descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- o provisions for the management and inspection of the identified engineering controls;
- o 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 one foot of exposed soil exceeds the applicable SCOs;

- o a provision for evaluation of the potential for soil vapor intrusion for any buildings on the Site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- o maintaining site access controls and Department notification; and
- o the steps necessary for the period 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:

- o monitoring of groundwater to assess the performance and effectiveness of the remedy;
- o a schedule of monitoring and frequency of submittals to the Department;
- o monitoring for vapor intrusion for any buildings on the Site, as may be required by the Institutional and Engineering Control Plan discussed above.

c. The Site Management Plan will be subject to an agreement between the tenant and the property owner (the City) for site access and any other pertinent provisions to enable maintenance of cover systems, management of remaining contamination, excavation, inspections, sampling, and/or any other requisite activities.

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.

July 6, 2018
Date

/for Gerard Burke
Gerard Burke, Director
Remedial Bureau B

DECISION DOCUMENT

Hunts Point Parcel A-2
Bronx, Bronx County
Site No. C203094
July 2018

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:

NY Public Library - Hunts Point Branch
877 Southern Boulevard
Bronx, NY 10459
Phone: (718) 617-0338

Bronx Community Board 2
1029 E 163rd St., Room 202
Bronx, NY 10459
Phone: (718) 328-9125

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, Voluntary 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 site (formerly in the Voluntary Cleanup Program as Operable Unit No. 2 (OU2), Site No. V00233) is located in an urban area in the Hunts Point section of the Borough of the Bronx. The site is an approximate 3.2-acre lot within a larger tax lot containing multiple parcels of land and is identified on New York City tax maps as Block 2778, portion of Lot 100. The site is bound to the north by Viele Avenue, to the east by OU1, to the south by Food Center Drive, and to the west by Halleck Street.

Site Features:
The site is currently vacant with the investigative area being mostly level terrain, aside from a large stockpile of fill material (approximately 9,900 cubic yards) located at the northern end of the site. The site is covered in vegetation with some areas being wooded, and is surrounded by an 8-foot chain link fence with one gate opening on the southeastern corner of the parcel along Food Center Drive.

Current Zoning and Land Use:
The site is zoned M3-1 (Manufacturing) which allows for commercial and industrial uses, and is currently vacant. Surrounding properties include the Fulton Fish Market to the south, Nebraskaland and the Hunts Point Cooperative Market to the east, mixed commercial and industrial to the north, and mixed industrial and parking to the west.

Past Use of the Site:
Historically, the Hunts Point Cooperative Market was part of the Consolidated Edison Company of New York (Con Ed) manufactured gas plant (MGP) that was initially constructed between 1924 and 1932, and operated until the early 1960s. The plant was constructed to manufacture both oven gas and carbureted water gas, producing coke, ammonium sulfate, coal tar, water gas tar, and light oil as major by-products. In total, approximately 46 buildings or structures existed on the former Con Ed facility that were actively involved in gas production. Previous investigations of the site and adjacent parcels in the Hunts Point Food Distribution Center have located deposits of the two major byproducts of MGP operations within the subsurface: coal tar and purifier waste.

Site Geology and Hydrogeology:
The site incorporates approximately 3.2 acres of fairly level land approximately 13 feet above sea

level (NAVD 88). The soil stratigraphy of site typically contains a 1-2 ft thick layer of silty sand underlain by fill material including sand, construction and demolition debris, coal ash, incinerator ash, coal, cinders and material significantly impacted by MGP-related waste (coal tar and purifier waste). The fill material generally ranges from 5 to 10 feet thick and is underlain by a native clay layer.

Groundwater depth at the site is approximately 8 to 10 feet below ground surface. Groundwater flow direction is tidally influenced based on the proximity to the Bronx River and is generally 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, alternatives (or an alternative) that restrict(s) the use of the site to commercial use (which allows for 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, but has elected to address coal tar contamination which has been documented by the Applicant to extend beyond the eastern site boundary. Due to the high concentrations of polyaromatic hydrocarbons (PAHs), cyanide and lead in on-site soil, and the demonstrated ability of some of these contaminants to transfer to other environmental media (e.g., groundwater) the Department has determined that this site presents a significant threat to public health and the environment. However, due to Applicant's intent to address off-site contamination, no enforcement actions are necessary at this time.

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:

benzo(a)pyrene	cyanides (soluble cyanide salts)
naphthalene	lead

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

- groundwater
- soil

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Decision Document.

There were no IRMs performed at this site during the RI.

6.3: Summary of Environmental Assessment

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

Nature and Extent of Contamination: Soil and groundwater were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) including PAHs such as naphthalene, metals, polychlorinated biphenyls (PCBs), and pesticides. Based on the investigations conducted to date, the primary contaminants of concern include PAHs, cyanide, and lead.

Soil - PAHs including naphthalene and benzo(a)pyrene (BaP) were found in subsurface soils (7'-9' depth interval), mostly in the southern portion of the site. The maximum concentration of naphthalene found on-site (30,679 parts per million (ppm)) significantly exceeds the soil cleanup objective (SCO) for commercial use (500 ppm) and the groundwater protection SCO (12 ppm). The maximum concentration of BaP found on-site (3,069 ppm) significantly exceeds the soil cleanup objective (SCO) for commercial use (1 ppm). Metals were found in subsurface soil across the site above SCOs. The maximum concentration of cyanide found on-site (1,280 ppm) significantly exceeds the SCO for commercial use (27 ppm) and the groundwater protection SCO (40 ppm). The maximum concentration of lead found on-site (29,900 ppm) exceeds the SCO for commercial use (1,000 ppm) and significantly exceeds the groundwater protection SCO (450 ppm). PCBs/pesticides were not found to in excess of applicable SCOs. Data from adjacent parcels indicates that the coal tar contamination extends off-site.

Groundwater - Naphthalene was found in groundwater in the central portion of the site slightly exceeding the Class GA groundwater standard (10 ppb) with a maximum concentration of 15 ppb. Other PAHs were either non-detect or detected at concentrations below Class GA groundwater standards. Cyanide was found in groundwater slightly exceeding the Class GA groundwater standard (200 ppb) at a maximum concentration of 443 ppb. Lead was found in groundwater in the southern portion of the site moderately exceeding the Class GA groundwater standard (25 ppb) with a maximum concentration of 103 ppb. Data from adjacent parcels does not indicate any off-site impacts in groundwater related to this Site.

Soil Vapor and Indoor Air - Soil vapor sampling was not conducted.

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. People 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 overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Because the site is vacant, the inhalation of site-related contaminants due to soil vapor intrusion does not represent a current concern. The potential exists for the inhalation of site contaminants due to soil vapor intrusion in any future buildings developed on the site or in the off-site area on the adjacent Hunts Point Parcel A site.

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 exposure to contaminants volatilizing from 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 Source Removal/Treatment and Cover System remedy.

The elements of the selected remedy, as shown in Figures 2 through 4, 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; and
   - Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Excavation

   Excavation and off-site disposal/treatment of contaminated source areas, including:

   - On-site soil and off-site soil with visual waste material including coal tar material or non-aqueous phase liquid. The off-site area is located on a portion of the adjacent Hunts Point Parcel A, OU1 (Site No. V00233) as shown on Figure 2;
   - grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);

- soil containing total PAHs exceeding 500 ppm.

Approximately 5,900 cubic yards of coal tar impacted soil will be removed from the site (including the off-site area mentioned above) and blended with soil from the existing soil stockpile (which was generated from previous site activities on adjacent former Voluntary Cleanup Program sites on Hunts Point) on the northern portion of the site at a ratio of 1:1 by volume prior to disposal using off-site thermal treatment. Any coal tar not removed will be treated as described in Paragraph 4 below.

3. Backfill

On-site soil (including the existing on-site soil stockpile located in the northern portion of the Site) which does not exceed the above excavation criteria may be used below the cover system described in Paragraph 5 below to backfill the excavation to the extent that a sufficient volume of on-site soil is available and establish the design grades at the site.

Clean fill meeting the lower of the commercial SCOs and the groundwater protection SCOS, as required by6 NYCRR 375-6.7(d), will be brought in as necessary to replace the excavated soil or complete backfilling of the excavation and establish design grades at the site.

4. In-Situ Solidification

In-situ solidification (ISS) will be implemented in an approximately 0.6-acre purifier waste area located in the central to northern portion of the site, as indicated on Figure 3. The upper 4 to 10 feet of overburden material in the ISS treatment which does not exceed the excavation criteria described in Paragraph 2 above will be removed and may be used below the cover system described in Paragraph 6 below. The treatment zone in the purifier waste area will extend from approximately 4 feet below grade to approximately 22 feet below grade, 2 feet into the clay layer. If ISS of coal tar waste is undertaken, the treatment zone in the coal tar waste area will extend from approximately 4 feet below grade to at least the bottom of the coal tar layer. The purifier waste or coal tar waste will be mixed in place with solidifying agents (typically Portland cement) or other binding agents (the underlying clay) using an excavator or augers. The purifier waste and binding agents are mixed to produce a solidified mass resulting in a low permeability monolith. The solidified mass will then be covered with a cover system as described in Paragraph 6 to prevent direct exposure to the solidified mass. The resulting solid matrix reduces or eliminates mobility of contamination and reduces or eliminates the matrix as a source of groundwater contamination.

5. Barrier Wall

A perimeter soil-bentonite wall will be installed, as indicated on Figure 3 to enclose the purifier waste solidification area. The upper 10 feet of overburden material along the footprint of the barrier wall which does not exceed the excavation criteria described in

Paragraph 1 above will be removed and may be used below the cover system described in Paragraph 6 below. The soil-bentonite wall will extend to approximately 5 feet into the clay layer. The barrier wall will provide a necessary barrier to groundwater flow and prevent on-site contamination from migrating off-site.

6. Cover System

A site cover will be required to allow for commercial use of the Site and the off-site area located on a portion of the adjacent Hunts Point Parcel A, OU1 (Site No. V00233) in areas where the upper one foot of exposed soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is to be used it will be a minimum of one foot of soil placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetation layer. Soil cover material, including any fill material brought to the Site, will meet the SCOs for soil 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. Where the soil cover is required over the ISS treatment area, it will consist of a minimum of four feet of soil meeting the SCOs for commercial use. For areas where solidified material underlies the cover, the solidified material itself will serve as the demarcation layer due to the nature of the material.

7. In-Situ Liquid Phase Adsorption using GAC-coated Gravel

Groundwater exposed during the performance of excavation activities described in Paragraph 1 will be treated in-situ ("in-place") with gravel coated with granular activated carbon (GAC), as necessary, to remove volatile contaminants from groundwater by adsorption. The GAC-coated gravel will be blended with granular backfill and placed in those areas where the excavation extends below the groundwater table, as indicated on Figure 4. A demarcation barrier will be placed over these areas to prevent disturbance of the GAC-coated gravel during any future redevelopment.

8. Dewatering and Treatment Prior to Discharge

Contaminated groundwater encountered during excavation dewatering will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Liquids discharged into the New York City sewer system will be addressed through approval by the New York City Department of Environmental Protection. Alternatively, fluids generated during dewatering of excavations will be treated to meet the Generic Effluent Criteria for Groundwater Discharges developed by the Department's Division of Water prior to discharge on-Site.

9. Institutional Controls

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

- 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 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 NYCDOH; and
- requires compliance with the Department approved Site Management Plan for the on-site area.
- requires compliance with the Department approved Site Management Plan for Hunts Point Parcel A, OU1 for the off-site area discussed in Paragraph 2 above.

10. 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 9 above.

Engineering Controls: The ISS discussed in Paragraph 4, the barrier wall discussed in Paragraph 5, and the cover system discussed in Paragraph 6.

This plan includes, but may not be limited to:

- o an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- o descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- o provisions for the management and inspection of the identified engineering controls;
- o a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Paragraph 5 above will be placed in any areas where the upper one foot of exposed soil exceeds the applicable SCOs;
- o a provision for evaluation of the potential for soil vapor intrusion for any buildings on the Site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- o maintaining site access controls and Department notification; and

- the steps necessary for the period 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;
- monitoring for vapor intrusion for any buildings on the Site, as may be required by the Institutional and Engineering Control Plan discussed above.

c. The Site Management Plan will be subject to an agreement between the tenant and the property owner (the City) for site access and any other pertinent provisions to enable maintenance of cover systems, management of remaining contamination, excavation, inspections, sampling, and/or any other requisite activities.

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Figure 1.
Site Plan
NYSDEC BCP Application
Hunts Point Parcel A-2

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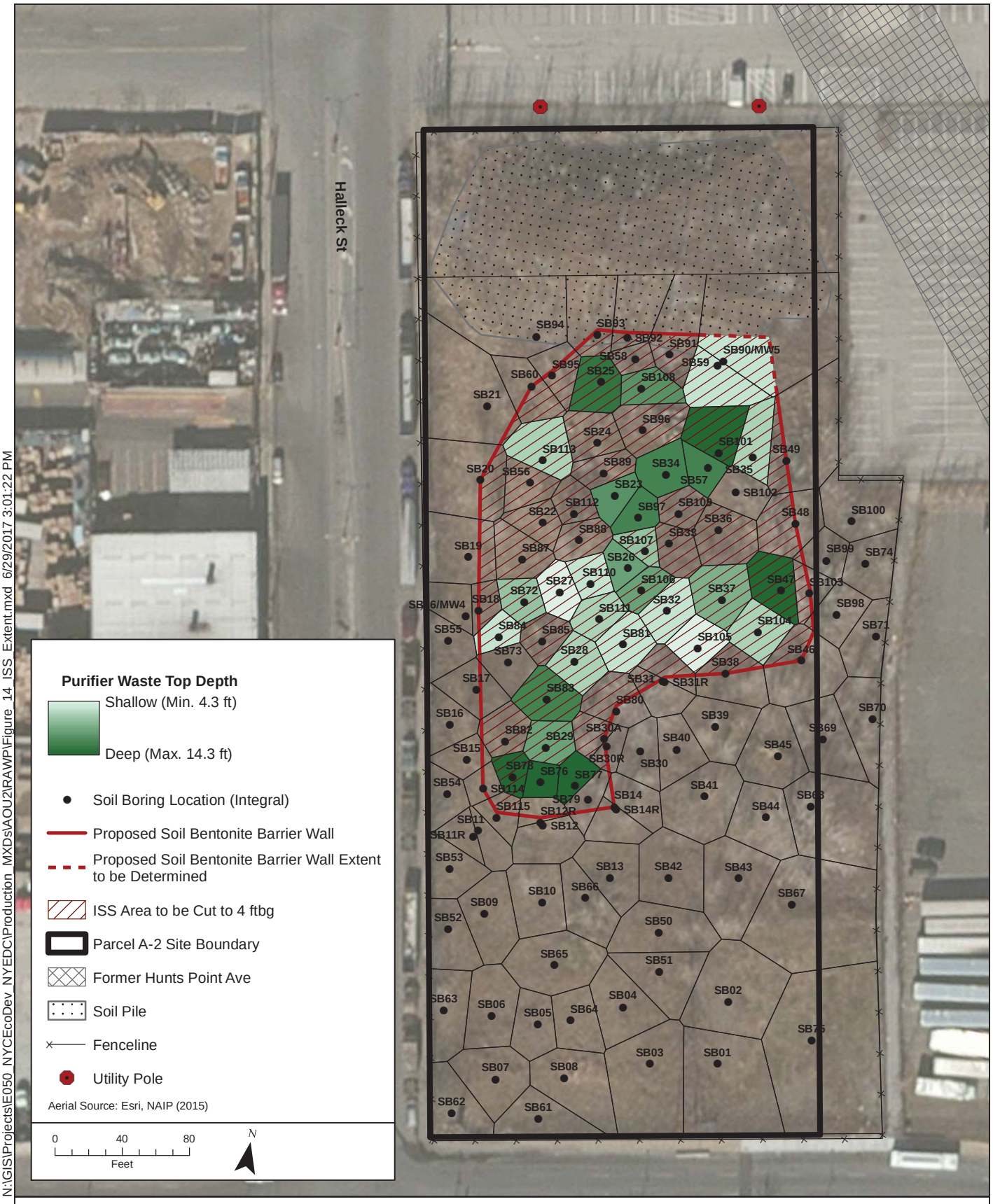
Figure 2.
Extent of Excavation, Alternative II
Remedial Action Work Plan
Hunts Point Parcel A-2



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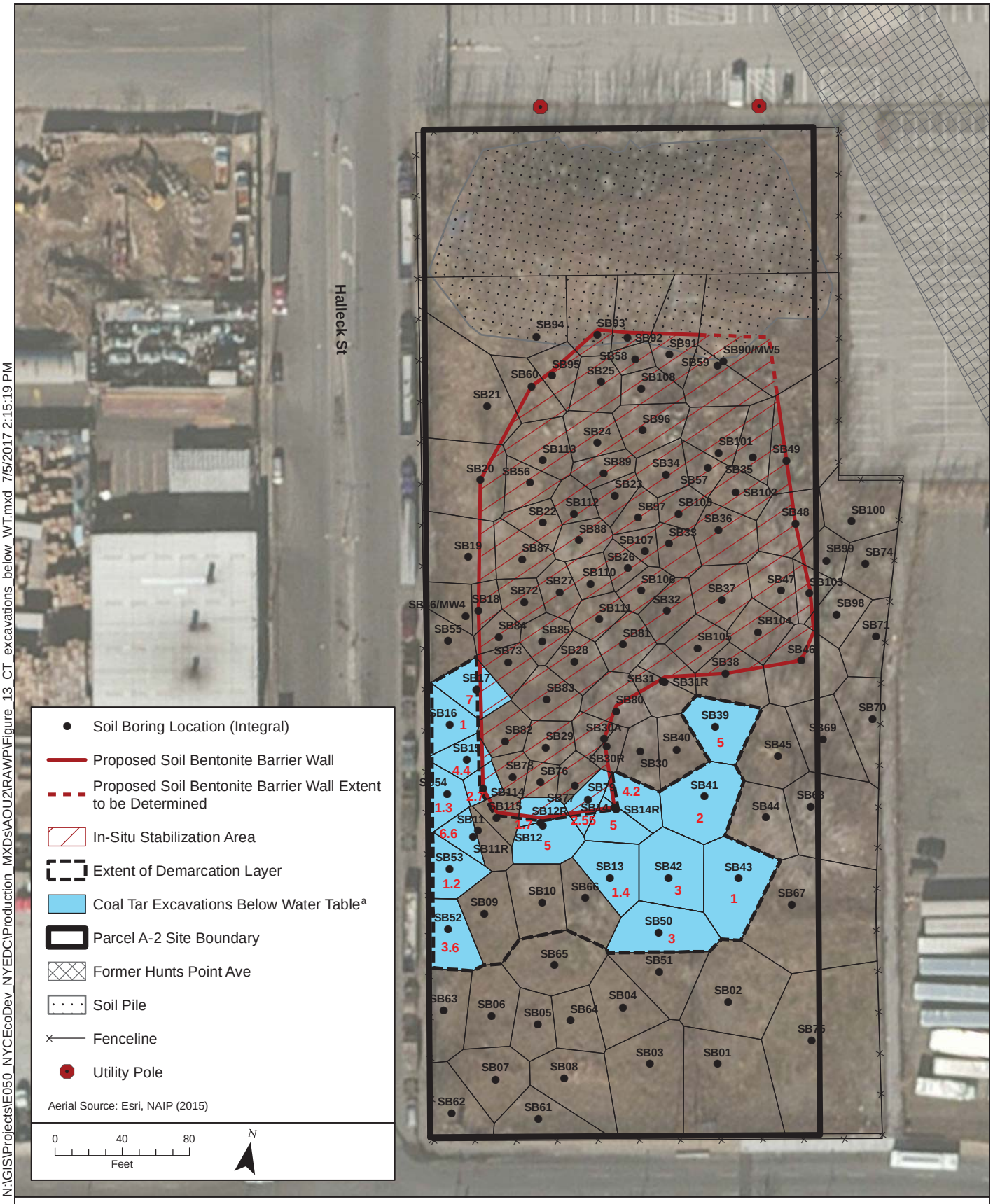
Notes:
1. Groundwater generally encountered at 10-15 ftbg.
2. ISS = In-Situ Stabilization

Figure 3.
In-Situ Stabilization Extent
Remedial Action Work Plan
Hunts Point Parcel A-2



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Notes:
1. [a]Assumed water table is at 10 ft below ground. Value in red indicates the depth (in feet) of coal tar waste that extends beneath the water table.
2. Excavations to be backfilled with stone and AguaGate mixture to 1 ft above water table.

Figure 4.
Coal Tar Excavations with AquaGate
Remedial Action Work Plan
Hunts Point Parcel A-2