DECISION DOCUMENT

515 West 18th Street
Brownfield Cleanup Program
New York, New York County
Site No. C231093
September 2017

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

DECLARATION STATEMENT - DECISION DOCUMENT

515 West 18th Street
Brownfield Cleanup Program
New York, New York County
Site No. C231093
September 2017

Statement of Purpose and Basis

This document presents the remedy for the 515 West 18th 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 515 West 18th 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; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Track 2 and Source Material Area Excavation

For the portions of the site where excavation is technically feasible, excavation and off-site disposal of all on-site soils which exceed restricted-residential SCOs, as defined by 6 NYCRR Part 375-6.8, in the upper 15 feet. In addition, excavation of all source material below 15 feet, including:

- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- non-aqueous phase liquids;
- soil with visual waste material or non-aqueous phase liquid;
- soil containing total SVOCs exceeding 500 ppm; and
- soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G.

Approximately 8,100 cubic yards of soil exceeding restricted residential SCOs, and 14,400 cubic yards of source material and overlying soil will be removed from the site. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site.

If a Track 2 restricted residential cleanup is achieved, a cover system will not be a required element of the remedy for this portion of the site.

3. Track 4 Areas Site Cover

For the portions of the site where deep excavation is not feasible due to adjacent buildings and the foundation piers for the High Line, all soils in the upper two feet which exceed the restricted residential SCOs will be excavated and transported off-site for disposal to enable placement of a site cover. Approximately 675 cubic yards of contaminated soils will be removed from these areas. In these areas a site cover will be required to allow for restricted residential use of the site. The site cover may consist of paved surface parking areas, sidewalks, or a soil cover. 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 as set forth in 6 NYCRR Part 375-6.7(d). In areas where building foundations or building slabs preclude contact with the soil, the requirements for a site cover will be deferred until such time that they are removed.

4. Institutional Control

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

- require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allow the use and development of the controlled property for restricted residential use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or NYCDOH; and
- require compliance with the Department approved Site Management Plan.

5. 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 4 above.

Engineering Controls: The site cover discussed in Paragraph 3 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;
- a provision for further investigation and remediation should large scale redevelopment occur, if any of the existing structures are demolished, or if the subsurface is otherwise made accessible. The nature and extent of contamination in areas where access was previously limited or unavailable will be immediately and thoroughly investigated pursuant to a plan approved by the Department. Based on the investigation results and the Department determination of the need for a remedy, a Remedial Action Work Plan (RAWP) will be developed for the final remedy for the site, including removal and/or treatment of any source areas to the extent feasible. Citizen Participation Plan (CPP) activities will continue through this process. Any necessary remediation will be completed prior to, or in association with, redevelopment;
- descriptions of the provisions of the environmental easement including any land use, groundwater use restrictions;
- 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;
- 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:

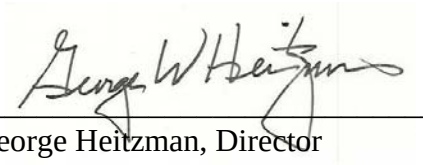
- monitoring of groundwater for site related contamination and also for indicators which will provide an understanding of the biological activity breaking down the contamination. (It is anticipated that groundwater contamination at the site boundary will decrease as a result of the excavation of source material from the site);
- 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.

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.

September 6, 2017

Date



George Heitzman, Director
Remedial Bureau C

DECISION DOCUMENT

515 West 18th Street
New York, New York County
Site No. C231093
September 2017

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 repository:

New York Public Library - Muhlenberg Branch
Attn: Ashley Forrest Curran
209 West 23rd Street
New York, NY
Phone: 212-924-1585

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 515 West 18th Street site is located in an urban area in the West Chelsea section of the Borough of Manhattan. The site is bounded by West 19th Street on the north, West 18th Street to the south, and 10th Avenue to the east.

Site Features: The site consists of two adjacent lots, designated as Lots 20 and 29. Lot 20 is currently improved with two 2-story buildings, with slab on grade foundations. The first building has the first floor utilized as a parking garage and the second floor as an art gallery. The other building is a residential space. Lot 29 is a paved parking lot. The High Line Park, an elevated and open recreational walkway, runs north to south over the western portion of Lot 29.

Current Zoning/Use: The site is zoned C6-4 for mixed commercial and residential use and is currently vacant.

Past Uses of the Site: Both lots were historically used to support the nearby Manufactured Gas Plant (MGP) operations of the West 18th Street Gas Works. In approximately 1848, two gas holders were constructed on Lot 29 and used for storage of manufactured gas until the early 1900s. Lot 20 was used as a storage yard by the MGP from about 1870 until the early 1900s. The gas works produced gas using the coal carbonization process throughout its entire history. After the site was sold in 1919, a large garage was constructed on the 18th Street side of Lot 20 that included buried gasoline tanks. In 1947, a private garage was built on the 19th Street side of Lot 20 as well. On Lot 29, the gas holders were razed in 1914. After being sold in 1917, Lot 29 was used as a wagon yard, automobile parking lot, and commercial truck parking lot with several small structures and underground petroleum storage tanks. These properties were originally part of a Voluntary Cleanup Program project, subject to a legal agreement between Con Edison and the Department, for the Con Edison West 18th Street Gas Works site, site #V00530.

Site Geology and Hydrogeology: The site is underlain by a thick deposit of urban fill materials which was placed along the Hudson River shoreline to create additional land for development. The fill, 7 to 30 feet deep, consists of a variety of man-made materials such as bricks and ash, mixed with soil. The fill is underlain by sands, silts and glacial till, which extend to bedrock, found between 40 and 60 feet below the surface.

Groundwater occurs between 8 and 9 feet below grade. Regional groundwater flow is westerly towards the Hudson River; local groundwater flow is generally the same.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

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

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

SECTION 5: ENFORCEMENT STATUS

The Department and Consolidated Edison Company of New York, Inc.(ConEd) entered into a multi-site Voluntary Cleanup Agreement on August 15, 2002 (Index Number D2-0003-02-08), which included 45 former manufactured gas plant (MGP) sites, including the West 18th Street MGP site. Because the Agreement obligates ConEd to implement a full remedial program for MGP-related contamination attributable to the site, any off-site impacts will be addressed by that agreement or subsequent legal agreements.

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:

- Total Polycyclic Aromatic Hydrocarbons (PAHs)
- Benzene, Toluene, Ethylbenzene and Xylenes (BTEX)
- Arsenic
- Barium
- Lead
- Mercury

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:
Over the course of nine studies conducted between April 2005 and June 2016, soil and groundwater were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls, (PCBs), and pesticides. Based on these investigations, the primary contaminants of concern are: SVOCs (primarily polyaromatic hydrocarbons) associated with the former manufactured gas plant on the property, and VOCs (primarily benzene, toluene, ethylbenzene, and xylenes) associated with both the manufactured gas plant (MGP) and with the buried tanks formerly used to store petroleum; and the metals lead, arsenic, mercury and barium associated with the fill materials used to create the site landmass. In addition to soil and groundwater contamination, separate phase coal tar was observed beneath Lot 29.

Soil:
Lot 29 contains the subsurface foundations of two former MGP gas holders, located immediately to the east of the High Line. The most concentrated contamination was found at the bottom of these structures, consisting of a few inches of visibly coal tar-contaminated soil at depths of roughly 20-22 feet. These impacts appear to be limited to the interior of the holders and were not observed below or outside either holder. These impacts exceed the restricted residential SCOs for SVOCs, with a maximum concentration of naphthalene at 22,000 parts per million (ppm), for metal, with a maximum concentration of lead at 1,740 ppm, and, for VOCs, with a maximum concentration of 230 ppm for xylenes.

Other portions of Lot 29 contain lower levels of contamination which exceed restricted residential SCOs. The sources of this contamination are less clear than in the gas holder foundations, but some appears to be related to petroleum storage tanks, and some appears to derive from the urban fill materials used to raise the ground surface elevation for past site development. The petroleum contamination is generally limited to the southern portion of the lot at a depth of 5-7 feet, with localized deeper impacts (9-11 feet) under the northern portion of Lot 29. These impacts exceed the restricted residential SCOs for metals, with a maximum concentration of lead for 636 ppm, for SVOCs, with a maximum concentration of benzo(a)anthracene of 2.7 ppm, and a maximum concentration of xylenes of 350 ppm.

On Lot 20, west of the High Line, there is soil contamination from metals, VOCs and SVOCs that also exceed the restricted residential SCOs, with a maximum concentration for VOCs, of xylene, at 160 ppm, a maximum concentration for SVOCS, of benzo(b)fluoranthene, at 8.7 ppm, and a maximum concentration for metals, of lead, at 708 ppm. Most of these impacts are found in the upper 15 feet with the highest levels found in the upper 8 feet. The mix of SVOCs, VOCs, and metals are indicative of historic fill. Samples also show elevated total petroleum hydrocarbons (a specific group of VOCs and SVOCs usually found in petroleum products like gasoline and diesel fuel) which is likely attributed to the past petroleum storage tanks on the lot. There were seven underground storage tanks located on the lot. Some of the seven were removed and some were abandoned in place. While contamination associated with historic fill

material is present throughout this area, sampling data indicates that contamination in soil has not migrated from the site.

Groundwater:
Groundwater is contaminated with VOCs and SVOCs across the site, with the highest concentrations found along the southern edge of the site. The source of this contamination is likely the petroleum and MGP by-products on the site. Based on the results at the perimeter of the site, VOCs are likely migrating off-site in the groundwater.

Soil Vapor:
While soil vapor samples have not been collected, it is likely that the petroleum contamination is creating elevated levels of VOCs in the soil vapor above the groundwater. As part of the remedy, following the excavation of source materials, a soil vapor intrusion study will be completed to determine whether actions are needed to address exposures to contaminated soil vapor.

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.*

People may contact contaminated soil or groundwater if they dig below the ground surface. People are not drinking the contaminated groundwater since the area is served by a public water supply system that is not contaminated by the site. 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. The potential exists for people to inhale contaminants in indoor air due to soil vapor intrusion. An evaluation is needed to determine whether soil vapor intrusion is a concern for any 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 Multiple Cleanup Tracks remedy.

The selected remedy is referred to as the Track 2/ Track 4 Soil Excavation 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;
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- 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. Track 2 and Source Material Area Excavation

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- non-aqueous phase liquids;
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- soil containing total SVOCs exceeding 500 ppm; and
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If a Track 2 restricted residential cleanup is achieved, a cover system will not be a required element of the remedy for this portion of the site.

3. Track 4 Areas Site Cover

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4. Institutional Control

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

- require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allow the use and development of the controlled property for restricted residential use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or NYCDOH; and
- require compliance with the Department approved Site Management Plan.

5. 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 4 above.

Engineering Controls: The site cover discussed in Paragraph 3 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;
- a provision for further investigation and remediation should large scale redevelopment occur, if any of the existing structures are demolished, or if the subsurface is otherwise made accessible. The nature and extent of contamination in areas where access was previously limited or unavailable will be immediately and thoroughly investigated pursuant to a plan approved by the Department. Based on the investigation results and the Department determination of the need for a remedy, a Remedial Action Work Plan (RAWP) will be developed for the final remedy for the site, including removal and/or treatment of any source areas to the extent feasible. Citizen Participation Plan (CPP) activities will continue through this process. Any necessary remediation will be completed prior to, or in association with, redevelopment;
- descriptions of the provisions of the environmental easement including any land use, groundwater use restrictions;
- 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;
- 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 for site related contamination and also for indicators which will provide an understanding of the biological activity breaking down the contamination. (It is anticipated that groundwater contamination at the site boundary will decrease as a result of the excavation of source material from the site);

- 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.

Site Boundary

W. 19th St

Gas Holder

LOT 29

10th Ave

LOT 20

HIGH LINE ELEVATED PARK

Gas Holder

W. 18th St

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integral engineering pc.
61 BROADWAY, SUITE 1601
NEW YORK, NEW YORK 10006
www.integral-corp.com

0 15 30
Feet

N

Basemap Source: Architectural Survey, Fehringer Surveying, P.C., 511 West 18th Street, July 29, 2014.

Note:
1. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.

Figure 1
Site Plan
Remedial Action Work Plan
515 West 18th Street
New York, New York 10011

Excavation for Remediation (0-2 feet below grade)
Excavation for Remediation (0-5 feet below grade)
Excavation for Remediation (0-10 feet below grade)
Excavation for Remediation (0-15 feet below grade)
Excavation for Remediation, Excavation necessary to remove source material - Excavation to bottom of holders (~20-22 ftbg) Total of approximately 22,754 tons
Subject Property

Notes:
1. Gas holders are from the Former West 18th Street Gas Works, as shown on Sanborn maps dated 1895. Revised per Mueser Rutledge Consulting Engineers Exploratory Test Pitting, 2016 and Integral Engineering Pre-Design Investigation, 2016.
2. The 0-2 excavation is limited in depth due to the proximity to neighboring buildings.

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integral engineering p.c.
61 Broadway, Suite 1601
New York, New York 10006
www.integral-corp.com

Sources:
Manhattan Tax Parcels: NYC Department of City Planning, 2013

0 15 30
Feet

N

Figure 2

Soil Excavation Depth for Remedial Action
Remedial Action Work Plan
515 West 18th Street
Manhattan, New York 10011