DECISION DOCUMENT

561 Greenwich Street
Brownfield Cleanup Program
New York, New York County
Site No. C231129
March 2020

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

DECLARATION STATEMENT - DECISION DOCUMENT

561 Greenwich Street
Brownfield Cleanup Program
New York, New York County
Site No. C231129
March 2020

Statement of Purpose and Basis

This document presents the remedy for the 561 Greenwich Street 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 561 Greenwich Street 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. In-Situ Chemical Oxidation

In-situ chemical oxidation (ISCO) will be implemented to treat petroleum-related contaminants in groundwater and saturated soil beneath the water table. To destroy petroleum-related contaminants in the subsurface, activated carbon and a chemical oxidant will be injected into the subsurface via injection wells screened from approximately 16 to 23 feet below grade. The treatment areas are an approximately 5,000 square foot area located in and around the area of the underground storage tanks in the western portion of the site and an approximately 2,550 square foot area beneath the adjacent Greenwich Street sidewalk.

3. Excavation

The on-site building has been 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.

Excavation and off-site disposal of all soils in the upper one foot which exceed the commercial SCOs and 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;
- soil with visual waste material or non-aqueous phase liquid;
- soils which exceed the protection of groundwater soil cleanup objectives (PGWSCOs), as defined by 6 NYCRR Part 375-6.8 for those contaminants found in site groundwater above standards; and
- soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G.

Approximately 10,000 cubic yards of contaminated soil will be removed from the site.

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

4. Backfill

On-site soil which does not exceed the above excavation criteria or the protection of groundwater SCOs for any constituent may be used anywhere beneath the cover system, including below the water table, to backfill the excavation and/or establish the designed grades at the site.

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) may be brought in to replace the excavated soil and establish the designed grades at the site.

5. 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 surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a 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 vegetative layer. Soil cover material, including any fill material brought to the site, will meet the SCOs for cover material for

the use of the site as set forth in 6 NYCRR Part 375-6.7(d). Substitution of other materials and components may be allowed where such components already exist or are a component of the tangible property to be placed as part of site redevelopment. Such components may include, but are not necessarily limited to pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs.

6. Engineering and Institutional Controls

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

7. 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 commercial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or NYCDOH; and
- require compliance with the Department approved Site Management Plan.

8. 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 engineering controls remain in place and effective:

   Institutional Controls: The Environmental Easement discussed in Paragraph 8 above and land use and groundwater use restrictions.

   Engineering Controls: The cover system discussed in Paragraph 5 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any occupied buildings on the site or affected off-site areas, including provision for implementing actions recommended to address exposures related to soil vapor intrusion:
- 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 or affected off-site areas, as may be required by the Institutional and Engineering Control Plan discussed above.

Declaration

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

March 12, 2020

Date

Gerard Burke, Director
Remedial Bureau B

DECISION DOCUMENT

561 Greenwich Street
New York, New York County
Site No. C231129
March 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:

New York Public Library - Hudson Park Branch
66 Leroy Street
New York, NY 10014
Phone: 212-243-6876

Manhattan Community Board 2
Attn: Terri Cude
3 Washington Square Village #1A
New York, NY 10012
Phone: 212-979-2272

DECInfo Locator - Web Application
https://gisservices.dec.ny.gov/gis/dil/index.html?rs=C231129

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 0.46-acre site at 561 Greenwich Street is within the SoHo neighborhood of Manhattan and is identified as Block 598, Lot 42 on the New York tax map. The site is bound by King Street to the north, a 17-story commercial office building to the east, Charlton Street to the south, and Greenwich Street to the west.

Site Features:
The site elevation ranges from 11 to 14 feet above mean sea level. Until late 2019, the site contained a one-story parking garage built circa 1930 that has been demolished and an open-air parking lot surrounded by a chain-link fence. The garage contained a partial cellar (about 130 square feet) in the northwestern portion of the building.

Current Zoning and Land Use:
The current zoning designation is M1-6, which permits commercial uses. The site is presently empty. The proposed redevelopment use as an office building is consistent with existing zoning for the property. The surrounding area includes residential, commercial and industrial properties.

Past Use of the Site:
The site has been occupied by commercial and industrial facilities as early as 1894. The historical site uses include a preserves factory (1894-1905), a canning facility (1905-1922) and Express Depot (1951-1968). Recent site uses include the garage (1951-present) and the parking lot (1968-present). Two 550-gallon gasoline underground storage tanks (USTs), believed to have been installed when the garage was built, are still present on the site.

Site Geology and Hydrogeology:
The site elevation ranges from 11 to 14 feet above mean sea level. Groundwater depths range from about 15 to 17.5 feet below grade. Site groundwater flows west toward the Hudson River, following the influence of local topography.

The site was on a meadow within the original shoreline of Manhattan Island and has been filled

into its present elevation. The generalized stratigraphy underlying the site is composed of a surficial layer of concrete and asphalt overlying fill material followed by natural sand deposits and bedrock. Fill material was observed immediately below the existing surface to depths ranging from about 7.5 to 13 feet below grade. The fill layer was shallowest in the southern portion of the site and deepest in the northern portion of the site. Fill material generally consists of light to dark brown and grey, medium sand with trace fine sand, fine gravel, silt, and varying amounts of coal, brick and concrete fragments. A native sand layer consisting of brown fine sand with trace medium sand, clay and silt was observed below the fill layer throughout the site. Peat and organic clay layers were observed in the eastern and southeastern portion of the site.

Bedrock underlying the site consists of gray sillimanite-muscovite-tourmaline schist at approximately 110 feet below grade.

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 that restrict the use of the site to commercial use (which allows for 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 unrestricted use standards, criteria and guidance values (SCGs) for the site contaminants is available in the RI Report.

SECTION 5: ENFORCEMENT STATUS

One or more of the Applicants under the Brownfield Cleanup Agreement is a Participant. The Participants have an obligation to address on-site and off-site contamination. 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

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 contaminants of concern identified at this site are:

1,2,4-trimethylbenzene	1,2,4,5-tetramethylbenzene
1,3,5-trimethylbenzene	benzo(a)pyrene
naphthalene	benzo(b)fluoranthene
lead	dibenz[a,h]anthracene
barium	indeno(1,2,3-cd)pyrene
benzene	toluene
xylene	ethylbenzene
benzo(a)anthracene	n-propylbenzene

The contaminants of concern exceed the applicable SCGs for soil and groundwater.

6.2: Interim Remedial Measures

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

The following IRM has been completed at this site based on conditions observed during the RI. Prior to the IRM, the VOCs detected included 1,2,4-trimethylbenzene (290 parts per million, or ppm), benzene (49 ppm) and total xylenes (700 ppm) above their respective restrictive commercial use SCOs (RCSCOs) of 190 ppm, 44 ppm and 500 ppm. Petroleum-related VOCs present above their protection of groundwater SCOs (PGSCOs) were 1,3,5-trimethylbenzene (100 ppm) (PGSCO is 8.4 ppm), ethylbenzene (95 ppm) (PGSCO is 1 ppm), naphthalene (66 ppm) (PGSCO is 12 ppm), n-propylbenzene (33 ppm) (PGSCO is 3.9 ppm), toluene (220 ppm) (PGSCO is 0.7 ppm). The results of the IRM will be presented in the Final Engineering Report (FER).

UST Removal and LNAPL Extraction
An IRM was conducted in February and March 2020 that included the following tasks.

- Installation of four, 4-inch-diameter recovery wells surrounding the underground storage tanks (USTs) in the western part of the site;
- Recovery and off-site disposal of petroleum-related light non-aqueous phase liquid (LNAPL) from the recovery wells via a vacuum truck; and
- Decommissioning and removal of six USTs, including documentation of proper handling and disposal of associated impacted material and the UST contents that included gasoline, oil, waste oil and hydraulic fluid.

A construction completion report is expected in April 2020.

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. Groundwater was analyzed for perfluoroalkyl substances (PFAS). Based upon investigations conducted to date, the primary contaminants of concern include VOCs, SVOCS, and metals in soil and groundwater, and VOCs in soil vapor.

Soil - Historic urban fill covers the entire site to about 7.5 to 13 feet below grade. Historic fill typically contains coal ash and other byproducts of combustion and is the likely source of the semi-volatile organic compounds (SVOCs), specifically polycyclic aromatic hydrocarbons (PAHs), barium and lead contamination observed in on-site soil above unrestricted-use soil cleanup objectives (SCOs). Chemical and/or petroleum impacts, evidenced by odors, staining and/or

elevated field instrument readings above background levels, were observed at 5 of 10 soil boring locations.

The petroleum-related VOCs were observed in the proximity of the USTs. The USTs were subsequently removed as part of an IRM conducted in February 2020.

The historic fill-related SVOCs include benzo(a)anthracene (35 ppm), benzo(a)pyrene (32 ppm), benzo(b)fluoranthene (38 ppm), dibenz(a,h)anthracene (4.2 ppm) and indeno(1,2,3-cd)pyrene (19 ppm) were detected at the maximum concentrations stated above their respective RCSCOs of 5.6 ppm, 1 ppm, 5.6 ppm, 0.56 ppm and 5.6 ppm.

Metals including barium (1,040 ppm) and lead (5,680 ppm) were present above their commercial use SCOs. Delineation of lead contamination was conducted across the site as part of a waste characterization of soil in preparation of the remedial excavation and off-site disposal. Lead concentrations in on-site soil exceeded its protection of groundwater standard of 450 ppm in 44 of 127 samples. Toxicity characteristic leaching procedure (TCLP) concentrations exceeded the hazardous waste criterion of 5 milligrams per liter (mg/L) in 37 of the 127 samples.

No pesticides or PCBs were detected at concentrations above the commercial use SCOs.

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

Groundwater - VOC and SVOC impacts consistent with the soil contamination were observed in on-site and off-site groundwater above ambient water quality standards (AWQS). The VOCs present in groundwater in excess of their groundwater standards are 1,2,4,5-tetramethylbenzene (54 parts per billion, or ppb), 1,2,4-trimethylbenzene (1,200 ppb), 1,3,5-trimethylbenzene (390 ppb), benzene (13,000 ppb), ethylbenzene (1,400 ppb), naphthalene (550 ppb), n-propylbenzene (120 ppb), o-xylene (3,600 ppb), p/m-xylene (7,100 ppb) and toluene (16,000 ppb). The groundwater quality standard for each of these VOCS is 5 ppb except for naphthalene at 10 ppb and benzene at 1 ppb. Total PFAS was detected up to 0.323 ppb. However, PFAS were not identified as a contaminant of concern for this site.

SVOC impacts to groundwater were benzo(b)fluoranthene (0.14 ppb), benzo(k)fluoranthene (0.06 ppb), chrysene (0.11 ppb), and phenol (58 ppb). The groundwater quality standards for each of these SVOCs in 0.002 ppb except for phenol at 1 ppb.

Two pesticides, aldrin (0.008 ppb) and dieldrin (0.013 ppb), were detected above their respective groundwater quality standards of 0.002 ppb and 0.004 ppb.

PFAS were not identified as a contaminant of concern for this site. There are no public water supply wells within a half mile and there is a municipal prohibition for use of groundwater at the site.

The data indicate that there are off-site impacts in groundwater related to this site and as a participant in the Brownfield program, the applicant will address those impacts.

Soil Vapor - Petroleum-related VOCs were detected in soil vapor samples at concentrations above ambient air sample concentrations. The total detected VOC concentration in the outdoor ambient air sample was 32.5 micrograms per cubic meter ($\mu g/m^3$). The total detected VOC concentration in the soil vapor samples ranged from 290 $\mu g/m^3$ to 56,650 $\mu g/m^3$. Total benzene, toluene, ethylbenzene, and xylenes (BTEX) concentrations in soil vapor samples ranged from 84 $\mu g/m^3$ to 7,748 $\mu g/m^3$.

Based on the available data it can be presumed that there are off-site impacts in soil vapor migrating westward from the 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.*

Direct contact with contaminants in the soil is unlikely because the majority of the site is covered with building slabs and pavement. 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 there is no on-site building at this time, inhalation of site contaminants in indoor air due to soil vapor intrusion does not currently represent an exposure concern for the site. However, the potential exists for the inhalation of site contaminants due to soil vapor intrusion offsite and for any future onsite redevelopment and occupancy.

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 commercial use with site-specific soil cleanup objectives remedy.

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

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

1. Remedial Design

A remedial design program 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. In-Situ Chemical Oxidation

In-situ chemical oxidation (ISCO) will be implemented to treat petroleum-related contaminants in groundwater and saturated soil beneath the water table. To destroy petroleum-related contaminants in the subsurface, activated carbon and a chemical oxidant will be injected into the subsurface via injection wells screened from approximately 16 to 23 feet below grade. The treatment areas are an approximately 5,000 square foot area located in and around the area of the previous locations of the underground storage tanks in the western portion of the site and an approximately 2,550 square foot area beneath the adjacent Greenwich Street sidewalk.

3. Excavation

In order to implement the remedy, the on-site building has been demolished and the demolition debris has been taken off-site for proper disposal.

Excavation and off-site disposal of all soils in the upper one foot which exceed commercial SCOs and 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;
- soil with visual waste material or non-aqueous phase liquid;
- soils which exceed the protection of groundwater soil cleanup objectives (PGWSCOs), as defined by 6 NYCRR Part 375-6.8 for those contaminants found in site groundwater above standards; and
- soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G.

Approximately 10,000 cubic yards of contaminated soil will be removed from the site.

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

4. Backfill

On-site soil which does not exceed the above excavation criteria or the protection of groundwater SCOs for any constituent may be used anywhere beneath the cover system, including below the water table, to backfill the excavation and/or establish the designed grades at the site.

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) may be brought in to replace the excavated soil and establish the designed grades at the site.

5. 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 surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a 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 vegetative layer. Soil cover material, including any fill material brought to the site, will meet the SCOs for cover material for the use of the site as set forth in 6 NYCRR Part 375-6.7(d). Substitution of other materials and components may be allowed where such components already exist or are a component of the tangible property to be placed as part of site redevelopment. Such components may include, but are not necessarily limited to pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs.

6. Engineering and Institutional Controls

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

7. 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 commercial use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or NYCDOH; and
- require compliance with the Department approved Site Management Plan.

8. Site Management Plan

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

B. 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 engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 6 above and land use and groundwater use restrictions.

Engineering Controls: The cover system discussed in Paragraph 5 above.

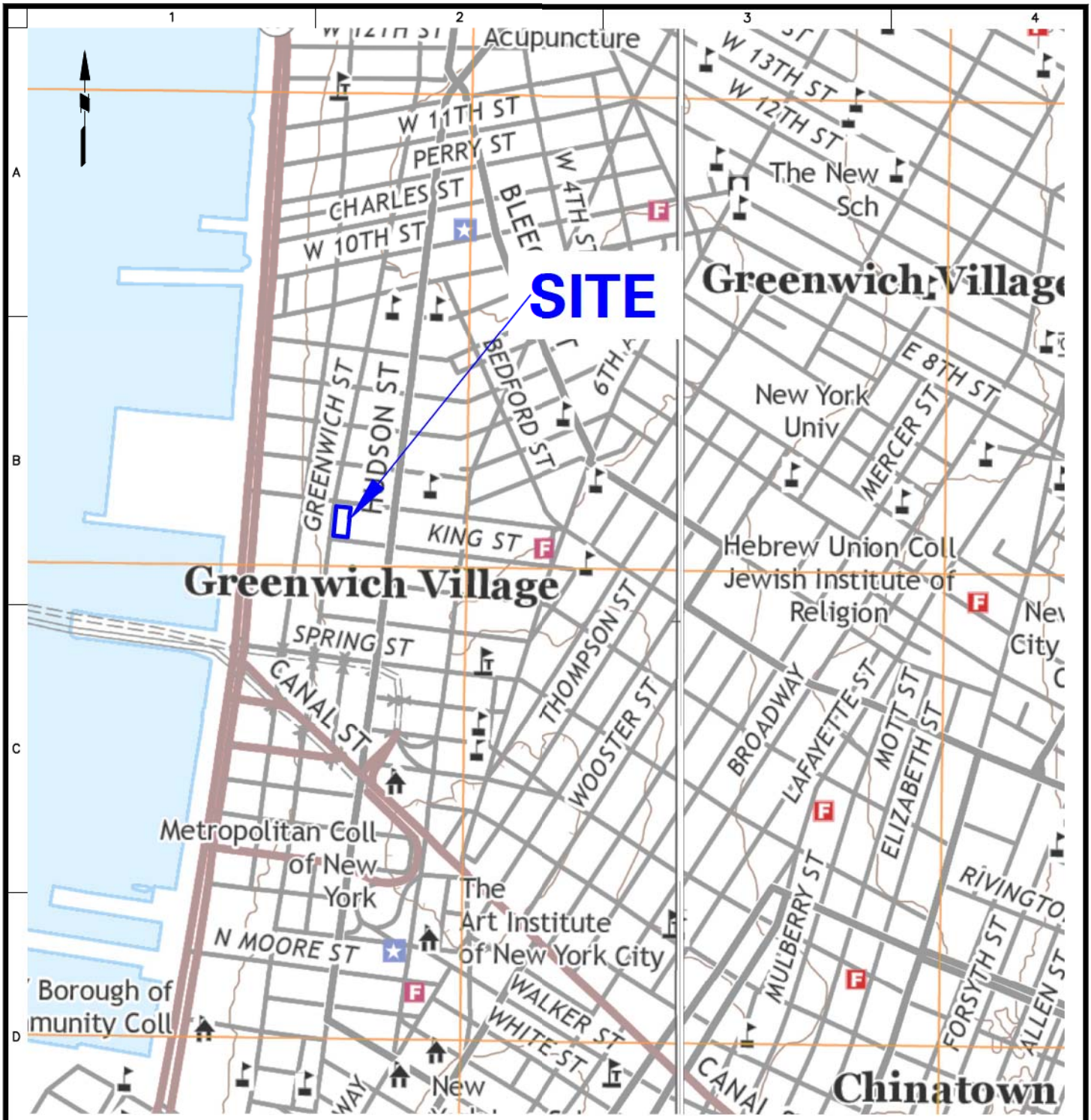
This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;

- descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any occupied buildings on the site or affected off-site areas, including provision for implementing actions recommended to address exposures related to soil vapor intrusion:
- 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.

C. 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 or affected off-site areas, as may be required by the Institutional and Engineering Control Plan discussed above.



NOTES:

1. BASE MAP IS REFERENCED FROM UNITED STATES GEOLOGICAL SURVEY (USGS) 7.5-MINUTE SERIES TOPOGRAPHICAL MAPS, JERSEY CITY AND BROOKLYN QUADRANGLES, DATED 2016.

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SCALE IN FEET

LANGAN

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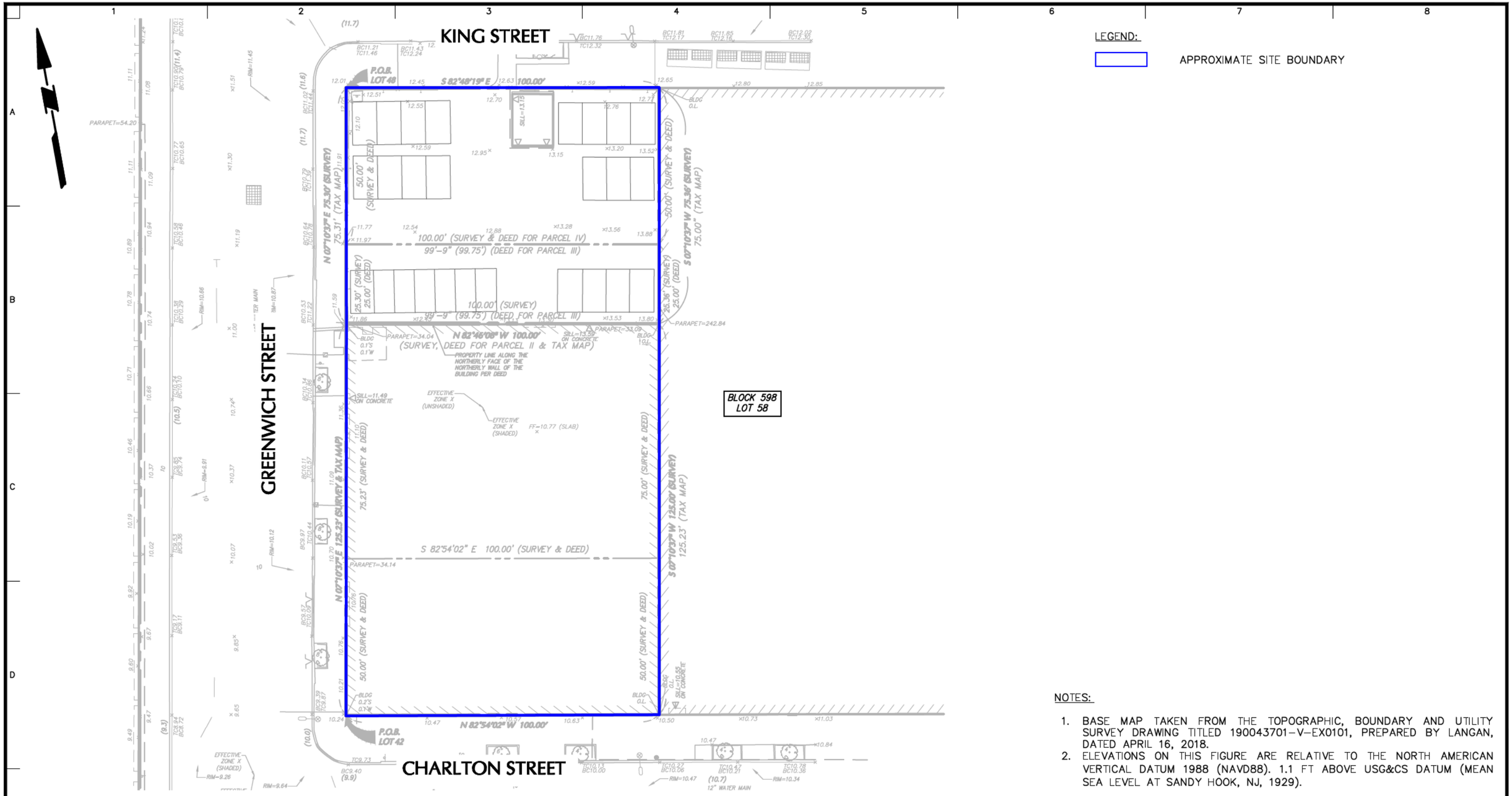
Project	561 GREENWICH STREET BLOCK No. 598 LOT No. 42 NEW YORK NEW YORK
Drawing Title	SITE LOCATION MAP
Project No.	190043701
Date	07/12/2019
Drawn By	ERA
Checked By	PM
Drawing No.	1
Sheet	1 of 11

Filename: \\langan.com\data\WPW\data7\190043701\Project Data\CAD\01\SheetFiles\Environmental\BCP - RAWP\Figure 1 - Site Location Map.dwg Date: 12/17/2019 Time: 16:08 User: kracanelli Style Table: Langan.stb Layout: Site Location Map



LEGEND:

APPROXIMATE SITE BOUNDARY

NOTES:

1. BASE MAP TAKEN FROM THE TOPOGRAPHIC, BOUNDARY AND UTILITY SURVEY DRAWING TITLED 190043701-V-EX0101, PREPARED BY LANGAN, DATED APRIL 16, 2018.
2. ELEVATIONS ON THIS FIGURE ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88). 1.1 FT ABOVE USG&CS DATUM (MEAN SEA LEVEL AT SANDY HOOK, NJ, 1929).

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SCALE IN FEET

WARNING: IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.

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Project	561 GREENWICH STREET BLOCK No. 598, LOT No. 42 NEW YORK NEW YORK
Figure Title	SITE PLAN
Project No.	190043701
Date	5/14/2018
Drawn By	ERA
Checked By	PM
Figure No.	2
Sheet	2 of 11

Filename: \\langan.com\data\WPW\data7\190043701\Project Data\CAD\01\SheetFiles\Environmental\BCP - RAWP\Figure 2 - Site Plan.dwg Date: 12/17/2019 Time: 16:16 User: kracanelli Style Table: Langan.stb Layout: ANSIB-BL

LEGEND:

- APPROXIMATE SITE BOUNDARY
- APPROXIMATE EXTENT OF SUPPORT OF EXCAVATION
- APPROXIMATE EXTENT OF EXCAVATION FROM ONE FOOT TO ALLOW FOR A COVER SYSTEM TO UP TO 12 FEET BELOW GRADE TO REMOVE SOURCE MATERIAL INCLUDING LEAD
- APPROXIMATE EXTENT OF EXCAVATION TO BETWEEN ABOUT EL. –1 TO EL. –4 (ABOUT 12 TO 15 FEET BGS), SEE NOTE 6
- APPROXIMATE EXTENT OF EXCAVATION TO ABOUT EL. –5 (ABOUT 16 FEET BGS) AND TREATMENT BETWEEN ABOUT EL. –5 AND EL. –12 (ABOUT 16 TO 23 FEET BGS), SEE NOTE 7
- APPROXIMATE EXTENT OF OFF–SITE TREATMENT BETWEEN ABOUT EL. 0 AND EL. –12 (ABOUT 11 TO 23 FEET BGS), SEE NOTE 7
- APPROXIMATE EXTENT OF SUSPECTED USTs
- EB/MW-21 APPROXIMATE OFF–SITE GROUNDWATER MONITORING WELL LOCATION

NOTES:

1. BASE MAP TAKEN FROM SUPPORT OF EXCAVATION – PLAN, PREPARED BY LANGAN, DATED 12/6/2019.
2. ELEVATIONS ON THIS FIGURE ARE RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88). 1.1 FT ABOVE USG&CS DATUM (MEAN SEA LEVEL AT SANDY HOOK, NJ, 1929).
3. UNDERGROUND STORAGE TANK (UST) LOCATIONS ARE APPROXIMATE BASED ON NOVA GEOPHYSICAL ENGINEERING'S GEOPHYSICAL ENGINEERING SURVEY REPORT DATED OCTOBER 15, 2019.
4. ALTERNATIVE II TRACK 4 REMEDY: THE SITE WILL BE EXCAVATED TO ABOUT 11 TO 16 FEET BGS TO REMOVE USTs, PETROLEUM–IMPACTED SOURCE MATERIAL, AND HAZARDOUS LEAD–IMPACTED MATERIAL, AS DISCUSSED BELOW.
5. SITE–WIDE EXCAVATION WILL EXTEND TO ABOUT EL. –1 TO ACCOMMODATE REMOVAL OF HAZARDOUS LEAD–IMPACTED MATERIAL AND ALLOW FOR SAFE EXCAVATION OF PETROLEUM–IMPACTED SOURCE MATERIAL.
6. PETROLEUM–IMPACTED SOURCE MATERIAL AND MATERIAL EXHIBITING NUISANCE PETROLEUM–LIKE ODORS AND STAINING WILL BE REMOVED TO BETWEEN ABOUT EL. –1 TO –4.
7. USTs AND PETROLEUM–IMPACTED SOURCE MATERIAL WILL BE EXCAVATED TO ABOUT EL. –5. PETROLEUM–IMPACTED SOIL AND GROUNDWATER WILL BE FURTHER REMEDIATED BY LOCALIZED DEWATERING, IN–SITU CHEMICAL OXIDATION (ISCO) VIA INJECTION POINTS AND APPLICATION OF POWDERED ACTIVATED CARBON (PAC). THE ON–SITE HATCHED AREA WILL REQUIRE TREATMENT TO BETWEEN ABOUT EL –5 AND EL –12, OR ABOUT 16 AND 23 FEET BGS. THE OFF–SITE HATCHED AREA WILL REQUIRE TREATMENT VIA ISCO AND/OR INJECTION OF PAC.
8. PROPOSED TREATMENT AREA IS BASED ON ANALYTICAL DATA. ADDITIONAL TREATMENT MAY BE REQUIRED BASED ON OBSERVED FIELD CONDITIONS FOLLOWING SITE–WIDE EXCAVATION.
9. ISCO TREATMENT WILL BE PERFORMED VIA ALKALINE–ACTIVATED PERSULFATE.
10. DEPTHS BGS ARE ESTIMATED ASSUMING AN AVERAGE EXISTING SITE GRADE OF ABOUT EL. 11.
11. BGS = BELOW GRADE SURFACE

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SCALE IN FEET

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Project
561 GREENWICH STREET
BLOCK No. 598, LOT No. 42
NEW YORK NEW YORK

Figure Title
Excavation Plan

Project No.	190043701
Date	02/18/2020
Drawn By	ERA
Checked By	PM

Figure No. 3
Sheet 9 of 11

Filename: \\langan.com\data\WPW\data7\190043701\Project Data\CAD\01\SheetFiles\Environmental\BCP - RAWP\Figure 9 - Alternative II - Track 4 Remedy_02.18.2020.dwg Date: 2/19/2020 Time: 11:11 User: kracanelli Style Table: Langan.stb Layout: Treatment Areas - PILE CAP BACKGROUND