

REMEDIAL ACTION WORK PLAN
FORMER FIEDLER WATERPROOFING & MASONRY SITE
91 BRUCKNER BOULEVARD
BRONX, NEW YORK
NYSDEC BCP SITE C203160

by
Haley & Aldrich of New York
New York, New York

for
91 Bruckner Blvd LLC
162 Manhattan Avenue, 1st Floor
Brooklyn, New York 11206

File No. 0205563
October 2023





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PREPARED FOR
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File No. 0205563
October 2023

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List of Acronyms and Abbreviations

A

amsl	Above mean sea level
AOC	Area of Concern
ASP	Analytical Services Protocol
AST	Aboveground Storage Tank
AWQS	Ambient Water Quality Standards

B

BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
BTEX	Benzene, toluene, ethylbenzene, xylenes

C

CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulations
CHASP	Construction Health and Safety Plan
COC	Contaminant of Concern
CP-51	Commissioners Policy-51 (<i>specifically "October 2010 NYSDEC Commissioners Policy 51"</i>)
CPP	Citizen Participation Plan
CQAP	Construction Quality Assurance Plan
CSM	Conceptual Site Model
cu yd	cubic yard
CVOC	Chlorinated Volatile Organic Compound

D

DER	Division of Environmental Remediation
DER-10	Division of Environmental Remediation-10 (<i>specifically "May 2010 NYSDEC Technical Guidance for Site Investigation and Remediation"</i>)
DUSR	Data Usability Summary Report

E

EC	Engineering Controls
ECL	Environmental Conservation Law
EDD	Electronic Data Deliverable
EE	Environmental Easement
ELAP	Environmental Laboratory Approval Program
ESA	Environmental Site Assessment
ESI	Environmental Site Investigation

List of Acronyms and Abbreviations (Continued)

F

FER	Final Engineering Report
FEMA	Federal Emergency Management Agency
ft bgs	feet below ground surface

G

GV	Guidance Value
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H

Haley & Aldrich	Haley & Aldrich of New York
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response

I

IC	Institutional Control
in.	inches

L

L/min	liters per minute
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M

MDL	Method Detection Limit
µg/L	micrograms per liter
µg/m ³	micrograms per cubic meter
mg/L	milligrams per liter
ml/min	milliliter per minute
MS/MSD	Matrix Spike/Matrix Spike Duplicate
MW	Monitoring Well

N

ng/L	nanograms per liter
NYCDEP	New York City Department of Environmental Protection
NYCDOB	New York City Department of Buildings
NYCDOT	New York City Department of Transportation
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation

O

OSHA	Occupational Health and Safety Administration
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List of Acronyms and Abbreviations (Continued)

P

PAH	Polycyclic Aromatic Hydrocarbon
PBS	Petroleum Bulk Storage
PCB	Polychlorinated Biphenyl
PCE	Perchloroethylene/Tetrachloroethene
PHFxA	Perfluorohexanoic Acid
PFOA/PFAS	Per- and polyfluoroalkyl substances
PFOS	Perfluorooctanesulfonic acid (
PGWSCOs	Protection of Groundwater Soil Cleanup Objectives
PID	Photoionization Detector
ppb	parts per billion
PPE	Personal Protective Equipment
ppm	parts per million
ppt	parts per trillion
PVC	Polyvinyl Chloride

Q

QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
QHHEA	Qualitative Human Health Exposure Assessment

R

RA	Remedial Action
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RCA	Recycled Concrete Aggregate
RCRA	Resource Conservation and Recovery Act
RE	Remediation Engineer
RI	Remedial Investigation
RIR	Remedial Investigation Report
RIWP	Remedial Investigation Work Plan
RL	Reporting Limit
RRSCO	Restricted Residential Soil Cleanup Objective

List of Acronyms and Abbreviations (Continued)

S

SCG	Standards, Criteria, and Guidelines
SCO	Soil Cleanup Objective
SDS	Safety Data Sheet
SEQRA	State Environmental Quality Review Act
Site	91 Bruckner Boulevard, Bronx, New York
SMMP	Soil/Materials Management Plan
SMP	Site Management Plan
SOE	Support-of-Excavation
SPDES	State Pollutant Discharge Elimination System
sq ft	square feet
SSDS	Sub-Slab Depressurization System
SVI	Soil Vapor Intrusion
SVOC	Semi-Volatile Organic Compound
SWPPP	Stormwater Pollution Prevention Plan

T

TAL	Total Analyte List
TCE	Trichloroethylene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TOGS 1.1.1	Technical and Operational Guidance Series 1.1.1 (<i>Specifically “June 1998 NYSDEC Division of Water Technical and Operational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values, Class GA for the protection of a source of drinking water modified per the April 2000 addendum”</i>)
TPH	Total Petroleum Hydrocarbons

U

USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
UUSCO	Unrestricted Use Soil Cleanup Objective

V

VOC	Volatile Organic Compound
Volunteer	91 Bruckner Blvd LLC

Certification

I, Suzanne M. Bell, certify that I am currently a NYS registered professional engineer and that this Remedial Action Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

I certify that all information and statements in this certification are true. I understand that a false statement made herein is punishable as Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.



03 October 2023

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NYS Professional Engineer #106301

Date

Signature

It is a violation of Article 145 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 145, New York State Education Law.

Executive Summary

This Remedial Action Work Plan (RAWP) was developed by Haley & Aldrich of New York (Haley & Aldrich) on behalf of 91 Bruckner Blvd LLC for the proposed development of the Former Fiedler Waterproofing & Masonry Site located at 91 Bruckner Boulevard (Block 2278 Lot 1) within the Mott Haven neighborhood of the Bronx, New York (the Site).

91 Bruckner Blvd LLC applied to and was accepted into the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) as a Volunteer. A Brownfield Cleanup Agreement (BCA) was executed by the NYSDEC and 91 Bruckner Blvd LLC (the “Volunteer”) on 27 January 2023 (BCP Site No. C203160). The Volunteer proposes to remediate the Site for mixed-use commercial and residential purposes.

This RAWP summarizes the nature and extent of contamination on the Site as determined from data gathered during the Remedial Investigation (RI) performed by Haley & Aldrich in February 2023. It provides an evaluation of Track 1 (Alternative I) and Track 2 (Alternative II) cleanups, their associated costs, and a recommendation for a preferred remedy. The preferred Track 2 remedy is consistent with the procedures defined in the Division of Environmental Remediation (DER)-10 and complies with applicable federal, state, and local laws, regulations, and requirements.

SITE DESCRIPTION AND SITE HISTORY

The Site is located in the Mott Haven neighborhood of the Bronx and is identified as Block 2278 Lot 1 on the New York City tax map. The Site is a vacant approximately 14,500 square-foot (sq ft) lot bound by mixed-use and residential properties to the north, a warehouse designated as parking to the west, Bruckner Boulevard followed by Pulaski Park to the south, and Willis Avenue followed by a commercial restaurant to the west. The Site location is shown on Figure 1. Existing Site features are shown on Figure 2.

The Site is currently located within a residential and manufacturing (R6A/M1-2) zoning district, part of a Special Mixed-Use (MX-1) district. The Site is located in a mixed-use area characterized by warehouses, open space, commercial, industrial, and residential buildings and is served by municipal water and sewer.

The Site was developed in the early 1900s with two five-story dwellings with storefronts on the western portion of the Site, while the eastern portion of the Site remained vacant. The Site was listed as an alcohol denaturing plant in the 1927 city directory. By the mid-1930s, the eastern portion of the Site began to be utilized as a “Universal Car Loading Freight Station” and an additional store was developed on the southwest corner of the Site. By the mid-1940s, the “Universal Car Loading Freight Station” was no longer in use and this portion of the Site began to be utilized for wine storage and bottling. The Site remained relatively unchanged until the early 1950s when the portion of the building utilized for wine storage and bottling began to be utilized as a garage. Historical sources identified three gasoline tanks of unknown capacity on the southeastern portion of the Site from 1951 to 2007. Since the 1970s, Fiedler Waterproofing and Masonry Company began operating at the Site and continued operations through the early 2000s. In the early 1980s, the three storefronts were demolished and redeveloped with a one-story building in 1985. The one-story warehouse previously encompassing the Site was razed in 2022.

There are four sensitive receptors within a 500 feet (ft) radius of the Site listed below:

- 1) Pulaski Park, Bruckner Boulevard & Willis Avenue, Bronx, New York, 10454, listed as a public park.
- 2) Learning Through Play Pre-K Center, 105 Willis Avenue, Bronx, New York, 10454, listed as a school.
- 3) Bruckner Forever Young Social Adult Day Care, 80 Bruckner Boulevard, Bronx, New York, 10454, listed as an adult day care.
- 4) Ranaqua Playground, 452 E 136th Street, Bronx, New York, 10454, listed as a public playground.

Properties immediately surrounding the Site are zoned for mixed residential commercial land use.

SUMMARY OF REMEDIAL INVESTIGATION FINDINGS

The Remedial Investigation (RI) was completed in February 2023 in accordance with Title 6 of the New York Codes, Rules, and Regulations (6 NYCRR) Part 375, DER-10 and the New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006 and subsequent updates). The objective of the RI was to determine the nature and extent of contamination in soil, groundwater, and soil vapor.

A summary of environmental findings of the RI includes the following:

1. The Site's stratigraphy, from the current ground surface down, consists of contaminated fill consisting of brown silty sand with brick, concrete, and glass fragments to depths as great as 8 feet below ground surface (ft bgs). Brown silty sand with varying amounts of gravel, sand, and weathered rock underly the fill layer.
2. Groundwater was encountered at depths ranging from approximately 13 to 16 ft bgs, and groundwater beneath the Site generally flows to the south towards the Harlem River.
3. Soil analytical results were compared to NYSDEC Unrestricted Use Soil Cleanup Objectives (UUSCOs), Restricted Residential Soil Cleanup Objectives (RRSCOs), and Protection of Groundwater Soil Cleanup Objectives (PGWSCOs). Soil analytical results are summarized below:

Tetrachloroethene (PCE) was detected below applicable standards but above reporting limits in 20 soil samples, with six of those being estimated concentrations. The maximum reported concentration of PCE was 0.0011 parts per million (ppm) in sample SB-04-03 (6-8).

Several semi-volatile organic compounds (SVOCs), specifically polycyclic aromatic hydrocarbons (PAHs) including benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene, were detected at concentrations exceeding the UUSCOs, RRSCOs, and/or PGWSCOs in soil samples collected from 0 to 6 inches (in.), 3 to 5 ft, and 6 to 8 ft bgs at the Site.

Several metals, including barium, lead, mercury, arsenic, nickel, selenium, zinc, and copper were detected at concentrations exceeding the UUSCOs, RRSCOs, and/or PGWSCOs in soil samples

collected from 0 to 6 in., 3 to 5 ft, and 6 to 8 ft bgs at the Site. Concentrations of most metals were greatest in soil samples collected from the 0 to 6-in. interval.

The pesticides dieldrin, 4,4-DDD, 4,4-DDE, and 4,4-DDT were detected at concentrations exceeding the UUSCOs in soil samples collected from 0 to 6 in., 6 to 8 ft, and 12 to 14 ft bgs at the Site.

Perfluorooctanesulfonic acid (PFOS) was detected above the UUSCO at a maximum concentration of 2.53 parts per billion (ppb) in soil sample SB-04-03 (6-8'). Perfluorooctanoic acid (PFOA) was detected above the UUSCO at a maximum concentration of 0.313 ppb in SB-04-03 (6-8').

4. Groundwater analytical results were compared to the NYSDEC Ambient Water Quality Standard (AWQS).

One volatile organic compound (VOC), PCE, was detected above the AWQS in groundwater sample MW-08 at a concentration of 8.0 micrograms per liter (µg/L).

All groundwater samples reported one or multiple SVOCs, specifically PAHs, detected above the AWQS. All of the reported SVOC exceedances of the AWQS were estimated concentrations, with the exception of indeno(1,2,3-cd)pyrene in MW-11.

Three dissolved metals were detected above the AWQS in several groundwater samples including magnesium, selenium, manganese, and sodium. Chromium was reported above the AWQS at a concentration of 120.6 µg/L in MW-03.

Six total metals were detected above the AWQS in several groundwater samples including iron, lead, magnesium, manganese, selenium, and sodium. Additionally, chromium was reported above the AWQS at a concentration of 186.2 µg/L in MW-03.

Emerging Contaminants

Emerging contaminants PFOA/PFAS were compared to the February 2023 New York State Ambient Water Quality Standards and Guidance Values (NYSDEC GV) for PFOA and PFOS. PFOA was detected above the NYSDEC GV for protection of human health in a raw water source of 6.7 parts per trillion (ppt) in five groundwater samples at a maximum concentration of 248 ppt in MW-06. PFOS was detected above the NYSDEC GV for protection of human health in a raw water source of 2.7 ppt in five groundwater samples at a maximum concentration of 38 ppt in MW-11.

5. No standard currently exists for soil vapor samples in New York State. Total VOC concentrations ranged from 1,634.5 micrograms per cubic meter (µg/m³) to a maximum of 8,785.1 µg/m³. Four chlorinated volatile organic compounds (CVOs), vinyl chloride, methylene chloride, 1,1,1-trichloroethane, and PCE, were detected in soil vapor samples at the Site. Several petroleum-related VOCs were detected above laboratory detection limits in all soil vapor samples at the Site including, but not limited to, benzene, toluene, ethylbenzene, and total xylenes (BTEX).

QUALITY HUMAN HEALTH EXPOSURE ASSESSMENT

The potential exposure pathways for the current and future use conditions are discussed below.

Current Use Scenario: Site contamination includes metals, pesticides, and PAHs in soil; PAHs, VOCs, and metals in groundwater; and petroleum-related VOCs and CVOs in soil vapor. Under current conditions, the likelihood of exposure to soil or groundwater is limited, as the Site is secured with locked entrances. Site access is only granted to personnel associated with the planned development. Potable water for Bronx County will continue to be sourced from reservoirs in the Catskill and Delaware Watersheds. All intrusive work on the Site is done in accordance with a Site-Specific Health and Safety Plan and donning of personal protective equipment (PPE).

Construction/Remediation Scenario: The exposure element exists for all elements during this phase. The overall risk will be minimized by the implementation of a Site-Specific Construction Health and Safety Plan (CHASP), localized monitoring of organic vapors, community air monitoring on the Site perimeter for particulates and VOCs, vapor and dust suppression techniques, installation of a stabilized entrance, cleaning truck tires and undercarriages, and donning of appropriate PPE. Additionally, the Site will be under a RAWP which will include a Soil Materials Management Plan that will highlight measures for PPE, covering of stockpiles, housekeeping, suppression techniques (particulates and vapor), and measures to prevent off-Site migration of contaminants. In addition, the Site will be secured and inaccessible to the public during remedial construction.

Future Use Scenario: Under the proposed future condition (after construction/remediation), residual contaminants may remain on-Site depending on the remedy achieved. The remaining contaminants would include those listed in the current conditions. If contaminants remain on-Site after construction/remediation, the route of exposure will be mitigated by proper installation of foundation and implementation of institutional controls, such as land use and groundwater use restrictions.

SUMMARY OF THE REMEDY

Alternative II, a Track 2 remedy, will include the following:

1. Development and implementation of a CHASP and Community Air Monitoring Plan (CAMP) for the protection of on-Site workers, community/residents, and the environment during remediation and construction activities.
2. Design and construction of a Support of Excavation (SOE) system to support the Track 2 remediation.
3. Implementation of soil erosion, pollution, and sediment control measures in compliance with applicable laws and regulations.
4. Removal of the existing pavement and miscellaneous debris from the Site.
5. Decommissioning of on-Site monitoring wells, as necessary, in accordance with NYSDEC CP-43 Policy.
6. Excavation, stockpiling, off-Site transport, and disposal of approximately 3,100 cubic yards (cu yd) of contaminated fill material and soil that exceeds RRSCOs as defined by 6 NYCRR Part 375-6.8.

Excavation will be to 8 ft bgs within the western portion of the proposed building footprint and 2 ft within the eastern portion of the proposed building footprint and outside of the proposed building footprint to the north. A 10 ft by 10 ft hotspot surrounding soil boring SB-4 will extend to approximately 10 ft bgs to remove deeper material that exceeds RRSCOs.

7. If encountered, removal of underground storage tanks (USTs) and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) and decommissioning and off-Site disposal during redevelopment in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC Commissioners Policy-51 (CP-51), and other applicable NYSDEC UST closure requirements.
8. Screening for indications of contamination (by visual means, odor, and monitoring photoionization detectors [PIDs]) of excavated material during intrusive Site work.
9. Implementation of a preliminary waste characterization to facilitate off-Site disposal of excavated soil/fill. As part of waste characterization and for disposal purposes, a lateral and vertical delineation of elevated total metals hotspots will be completed to facilitate off-Site disposal of excavated soil/fill. Material from 0 to 2 ft bgs surrounding soil sample SB-05 (0-0.5') collected during the RI (from the location of previous soil sample HA-06_0-2 collected in the March 2022 Limited Phase II Environmental Site Investigation [ESI]) will be resampled for hazardous lead material and delineated as part of the waste characterization event.
10. Appropriate off-Site disposal of material removed from the Site in accordance with federal, state, and local rules and regulations for handling, transport, and disposal.
11. Backfill the Site as needed for the development with certified-clean fill/soil (i.e., meeting the Allowable Constituent Levels for Imported Fill or Soil as per unrestricted use defined in DER-10 Appendix 5), recycled concrete aggregate (RCA), or virgin, native crushed stone.
12. Collection and analysis of confirmation soil samples at the proposed remediation depths in accordance with DER-10 to confirm a Track 2 remedy was achieved. If the proposed confirmation sample exceeds Track 2 RRSCOs, over-excavation and additional confirmation sampling may be performed to ensure all impacted material has been removed from the Site.
13. Completion of a Soil Vapor Intrusion (SVI) Evaluation in accordance with DER-10 and NYSDOH Final Guidance on Soil Vapor Intrusion following remedial excavation activities and prior to occupancy.
14. Recording of an Environmental Easement to restrict use of the Site.

1. Introduction

This Remedial Action Work Plan (RAWP) was developed by Haley & Aldrich of New York (Haley & Aldrich) on behalf of 91 Bruckner Blvd LLC for the proposed development of the Former Fiedler Waterproofing & Masonry Site located at 91 Bruckner Boulevard (Block 2278 Lot 1) within the Mott Haven neighborhood of the Bronx, New York (the Site).

91 Bruckner Blvd LLC applied to and was accepted into the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) as a Volunteer. A Brownfield Cleanup Agreement (BCA) was executed by the NYSDEC and 91 Bruckner Blvd LLC (the “Volunteer”) on 27 January 2023 (BCP Site No. C203160). The Volunteer proposes to remediate the Site for mixed-use commercial and residential purposes.

This RAWP summarizes the nature and extent of contamination on the Site as determined from data gathered during the Remedial Investigation (RI) performed by Haley & Aldrich in February 2023. It provides an evaluation of Track 1 (Alternative I) and Track 2 (Alternative II) cleanups, their associated costs, and a recommendation for a preferred remedy. The preferred Track 2 remedy is consistent with the procedures defined in Division of Environmental Remediation (DER)-10 and complies with applicable federal, state, and local laws, regulations, and requirements.

1.1 SITE LOCATION AND DESCRIPTION

The Site is located in the Mott Haven neighborhood of the Bronx and is identified as Block 2278 Lot 1 on the New York City tax map. The Site is a vacant approximately 14,500 square-foot (sq ft) lot bound by mixed-use and residential properties to the north, a warehouse designated as parking to the west, Bruckner Boulevard followed by Pulaski Park to the south, and Willis Avenue followed by a commercial restaurant to the west. The Site location is shown on Figure 1. Existing Site features are shown on Figure 2. A Site survey map is provided in Appendix A.

The Site is currently located within a residential and manufacturing (R6A/M1-2) zoning district, part of a Special Mixed-Use (MX-1) district. The Site is located in a mixed-use area characterized by warehouses, open space, commercial, industrial, and residential buildings and is served by municipal water and sewer. A copy of the zoning map is included in Appendix B.

1.2 PROPOSED DEVELOPMENT PLAN

The planned project will consist of the construction of a seven-story residential building with a full cellar encompassing a majority of the Site footprint (approximately 10,714 sq ft). The new development is anticipated to include a one-level cellar requiring excavation extending to approximately 12 feet below ground surface (ft bgs) and 15 ft bgs for an elevator pit located on the eastern portion of the Site. Piping for a passive sub-slab depressurization system (SSDS) will be laid within the foundation as part of development. The redevelopment will also include an affordable housing component. Development plans are included in Appendix C.

1.3 DESCRIPTION OF SURROUNDING PROPERTY

The Site is located along Bruckner Boulevard between Willis Avenue and Brown Place in an urban area identified as the Mott Haven neighborhood in the Borough of The Bronx. There are four sensitive receptors within a 500 feet (ft) radius of the Site listed below:

- 1) Pulaski Park, Bruckner Boulevard & Willis Avenue, Bronx, New York, 10454, listed as a public park.
- 2) Learning Through Play Pre-K Center, 105 Willis Avenue, Bronx, New York, 10454, listed as a school.
- 3) Bruckner Forever Young Social Adult Day Care, 80 Bruckner Boulevard, Bronx, New York, 10454, listed as an adult day care.
- 4) Ranaqua Playground, 452 E 136th Street, Bronx, New York, 10454, listed as a public playground.

1.4 SITE HISTORY

The Site was developed in the early 1900s with two five-story dwellings with storefronts on the western portion of the Site, while the eastern portion of the Site remained vacant. The Site was listed as an alcohol denaturing plant in the 1927 city directory. By the mid-1930s, the eastern portion of the Site began to be utilized as a “Universal Car Loading Freight Station” and an additional store was developed on the southwest corner of the Site. By the mid-1940s, the “Universal Car Loading Freight Station” was no longer in use and this portion of the Site began to be utilized for wine storage and bottling. The Site remained relatively unchanged until the early 1950s when the portion of the building utilized for wine storage and bottling began to be utilized as a garage. Historical sources identified three gasoline tanks of unknown capacity on the southeastern portion of the Site from 1951 to 2007. Since the 1970s, Fiedler Waterproofing and Masonry Company began operating at the Site and continued operations through the early 2000s. In the early 1980s, the three storefronts were demolished and redeveloped with a one-story building in 1985. The one-story warehouse previously encompassing the Site was razed in 2022.

1.5 PREVIOUS ENVIRONMENTAL REPORTS

To date, the following investigations have been performed at the Site.

1. September 2021 Phase I Environmental Site Assessment (ESA) Prepared by P.W. Grosser Consulting Inc.
2. October 2021 Phase II ESA Prepared by P.W. Grosser Consulting Inc.
3. March 2022 Limited Phase II Environmental Site Investigation (ESI) Prepared by Haley & Aldrich

Prior investigation findings are included in Appendix A of the Remedial Investigation Work Plan (RIWP) dated 13 January 2023, the Remedial Investigation Report (RIR) dated 12 April 2023, all prepared by Haley & Aldrich. Investigation findings from work conducted prior to the 2023 RI informed preparation of the RIWP, but were not relied upon for this RAWP, which is based upon the 2023 RI findings.

2. Description of Remedial Investigation Findings

The RI was completed in accordance with Title 6 of the New York Codes, Rules, and Regulations (6 NYCRR) Part 375, DER-10 and the New York State Department of Health (NYSDOH) Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006 and subsequent updates). The objective of the RI was to determine the nature and extent of contamination in soil, groundwater, and soil vapor. The RI was performed from 13 February 2023 through 27 February 2023.

2.1 REMEDIAL INVESTIGATION

The RI consisted of the following:

- Advancement of fourteen soil borings to 15 ft bgs with samples collected from the surface to 2 inches (in.) below grade, from 6 to 8 ft bgs, and from 12 to 14 ft bgs. An additional three soil borings were advanced to 6 ft bgs to further evaluate the contaminated fill material with samples collected between 2 to 5 ft bgs. A total of 45 soil samples were collected (plus quality assurance/quality control [QA/QC] samples) for laboratory analysis;
- Installation of seven 2-in. groundwater monitoring wells to a depth of 20 to 25 ft bgs and the collection of seven groundwater samples (plus QA/QC samples);
- Installation of 11 soil vapor probes to a depth of approximately 12 to 14 ft bgs and the collection of 11 soil vapor samples.

2.1.1 Soil Investigation

Fourteen borings were advanced to 15 ft bgs using a track-mounted direct-push drill rig (Geoprobe®) operated by a licensed operator of Lakewood Environmental Services Corp., the drilling subcontractor. Additionally, three soil borings were advanced to a depth of 6 ft bgs in order to further investigate contaminated fill material observed throughout the Site. Soil samples were collected from dedicated acetate liners using a stainless-steel trowel or sampling spoon. Samples were collected using laboratory-provided clean bottle ware. Volatile organic compound (VOC) grab samples were collected using terra cores.

Generally, soil samples were collected from the surface to 2 in. below current grade, from within the contaminated fill or most impacted zone from 6 to 8 ft, and from the native soil layer from 12 to 14 ft bgs. An additional three soil borings were advanced to 6 ft bgs to further evaluate the contaminated fill material with samples collected between 2 to 5 ft bgs.

2.1.2 Groundwater Investigation

Seven, 2-in. diameter permanent monitoring wells were installed to approximately 20 to 25 ft bgs, with the exception of MW-09. Each monitoring well was constructed using a 2-in. diameter polyvinyl chloride (PVC) riser pipe with 10-ft-long, 10-slot (0.01-in.) slotted screens. Each monitoring well was constructed with a 2-in. annular space installed using either #0 or #00 certified clean sand fill. Monitoring well screens were installed to straddle the water table. Following installation, monitoring wells were

developed by surging a pump in the well several times to pull fine-grained material from the well. During a monitoring well gauging event concurrent with the well survey on 24 February 2023, groundwater was encountered at depths ranging from approximately 13.78 to 16.07 ft bgs.

2.1.3 Soil Vapor Investigation

Soil vapor samples were collected in accordance with the Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH October 2006). Eleven soil vapor probes were installed to 12 to 14 ft bgs, just below the proposed development depth and approximately 1 to 2 ft above the groundwater interface. The vapor implants were installed with a direct-push drilling rig (e.g., Geoprobe®) to advance a stainless-steel probe to the desired sample depth. To ensure the stainless-steel soil vapor probe was sealed completely to the surface using bentonite, a tracer gas test was used in accordance with NYSDOH protocols for QA/QC purposes to verify the integrity of the soil vapor probe seal. In addition, one to three implant volumes were purged prior to the collection of the soil vapor samples. Sampling occurred for the duration of two hours at a rate not exceeding 0.2 liters per minute (L/min). At the conclusion of the sampling round, tracer gas monitoring was performed a second time to confirm the continued integrity of the probe seals.

Samples were collected in appropriately-sized Summa canisters that were certified clean by the laboratory. Samples were analyzed for VOCs using the United States Environmental Protection Agency (USEPA) Method TO-15.

2.2 SAMPLES COLLECTED

During the RI, a total of 45 soil samples (plus one duplicate for QA/QC) were collected from the surface at 0 to 2 in. below current grade (variable throughout the Site), from within the contaminated fill or most impacted zone from 6 to 8 ft and from the native soil layer from 12 to 14 ft bgs. Samples were collected using laboratory-provided clean bottle ware, and VOC grab samples were collected using terra cores.

A total of seven groundwater samples, one from each monitoring well, were collected for laboratory analysis. A field blank, one trip blank, a duplicate sample, and a Matrix Spike/Matrix Spike Duplicate (MS/MSD) sample were also collected for QA/QC purposes. Groundwater monitoring wells were sampled using low-flow sampling methods. Monitoring wells were purged, and physical and chemical parameters stabilized before samples were taken.

A total of eleven soil vapor samples were collected for laboratory analysis, one from each soil vapor probe. Samples were collected in appropriately-sized Summa canisters that were certified clean by the laboratory. Sampling occurred for the duration of two hours.

QA/QC samples included equipment rinsate/field blanks, trip blanks, sample duplicates, and MS/MSDs.

Soil, groundwater, and soil vapor samples were submitted for laboratory analysis to Alpha Analytical Inc., an NYSDOH Environmental Laboratory Approval Program (ELAP)-certified laboratory located in Westborough, Massachusetts.

2.3 CHEMICAL ANALYSIS

The laboratory analyses performed on the soil, groundwater, and soil vapor samples are summarized below.

Soil samples were analyzed for the following parameters:

- Target Compound List (TCL) VOCs by USEPA Method 8260C/5035;
- TCL Semi-Volatile Organic Compounds (SVOCs) using USEPA Method by 8270D;
- Total Analyte List (TAL) Metals by USEPA Method 6010D/6020/Hg;
- TCL Polychlorinated Biphenyls (PCBs) by USEPA Method 8082A;
- TCL Pesticides by USEPA Method 8081B (for soil samples collected from the surface to 6 in. below the current surface grade only);
- Per- and polyfluoroalkyl substances (PFAS) by USEPA Method 1633; and
- 1,4-dioxane by USEPA Method 8270 SIM.

Groundwater samples collected were analyzed for the following parameters:

- TCL VOCs using USEPA Method 8260B;
- TCL SVOCs using USEPA Method 8270C;
- Total Metals (total chromium) using USEPA Methods 6010/7471;
- PCBs using USEPA Method 8082;
- Pesticides using USEPA Method 8081B;
- PFAS using USEPA Method 1633; and
- 1,4-dioxane using USEPA Method 8270D SIM isotope dilution.

Soil vapor samples were analyzed for VOCs using USEPA Method TO-15.

2.4 REMEDIAL INVESTIGATION FINDINGS SUMMARY

1. The Site's stratigraphy, from the current ground surface down, consists of contaminated fill consisting of brown silty sand with brick, concrete, and glass fragments to depths as great as 8 ft bgs. Brown silty sand with varying amounts of gravel, sand, and weathered rock underly the fill layer.
2. Groundwater was encountered at depths ranging from approximately 13 to 16 ft bgs, and groundwater beneath the Site generally flows to the south towards the Harlem River as shown in Figure 3.
3. Soil analytical results were compared to NYSDEC Unrestricted Use Soil Cleanup Objectives (UUSCOs), Restricted Residential Soil Cleanup Objectives (RRSCOs), and Protection of Groundwater Soil Cleanup Objectives (PGWSCOs). Soil analytical results are summarized below and shown in Figures 4 and 5:

Volatile Organic Compounds

VOCs were not detected in any soil samples above applicable standards.

Tetrachloroethene (PCE) was detected below applicable standards but above reporting limits in 20 soil samples, with six of those being estimated concentrations. Detections of PCE were reported in the 0 to 6 in., 6 to 8 ft, and 12 to 14 ft bgs intervals. The maximum reported concentration of PCE was 0.011 parts per million (ppm) in sample SB-04-03 (6-8').

Semi-Volatile Organic Compounds

Several SVOCs, specifically PAHs, were detected at concentrations exceeding the UUSCOs, RRSCOs, and/or PGWSCOs in soil samples collected from 0 to 6 in., 3 to 5 ft, and 6 to 8 ft bgs at the Site. Maximum concentrations of PAHs were greatest in soil sample DUP-01-02132023 collected from the 0 to 6-in. interval at the location of soil boring SB-14.

The maximum concentrations of compounds which exceeded UUSCOs, RRSCOs, and PGWSCOs included benzo(a)anthracene (52 ppm), benzo(a)pyrene (56 ppm), benzo(b)fluoranthene (56 ppm), benzo(k)fluoranthene (16 ppm), chrysene (47 ppm), and indeno(1,2,3-cd)pyrene (34 ppm).

The maximum concentrations of compounds which exceeded UUSCOs and RRSCOs included dibenzo(a,h)anthracene (6.2 ppm), fluoranthene (140 ppm), phenanthrene (150 ppm), and pyrene (130 ppm).

Dibenzofuran was also reported to exceed its UUSCO at a concentration of 10 ppm.

No other SVOCs were detected in any soil samples above applicable standards.

Metals

Several metals were detected at concentrations exceeding the UUSCOs, RRSCOs, and/or PGWSCOs in soil samples collected from 0 to 6 in., 3 to 5 ft, and 6 to 8 ft bgs at the Site. Concentrations of most metals were greatest in soil samples collected from the 0 to 6-in. interval.

Three metals were detected at concentrations exceeding the UUSCOs, RRSCOs, and PGWSCOs in surface soil samples collected at the Site. The maximum concentrations of barium (1,440 ppm) and lead (2,610 ppm) were reported in soil sample SB-13 (0-0.5') while the maximum concentration of mercury (2.98 ppm) was reported in soil sample SB-04-03 (6-8').

Five metals were detected at concentrations exceeding the UUSCOs and RRSCOs in shallow soil samples collected at the Site. The maximum concentrations of arsenic (15.2 ppm) and copper (242 ppm) were reported in soil sample SB-17 (3-5'). The maximum concentration of nickel (53.3 ppm) occurred in soil sample SB-01 (0-0.5'), selenium (4.24 ppm) in soil sample SB-04 (0-0.5'), and zinc (1,540 ppm) in soil sample SB-13 (0-0.5').

No other metals were detected in any soil samples above applicable standards.

Toxicity Characteristic Leaching Procedure (TCLP) Metals

Soil sample SB-05 (0-0.5') was collected from the location of previous soil sample HA-06_0-2, collected during the March 2022 Limited Phase II ESI, which had reported TCLP lead at a concentration of 13.4 milligrams per liter (mg/L). TCLP lead was reported in soil sample SB-05 (0-0.5') above the method detection limit (MDL) but below the reporting limit (RL) at an estimated concentration of 0.195 mg/L.

The maximum concentration of TCLP lead was reported in soil sample SB-03 (6-8') at a concentration of 3.3 mg/L.

Polychlorinated Biphenyls

PCBs were not detected above applicable standards in any soil samples.

Pesticides

The pesticides dieldrin, 4,4-DDD, 4,4-DDE, and 4,4-DDT were detected at concentrations exceeding the UUSCOs in soil samples collected from 0 to 6 in., 6 to 8 ft, and 12 to 14 ft bgs at the Site. The concentrations of the four pesticides were reported at a maximum concentration in soil sample SB-02 (6-8') with the exception of dieldrin which was reported at a maximum concentration in soil sample SB-13 (0-0.5').

The maximum concentrations of compounds which exceeded UUSCOs included dieldrin (0.0242 ppm), 4,4-DDD (0.00876 ppm), 4,4-DDE (0.0653 ppm), and 4,4-DDT (0.247 ppm).

No other pesticides were detected in any soil samples above applicable standards.

Emerging Contaminants

1,4-dioxane was not detected above laboratory detection limits in any soil samples collected at the Site.

Perfluorooctanesulfonic acid (PFOS) was detected above the UUSCO at a maximum concentration of 2.53 parts per billion (ppb) in soil sample SB-04-03 (6-8'). Perfluorooctanoic acid (PFOA) was detected above the UUSCO at a maximum concentration of 0.313 ppb in SB-04-03 (6-8').

Total PFAS compounds ranged from non-detect to a maximum concentration of 2.84 ppb in soil sample SB-04-03 (6-8').

4. Groundwater analytical results were compared to the NYSDEC Ambient Water Quality Standard (AWQS). Groundwater analytical results are summarized below and shown in Figures 6 and 7:

Volatile Organic Compounds

One VOC, PCE, was detected above the AWQS in groundwater sample MW-08 at a concentration of 8.0 micrograms per liter (µg/L).

No other VOCs were detected in any groundwater sample above the AWQS.

Semi-Volatile Organic Compounds

All groundwater samples reported one or multiple SVOCs, specifically PAHs, detected above the AWQS. The maximum concentrations all occurred in groundwater sample MW-11 and included benzo(a)anthracene (0.03 µg/L, which was also reported in MW-01, MW-02, and MW-03), benzo(a)pyrene (0.03 µg/L), benzo(b)fluoranthene (maximum concentration 0.03 µg/L), benzo(k)fluoranthene (0.03 µg/L), chrysene (0.02 µg/L), and indeno(1,2,3-cd)pyrene (0.1 µg/L).

All of the reported SVOC exceedances of the AWQS were estimated concentrations, with the exception of indeno(1,2,3-cd)pyrene in MW-11.

No other SVOCs were detected in any groundwater sample above the AWQS.

Dissolved Metals

Three dissolved metals were detected above the AWQS in several groundwater samples including magnesium (maximum concentration 186,000 µg/L in MW-08), selenium (maximum concentration 23.1 µg/L in MW-03), and sodium (maximum concentration 179,000 µg/L in MW-03).

Chromium was reported above the AWQS at a concentration of 120.6 µg/L in MW-03. Additionally, manganese was reported above the AWQS at a concentration of 645.5 µg/L in MW-08.

No other dissolved metals were detected above the AWQS in any groundwater sample.

Total Metals

Six total metals were detected above the AWQS in several groundwater samples including iron (maximum concentration 5,880 µg/L in MW-03), lead (maximum concentration 84.47 µg/L in MW-03), magnesium (maximum concentration 242,000 µg/L in MW-03), manganese (maximum concentration of 677.5 µg/L in MW-08), selenium (maximum concentration 20.6 in MW-11), and sodium (maximum concentration 206,000 µg/L) in MW-03.

Additionally, chromium was reported above the AWQS at a concentration of 186.2 µg/L in MW-03.

No other total metals were detected above the AWQS in any groundwater sample.

Polychlorinated Biphenyls

PCBs were not detected above laboratory detection limits in any groundwater sample.

Pesticides

Pesticides were not detected above laboratory detection limits in any groundwater sample.

Emerging Contaminants

Emerging contaminants PFOA/PFAS were compared to the February 2023 New York State Ambient Water Quality Standards and Guidance Values (NYSDEC GV) for PFOA and PFOS.

1,4-dioxane was not detected in groundwater samples above laboratory detection limits with the exception of an estimated concentration of 0.0628 µg/L in MW-11.

PFOA was detected above the NYSDEC GV for protection of human health in a raw water source of 6.7 parts per trillion (ppt) in five groundwater samples at a maximum concentration of 248 ppt in MW-06. PFOS was detected above the NYSDEC GV for protection of human health in a raw water source of 2.7 ppt in five groundwater samples at a maximum concentration of 38 ppt in MW-11.

The total concentration of PFAS compounds ranged from 3.1 ppt in MW-08 to a maximum concentration of 255 ppt in MW-06.

5. No standard currently exists for soil vapor samples in New York State. Soil vapor analytical results are summarized herein and shown in Figure 8. Total VOC concentrations ranged from 1,634.5 micrograms per cubic meter (µg/m³) in SV-01 to a maximum of 8,785.1 µg/m³ in SV-05. Four chlorinated volatile organic compounds (CVOs), vinyl chloride, methylene chloride, 1,1,1-trichloroethane, and PCE, were detected in soil vapor samples at the Site. Vinyl chloride was detected in two soil vapor samples with a maximum reported concentration of 2.39 µg/m³ in SV-06. Methylene chloride was detected in three soil vapor samples with a maximum reported concentration of 14 µg/m³ in SV-06. 1,1,1-Trichloroethane was detected in two soil vapor samples with a maximum reported concentration of 5.78 µg/m³ in SV-05. PCE was detected in all 11 soil vapor samples with a maximum reported concentration of 232 µg/m³ in SV-07. Several petroleum-related VOCs were detected above laboratory detection limits in all soil vapor samples at the Site including, but not limited to, benzene, toluene, ethylbenzene, and total xylenes (BTEX). Total BTEX concentrations ranged from 473.1 µg/m³ in SV-02 to a maximum of 2,878.3 µg/m³ in SV-05.

2.5 SIGNIFICANT THREAT

The NYSDEC and NYSDOH have determined this Site does not pose a significant threat to human health and the environment.

2.6 GEOLOGY AND HYDROGEOLOGY

2.6.1 Contaminated Fill Material

The Site's stratigraphy, from the current ground surface down, consists of contaminated fill consisting of brown silty sand with brick, concrete, and glass fragments to depths as great as 8 ft bgs. Brown silty sand with varying amounts of gravel, sand, and weathered rock underly the fill layer.

2.6.2 Native Soil

The contaminated fill material is underlain by a potential native layer consisting of brown silty sand with varying amounts of gravel, sand, and weathered rock under the fill layer.

2.6.3 Bedrock

Weathered bedrock was encountered during the RI at depths ranging from 15 to 25 ft bgs. Bedrock beneath the Site is identified as the Fordham Gneiss which consists of garnet-biotite-quartz-plagioclase gneiss and amphibolite.

2.6.4 Hydrogeology

Groundwater was encountered at approximately 13.78 to 16.07 ft bgs, and groundwater flow internally beneath the Site is from north to south. Regional groundwater flow is based on a review of information at nearby sites and local topographical and hydrological features; generally, the flow direction is assumed to be to the south towards the Harlem River.

2.7 CONTAMINANT CONDITIONS

2.7.1 Conceptual Site Model

A conceptual site model (CSM) was developed based on the findings of the RI performed in February 2023 under the BCP program. The CSM provides a framework for distribution of impacted materials sitewide and potential migration/exposure pathways. Contamination sources are attributed to former use of the Site including former auto garage and industrial operations. The Site is located in a commercial and residential mixed-use area with historic uses including light industrial, auto repair, and other auto-related operations which may indicate potential comingling off-Site impacts. Distribution of contamination is observed throughout the Site and discussion of migration pathways and mitigation thereof upon remedy implementation is detailed further in remaining subsections. Further detail of contamination is included in Section 2.4. Table 1 provides a summary of Soil Cleanup Objective Exceedances.

2.7.2 Potential Sources of Contamination

Subsurface soils impacted with elevated concentrations of metals, SVOCs, and, in some areas, pesticides are consistent with characteristics of fill found throughout the New York City area. Fill material varies throughout the Site extending to depths as great as 8 ft bgs.

Elevated levels of PAHs and dissolved/total metals are present in groundwater. The source of PAH and metals impacts to groundwater is attributed to fill material. The source of CVOCs and petroleum-related VOCs in soil vapor likely resulted from former industrial operations.

2.7.3 Description of Areas of Concern (AOCs)

Based on Site observations, Site development history, and the findings of the previous environmental reports, three AOCs were identified. This section discusses the results of the RI with respect to the AOCs.

2.7.4 AOC 1 – Site-Wide Fill in Subsurface Soils

Subsurface soils on Site are impacted with elevated concentrations of metals, SVOCs, and in some areas, pesticides. Contaminated fill material varies in depth throughout the Site extending to depths as great as 8 ft bgs.

2.7.5 AOC 2 – VOCs Impacts to Groundwater

PCE was detected above the AWQS in groundwater sample MW-08 collected from the southeast portion of the Site during the RI.

2.7.6 AOC 3 – Soil Vapor Impacts

Based on a review of analytical data collected during this RI, VOCs including petroleum-related VOCs and CVOCs have partitioned from soil and/or groundwater into the vapor phase. Four CVOCs, including vinyl chloride, methylene chloride, 1,1,1-trichloroethane, and PCE, and petroleum-related VOCs were detected in soil vapor samples above laboratory detection limits.

2.8 QUALITATIVE HUMAN EXPOSURE ASSESSMENT

A qualitative exposure assessment consists of characterizing the exposure setting (including the physical environment and potentially exposed human populations), identifying exposure pathways, and evaluating chemical fate and transport. An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has the following five elements:

1. Receptor population;
2. Contaminant source;
3. Contaminant release and transport mechanism;
4. Point of exposure; and
5. Route of exposure.

An exposure pathway is complete when all five elements of an exposure pathway are documented; a potential exposure pathway exists when any one or more of the five elements comprising an exposure pathway is not documented but could reasonably occur. An exposure pathway may be eliminated from further evaluation when any one of the five elements comprising an exposure pathway does not exist in the present and will not exist in the future.

2.8.1 Receptor Population

The receptor population includes the people who are or may be exposed to contaminants at a point of exposure. The identification of potential human receptors is based on the characteristics of the Site, the surrounding land uses, and the probable future land uses. The Site is currently undeveloped and vacant and secured with locked fencing at Site entrances. Since the Site is vacant, individual receptors would currently only include construction/maintenance workers that may be employed to perform work on the property.

The Site owner plans to redevelop the property for residential purposes, consistent with surrounding property use and zoning. Exposed receptors under the future use scenario may comprise residents of the future building, indoor employees, outdoor employees (e.g., groundskeepers or maintenance staff), and construction workers who may be employed at or perform work on the property. Site visitors may also be considered receptors; however, their exposure would be similar to that of the indoor employees but at a lesser frequency and duration. In addition, residents or employees in off-Site adjoining buildings have the potential to be exposed to vapors.

2.8.2 Contaminant Sources

The source of contamination is defined as either the source of contaminant release to the environment (such as a waste disposal area or point of discharge) or the impacted environmental medium (soil, air, water) at the point of exposure. Sections 6.0 and 7.0 discuss the Contaminants of Concern (COCs) present in the Site media at elevated concentrations above background levels. In general, these are metals, pesticides, and SVOCs (including PAHs) in soil; SVOCs (including PAHs), VOCs, and metals in groundwater; and petroleum-related VOCs and CVOCs in soil vapor.

2.8.3 Contaminant Release and Transport

Contaminant release and transport mechanisms carry contaminants from the source to points where people may be exposed and are specific to the type of contaminant and site use. For VOCs present in soil vapor, the potential exists for exposure through pathways associated with soil vapor intrusion (SVI). This would include the indoor vapor intrusion pathway (also referred to as “SVI”).

2.8.4 Exposure Points, Routes, and Mechanisms

The point of exposure is a location where actual or potential human contact with a contaminated medium may occur. Based on the exceedances of RRSCOs for SVOCs and heavy metals in soil, CVOC and petroleum-related VOC concentrations above laboratory detection limits in soil vapor, and exceedances of AWQS for SVOCs, VOCs, and metals in groundwater, the point of exposure is defined as the entire Site.

The route of exposure is the manner in which a contaminant actually enters or contacts the human body (e.g., ingestion, inhalation, dermal absorption). Based on the types of receptors and points of exposure identified above, potential routes of exposure are listed below:

Current Use Scenario: The Site is currently undeveloped, vacant, and secured with locked gates at Site entrances. Exposure to contaminated soil and contaminated groundwater is only possible during subsurface investigations and other activities that breach the concrete slab. Release and transport mechanisms include contaminated surface soil transported as dust, contaminated groundwater flow, and volatilization of contaminants from soil and/or groundwater into vapor phase.

- Site Visitors and Public Adjacent to the Site – inhalation, and incidental ingestion
- Construction/Utility/Site Investigation Worker – skin contact, inhalation, and incidental ingestion

Construction/Remediation Scenario: In the continued absence of engineering and institutional controls, there will be continued exposure pathways during construction/remediation specifically related to surface soil. Construction/remedial activities include excavation and off-Site disposal of soil and dewatering of impacted groundwater (if required) to facilitate the construction of the foundation elements. Release and transport mechanisms include disturbed and exposed soil during excavation, contaminated soil transported as dust, contaminated groundwater flow (dewatering, if required), inhalation of dust from contaminated soil, and volatilization of contaminants from soil and/or groundwater into vapor phase.

- Site Visitors and Public Adjacent to Site –inhalation and incidental ingestion
- Construction/Utility/Remediation Worker – skin contact, inhalation, and incidental ingestion

Future Use Scenario: The anticipated remedial approach includes excavation of contaminated soil, dewatering of groundwater accumulated in excavations (if required), and installation of a composite cover system as part of construction. In the event the preferred remedial alternative is not achieved, and engineering controls are required, a potential remedial alternative/element would be proposed such as a potentially active SSDS. In the absence of engineering and institutional controls, release and transport mechanisms include contaminated groundwater and volatilization of contaminants from soil and/or groundwater into the vapor phase. Routes of future exposure include cracks in the foundation or slab or emergency repairs to the foundation walls or slab.

- Construction/Utility Worker – skin contact, inhalation, and incidental ingestion
- Occupant/Employee/Visitor – inhalation
- Public Adjacent to the Site – inhalation

Contaminant release and transport mechanisms carry contaminants from the source to points where people may be exposed and are specific to the type of contaminant and Site use. For the VOCs (including CVOCs and petroleum-related VOCs) present in soil vapor and groundwater, the potential exists for exposure through pathways associated with soil vapor migration. This would include the indoor vapor intrusion pathway also referred to as “SVI”). Additional pathways could include inhalation, and incidental ingestion of VOCs present in soil and groundwater when and where construction workers are involved in subsurface activities where volatiles are present at elevated concentrations.

Concerning the indoor air pathway, the NYSDOH has issued a guidance document for assessing potential impacts to indoor air via SVI. SVI is a relevant transport mechanism under the current and future use scenarios. Concerning skin contact, inhalation, and incidental ingestion of volatile organics present in soil and groundwater, the potential is low for exposure to VOCs for construction workers involved in subsurface activities where volatiles are present at elevated concentrations, given the results of the RI.

2.9 EXPOSURE ASSESSMENT

Based on the above assessment, the potential exposure pathways for the current and future use conditions are listed below.

Current Use Scenario: Site COCs include metals, pesticides, and PAHs in soil; PAHs, VOCs, and metals in groundwater; and petroleum-related VOCs and CVOCs in soil vapor. Under current conditions, the likelihood of exposure to soil or groundwater is limited, as the Site is secured with locked entrances. Site

access is only granted to personnel associated with the planned development. Potable water for Kings County will continue to be sourced from reservoirs in the Catskill and Delaware Watersheds. All intrusive work on the Site is done in accordance with a Site-Specific Health and Safety Plan (HASP) and donning of personal protective equipment (PPE).

Construction/Remediation Scenario: The exposure element exists for each element during the construction/remediation phase. The overall risk will be minimized by the implementation of a Site-Specific Construction Health and Safety Plan (CHASP), localized monitoring of organic vapors, community air monitoring on the Site perimeter for particulates and VOCs, vapor and dust suppression techniques, installation of a stabilized entrance, cleaning truck tires and undercarriages, and donning of appropriate PPE. Additionally, the Site will be remediated under a RAWP which will include a Soil Materials Management Plan (SMMP) that will highlight measures for PPE, covering of stockpiles, housekeeping, suppression techniques (particulates and vapor), and measures to prevent off-Site migration of contaminants. In addition, the Site will be secured and inaccessible to the public during remedial construction.

Future Use Scenario: Under the proposed future condition (after construction/remediation), residual contaminants may remain on-Site depending on the remedy achieved. The remaining contaminants would include those listed in the current conditions. If contaminants remain on-Site above the proposed use Soil Cleanup Objectives (SCOs) after construction/remediation, the route of exposure will be mitigated by proper installation of engineering controls such as Site capping system foundation and implementation of institutional controls such as land use and groundwater use restrictions. In the event the SVI evaluation indicates potential soil vapor intrusion, a potential remedial alternative/element would be proposed such as a potentially active SSDS.

2.10 FISH AND WILDLIFE IMPACT ANALYSIS

NYSDEC DER-10 requires an on-Site and off-Site Fish and Wildlife Resource Impact Analysis if the stipulated criteria are met. The Site, which was developed in the early 1900s and has been operated for alcohol denaturing, freight station, bottling, and waterproofing and masonry operations, is located in the Mott Haven neighborhood of Bronx, New York. The Site provides little or no wildlife habitat or food value and/or access to the detected subsurface contamination. No natural waterways are present on or adjacent to the Site. The proposed future use of the Site is for residential purposes. As such, no unacceptable ecological risks are expected under the current and future use scenario.

2.11 REMEDIAL ACTION OBJECTIVES

The following Remedial Action Objectives (RAOs) have been identified for the Site.

2.11.1 Soil

RAOs for Public Health Protection:

- Prevent ingestion/direct contact with contaminated soil.

RAOs for Environmental Protection:

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

2.11.2 Groundwater

RAOs for Public Health Protection:

- Prevent ingestion of groundwater with contamination levels exceeding drinking water standards.
- Prevent contact with, or inhalation of, volatiles from contaminated groundwater.

RAOs for Environmental Protection

- Remove the source of ground or surface water contamination.

2.11.3 Soil Vapor

RAOs for Public Health Protection:

- Mitigate the risk of impacts to public health resulting from existing, or the potential for, soil vapor intrusion into building at a Site.

2.11.4 Protection of Human Health and the Environment

Alternative I – The remedy would significantly reduce the potential for each of the identified pathways of exposure to on-Site contaminated media. Remediating the Site to Track 1 standards would result in the elimination of Site soil that exceeds UUSCOs. Encountered underground storage tanks (USTs) would be decommissioned, removed, and disposed of off-Site, and petroleum-impacted material, if encountered, would be excavated and disposed of off-Site. The RAOs for public health and environmental protection would be met through the removal of contaminated media at the Site to meet UUSCOs and PGWSCOs, which would significantly reduce the potential for exposure pathways via possible ingestion, inhalation, or dermal contact.

Since no engineering or institutional controls will be required for this remedy to maintain the Site in the future, this remedy is the most protective of human health and the environment.

Alternative II – The Track 2 remedy will provide similar overall protection to public health and the environment as Alternative I. Remediating the Site to Track 2 standards will result in the removal of Site soil that exceeds RRSCOs. Encountered USTs would be decommissioned, removed, and disposed of off-Site, and petroleum-impacted material, if encountered, would be excavated, and disposed of off-Site. The RAOs for public health and environmental protection would be met through the removal of contaminated media at the Site to meet RRSCOs, which would significantly reduce the potential for exposure pathways via possible ingestion, inhalation, or dermal contact.

The implementation of engineering and institutional controls will be required for this remedy to maintain the Site in the future; therefore, this remedy is protective of human health and the environment.

Public health will be protected during remediation under both remedial alternatives by implementing and enforcing dust, odor, and organic vapor control and monitoring procedures when needed.

3. Summary of Remedial Action

This section presents an analysis of the proposed remedial alternatives that could potentially be achieved under the BCP. The proposed SCOs under Alternative I would be the Part 375 UUSCOs under a Track 1 cleanup. Alternative II would utilize Part 375 RRSCOs under a Track 2 cleanup. Both alternatives would achieve the established RAOs outlined in Section 2.9. Following evaluation, Alternative II was selected as the preferred remedy.

3.1 ALTERNATIVE I – TECHNICAL DESCRIPTION

Alternative I, a Track 1 remedy, will include the following:

1. Development and implementation of a CHASP and Community Air Monitoring Plan (CAMP) for the protection of on-Site workers, community/residents, and the environment during remediation and construction activities.
2. Design and construction of a support-of-excavation (SOE) system to support the Track 1 remediation.
3. Implementation of soil erosion, pollution, and sediment control measures in compliance with applicable laws and regulations.
4. Removal of the existing pavement and miscellaneous debris from the Site.
5. Decommissioning of on-Site monitoring wells, as necessary, in accordance with NYSDEC CP-43 Policy.
6. Excavation, stockpiling, off-Site transport, and disposal of approximately 3,900 cubic yards (cu yd) of contaminated fill material and soil that exceeds UUSCOs as defined by 6 NYCRR Part 375-6.8. Excavation will be to 8 ft bgs on the western portion of the Site and 5 ft bgs on the eastern portion of the Site. A 10 ft by 10 ft hotspot surrounding soil boring SB-4 will extend to approximately 10 ft bgs.
7. If encountered, removal of USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) and decommissioning and off-Site disposal during redevelopment in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC Commissioners Policy-51 (CP-51), and other applicable NYSDEC UST closure requirements.
8. Screening for indications of contamination (by visual means, odor, and monitoring photoionization detectors [PIDs]) of excavated material during intrusive Site work.
9. Implementation of a preliminary waste characterization to facilitate off-Site disposal of excavated soil/fill. As part of waste characterization and for disposal purposes, a lateral and vertical delineation of elevated total metals hotspots will be completed to facilitate off-Site disposal of excavated soil/fill. Material from 0 to 2 ft bgs surrounding soil sample SB-05 (0-0.5') collected during the RI (from the location of previous soil sample HA-06_0-2 collected in the March 2022 Limited Phase II ESI) will be resampled for hazardous lead material and delineated as part of the waste characterization event.

10. Appropriate off-Site disposal of material removed from the Site in accordance with federal, state, and local rules and regulations for handling, transport, and disposal.
11. Backfill the Site as needed for the development with certified-clean fill/soil (i.e., meeting the Allowable Constituent Levels for Imported Fill or Soil as per unrestricted use defined in DER-10 Appendix 5), recycled concrete aggregate (RCA), or virgin, native crushed stone.
12. Collection and analysis of confirmation soil samples at the proposed remediation depths in accordance with DER-10 to confirm a Track 1 remedy was achieved. If the proposed confirmation sample exceeds Track 1 UUSCOs, over-excavation and additional confirmation sampling may be performed to ensure all impacted material has been removed from the Site.
13. Completion of a SVI Evaluation in accordance with DER-10 and NYSDOH Final Guidance on Soil Vapor Intrusion following remedial excavation activities and prior to occupancy.

The requirements for each of the Alternative I tasks are described below.

On-Site Worker, Public Health, and Environmental Protection

A Site-specific CHASP is appended to this RAWP (Appendix D) and would be enforced during excavation and foundation construction to protect on-Site workers from accidents and acute and chronic exposures to the identified contaminated media. Public health would be protected by implementing and enforcing dust, odor, and organic vapor control and monitoring procedures included in the CAMP. The CAMP would include continuous perimeter monitoring of dust and organic vapor using DustTrak aerosol monitors and PIDs capable of recording data and calculating 15-minute averages. Field personnel would monitor Site perimeters for visible dust and odors.

Support-of-Excavation

A SOE system will be installed to accommodate removal of soil that exceeds Track 1 UUSCOs. The SOE elements will be designed and installed as per the New York City Department of Building (NYCDOB) Code. Excavations are anticipated to be completed at the water table.

Fill and Soil Removal

To achieve Track 1, soil removal and disposal will extend to 8 ft bgs on the western portion of the Site and 5 ft bgs on the eastern portion. A 10 ft by 10 ft hotspot surrounding soil boring SB-4 will extend to approximately 10 ft bgs. The Alternative I excavation plan is shown in Figure 9.

The estimated volume of material requiring removal and off-Site disposal for a Track 1 cleanup is approximately 3,900 cu yd. All excavated soil will be screened for visual, olfactory, and instrumental evidence of environmental impacts.

UST Removal

USTs, if encountered, and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) will be decommissioned in accordance with applicable NYSDEC tank closure requirements, including those defined in DER-10 Section 5.5 and 6 NYCRR Part 613.9, and NYSDEC CP-51. USTs and/or associated appurtenances will be registered and administratively closed with the NYSDEC Petroleum Bulk Storage

(PBS) unit. If encountered, petroleum-impacted soil will be excavated and disposed of off-Site at a permitted disposal facility in accordance with applicable regulations. Closure documentation, such as Contractor affidavits, bills of lading for sludge disposal, and tank disposal receipts, would be provided as appendices in the Final Engineering Report (FER).

Fluids Management

Dewatering is not anticipated as part of this remedial alternative; however, if encountered, liquids removed from the Site, including dewatering fluids, would be handled, transported, and disposed of in accordance with applicable local, state, and federal regulations. Fluids would not be recharged back to the land surface or subsurface. Liquids discharged into the New York City sewer system will be addressed through approval by the New York City Department of Environmental Protection (NYCDEP). Based on the depth to water, dewatering is not anticipated to facilitate excavation of material that exceeds the UUSCOs and construction of foundation components. In the event dewatering is necessary, discharge will not commence prior to NYCDEP approval.

Backfill

Imported material would consist of clean fill that meets the UUSCOs or other acceptable fill material such as virgin stone from a quarry. NYSDEC Request to Import/Reuse forms will be submitted, and a template is provided in Appendix E.

Confirmation Soil Sampling

Per NYSDEC DER-10, confirmation soil samples would be collected from the bottom of the proposed remedial excavation at a frequency of one per 900 sq ft to confirm the attainment of UUSCOS. An estimated 17 confirmation soil samples, plus QA/QC samples, would be collected. Confirmation soil samples will be analyzed for the Part 375 list of VOCs, SVOCs, pesticides, PCBs, metals (including trivalent and hexavalent chromium), PFAS, and 1,4-dioxane. A total of four sidewall samples will be collected from the sidewalls of the proposed hotspot surrounding SB-4 and will be analyzed for SVOCs and metals. Of note, trivalent chromium, hexavalent chromium, and selenium will also be compared to the PGWSCOs.

Post-Remedy SVI Evaluation

Several VOCs were detected at elevated concentrations in soil vapor samples. Following remedial actions and prior to occupancy, a SVI Evaluation will be conducted to determine whether engineer controls will be required to address potential soil vapor intrusion at the Site and submitted to NYSDEC and NYSDOH. Because the building slab will be at the groundwater table, the SVI Evaluation will not include soil vapor sampling but include visual evaluation of the composite cover to confirm lack of vapor intrusion pathways and an indoor air sample. Should the SVI Evaluation indicate soil vapor intrusion, a potential remedial alternative/element would be proposed.

3.2 ALTERNATIVE II – TECHNICAL DESCRIPTION

Alternative II, a Track 2 remedy, will include the following tasks:

1. Development and implementation of a CHASP and CAMP for the protection of on-Site workers, community/residents, and the environment during remediation and construction activities.
2. Design and construction of a SOE system to support the Track 2 remediation.
3. Implementation of soil erosion, pollution, and sediment control measures in compliance with applicable laws and regulations.
4. Removal of the existing pavement and miscellaneous debris from the Site.
5. Decommissioning of on-Site monitoring wells, as necessary, in accordance with NYSDEC CP-43 Policy.
6. Excavation, stockpiling, off-Site transport, and disposal of approximately 3,100 cu yd of contaminated fill material and soil that exceeds RRSCOs as defined by 6 NYCRR Part 375-6.8. Excavation will be to 8 ft bgs within the western portion of the proposed building footprint and 2 ft within the eastern portion of the proposed building footprint and the area outside of the proposed building footprint to the north. A 10 ft by 10 ft hotspot surrounding soil boring SB-4 will extend to approximately 10 ft bgs to remove deeper material that exceeds RRSCOs.
7. If encountered, removal of USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) and decommissioning and off-Site disposal during redevelopment in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements.
8. Screening for indications of contamination (by visual means, odor, and monitoring PIDs) of excavated material during intrusive Site work.
9. Implementation of a preliminary waste characterization to facilitate off-Site disposal of excavated soil/fill. As part of waste characterization and for disposal purposes, a lateral and vertical delineation of elevated total metals hotspots will be completed to facilitate off-Site disposal of excavated soil/fill. Material from 0 to 2 ft bgs surrounding soil sample SB-05 (0-0.5') collected during the RI (from the location of previous soil sample HA-06_0-2 collected in the March 2022 Limited Phase II ESI) will be resampled for hazardous lead material and delineated as part of the waste characterization event.
10. Appropriate off-Site disposal of material removed from the Site in accordance with federal, state, and local rules and regulations for handling, transport, and disposal.
11. Backfill the Site as needed for the development with certified-clean fill/soil (i.e., meeting the Allowable Constituent Levels for Imported Fill or Soil as per unrestricted use defined in DER-10 Appendix 5), RCA, or virgin, native crushed stone.
12. Collection and analysis of confirmation soil samples at the proposed remediation depths in accordance with DER-10 to confirm a Track 2 remedy was achieved. If the proposed confirmation sample exceeds Track 2 RRSCOs, over-excavation and additional confirmation sampling may be performed to ensure all impacted material has been removed from the Site.
13. Completion of an SVI Evaluation in accordance with DER-10 and NYSDOH Final Guidance on Soil Vapor Intrusion following remedial excavation activities and prior to occupancy.
14. Establish a SMP for Institutional Controls (IC) that includes an IC plan.
15. Recording of an Environmental Easement to restrict use of the Site.

The requirements for each of the Alternative II tasks are described below.

On-Site Worker, Public Health, and Environmental Protection

A Site-specific CHASP is appended to this RAWP (Appendix D) and would be enforced during excavation and foundation construction to protect on-Site workers from accidents and acute and chronic exposures to the identified contaminated media. Public health would be protected by implementing and enforcing dust, odor, and organic vapor control and monitoring procedures included in the CAMP. The CAMP would include continuous perimeter monitoring of dust and organic vapor using DustTrak aerosol monitors and PIDs capable of recording data and calculating 15-minute averages. Field personnel would monitor Site perimeters for visible dust and odors.

Support-of-Excavation

An SOE system will be installed to accommodate removal of soil that exceeds Track 2 RRSCOs. The SOE elements will be designed and installed as per the NYCDOB Code.

Fill and Soil Removal

To achieve Track 2 cleanup, soil removal and disposal will extend to 8 ft bgs within the western portion of the proposed building footprint and 2 ft within the eastern portion of the proposed building footprint and the area outside of the proposed building footprint to the north. A 10 ft by 10 ft hotspot surrounding soil boring SB-4 will extend to approximately 10 ft bgs. The Alternative II excavation plan is shown in Figure 10.

The estimated volume of material requiring removal and off-Site disposal for a Track 2 cleanup is approximately 3,100 cu yd. All excavated soil will be screened for visual, olfactory, and instrumental evidence of environmental impacts.

UST Removal

USTs, if encountered, and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) will be decommissioned in accordance with applicable NYSDEC tank closure requirements, including those defined in DER-10 Section 5.5 and 6 NYCRR Part 613.9, and NYSDEC CP-51. USTs and/or associated appurtenances will be registered and administratively closed with the NYSDEC PBS unit. If encountered, petroleum-impacted soil will be excavated and disposed of off-Site at a permitted disposal facility in accordance with applicable regulations. Closure documentation, such as Contractor affidavits, bills of lading for sludge disposal, and tank disposal receipts, would be provided as appendices in the FER.

Backfill

As required for construction purposes, imported material will consist of clean fill that meets the lower of PGWSCOs or RRSCOs or other acceptable fill material such as virgin stone from a quarry or RCA. If RCA is imported to the Site, it will come from a NYSDEC-registered facility in compliance with 6 NYCRR Part 360 registration and permitting requirements for the period of RCA acquisition. RCA imported from compliant facilities will not require chemical testing, unless required by NYSDEC under its terms for

operation of the facility. Imported RCA must be derived from recognizable and uncontaminated concrete (less than 10 percent by weight passing through a No. 80 sieve). RCA is not acceptable for, and will not be used as, Site cover or drainage material. NYSDEC Request to Import/Reuse forms will be submitted, and a template is provided in Appendix E.

Documentation Soil Sampling

Per NYSDEC DER-10, confirmation soil samples would be collected from the bottom of the proposed remedial excavation at a frequency of one per 900 sq ft to confirm the attainment of RRSCOs. An estimated 17 confirmation soil samples, plus QA/QC samples, would be collected. Confirmation soil samples will be analyzed for the Part 375 list of VOCs, SVOCs, pesticides, PCBs, metals (including trivalent and hexavalent chromium), PFAS, and 1,4-dioxane. A total of four sidewall samples will be collected from the sidewalls of the proposed hotspot surrounding SB-4 and will be analyzed for SVOCs and metals. Of note, trivalent chromium, hexavalent chromium, and selenium will also be compared to the PGWSCOs.

Post-Remedy SVI Evaluation

Several VOCs were detected at elevated concentrations in soil vapor samples. Following remedial actions and prior to occupancy, a SVI Evaluation will be conducted to determine whether engineer controls will be required to address potential soil vapor intrusion at the Site and submitted to NYSDEC and NYSDOH. Because the building slab will be at the groundwater table, the SVI Evaluation will not include soil vapor sampling but include visual evaluation of the composite cover to confirm lack of vapor intrusion pathways and an indoor air sample. Should the SVI Evaluation results indicate soil vapor intrusion, a potential remedial alternative/element would be proposed.

Environmental Easement

An Environmental Easement (EE) would be recorded referencing ICs that are part of the selected remedy, which would be binding upon all subsequent owners and occupants of the property. The ICs would: 1) restrict the Site's use to restricted residential, commercial, and industrial uses, although land use is subject to local zoning laws; 2) restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDEC or NYSDOH; 3) require the completion and submission to the NYSDEC a periodic certification of ICs in accordance with Part 375; and 4) include notice-of-use restrictions of the Site's soil.

3.3 EVALUATION OF REMEDIAL ALTERNATIVES

The following is an evaluation of the proposed remedy based on the BCP remedy evaluation criteria listed below. The first two criteria are considered "threshold criteria" and the remaining criteria are "balancing criteria." A remedial alternative must meet the threshold criteria to be considered and evaluated further under the balancing criteria.

- Protection of human health and the environment
- Compliance with standards, criteria, and guidance (SCG)
- Short-term effectiveness and impacts

- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, or volume of contaminated material
- Implementability
- Cost-effectiveness
- Community acceptance
- Land use

3.3.1 Compliance with Standards, Criteria, and Guidance

Both alternatives will be in compliance with applicable standards, criteria, and guidance listed in Section 4.1 by removing Site sources of contamination to achieve the RAOs. While implementing either remedy, protection of public health and the environment will be maintained by enforcing a Site-specific CHASP and CAMP. Occupational Safety and Health Administration (OSHA) requirements for on-Site construction safety will be followed by Site contractors performing work.

3.3.2 Short-Term Effectiveness and Impacts

Alternative I – The most significant short-term adverse impacts and risks to the community will be the potential complications and risks involved with designing and constructing SOE and underpinning for the building and structures adjoining the Site. Potential impositions on roadway and pedestrian traffic associated with construction may be a result of the remedial excavation to achieve both Track 1 cleanup. Increased truck traffic in Alternative I, relative to Alternative II, may be necessary to haul out the additional soil that exceeds UUSCOs to achieve Track 1 standards.

Under Alternative I, the excavated soil and fill would require approximately 195, 20-cu-yd truck trips for disposal. Implementing Alternative I would require approximately five to six months of effort (assuming normal work hours). Truck traffic will be routed on the most direct course using major thoroughfares where possible, and flaggers will be used to protect pedestrians at Site entrances and exits. Waiting times associated with analysis of confirmation sampling and resampling may delay construction, leaving soil exposed for a longer time resulting in a potential increase in dust, odors, and/or organic vapor from the excavation and construction-related noise. The effects of these potential adverse impacts to the community, workers, and the environment will be minimized by implementing the respective control plans.

Alternative II – Alternative II will result in similar short-term adverse impacts and risks to the community. The excavated soil and fill would require approximately 155, 20-cu-yd truck trips. Implementing the Alternative II concept would require approximately four to five months of effort (assuming normal work hours).

Under both remedial alternatives, dust will be controlled by the on-Site application of water spray as needed. Engineering controls, such as slowing the pace of work, applying foam and/or dust suppressant, and/or covering portions of the excavation will be used to suppress odors/dust when required. Work will be modified or stopped according to the action levels defined in the CAMP. Therefore, short-term impacts are similar for both alternatives.

3.3.3 Long-Term Effectiveness and Performance

Alternative I will remove contaminated soil from the Site exceeding UUSCOs while Alternative II will remove contaminated soil from the Site exceeding RRSCOs and will be documented in post-excavation endpoint soil sampling. A post-construction SVI Evaluation would be implemented to evaluate potential for vapor intrusion into the on-Site building.

3.3.4 Reduction of Toxicity, Mobility, or Volume of Contaminated Material

Both remedial alternatives would permanently and significantly reduce the toxicity, mobility, and volume of contamination through removal of contaminated fill and buried solid waste through excavation and off-Site disposal.

3.3.5 Implementability

Alternative I – Implementing a Track 1 remedy will be technically challenging because of SOE requirements associated with protection of the neighboring buildings and streets; however, the construction of SOE systems to allow for excavations to depths of the Alternative I remedy are regularly installed. This remedy will consist primarily of excavation with standard bucket excavators. The availability of local contractors, personnel, and equipment suitable to working in a structurally challenging environment is high due to the frequency of this type of remediation in the region. It is not expected to require schedule extensions or additional costs associated with the excavation and SOE. However, if deeper contamination above UUSCOs is encountered requiring unanticipated over-excavation, the cost is marginal compared to the benefit of achieving an unrestricted use remediation and elimination of long-term institutional controls. Additional coordination between trades may be required. This alternative is considered feasible.

Alternative II – The technical feasibility of implementing the Alternative II remedy is similar to Alternative I, as significant excavation as well as installation of an SOE is still required to achieve the Track 2 RRSCOs. This alternative will consist primarily of excavation with standard bucket excavators. The availability of local contractors, personnel, and equipment suitable to working in a structurally challenging environment is high due to the frequency of this type of remediation in the region. Additional coordination between trades may be required. This alternative is considered feasible.

3.3.6 Cost-Effectiveness

Alternative I – Based on the assumptions detailed for Alternative I, the estimated remediation cost of a Track 1 cleanup is approximately \$2,907,000. Because the Site will be remediated to UUSCOs, there are no long-term operation, maintenance, or monitoring costs associated with the proposed remedy. Table 2 details the individual cost components used to arrive at this cost estimate.

Alternative II – Based on the assumptions detailed for Alternative II, the estimated remediation cost to achieve a Track 2 cleanup is approximately \$2,654,000. Alternative II is more cost-effective and also does not require long-term operation, maintenance, or monitoring costs. Table 3 outlines the individual cost-components used to arrive at this cost estimate.

3.3.7 Community Acceptance

Both remedial alternatives should be acceptable to the community because the potential exposure pathways to on-Site contamination will be addressed upon completion of the respective remedies and the Site will be remediated to allow for a higher-level use. The selected remedy will be subject to a 45-day public comment period in accordance with the Citizen Participation Plan (CPP), included as Appendix F. Substantive public comments will be addressed before the remedy is approved.

3.3.8 Land Use

The current, intended, and reasonably anticipated future residential land use of the Site and its surroundings are compatible with both remedial alternatives. The proposed development will include construction of a residential building encompassing the majority of the Site footprint with a cellar extending to approximately 12 ft from sidewalk grade. Mid-rise mixed-use commercial/residential, and multiple-story commercial and institutional buildings are located at properties surrounding the Site.

3.4 SELECTION PREFERRED REMEDY

Both alternatives will be protective of human health and the environment and meet the remedy selection criteria. Alternative I achieves the remedial action goals established for the redevelopment project and is effective in the short-term. Alternative I is feasible, but very challenging due to the potential damage to existing neighboring structures from SOE installation. Alternative II effectively reduces contaminant mobility. Alternative I is more effective in the long-term because the Site achieves unrestricted use. The excavation plan for Alternative I requires more material excavation and disposal than Alternative II, however, access issues may preclude the Site from achieving the Alternative I remedy. Alternative II is preferred over Alternative I as it can be feasibly and practically implemented at a lesser cost while providing similar overall protection to human health and the environment. Therefore, Alternative II is the recommended remedial alternative for this Site.

Figure 9 depicts the preferred Alternative II (Track 2) cleanup plan. Figure 10 depicts the Alternative II (Track 2) cleanup plan. The Alternative I and II remediation extent is based on data presented in the RIR.

3.4.1 Zoning

The Site is currently located within a residential and manufacturing (R6A/M1-2) zoning district, part of a Special Mixed-Use (MX-1) district. The Site is located in a mixed-use area characterized by warehouses, open space, commercial, industrial, and residential buildings and is served by municipal water and sewer. The Volunteer plans to redevelop the Site for residential purposes (including affordable housing) consistent with current zoning.

3.4.2 Applicable Comprehensive Community Master Plans or Land Use Plans

While there are no applicable comprehensive community master plans or land use plans associated with the neighborhood where the Site is located, development trends include the promotion of affordable housing preservation, encouragement of economic development and creation of pedestrian-friendly streets. The proposed affordable housing components and redevelopment plan are consistent with the

reasonably anticipated development patterns of the area. A copy of the zoning map is included in Appendix B.

3.4.3 Surrounding Property Uses

The current, intended, and reasonably anticipated future land use of the Site and its surroundings are compatible with the selected remedy. The construction of a new residential development conforms to recent development patterns in the area and current zoning.

3.4.4 Environmental Justice Concerns

The Site is located within a potential Environmental Justice Area. Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and politics. NYSDEC's Office of Environmental Justice acts as an advocate on behalf of these areas, which are disproportionately affected by environmental burdens.

3.4.5 Land Use Designations

There are no federal or state land use designations.

3.4.6 Population Growth Patterns

The population growth patterns and projections support the current and anticipated future land use.

3.4.7 Accessibility to Existing Infrastructure

The Site is accessible to existing infrastructure.

3.4.8 Proximity to Cultural Resources

The Site is not in close proximity to a registered landmark. The nearest registered landmark is a historic district building located at 422 East 136th Street approximately 600 ft north of the Site.

3.4.9 Proximity to Natural Resources

The Site is not located in close proximity to important federal, state, or local natural resources including waterways, wildlife refuges, wetlands, and critical habitats of endangered or threatened species. The nearest ecological receptor is the Harlem River, which is located approximately 500 ft southwest

3.4.10 Off-Site Groundwater Impacts

Municipal water supply wells are not present in this area of New York City; therefore, groundwater from the Site does not affect municipal water supply wells or recharge areas.

3.4.11 Proximity to Floodplains

According to the Federal Emergency Management Agency (FEMA) Preliminary Flood Insurance Rate Map (FIRM) dated 5 September 2007 (Map Number 3604970091F), the Site is not within a floodplain.

3.4.12 Geography and Geology of the Site

The Site geology is described in Section 2.6.

3.4.13 Current Institutional Controls

There are currently no institutional controls being implemented at the Site.

3.5 SUMMARY OF THE SELECTED REMEDIAL ACTION

The selected Alternative II, Track 2 remedy will include the following:

1. Development and implementation of a CHASP and CAMP for the protection of on-Site workers, community/residents, and the environment during remediation and construction activities.
2. Design and construction of a SOE system to support the Track 2 remediation.
3. Implementation of soil erosion, pollution, and sediment control measures in compliance with applicable laws and regulations.
4. Removal of the existing pavement and miscellaneous debris from the Site.
5. Decommissioning of on-Site monitoring wells, as necessary, in accordance with NYSDEC CP-43 Policy.
6. Excavation, stockpiling, off-Site transport, and disposal of approximately 3,100 cu yd of contaminated fill material and soil that exceeds RRSCOs as defined by 6 NYCRR Part 375-6.8. Excavation will be to 8 ft bgs within the western portion of the proposed building footprint and 2 ft within the eastern portion of the proposed building footprint and the area outside of the proposed building footprint to the north. A 10 ft by 10 ft hotspot surrounding soil boring SB-4 will extend to approximately 10 ft bgs.
7. If encountered, removal of USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) and decommissioning and off-Site disposal during redevelopment in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements.
8. Screening for indications of contamination (by visual means, odor, and monitoring PIDs) of excavated material during intrusive Site work.
9. Implementation of a preliminary waste characterization to facilitate off-Site disposal of excavated soil/fill. As part of waste characterization and for disposal purposes, a lateral and vertical delineation of elevated total metals hotspots will be completed to facilitate off-Site disposal of excavated soil/fill. Material from 0 to 2 ft bgs surrounding soil sample SB-05 (0-0.5') collected during the RI (from the location of previous soil sample HA-06_0-2 collected in the

March 2022 Limited Phase II ESI) will be resampled for hazardous lead material and delineated as part of the waste characterization event.

10. Appropriate off-Site disposal of material removed from the Site in accordance with federal, state, and local rules and regulations for handling, transport, and disposal.
11. Backfill the Site as needed for the development with certified-clean fill/soil (i.e., meeting the Allowable Constituent Levels for Imported Fill or Soil as per unrestricted use defined in DER-10 Appendix 5), RCA, or virgin, native crushed stone.
12. Collection and analysis of confirmation soil samples at the proposed remediation depths in accordance with DER-10 to confirm a Track 2 remedy was achieved. If the proposed confirmation sample exceeds Track 2 RRSCOs, over excavation and additional confirmation sampling may be performed to ensure all impacted material has been removed from the Site.
13. Completion of an SVI Evaluation in accordance with DER-10 and NYSDOH Final Guidance on Soil Vapor Intrusion following remedial excavation activities and prior to occupancy.
14. Recording of an Environmental Easement to restrict use of the Site.

Remedial activities will be performed in accordance with this RAWP and the NYSDEC-issued Decision Document under the oversight of a New York State-Licensed Professional Engineer. Deviations from the RAWP and/or Decision Document will be promptly reported to the NYSDEC for approval and explained in the FER.

4. Remedial Action Program

4.1 GOVERNING DOCUMENTS

The primary documents governing the remedial action are summarized in this section.

4.1.1 Standards, Criteria and Guidance

The following standards, criteria, and guidance are typically applicable to Remedial Action projects in New York State, and will be consulted and adhered to as applicable:

- 29 Code of Federal Regulations (CFR) Part 1910.120 – Hazardous Waste Operations and Emergency Response
- 6 NYCRR Part 364 – Waste Transporter Permits
- 6 NYCRR Part 371 – Identification and Listing of Hazardous Wastes
- 6 NYCRR Part 372 – Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities
- 6 NYCRR Subpart 373-4 – Facility Standards for the Collection of Household Hazardous Waste and Hazardous Waste from Conditionally Exempt Small Quantity Generators
- 6 NYCRR Subpart 374-1 – Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
- 6 NYCRR Subpart 374-3 – Standards for Universal Waste
- 6 NYCRR Part 375 – Environmental Remediation Programs
- 6 NYCRR Part 376 – Land Disposal Restrictions
- 6 NYCRR Part 750 – State Pollutant Discharge Elimination System (SPDES) Permits
- CFR Title 29 Part 1910.120 - Hazardous Waste Operations and Emergency Response Standard
- CFR Title 29 Part 1926 - Safety and Health Regulations for Construction
- CP-43 – Commissioner Policy on Groundwater Monitoring Well Decommissioning (December 2009)
- NYSDEC Spill Response Guidance Manual
- NYSDEC Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances Under NYSDEC's Part 375 Remedial Programs (April 2023)
- CP-51 – Soil Cleanup Guidance (2010)
- DER-10 – Technical Guidance for Site Investigation and Remediation (May 3, 2010)
- DER-23 – Citizen Participation Handbook for Remedial Programs (March 2010)

- NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006)
- TOGS 1.1.1 – Ambient Water Quality Standards & Guidance Values and Groundwater Effluent Limitations
- Screening and Assessment of Contaminated Sediment (Division of Fish, Wildlife and Marine Resources, June 2014)

4.1.2 Construction Health and Safety Plan

A Site-specific CHASP has been prepared (Appendix D). The CHASP will apply to remedial and construction-related work on Site. The CHASP provides a mechanism for establishing on-Site safe working conditions, safety organization, procedures, and PPE requirements during implementation of the remedy. The CHASP meets the requirements of 29 CFR 1910 and 29 CFR 1926 (which includes 29 CFR 1910.120 and 29 CFR 1926.65, respectively). The CHASP includes, but is not limited to, the following components:

- Organization and identification of key personnel
- Training requirements
- Medical surveillance requirements
- List of Site hazards
- Excavation safety
- Drill rig safety
- Work zone descriptions and monitoring procedures
- Personal safety equipment and PPE requirements
- Decontamination requirements
- Standard operating procedures
- Contingency plan
- CAMP
- Safety data sheets (SDS)

The Volunteer and associated parties preparing the remedial documents submitted to New York State and those performing the construction work are responsible for the preparation of a CHASP and for performance of the work according to the CHASP and applicable laws. The CHASP and requirements defined in this RAWP pertain to remedial and ground-intrusive work performed at the Site until the issuance of a Certificate of Completion. The Haley & Aldrich Safety Coordinator will be Brian Ferguson, a resume for whom is included in Appendix G. If required, confined space entry will comply with OSHA requirements to address the potential risk posed by combustible and toxic gasses.

4.1.3 Quality Assurance Project Plan (QAPP)

A QAPP has been prepared that describes the quality control components that will ensure that the proposed remedy accomplishes the remedial goals and RAOs and is completed in accordance with the design specifications. The QAPP is provided as Appendix G and includes:

- Responsibilities of key personnel and their organizations for the proposed remedy;
- Qualifications of the quality assurance officer;
- Sampling requirements including methodologies, quantity, volume, locations, frequency, and acceptance and rejection criteria; and
- Description of the reporting requirements for quality assurance activities including weekly quality assurance review reports.

4.1.4 Construction Quality Assurance Plan (CQAP)

A CQAP has been prepared that describes the quality control components that will ensure that the proposed remedy accomplishes the remedial goals and RAOs and is completed in accordance with the design specifications. Because the remedy will be accomplished concurrently with building construction, the Contractor and construction manager will have the primary responsibility to provide construction quality. A list of engineering personnel involved in implementation of the CQAP and procedures that will be carried out by the remedial engineering team are listed in Section 4.2.1. Project personnel resumes are provided in Appendix G.

4.1.5 Soil/Materials Management Plan

A SMMP has been prepared that includes detailed plans for managing soils/materials that are disturbed at the Site, including excavation, handling, storage, transport, and disposal. The SMMP also includes controls that will be applied to these efforts to facilitate effective, nuisance-free performance in compliance with applicable federal, state, and local laws and regulations (see Section 5.4).

4.1.6 Stormwater Pollution Prevention Plan (SWPPP)

Erosion and sediment controls will be implemented as necessary in conformance with requirements presented in the New York State Guidelines for Urban Erosion and Sediment Control. Best management practices for soil erosion and sediment control will be selected to minimize erosion and sedimentation off-Site from the onset of remediation to the completion of development. Stormwater pollution prevention will be implemented as described below in Section 5.4.9. A SWPPP is not necessary because the project will disturb less than 1 acre, and stormwater discharge will be to a combined sewer in accordance with the New York City generic SPDES permit.

4.1.7 Community Air Monitoring Program

Details of the CAMP are discussed in section 5.4.11.

4.1.8 Contractors Site Operations Plan

The Remediation Engineer (RE) will review plans and submittals for this remedial project, Contractor and subcontractor document submittals, and will confirm that plans and submittals are in compliance with this RAWP. The RE is responsible to ensure that later document submittals for this remedial project, including Contractor and subcontractor document submittals, are in compliance with this RAWP. Remedial documents, including Contractor and subcontractor document submittals, will be submitted to the NYSDEC and NYSDOH in a timely manner and prior to the start of work associated with the remedial document.

4.1.9 Citizen Participation Plan

Document repositories were established at the following locations and contain the applicable project documents:

1. Bronx Public Library – Mott Haven Branch

Attn: Kathleen Carasco
321 E 140th Street, Bronx, New York
Bronx, NY 10454
Phone: 718.665.4878
Email: kathleencarrasco@nypl.org

2. Bronx Public Library – Woodstock Branch

Attn: Daisha Topping
761 E 160th Street, Bronx, New York
Bronx, New York 10456
Phone: 718.665.6255
Email: daishatopping@nypl.org

3. NYSDEC

Attn: Shawn Roberts, Case Manager
625 Broadway
Albany, New York 12233-7016
Phone: 518.402.9799

4.2 GENERAL REMEDIAL CONSTRUCTION INFORMATION

4.2.1 Project Organization

A project team for the Site was created based on qualifications and experience with personnel suited for successful completion of the project.

The following project personnel are anticipated for oversight of the RAWP implementation. Project personnel resumes are provided in Appendix G.

NYSDEC Case Manager
 NYSDOH Case Manager
 Remediation Engineer
 Project Manager/Qualified Environmental Professional
 Haley & Aldrich Health & Safety Director
 Health & Safety Officer
 Field Team Leader/Quality Assurance Officer

Shawn Roberts
 Christopher Budd
 Suzanne Bell, P.E.
 Mari Conlon
 Brian Fitzpatrick, CHMM
 Brian Ferguson
 Zach Simmel

Haley & Aldrich personnel, under the direct supervision of the Qualified Environmental Professional and the RE, will be on-Site during implementation of the RAWP to monitor particulates and organic vapor in accordance with the CAMP. CAMP results that exceed specified action levels will be reported to the NYSDEC and NYSDOH.

Haley & Aldrich personnel will meet with the Construction Superintendent on a daily basis to discuss the plans for that day and schedule upcoming activities. Field personnel will document remedial activities. Field activities will be forwarded to the Field Team Leader and Project Manager on a daily basis and to the Qualified Environmental Professional and the RE on a weekly basis. Daily reports will also be submitted to the NYSDEC and NYSDOH case managers by noon the following business day.

Field personnel will screen excavations with a PID during ground-intrusive work. PID readings, including specifically elevated readings, will be recorded in the project field book (or on separate logs) and reported to the NYSDEC and NYSDOH. Field personnel under the direct supervision of the RE and Qualified Environmental Professional will collect confirmation samples from the base and sidewalls of the excavation in accordance with this RAWP.

Field observations and laboratory tests will be recorded in the project field book or on separate logs. Recorded field observations may take the form of notes, charts, sketches, and/or photographs. A photo log will be kept to document construction activities during remediation.

The Field Team Leader will maintain original field paperwork during performance of the remedy. Remedial activities will be documented in the monthly BCP progress reports. The Project Manager will maintain the field paperwork after completion and will maintain submittal document files.

4.2.2 Remediation Engineer

The RE for this project will be Suzanne Bell. The RE is a registered professional engineer licensed by the State of New York. The RE will have primary direct responsibility for implementation of the remedial program at the Site. The RE will certify in the FER that the remedial activities were observed by qualified environmental professionals under their supervision and that the remediation requirements set forth in this RAWP and other relevant provisions of Environmental Conservation Law (ECL) 27-1419 have been achieved in substantial conformance with the RAWP.

Under direction of the RE, the work of other Contractors and subcontractors involved in aspects of the remedial construction will be documented, including soil excavation, stockpiling, confirmation sample collection, air monitoring, emergency spill response services, import of backfill, and management of waste transport and disposal.

The RE will review the pre-remedial plans submitted by Contractors and subcontractors for substantial conformance with this RAWP and will provide a certification in the FER. The RE will provide the certifications listed below in Section 8.1.

4.2.3 Remedial Action Construction Schedule

The remedial action construction schedule is discussed below in Section 9.0 and included in Appendix H. The NYSDEC will be promptly notified of proposed changes, delays, and/or deviations to the schedule.

4.2.4 Work Hours

The hours for operation of remedial construction will either conform to the requirements of the NYCDOB construction code or to a Site-specific variance issued by the NYCDOB. The NYSDEC will be notified by the Volunteer of variances issued by the NYCDOB. The NYSDEC reserves the right to deny alternate remedial construction hours.

4.2.5 Site Security

Site access will be controlled by gate entrances to the property. The Site perimeter will be secured with gated, signed, plywood fencing with restricted points of entry in accordance with the NYCDOB and New York City Department of Transportation (NYCDOT) permits and requirements. The purpose of the fencing is to limit Site access to authorized personnel, protect pedestrians from Site activities, and maintain Site security.

4.2.6 Traffic Control

Site traffic will be controlled through designated points of access along Bruckner Boulevard. Access points will be continuously monitored and if necessary, a flagging system will be used to protect workers, pedestrians, and authorized guests. Traffic will also be required to adhere to applicable local, state, and federal laws.

4.2.7 Contingency Plan

Contingency plans, as described below, have been developed to effectively deal with potential unexpected discovery of additional contaminated media or USTs.

4.2.8 Discovery of Additional Contaminated Soil

During remediation and construction, soil will be continuously monitored by the RE's field representatives via visual, olfactory, and instrumental field screening techniques to identify additional soil that may not be suitable for disposal at the NYSDEC-approved disposal facility. If such soil is identified, the suspected impacts will be confirmed by collecting and analyzing samples in accordance with the NYSDEC-approved facility's requirements. If the previously approved facility is not permitted to receive the impacted soil, the soil will be excavated and disposed of off-Site at a permitted facility that can receive the material.

Identification of unknown or unexpected contaminated media identified by screening during ground-intrusive Site work will be promptly communicated to the NYSDEC Project Manager. These findings will be detailed in the monthly BCP progress report.

4.2.9 UST Discovery

Previous investigations did not identify the presence of USTs on the Site. In the event a UST is discovered during excavation, it will be decommissioned as per the 6 NYCRR Part 612.2 and 613.9 and DER-10 Section 5.5. After removal of the tank and residual contents, confirmatory post-excavation soil samples will be collected as outlined in DER-10 if deemed necessary by the NYSDEC and/or the RE. Post-excavation soil samples are not expected where the proposed excavation would extend below the UST, unless visual, olfactory, or instrumental field screening techniques indicate the potential for contamination. If petroleum-impacted soils are encountered, they will be segregated, characterized, and disposed of at an appropriate off-Site facility. Closure documentation including affidavits, bills of lading, and tank disposal receipts will be included in the FER. If necessary, the NYSDEC PBS registration will be updated.

In the event USTs are encountered during ground-intrusive activities, the NYSDEC Project Manager will be promptly notified, and pertinent information will be included in the monthly BCP progress report.

4.2.10 Worker Training and Monitoring

Worker training and monitoring will be conducted in accordance with the Site-specific CHASP.

4.2.11 Agency Approvals

The Volunteer has addressed all State Environmental Quality Review Act (SEQRA) requirements for this Site. All permits or government approvals required for remedial construction have been, or will be, obtained prior to the start of remedial construction.

The planned end use for the Site is in conformance with the current zoning for the property as determined by the New York City Department of Planning. A Certificate of Completion will not be issued for the project unless conformance with zoning designation is demonstrated.

A complete list of all local, regional, and national governmental permits, certificates, or other approvals or authorizations required to perform the remedial and development work will be included in the FER. This list will include a citation of the law, statute, or code to be complied with, the originating agency, and a contact name and phone number in that agency.

All planned remedial or construction work in regulated wetlands and adjacent areas will be specifically approved by the NYSDEC Division of Natural Resources to ensure that it meets the requirements for substantive compliance with those regulations prior to the start of construction. Nothing in the approved RAWP or its approval by NYSDEC should be construed as an approval for this purpose.

4.2.12 Pre-Construction Meeting with the NYSDEC

Prior to the start of remedial construction, a meeting will be held among the NYSDEC, RE, the Volunteer, Construction Manager, and remediation contractor to discuss project roles, responsibilities, and expectations associated with this RAWP.

4.2.13 Emergency Contact Information

An emergency contact sheet that states the specific project contacts (with names and phone numbers) for use by NYSDEC and NYSDOH in the case of an emergency is included in the CHASP.

4.2.14 Remedial Action Costs

A detailed summary of the total estimated costs of the Track 1 and Track 2 remedies are included in Tables 2 and 3, respectively.

4.3 SITE PREPARATION

4.3.1 Mobilization

Prior to commencing remedial construction, the remediation contractor will mobilize to the Site and prepare for remedial activities. Mobilization and Site preparation activities may include the following:

- Identifying the location of aboveground and underground utilities (e.g., power, gas, water, sewer, and telephone), equipment, and structures as necessary to implement remediation;
- Mobilizing necessary remediation personnel, equipment, and materials to the Site;
- Constructing one or more stabilized construction entrances consisting of non-hazardous material at or near the Site exit, which takes into consideration the Site setting and Site perimeter;
- Constructing an equipment decontamination pad for trucks, equipment, and personnel that come into contact with impacted materials during remediation; and
- Marking-out metals hot spots and other hot spot areas (if identified during the preliminary waste characterization sampling event).

4.3.2 Monitoring Well Decommissioning

Monitoring wells be decommissioned in accordance with NYSDEC CP-43 by an experienced driller with oversight from Haley & Aldrich. Decommissioning documentation will be provided in the FER.

4.3.3 Erosion and Sedimentation Controls

Since the planned earthwork activities will be below the adjacent sidewalk grade, full-time erosion and sedimentation measures are not anticipated. Best management practices for soil erosion will be implemented to minimize erosion and sedimentation off-Site.

4.3.4 Temporarily Stabilized Construction Entrance(s)

Temporary stabilized construction entrances will be installed at the existing curb cuts along Bruckner Boulevard and Willis Avenue. The entrances will be covered with NYSDEC-approved gravel or RCA and graded so that runoff water will be directed on-Site. Vehicles exiting construction areas will be cleaned using clean water or dry brushing, as needed, to remove Site soil from the tires and undercarriages. The Contractor will protect and maintain the existing sidewalks and roadways at both Site access points.

4.3.5 Utility Marker and Easement Layouts

91 Bruckner Blvd LLC and its Contractors are solely responsible for the identification of utilities and/or easements that might be affected by work under this RAWP and implementation of the required, appropriate, or necessary health and safety measures during performance of the work under this RAWP. 91 Bruckner Blvd LLC and its Contractors are solely responsible for safe execution of the work performed under this RAWP. 91 Bruckner Blvd LLC and its Contractors must obtain the necessary local, state, and/or federal permits or approvals that may be required to perform the work detailed in this RAWP. Approval of this RAWP by the NYSDEC does not constitute satisfaction of these requirements.

4.3.6 Excavation Support

Appropriate management of the structural stability of on-Site or off-Site structures during Site activities is the sole responsibility of 91 Bruckner Blvd LLC and its Contractors. 91 Bruckner Blvd LLC and its Contractors are solely responsible for the safe execution of the work performed under this RAWP. 91 Bruckner Blvd LLC and its Contractors must obtain the necessary local, state, and/or federal permits or approvals that may be required to perform the work detailed in this RAWP. Additionally, 91 Bruckner Blvd LLC and its Contractors are solely responsible for the implementation of the required, appropriate, or necessary health and safety measures during the performance of work conducted under this RAWP.

4.3.7 Equipment and Material Staging

The Contractor will notify the RE and 91 Bruckner Blvd LLC, in writing with receipt confirmed, at least 30 calendar days in advance of pending Site work mobilization. During mobilization, construction equipment will be delivered to the Site, temporary facilities constructed, and temporary utilities installed. The Contractor will place and maintain temporary toilet facilities within the work areas for usage by Site personnel.

4.3.8 Truck-Inspection Station

An outbound-truck inspection station will be set up at or near the Site exit. Before exiting the Site, trucks will be required to stop at the truck inspection station and will be examined for evidence of contaminated soil on the undercarriage, body, and wheels. If observed, soil and debris will be removed. Brooms, shovels, and potable water will be utilized for the removal of soil from vehicles and equipment, as necessary. The Contractor is responsible for collecting soil that is tracked immediately off-Site and returning the soil to the Site.

4.3.9 Site Fencing

The Site will be secured with a gated fence with appropriate signage maintained by the Contractor. The fence will limit access to authorized personnel and protect pedestrians from Site activities.

4.3.10 Demobilization

After remediation and construction are completed, the Contractor will be responsible for demobilizing equipment and materials not designated for off-Site disposal. The RE's representative will document that the Contractor performs follow-up coordination and maintenance for the following activities:

- Removal of sediment and erosion control measures and disposal of materials in accordance with applicable rules and regulations;
- Equipment decontamination;
- Refuse disposal; and
- Removal of remaining contaminated material or waste.

4.4 REPORTING

A FER will be required to document the remedial action. The RE, Suzanne Bell, will be responsible for certifying the FER and is licensed to practice engineering in the State of New York. Should Suzanne Bell become unable to fulfill this responsibility, another suitably qualified New York State Professional Engineer will take their place. Field reports will be included as appendices to the FER. In addition to the periodic reports and the FER, copies of the relevant Contractor documents will be submitted to the NYSDEC.

4.4.1 Field Reports

Reports providing a summary of activities for each day of active remedial work will be emailed to the NYSDEC and NYSDOH project managers on a daily basis. These reports will include:

- The project number, statement of activities, an update of the progress made, locations of excavation, and other remedial work performed;
- Quantities of material imported and exported from the Site;
- Status of on-Site soil/fill stockpiles;
- A summary of citizen complaints including relevant details (i.e., name, phone number, basis of complaint, actions taken);
- A summary of CAMP results noting exceedances; and
- Photographs of notable Site conditions and activities.

Reports are not intended to be the primary mode of communication for notifying NYSDEC of emergencies, requests for changes to the RAWP, or time-critical information. However, these conditions

if to occur, will be included in the daily reports. Emergency conditions and changes to the RAWP will be directly communicated to the NYSDEC Project Manager.

4.4.2 Monthly Reports

Monthly reports will consist of a summary of remedial work performed at the Site throughout the month and will include:

- Investigative or remedial actions relative to the Site during the reporting period;
- Actions relative to the Site anticipated for the next reporting period;
- Approved changes of work scope or schedule, if applicable;
- Results of sampling or testing;
- Deliverables submitted during the reporting period;
- The approximate percentage of completion of the project at the Site;
- Unresolved delays encountered that may affect the schedule;
- Citizen Participation Plan activities during this reporting period and activities anticipated in support of the Citizen Participation Plan for the next reporting period; and
- All daily reports submitted to NYSDEC during the reporting period will be included as an appendix.

4.4.3 Photographs

Photographs of the remedial activities will be taken and included in the FER with provided descriptions of the representative photographs.

4.4.4 Complaint Management Plan

Complaints from the public regarding nuisance or other Site conditions will be addressed by notifying the NYSDEC of the complaint and investigating the cause/source of the issue. Records will be kept regarding the date and time of the complaint, the nature of the complaint, the type of communication (i.e., telephone, email, letter, etc.) and the name and contact information of the complaint provider. Corrective measures will then be formulated and put into place to address the complaint as soon as possible. Resolution will be documented and submitted to the NYSDEC. A representative of the Volunteer will reply within two weeks of receipt to the complaint provider to ensure resolution.

4.4.5 Deviations from the RAWP

Deviations from the RAWP will be communicated to and coordinated with the NYSDEC in advance. Notification will be provided to the NYSDEC by telephone and email for conditions requiring immediate action (e.g., conditions judged to be a danger to the surrounding community). Based on the significance of the deviation, an addendum to this RAWP may be necessary and will include:

- Reasons for deviating from the approved RAWP;

- Approval process to be followed for changes/editions to the RAWP; and
- Effect of the deviations on the overall remedy.

5. Remedial Action: Material Removal from the Site

Remediation will include the following material removal tasks:

Excavation, stockpiling, off-Site transport, and disposal of 3,100 cu yd of contaminated fill material and native material exceeding RRSCOs as defined by 6 NYCRR Part 375-6.8. Excavation will be to 8 ft bgs within the western portion of the proposed building footprint and 2 ft within the eastern portion of the proposed building footprint and the area outside of the proposed building footprint to the north. A 10 ft by 10 ft hotspot surrounding soil boring SB-4 will extend to approximately 10 ft bgs.

5.1 SOIL CLEANUP OBJECTIVES

SCOs for the Site will be the Track 2 RRSCOs listed in Table 4. Soil and materials management will be conducted in accordance with the SMMP as described below. Soil sample locations and results that exceed the RRSCOs are shown on Figure 4. UST closures (if necessary) will, at a minimum, conform to criteria defined in DER-10.

5.2 REMEDIAL PERFORMANCE EVALUATION (CONFIRMATION SAMPLING)

5.2.1 Soil Sampling Frequency

One confirmation soil sample will be collected for every 900 sq ft of excavation base Site-wide in accordance with NYSDEC DER-10, or at an alternative frequency approved by NYSDEC. Confirmation samples will be collected to confirm that RRSCOs have been achieved.

A total of 17 confirmation samples, plus QA/QC samples, will be collected from the base of the remedial excavation. A total of four sidewall samples will be collected from the sidewalls of the proposed hotspot surrounding SB-4 and will be analyzed for SVOCs and metals. If results of a confirmation soil sample do not comply with the RRSCOs, over-excavation will be completed as practical to achieve a Track 2 remedy and additional confirmation samples will be collected of the over-excavation area at the frequencies indicated above. Proposed confirmation sample locations are shown in Figure 11.

5.2.2 Methodology

Confirmation soil samples will be collected from the base of the excavations in accordance with NYSDEC DER-10 to document remedial performance and will be analyzed for the Part 375 list of VOCs, SVOCs, pesticides, PCBs, metals, PFAS, and 1,4-dioxane. Samples will be collected into laboratory-provided bottle ware. VOCs will be collected into Terracore or Encores. Samples will be transported under chain of custody protocol to an ELAP-certified laboratory. Should additional soil samples be deemed necessary (e.g., additional tank closure, unknown environmental condition through visual evidence of a remaining source, over-excavation of failed confirmation sample), confirmation sampling will be conducted in accordance with NYSDEC DER-10.

5.2.3 QA/QC

Quality control procedures for confirmation soil sampling are included in the QAPP (refer to Appendix G). Confirmation analytical results will be provided in the NYSDEC's electronic data deliverable (EDD) format for EQUIS™. Guidance on the sampling frequency is presented in NYSDEC DER-10 Section 5.4.

The QA/QC procedures required by the NYSDEC Analytical Services Protocol (ASP) and SW-846 methods will be followed. This will include instrument calibration, standard compound spikes, surrogate compound spikes, and analysis of quality control samples. The laboratory will provide sample bottles, which will be pre-cleaned and preserved. Where there are differences in the SW-846 and NYSDEC ASP requirements, the NYSDEC ASP will take precedence.

5.2.4 Data Validation

ASP Category B deliverables will be prepared for remedial performance samples collected during implementation of this RAWP. Data Usability Summary Reports (DUSR) will be prepared by a qualified data validator and the findings will be reported in the FER.

5.2.5 Reporting

Analytical laboratories that analyze confirmation soil samples, prepare results, and perform contingency sampling will be NYSDOH ELAP-certified.

5.3 ESTIMATED MATERIAL REMOVAL QUANTITIES

Excavation on-Site for the proposed redevelopment plan is anticipated to generate approximately 5,500 cu yd of soil. A summary of anticipated material types to be excavated and disposed of off-Site is provided below:

1. Excavation, stockpiling, off-Site transport, and disposal of approximately 3,100 cu yd of historical fill material and native soil exceeding RRSCOs as defined by 6 NYCRR Part 375-6.8.

5.4 SOIL/MATERIALS MANAGEMENT PLAN

This section presents the approach to management, disposal, and reuse of soil, fill, and materials excavated from the Site. This plan is based on the current knowledge of Site conditions and will be altered as necessary. Field personnel, under the direction of the RE, will monitor and document the handling and transport of material removed from the Site for disposal as a regulated solid waste. Field personnel, under the direction of the RE, will assist the remediation contractor in identifying impacted materials during remediation, determining materials suitable for direct load out versus temporary on-Site stockpiling, selecting of samples for waste characterization, if necessary, and determining the proper off-Site disposal facility. Separate stockpile areas will be constructed as needed for the various materials to be excavated or generated in order to avoid comingling impacted with nonimpacted soil.

5.4.1 Soil Screening Methods

Visual, olfactory, and instrumental soil screening and assessment will be performed during remediation and development-related ground intrusive activities into known or potentially contaminated material. Soil screening will be performed regardless of when the invasive work is done and will include excavation and invasive work performed during the remedy and development, such as excavations for foundations and utility work.

5.4.2 Stockpile Methods

Stockpiles will be used as necessary to separate and stage excavated material pending loading or characterization sampling. Separate stockpile areas will be constructed to avoid comingling materials. Stockpile areas will meet the following minimum requirements:

- Excavated soil will be placed onto a minimum thickness of 6 mil low-permeability liner of sufficient strength and thickness to prevent puncture during use; separate stockpiles will be created where material types are different. The use of multiple layers of thinner liners is permissible.
- Efforts will be made to place and remove the soil to minimize the potential to jeopardize the integrity of the liner.
- Stockpiles will be covered at the designated times (see below) with a minimum 6-mil plastic sheeting or tarps which will be securely anchored to the ground. Stockpiles will be routinely inspected and broken sheeting covers will be promptly replaced.
- Stockpiles will be covered upon reaching their capacity (approximately 1,000 cu yd) until ready for loading. Stockpiles that have not reached their capacity will be covered at the end of each workday.
- Each stockpile will be encircled with silt fences and hay bales, as needed, to contain and filter particulates from rainwater that has drained off the soils and to mitigate the potential for surface water run-off.
- Stockpiles will be inspected at a minimum of once daily and after every storm event.
- If encountered, stockpiling hazardous-impacted on Site will be avoided as necessary, and material will be live-loaded into trucks permitted to transport hazardous waste.

5.4.3 Materials Excavation and Load Out

Field personnel, under the supervision of the RE, will monitor ground-intrusive work and the excavation and load-out of excavated material.

Loaded vehicles leaving the Site will be appropriately, securely covered, manifested, and placarded in accordance with the appropriate federal, state, and local requirements, including applicable transportation requirements (i.e., New York State Department of Transportation [NYSDOT] and NYCDOT requirements). Trucks hauling fill material will not be lined unless free liquids are present or the material is grossly impacted. Hazardous wastes derived from the Site will be stored, transported, and disposed of in compliance with applicable local, state, and federal regulations.

A truck wash will be operated on Site. Trucks will be washed, as necessary, before leaving the Site, and Site ingress and egress points will be cleaned of dirt and other materials to prevent material generated during remediation and development from being tracked off-Site.

The Volunteer and associated parties preparing the remedial documents submitted to the NYSDEC and the parties performing this work, are responsible for the safe performance of ground intrusive work, the structural integrity of excavations, and for structures that may be affected by excavations (such as building foundations and bridge footings).

The Volunteer and associated parties will ensure that Site development activities will not interfere with, or otherwise impair or compromise, remedial activities proposed in this RAWP. Development-related grading cuts and fills will not be performed without NYSDEC approval and will not interfere with, or otherwise impair or compromise, the performance of remediation required by this RAWP. Mechanical processing of contaminated fill and contaminated soil on-Site is prohibited unless otherwise approved by NYSDEC.

Primary contaminant sources (including, but not limited to, tanks and hotspots) identified during Site characterization, the RI, and implementation of the remedy will be surveyed by a surveyor licensed to practice in the State of New York. The excavation will be surveyed, and survey information will be shown on maps to be included with the FER.

5.4.4 Materials Transport Off-Site

Transport of materials will be performed by licensed haulers in accordance with appropriate local, state, and federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded. Trucks headed to disposal facilities will travel northwest on Bruckner Boulevard, north on Willis Avenue, northwest on 134th Street onto the Major Deegan Expressway I-87 North, or other NYSDEC-approved routes. Truck routes are shown on Figure 12.

Loaded trucks will exit in the vicinity of the Site using approved truck routes. These routes are the most appropriate route to and from the Site and take into account the following:

- Limiting transport through residential areas and past sensitive sites;
- Use of city mapped truck routes;
- Prohibiting off-site queuing of trucks entering the facility;
- Limiting total distance to major highways;
- Promoting safety in access to highways;
- Overall safety in transport; and
- Community input (where necessary).

Trucks will be prohibited from excessive stopping and idling in the neighborhood outside of the Site. Material transported by trucks exiting the Site will be secured with tight-fitting covers. Loose-fitting

canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, or hazardous metals-impacted material, truck liners will be used.

5.4.5 Materials Disposal Off-Site

Waste characterization will be performed exclusively for off-Site disposal in a manner suitable to the receiving facility and in conformance with applicable permits. Sampling and analytical methods, sampling frequency, analytical results, and QA/QC results will be reported. Data available for excavated material to be disposed of at a given facility will be submitted to the disposal facility with suitable explanation prior to shipment and receipt. As part of waste characterization and for disposal purposes, a lateral and vertical delineation of elevated metals hotspots will be completed to facilitate off-Site disposal of excavated soil/fill.

If encountered, hazardous soil will be managed in accordance with applicable federal, state, and local regulations. As such, the handling, transport, and disposal of hazardous fill material is subject to USEPA and the OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) regulations. The excavated material would be segregated in the field and temporarily placed in stockpiles, or direct loaded, and transported by Part 364-permitted trucks to a facility permitted by the Resource Conservation and Recovery Act (RCRA) to accept hazardous waste.

During the RI, soil sample SB-05 (0-0.5') was collected from the location of previous soil sample HA-06_0-2, collected during the March 2022 Limited Phase II ESI where hazardous levels of lead were identified via TCLP analysis. During the RI, hazardous lead was not identified in the 0 to 0.5 ft bgs interval. Material at this location will be re-sampled and further laterally delineated during waste characterization at the 0 to 2 ft bgs interval. Step outs will be collected 5 ft in each direction and sampled for total and TCLP lead from 0 to 2 ft bgs. Should hazardous levels of lead be identified in these 0 to 2 ft samples, subsequent deeper intervals in 2 ft increments (i.e. 2 to 4 ft bgs, 4 to 6 ft bgs, etc.) will be analyzed until hazardous lead material is delineated vertically as well.

Disposal facilities have not been determined at the time of this report submittal; however, facility determination will be reported to the NYSDEC Case Manager prior to off-Site transport and disposal of excavated material. About 3,100 cu yd of historical fill and native soil that exceeds RRSCOs are expected to be disposed of off-Site. Soil/fill/solid waste excavated and removed from the Site will be treated as contaminated and regulated material and will be disposed of in accordance with local, state (including 6 NYCRR Part 360), and federal regulations.

If hazardous soil is identified, it will be managed in accordance with applicable federal, state, and local regulations. As such, the handling, transport, and disposal of hazardous fill material is subject to USEPA and the OSHA HAZWOPER regulations. The presence of hazardous waste requires compliance with both federal and state regulations and the following requirements:

1. Hazardous waste disposal requires obtaining a USEPA RCRA generator ID number.
2. Hazardous waste must be transported to a facility permitted by RCRA to accept hazardous waste.
3. Hazardous waste must be segregated and cannot be comingled with other Site material.

4. Hazardous waste must be transported and disposed of by properly permitted (Part 364) transporters and facilities.

If disposal of soil/fill from this Site is proposed for unregulated disposal (i.e., clean soil removed for development purposes), a formal request with an associated plan will be made to NYSDEC's Project Manager. Unregulated off-Site management of materials from this Site is prohibited without formal NYSDEC approval. Material that does not meet UUSCOs, such as non-hazardous contaminated fill material, contaminated soil, and hazardous lead-impacted material excavated, is prohibited from being taken to a New York State recycling facility (6 NYCRR Part 360-16 Registration Facility). Non-hazardous contaminated fill material, contaminated soil, and hazardous lead-impacted material transported off-Site will be handled, at a minimum, as a solid waste per 6 NYCRR Part 360.

The following documentation, to be included in the FER, will be obtained for each disposal location used in this project to fully demonstrate and document that the disposal of material derived from the Site conforms to applicable laws:

- A letter from the RE or 91 Bruckner Blvd LLC to the receiving facility describing the material to be disposed of and requesting formal written acceptance of the material. This letter will state that material to be disposed of is contaminated material generated at an environmental remediation site located in New York State. The letter will provide the project identity and the name and phone number of the RE. The letter will include as an attachment a summary of chemical data for the material being transported (including waste characterization and RI data); and
- A letter from each receiving facility stating that it is in receipt of the correspondence (above) and acceptance of the material is approved.

5.4.6 Materials Reuse On-Site

Materials reuse is not anticipated at the Site.

If on-Site material is proposed for reuse, material will be stockpiled and sampled at a frequency consistent with the recommendations of Table 5.4(e)10 in DER-10 in order to confirm RRSCOs are achieved prior to placing backfill. It is noted that only soils meeting the requirements in this section may be reused. Soil proposed for reuse must be non-hazardous, must not be grossly contaminated, and must meet Track 2 RRSCOs. Soil proposed for reuse will not contain organic matter, including wood, roots, stumps, etc., or other solid waste derived from clearing and grubbing. Soil removed during implementation of the remedy will not be reused in a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

5.4.7 Fluids Management

A dewatering and treatment system is not anticipated as part of the preferred remedial alternative.

5.4.8 Demarcation

After the completion of soil removal and any other invasive remedial activities and prior to backfilling, a land survey will be performed by a New York State licensed surveyor. The survey will define the top

elevation of residual contaminated soils. A physical demarcation layer, consisting of orange snow fencing material or equivalent material will be placed on this surface to provide a visual reference. This demarcation layer will constitute the top of the “Residuals Management Zone,” the zone that requires adherence to special conditions for disturbance of contaminated residual soils defined in the Site Management Plan (SMP). The survey will measure the grade covered by the demarcation layer before the placement of cover soils, pavement and sub-soils, structures, or other materials. This survey and the demarcation layer placed on this grade surface will constitute the physical and written record of the upper surface of the “Residuals Management Zone” in the SMP. A map showing the survey results will be included in the FER and the SMP.

5.4.9 Backfill from Off-Site Sources

If imported materials are proposed, documentation of the material will be provided to NYSDEC for approval prior to its use on Site. Imported soil for backfill must meet the requirements of 6 NYCRR Part 375-6.7(d) and NYSDEC DER-10 Section 5.4(e), Table 5.4(e)10 and achieve the lesser of RRSCOs or PGWSCOs. Material from industrial sites, spill sites, other environmental remediation sites, or other potentially contaminated sites will not be imported to the Site. Solid waste will not be imported onto the Site.

Backfill material will consist of clean fill (as described in the following paragraph) or other acceptable fill material such as virgin stone from a quarry or RCA. If RCA is imported to the Site, it will be from a NYSDEC-registered facility in compliance with 6 NYCRR Part 360 registration and permitting requirements for the period of acquisition of RCA. RCA imported from compliant facilities will not require chemical testing, unless required by the NYSDEC under the terms for operation of the facility. RCA imported to the Site must be derived from recognizable and uncontaminated concrete, with no more than 10 percent by weight passing through a No. 80 sieve. RCA is not acceptable for and will not be used as cover or drainage material.

Imported soil (i.e., clean fill) will meet the lesser of RRSCOs or PGWSCOs. Non-compliant soils will not be imported to the Site. Clean fill will be segregated at a source/facility that is free of environmental contaminants. Qualified environmental personnel will collect representative samples at a frequency consistent with NYSDEC DER-10. The samples will be analyzed for Part 375 VOCs, SVOCs, pesticides/herbicides, PCBs, cyanide, metals including total chromium, 1,4-dioxane, and PFAS by a NYSDOH ELAP-certified laboratory. Upon meeting these criteria, the certified-clean fill will be transported to the Site and segregated from impacted material, as necessary, on plastic sheeting until used as backfill. Trucks entering the Site with imported soils will be secured with tight fitting covers.

Soils that meet “exempt” fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by the NYSDEC. The contents of this RAWP and NYSDEC approval of this RAWP should not be considered an approval for this purpose.

5.4.10 Stormwater Pollution Prevention

Silt fence or hay bales will be installed around the perimeter of the remedial construction area, as required. Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook maintained at the Site and available for

inspection by the NYSDEC. Necessary repairs to silt fence and/or hay bales will be made immediately. Accumulated sediments will be removed as required to keep the barriers and hay bale checks functional. Manufacturer's recommendations will be followed for replacing silt fence damaged due to weathering. Erosion and sediment control measures identified in the RAWP will be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they will be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to the sewer system.

5.4.11 Contingency Plan

As discussed above in Section 4.2.7, if USTs or other previously unidentified contaminant sources are found during on-Site remedial excavation or development-related construction, sampling will be performed on product, if encountered, and surrounding subsurface materials (e.g., soil, stone). Chemical analyses will include Part 375 VOCs, SVOCs, PCBs, pesticides, metals, and PFAS. Analyses will not be otherwise limited without NYSDEC approval. Identification of unknown or unexpected contaminated media identified by screening during ground-intrusive work will be promptly communicated by phone to the NYSDEC Project Manager. These findings will also be detailed in the monthly BCP progress report.

5.4.12 Community Air Monitoring Plan

The CAMP will require real-time monitoring for particulates (i.e., dust) and VOCs at the upwind and downwind perimeters when ground intrusive activities, including soil/waste excavation, soil handling, test pit excavation, and/or trenching, are in progress at the Site. The CAMP aims to provide protection for residents in the designated work area and residents of the downwind community from potential airborne releases that directly result from the remedial construction activities conducted at the Site. Adherence to the monitoring action levels specified in the CAMP requires monitoring and, when necessary, corrective actions to abate emissions, and/or shutdown work. The CAMP also helps to confirm that work activities do not spread contamination off-Site through the air. In addition, visual and olfactory observations will be made to keep dust and odors at a minimum around the work areas. VOCs will be monitored using PIDs, and particulates will be monitored using TSI DustTrak Environmental Monitor (DustTraks) equipment. Readings will be recorded every 15-minutes at the Site by field personnel.

The following actions will be taken based on monitoring of particulate concentrations:

- If the downwind PM-10 particulate level is $100 \mu\text{g}/\text{m}^3$ greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed $150 \mu\text{g}/\text{m}^3$ above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than $150 \mu\text{g}/\text{m}^3$ above the upwind level, work will be stopped, and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within $150 \mu\text{g}/\text{m}^3$ of the upwind level and in preventing visible dust migration.

The following actions will be taken based on VOC monitoring:

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 ppm above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 ft downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less, but in no case less than 20 ft, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shut down.

5.4.13 Odor, Dust, and Nuisance Control Plan

Odor, dust, and nuisance controls will be accomplished by the remediation contractor as described in this section.

Odor Control

This odor control plan is capable of controlling emissions of nuisance odors off-Site. Specific odor control methods to be used if needed will include application of foam suppressants or tarps over the odor or VOC source areas. If nuisance odors are identified, work will be halted, and the source of odors will be identified and corrected. Work will not resume until nuisance odors have been abated. The NYSDEC and NYSDOH will be notified of odor events and of other complaints about the project. Implementation of odor controls is the responsibility of the Contractor. Monitoring odor emission, including the halt of work, will be the responsibility of the RE or his/her designated representative.

Necessary means will be employed to prevent on- and off-Site nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (a) direct load-out of soils to trucks for off-Site disposal; (b) use of chemical odorants in spray or misting systems; and (c) use of staff to monitor odors in surrounding neighborhoods.

Where odor nuisances have developed during remedial work and cannot be corrected, or where the release of nuisance odors cannot otherwise be avoided due to on-Site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering excavation and handling areas under tented containment structures equipped with appropriate air venting/filtering systems.

Dust Control

A dust suppression plan that addresses dust management during ground-intrusive on-Site work will include, at a minimum: (a) use of a dedicated water distribution system, on-Site water truck for road wetting, or an alternate source with suitable supply and pressure for use in dust control; (b) gravel used for on-Site roads to provide a clean and dust-free road surface; and (c) on-Site roads will be limited in total area to minimize the area required for water spraying.

Other Nuisances

A plan for rodent control will be developed and used by the remediation contractor during Site preparation (including clearing and grubbing) and during remedial work. A plan for noise control will be developed and used by the remediation contractor during Site preparation and remedial work and will conform, at a minimum, to the NYCDEP noise control standards.

6. Residual Contamination to Remain On-Site

Upon completion of the Track 2 remedy, impacted soil considered source material will be removed from the Site but residual soils with impacts above UUSCOs will exist beneath the remedial excavation depths. If results of aforementioned confirmation samples do not comply with the RRSCOs, over-excavation will be completed as practical to achieve a Track 2 remedy and additional endpoint samples will be collected of the over-excavation area.

With the Track 2 remedy, some residual material with impacts above UUSCOs may exist beneath the Site after the remedy is complete, but Engineering Controls (ECs) will not be required. ICs, described in the following sections, will be implemented to protect public health and the environment by appropriately managing use restrictions.

7. Institutional Controls

Under Alternative II, anticipated to achieve a Track 2 cleanup, ICs would 1) restrict the site's use to restricted residential, commercial, and industrial uses, although land use is subject to local zoning laws; and 2) restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDEC or NYSDOH.

7.1 ENVIRONMENTAL EASEMENT

An Environmental Easement, as defined in Article 71 Title 36 of the Environmental Conservation Law, is required when residual contamination is left on-Site after the Remedial Action is complete. As part of this remedy, an Environmental Easement approved by NYSDEC will be filed and recorded with the Bronx County Office of the City Register. The Environmental Easement will be submitted as part of the FER.

The Environmental Easement renders the Site a Controlled Property. The Environmental Easement must be recorded with the Bronx County Office of the City Register before the Certificate of Completion can be issued by NYSDEC. A series of Institutional Controls are required under this remedy to implement, maintain, and monitor these Engineering Control systems, prevent future exposure to residual contamination by controlling disturbances of the subsurface soil, and restricting the use of the Site to restricted residential use(s) only. These Institutional Controls are requirements or restrictions placed on the Site that are listed in, and required by, the Environmental Easement. Institutional Controls can, generally, be subdivided between controls that support Engineering Controls, and those that place general restrictions on Site usage or other requirements. Institutional Controls in both of these groups are closely integrated with the SMP, which provides all of the methods and procedures to be followed to comply with this remedy.

The ICs associated with this Site include:

- Compliance with the Environmental Easement by the Grantee and the Grantee's successors and adherence of all elements of the SMP is required;

Adherence to these Institutional Controls for the Site is mandated by the Environmental Easement and will be implemented under the SMP (discussed in the next section). The Controlled Property (Site) will also have a series of Institutional Controls in the form of Site restrictions and requirements. The Site restrictions that apply to the Controlled Property are:

- Vegetable gardens and farming on the Controlled Property are prohibited;
- Use of groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for intended purpose;
- All future activities on the Controlled Property that will disturb residual contaminated material are prohibited unless they are conducted in accordance with the soil management provisions in the SMP;
- The Controlled Property may be used for restricted residential use only, provided the long-term Engineering and Institutional Controls included in the SMP are employed; and

- The Controlled Property may not be used for a higher level of use, such as unrestricted use, without an amendment or extinguishment of this Environmental Easement.

7.2 SITE MANAGEMENT PLAN

Site Management is the last phase of remediation and begins with the approval of FER and issuance of the Certificate of Completion for the Remedial Action. Site Management continues in perpetuity or until released in writing by NYSDEC. The property owner is responsible to ensure that all Site Management responsibilities defined in the Environmental Easement and the SMP are performed.

The SMP for this Site is intended to provide a detailed description of the procedures required to manage residual contamination left in place at the Site following completion of the Remedial Action in accordance with the BCA with the NYSDEC. This includes development, implementation, and management of all Institutional Controls.

8. Final Engineering Report

A FER will be submitted to the NYSDEC following implementation of the remedy defined in this RAWP. The FER will be prepared in conformance with NYSDEC DER-10 and will include the following:

- Documentation that the remedial work required under this RAWP has been completed and has been performed in substantial conformance with this plan.
- A summary of the locations and characteristics of material removed from the Site including the surveyed map(s) of each area, as necessary.
- As-built drawings for constructed elements, certifications, manifests, and bills of lading.
- A description of the changes to the remedy from the elements provided in the RAWP and associated design documents, if any.
- A tabular summary of performance evaluation sampling results and material characterization results and other sampling and chemical analyses performed as part of the remedy.
- Written and photographic documentation of remedial work performed under this remedy.
- A summary of the post-excavation groundwater analytical results.
- A summary of confirmation sampling results to show that remaining soil left on-Site meets the Track 2 RRSCOs.
- If necessary, a summary of remaining contamination that exceeds the Track 2 RRSCOs and an explanation for why the material was not removed as part of the remedy. A table and a map that shows remaining contamination in excess of the Track 2 RRSCOs would also be included.
- Documentation of treatment and/or disposal of material removed from the Site, including excavated contaminated soil, contaminated fill, solid waste, hazardous waste, non-regulated material, and fluids. Documentation associated with the disposal of material must also include records and approvals for receipt of the material.
- Documentation of the origin and chemical quality of each material type imported onto the Site.

Before approval of the FER and issuance of a Certificate of Completion, the daily or weekly reports and monthly BCP progress reports must be submitted in digital format (i.e., PDF).

8.1 CERTIFICATIONS

The following certification will appear in front of the FER Executive Summary. The certification will be signed by the RE, Suzanne Bell, who is a New York State-licensed Professional Engineer. The certification will be appropriately signed and stamped.

The certification will include the following statements:

I, Suzanne M. Bell, am currently a registered professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the Former Fiedler Waterproofing & Masonry Site (NYSDEC BCA Index No. C203160-12-22 Site No. C203160).

I certify that the Site description presented in this FER is identical to the Site descriptions presented in the Environmental Easement, the Site Management Plan, and the Brownfield Cleanup Agreement for Former Fiedler Waterproofing & Masonry Site and related amendments.

I certify that the Remedial Action Work Plan dated October 2023 and Stipulations [if any] in a letter dated [month day year] and approved by the NYSDEC were implemented and that all requirements in those documents have been substantively complied with.

I certify that the remedial activities were observed by qualified environmental professionals under my supervision and that the remediation requirements set forth in the Remedial Action Work Plan and any other relevant provisions of ECL 27-1419 have been achieved.

[If Track 2 not achieved] I certify that all use restrictions, Institutional Controls, Engineering Controls, and all operation and maintenance requirements applicable to the Site are contained in an Environmental Easement created and recorded pursuant ECL 71-3605 and that all affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded. A Site Management Plan has been submitted by 91 Bruckner Blvd LLC NY LLC for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site, including the proper maintenance of all remaining monitoring wells, and that such plan has been approved by the NYSDEC.

I certify that the export of all contaminated soil, fill, water or other material from the property was performed in accordance with the Remedial Action Work Plan, and were taken to facilities licensed to accept this material in full compliance with all Federal, State and local laws.

I certify that all import of soils from off-Site, including source approval and sampling, has been performed in a manner that is consistent with the methodology defined in the Remedial Action Work Plan.

I certify that all invasive work during the remediation and all invasive development work were conducted in accordance with dust and odor suppression methodology and soil screening methodology defined in the Remedial Action Work Plan.

I certify that all information and statements in this certification are true. I understand that a false statement made herein is punishable as Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

It is a violation of Article 145 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 145, New York State Education Law.

9. Schedule

Mobilization for implementation of the RAWP is expected to take about one to two weeks. Once mobilization is complete, remediation of the Site will proceed. The remedy, which will be implemented in accordance with this RAWP, is anticipated to take about three to four months to complete. After completion of the remedy, a FER will be drafted and subsequently submitted to the NYSDEC for review and approval. A proposed project schedule is included in Appendix H.

References

1. Remedial Investigation Report. 1 Bruckner Boulevard, The Bronx, New York. Prepared by 91 Bruckner Blvd LLC & Haley & Aldrich of New York, prepared for the New York State Department of Environmental Conservation. Submitted April 2023.
2. New York State Department of Environmental Conservation, Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS), November 2022.
3. Brownfield Cleanup Program Application. 91 Bruckner Boulevard, The Bronx, New York. Prepared by 91 Bruckner Blvd LLC & Haley & Aldrich of New York, prepared for the New York State Department of Environmental Conservation. Submitted August 2022.
4. Phase II Limited Environmental Site Investigation Report, 91 Bruckner Boulevard, Bronx, New York. Prepared by Haley & Aldrich of New York, prepared for Artist Construction, March 2022.
5. Phase I Environmental Site Assessment, 91 Bruckner Blvd / 402 E 134th Street, Bronx, New York. Prepared by PW Grosser Consulting Inc., prepared for Artist Construction, September 2021.
6. Phase II Environmental Site Assessment, 91 Bruckner Blvd, Bronx, New York. Prepared by PW Grosser Consulting Inc., prepared for Artist Construction, October 2021.
7. Program Policy DER-10, "Technical Guidance for Site Investigation and Remediation," New York State Department of Environmental Conservation, May 2010.
8. New York State Department of Environmental Conservation, Part 375 of Title 6 of the New York Compilation of Codes, Rules, and Regulations, Effective December 14, 2006.
9. New York State Department of Health, Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006.
10. New York State Division of Water Technical and Operational Guidance Series (TOGS) (1.1.1) dated June 1998.

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TABLES

TABLE 1.
SUMMARY OF SOIL CLEANUP OBJECTIVE EXCEEDANCES
91 BRUCKNER BOULEVARD, BRONX, NEW YORK
BCP SITE NO. C203160

Soil					
Analyte	PGWSCO	RRSCO	UUSCO	Max Concentraiton (ppm)	Sample
Benzo(a)anthracene	1	1	1	52	DUP-01-02132023 (SB-14 (0-0.5)
Benzo(a)pyrene	22	1	1	56	DUP-01-02132023 (SB-14 (0-0.5)
Benzo(b)fluoranthene	1.7	1	1	56	DUP-01-02132023 (SB-14 (0-0.5)
Benzo(k)fluoranthene	1.7	3.9	0.8	16	DUP-01-02132023 (SB-14 (0-0.5)
Chrysene	1	3.9	1	47	DUP-01-02132023 (SB-14 (0-0.5)
Dibenzofuran	210	59	7	10	DUP-01-02132023 (SB-14 (0-0.5)
Dibenz(a,h)anthracene	1000	0.33	0.33	6.2	DUP-01-02132023 (SB-14 (0-0.5)
Indeno(1,2,3-cd)pyrene	8.2	0.5	0.5	34	DUP-01-02132023 (SB-14 (0-0.5)
Phenanthrene	1000	100	100	150	DUP-01-02132023 (SB-14 (0-0.5)
Pyrene	1000	100	100	130	DUP-01-02132023 (SB-14 (0-0.5)
Arsenic	16	16	13	21.1	SB-04-03 (6-8)
Barium	820	400	350	1440	SB-13 (0-0.5)
Cadmium	7.5	4.3	2.5	2.79	SB-04-03 (6-8)
Copper	1720	270	50	381	SB-04-03 (6-8)
Lead	450	400	63	2610	SB-13 (0-0.5)
Mercury	0.73	0.81	0.18	2.98 J	SB-04-03 (6-8)
Nickel	130	310	30	53.3	SB-01 (0-0.5)
Selenium	4	180	3.9	4.24	SB-04 (0-0.5)
Zinc	2480	10000	109	1540	SB-13 (0-0.5)
4,4'-DDD	14	13	0.0033	0.00876 J+	SB-02 (6-8)
4,4'-DDE	17	8.9	0.0033	0.0653 J+	SB-02 (6-8)
4,4'-DDT	136	7.9	0.0033	0.247 J+	SB-02 (6-8)
Dieldrin	0.1	0.2	0.005	0.0242 J+	SB-13 (0-0.5)
Perfluorooctanesulfonic acid (PFOS)	3.7	44	0.88	2.53	SB-04-03 (6-8)
Groundwater					
Analyte	AWQS		Max Concentraiton (ug/L)		Sample
Chromium	50		186.2		MW-03
Iron	300		5880		MW-03
Lead	25		84.47		MW-03
Magnesium	35000		242000		MW-03
Manganese	300		677.5		MW-08
Selenium	10		23.1		MW-03
Sodium	20000		206000		MW-03
Benzo(a)anthracene	0.002		0.03 J		MW-02, MW-03, MW-11 and DUP-01
Benzo(b)fluoranthene	0.002		0.03 J		MW-11
Benzo(K)fluoranthene	0.002		0.02 J		MW-11
Chrysene	0.002		0.02 J		MW-11 and DUP-01
Indeno(1,2,3-cd)pyrene	0.002		0.1		MW-11
Tetrachloroethene	5		8		MW-08

Notes:
Soil analytical results are compared to the New York State Department of Environmental Conservation (NYSDEC) Title 6 of the Official Compilation of New York Codes, Rules, and Regulations (NYCRR) Part 375 Unrestricted Use Soil Cleanup Objectives (UUSCO), Restricted-Use Residential Soil Cleanup Objectives (RRSCO), and Protection of Groundwater Soil Cleanup Objectives (PGWSCO).
Grounwater Analytical Results Compared to New York TOGS 111 Ambient Water Quality Standards (AWQS)

TABLE 2.

ALTERNATIVE I REMEDIAL COST ESTIMATE

91 BRUCKNER BOULEVARD, BRONX, NEW YORK

BCP Site No. C203160

Consulting/Engineering Costs					
Task	Description	Unit	Unit Cost	Quantity	Total Cost
1	Waste Characterization	Lump Sum	\$ 50,000	1	\$ 50,000
2	Program Management (NYSDEC/NYSDOH Correspondence, Daily/Weekly/Monthly Reporting, etc.)	Month	\$ 15,000	12	\$ 180,000
3	Remedial Oversight	Month	\$ 30,000	6	\$ 180,000
4	Confirmation Sampling	Sample	\$ 2,000	25	\$ 50,000
5	Soil Vapor Intrusion Evaluation	Allowance	\$ 5,000	1	\$ 5,000
6	Soil Vapor Intrusion Reporting	Lump Sum	\$ 3,000	1	\$ 3,000
7	Closure Reporting and COC Coordination	Allowance	\$ 50,000	1	\$ 50,000
Consulting/Engineering Subtotal					\$ 518,000
Contractor Costs					
Task	Description	Unit	Unit Cost	Quantity	Total Cost
1	Mobilization/Demobilization, Site Maintenance, Security, etc.	Allowance	\$ 300,000	1	\$ 300,000
2	Truck Wash Station	Month	\$ 20,000	6	\$ 120,000
3	Management/Handling Contaminated Material	Cubic Yard	\$ 40	3,900	\$ 156,000
4	Support of Excavation (\$4,000/Linear Foot X Site Perimeter 525 ft = \$2,100,000)	Linear Foot	\$ 2,100,000	0.55	\$ 1,155,000
5	Transport and Disposal of Non-Hazardous Contaminated Material	Ton	\$ 50	5,800	\$ 290,000
6	Transport and Disposal of Hazardous Material (F Listed and/or Lead)	Ton	\$ 275	50	\$ 13,750
7	Underground Storage Tank (Contingency Budget)	Allowance	\$ 75,000	0	\$ -
8	Backfill (truck pads)	Ton	\$ 30	1000	\$ 30,000
Contractor Subtotal					\$ 2,064,750
Total					\$ 2,582,750
15% Contingency					\$ 387,413
Estimated Total (Rounded to the nearest \$1,000)					\$ 2,970,000

Notes:

1. Assuming a conditional Track 1 Remedy requiring excavations to remove soil exceeding Track 1 UUSCOs.
2. Assumes density of 1.5 tons per cubic yard of fill/soil.
3. Assumes residual soil will meet Track 1 Unrestricted Use Soil Cleanup Objectives.
4. Assumes dewatering will not be required.
5. SOE Costs are based on a conventional soldier pile and timber lagging system with lateral bracing provided by either steel rakers or tiebacks.
6. Costs are estimated and subject to change. Costs do not include new building construction.
7. RAWP implementation is assumed to take 5-6 months.
8. This cost estimate was prepared to compare various remedial alternatives as was based on available information at the time of preparation. The estimate may be +/- 30-50% of the actual cost. This estimate was not prepared for financial or legal consulting purposes and was not intended for use regarding compliance with financial reporting requirements or liability services.
9. This estimate does not include legal fees associated with attorneys involved in the project, insurance fees or outside consulting fees.

TABLE 3.

ALTERNATIVE II REMEDIAL COST ESTIMATE (PREFERRED REMEDY)

91 BRUCKNER BOULEVARD, BRONX, NEW YORK

BCP SITE NO. C203160

Consulting/Engineering Costs					
Task	Description	Unit	Unit Cost	Quantity	Total Cost
1	Waste Characterization	Lump Sum	\$ 50,000	1	\$ 50,000
2	Program Management (NYSDEC/NYSDOH Correspondence, Daily/Weekly/Monthly Reporting, etc.)	Month	\$ 15,000	10	\$ 150,000
3	Remedial Oversight	Month	\$ 30,000	5	\$ 150,000
4	Confirmation Sampling	Sample	\$ 2,000	25	\$ 50,000
5	Soil Vapor Intrusion Evaluation	Allowance	\$ 5,000	1	\$ 5,000
6	Soil Vapor Intrusion Reporting	Lump Sum	\$ 3,000	1	\$ 3,000
8	Closure Reporting and COC Coordination	Allowance	\$ 75,000	1	\$ 75,000
Consulting/Engineering Subtotal					\$ 483,000
Contractor Costs					
Task	Description	Unit	Unit Cost	Quantity	Total Cost
1	Mobilization/Demobilization, Site Maintenance, Security, etc.	Allowance	\$ 300,000	1	\$ 300,000
2	Truck Wash Station	Month	\$ 20,000	8	\$ 160,000
3	Management/Handling Contaminated Material	Cubic Yard	\$ 40	3,100	\$ 124,000
4	Support of Excavation (\$4,000/Linear Foot X Site Perimeter 450 ft = \$1,800,000)	Linear Foot	\$ 1,800,000	0.6	\$ 1,080,000
5	Transport and Disposal of Non-Hazardous Contaminated Material	Ton	\$ 50	6,450	\$ 322,500
6	Transport and Disposal of Hazardous Material (F Listed and/or Lead)	Ton	\$ 275	50	\$ 13,750
7	Underground Storage Tank (Contingency Budget)	Allowance	\$ 75,000	1	\$ 75,000
8	Backfill (truck pads)	Ton	\$ 30	1000	\$ 30,000
Contractor Subtotal					\$ 2,105,250
Total					\$ 2,588,250
15% Contingency					\$ 388,238
Estimated Total (Rounded to the nearest \$1,000)					\$ 2,976,000

Notes:

1. Assuming a conditional Track 2 Remedy requiring excavations to remove soil exceeding Track 2 RRSCOs.
2. Assumes density of 1.5 tons per cubic yard of fill/soil.
3. Assumes residual soil will meet Track 2 Restricted Residential Soil Cleanup Objectives.
4. Assumes dewatering will not be required.
5. SOE Costs are based on a conventional soldier pile and timber lagging system with lateral bracing provided by either steel rakers or tiebacks.
6. Costs are estimated and subject to change. Costs do not include new building construction.
7. RAWP implementation is assumed to take 4-5 months.
8. This cost estimate was prepared to compare various remedial alternatives as was based on available information at the time of preparation. The estimate may be +/- 30-50% of the actual cost. This estimate was not prepared for financial or legal consulting purposes and was not intended for use regarding compliance with financial reporting requirements or liability services.
9. This estimate does not include legal fees associated with attorneys involved in the project, insurance fees or outside consulting fees.

TABLE 4.

TRACK 2 SOIL CLEANUP OBJECTIVES

91 BRUCKNER BOULEVARD, BRONX, NEW YORK
 NYSDEC BCP SITE C203160

PCBs/Pesticides (mg/kg)	
Delta-BHC	100
Lindane	1.3
Alpha-BHC	0.48
Beta-BHC	0.36
Heptachlor	2.1
Aldrin	0.097
Endrin	11
Dieldrin	0.2
4,4'-DDE	8.9
4,4'-DDD	13
4,4'-DDT	7.9
Endosulfan I	24
Endosulfan II	24
Endosulfan sulfate	24
cis-Chlordane	4.2
PCBs, Total	1

Volatile Organic Compounds (mg/kg)	
Methylene chloride	100
1,1-Dichloroethane	26
Chloroform	49
Carbon tetrachloride	2.4
Tetrachloroethene	19
Chlorobenzene	100
1,2-Dichloroethane	3.1
1,1,1-Trichloroethane	100
Benzene	4.8
Toluene	100
Ethylbenzene	41
Vinyl chloride	0.9
1,1-Dichloroethene	100
trans-1,2-Dichloroethene	100
Trichloroethene	21
1,2-Dichlorobenzene	100
1,3-Dichlorobenzene	49
1,4-Dichlorobenzene	13
Methyl tert butyl ether	100
Xylenes, Total	100
cis-1,2-Dichloroethene	100
Acetone	100
2-Butanone	100
n-Butylbenzene	100
sec-Butylbenzene	100
tert-Butylbenzene	100
Naphthalene	100
n-Propylbenzene	100
1,3,5-Trimethylbenzene	52
1,2,4-Trimethylbenzene	52
1,4-Dioxane	13

Semivolatile Organic Compounds (mg/kg)	
Acenaphthene	100
Hexachlorobenzene	1.2
1,2-Dichlorobenzene	100
1,3-Dichlorobenzene	49
1,4-Dichlorobenzene	13
Fluoranthene	100
Naphthalene	100
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(k)fluoranthene	3.9
Chrysene	3.9
Acenaphthylene	100
Anthracene	100
Benzo(ghi)perylene	100
Fluorene	100
Phenanthrene	100
Dibenzo(a,h)anthracene	0.33
Indeno(1,2,3-cd)pyrene	0.5
Pyrene	100
Dibenzofuran	59
Pentachlorophenol	6.7
Phenol	100
2-Methylphenol	100
3-Methylphenol/4-Methylp	100
1,4-Dioxane	13

Metals (mg/kg)	
Arsenic, Total	16
Barium, Total	400
Beryllium, Total	72
Cadmium, Total	4.3
Copper, Total	270
Lead, Total	400
Manganese, Total	2000
Mercury, Total	0.81
Nickel, Total	310
Selenium, Total	180
Silver, Total	180
Zinc, Total	10000

Notes:

1. Criteria are 6 NYCRR Part 375 Restricted Residential Soil Cleanup Objectives
2. mg/kg: milligram per kilogram

FIGURES

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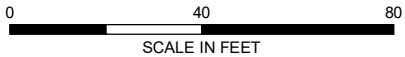


LEGEND

-  PARCEL BOUNDARY
-  SITE BOUNDARY

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. ASSESSOR PARCEL DATA SOURCE: NYC DEPARTMENT OF CITY PLANNING
3. AERIAL IMAGERY SOURCE: ESRI



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91 BRUCKNER BOULEVARD
BRONX, NEW YORK

SITE PLAN

MAY 2023

FIGURE 2

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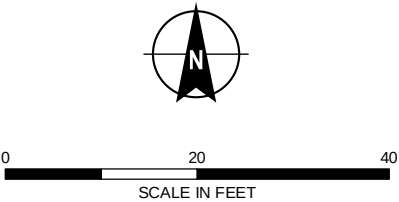


LEGEND

-  MONITORING WELL
-  SITE BOUNDARY
-  PARCEL BOUNDARY
-  14.0 DEPTH TO GROUNDWATER CONTOUR, IN FEET (DASHED WHERE INFERRED)
-  GROUNDWATER FLOW DIRECTION
-  13.88 GROUNDWATER ELEVATION (NAVD 88)

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. ASSESSOR PARCEL DATA SOURCE: NYC DEPARTMENT OF CITY PLANNING
3. AERIAL IMAGERY SOURCE: NEARMAP, 27 SEPTEMBER 2022



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91 BRUCKNER BOULEVARD
BRONX, NEW YORK

GROUNDWATER
CONTOUR MAP

MAY 2023

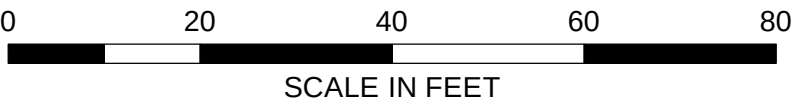
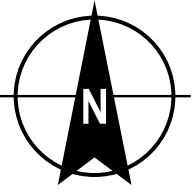
FIGURE 3

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- LEGEND**
- SOIL BORING
 - SITE BOUNDARY
 - PARCEL BOUNDARY

- NOTES**
- ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
 - SOIL SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) TITLE 6 OF THE OFFICIAL COMPILATION OF NEW YORK CODES, RULES, AND REGULATIONS (NYCRR) PART 375 UNRESTRICTED USE SOIL CLEANUP OBJECTIVES (SCOS), RESTRICTED-RESIDENTIAL SCOS, AND 40 CFR 261 SUBPART C AND TABLE 1 OF 40 CFR 261.24.
 - DESCRIPTIONS:
NY-RESR = NYSDEC PART 375 RESTRICTED-RESIDENTIAL USE SCO
NY-UNRES = NYSDEC PART 375 UNRESTRICTED USE SCO
NY-PGW = NYDEC PART 375 PROTECTION OF GROUNDWATER CRITERIA
 - EXCEEDANCES OF THE NY-UNRES ARE SHADED GRAY
 - EXCEEDANCES OF THE NY-UNRES AND NY-RESRR ARE SHADED YELLOW
 - EXCEEDANCES OF THE NY-PGW ARE SHOWN IN BLACK TEXT AND IN ITALICS
 - RESULTS ARE DISPLAYED IN MILLIGRAMS PER KILOGRAM (mg/kg).
 - ASSESSOR PARCEL DATA SOURCE: NYC DEPARTMENT OF CITY PLANNING
 - AERIAL IMAGERY SOURCE: NEARMAP, 27 SEPTEMBER 2022



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91 BRUCKNER BOULEVARD
BRONX, NEW YORK

SOIL RESULTS EXCEEDANCES MAP

MAY 2023

FIGURE 4

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SB-13	02/13/2023 L2307700-03 SB-13 (0-0.5) 0 - 0.5 (ft)	02/13/2023 L2307700-04 SB-13 (6-8) 6 - 8 (ft)	02/13/2023 L2307700-05 SB-13 (12-14) 12 - 14 (ft)
Perfluorooctanesulfonic acid (PFOS)	1.16	ND (0.196)	0.166 J

LEGEND

 SOIL BORING

 SITE BOUNDARY

 PARCEL BOUNDARY

- NOTES
1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.

2. SOIL SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION(NYSDEC) PART 375 REMEDIAL PROGRAMS GUIDANCE ON THE SAMPLING, ANALYSIS, AND ASSESSMENT OF PER-AND POLYFLUOROALKYL SUBSTANCES (PFAS).

3. NY-RESR = NYSDEC PART 375 RESTRICTED-RESIDENTIAL USE SCO

4. NY-UNRES = NYSDEC PART 375 UNRESTRICTED USE SCO

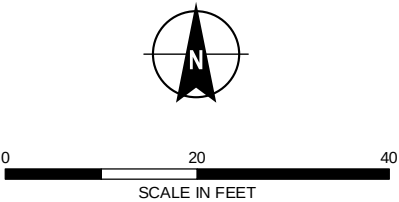
5. EXCEEDANCES OF THE NY-UNRES SCOS ARE SHADED GRAY.

6. EXCEEDANCES OF THE NY-UNRES AND NY-RESR ARE SHADED YELLOW.

7. RESULTS ARE DISPLAYED IN MICROGRAMS PER KILOGRAMS (ug/kg).

8. ASSESSOR PARCEL DATA SOURCE: NYC DEPARTMENT OF CITY PLANNING

9. AERIAL IMAGERY SOURCE: NEARMAP, 27 SEPTEMBER 2022



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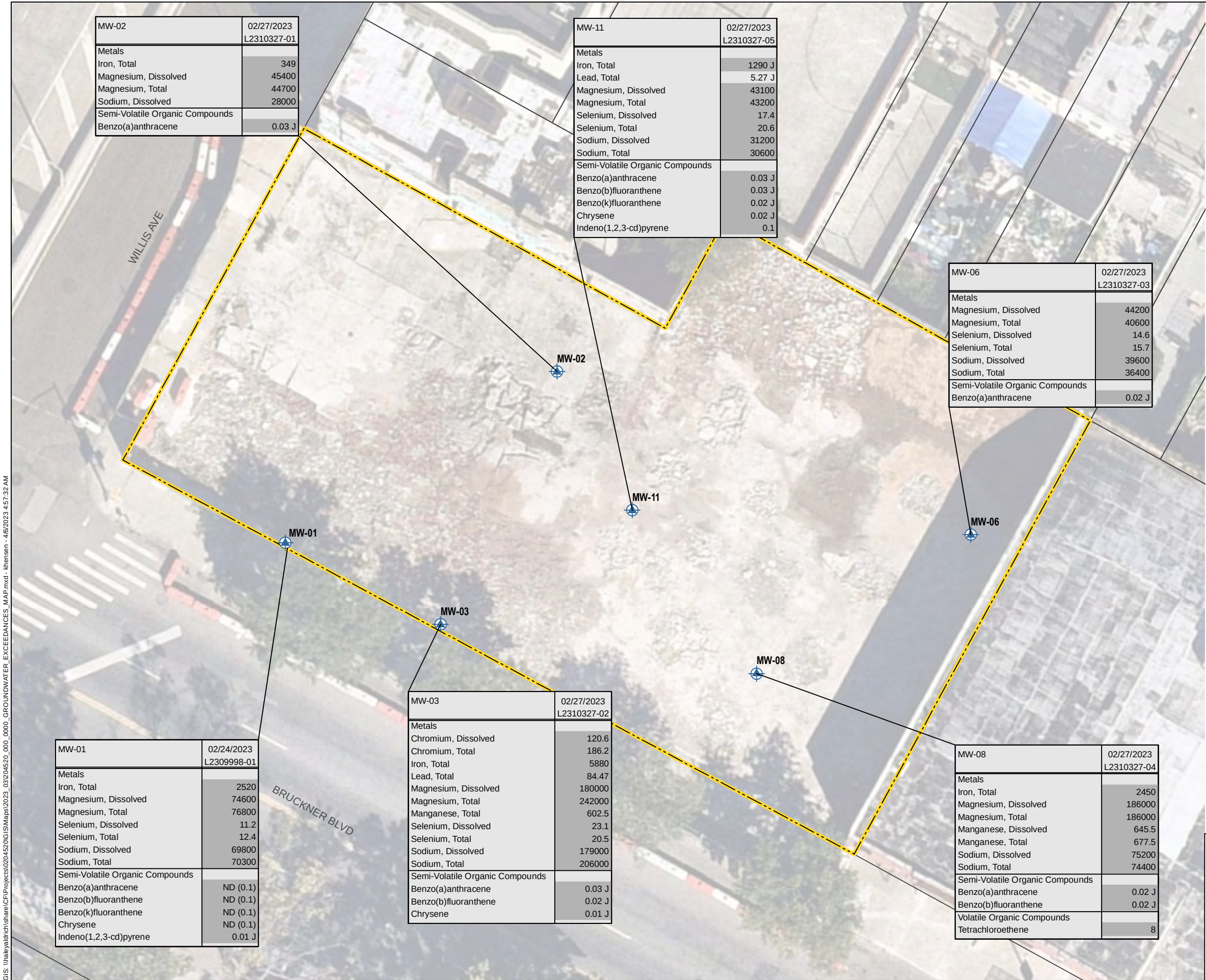
91 BRUCKNER BOULEVARD
BRONX, NEW YORK

EMERGING CONTAMINANT SOIL
RESULTS EXCEEDANCES MAP

MAY 2023

FIGURE 5

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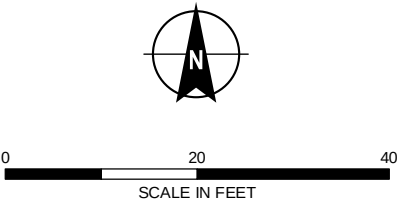
LEGEND

 MONITORING WELL

 SITE BOUNDARY

 PARCEL BOUNDARY

- NOTES**
1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
 2. GROUNDWATER SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION(NYSDEC) TECHNICAL AND OPERATIONAL GUIDANCE SERIES (TOGS) 1.1.1 AMBIENT WATER QUALITY STANDARDS (AWQS)
 3. ALL RESULTS SHADED GRAY EXCEED THE NYSDEC AWQS.
 4. RESULTS ARE DISPLAYED IN MICROGRAMS PER LITER (ug/L).
 5. ASSESSOR PARCEL DATA SOURCE: NYC DEPARTMENT OF CITY PLANNING
 6. AERIAL IMAGERY SOURCE: NEARMAP, 27 SEPTEMBER 2022



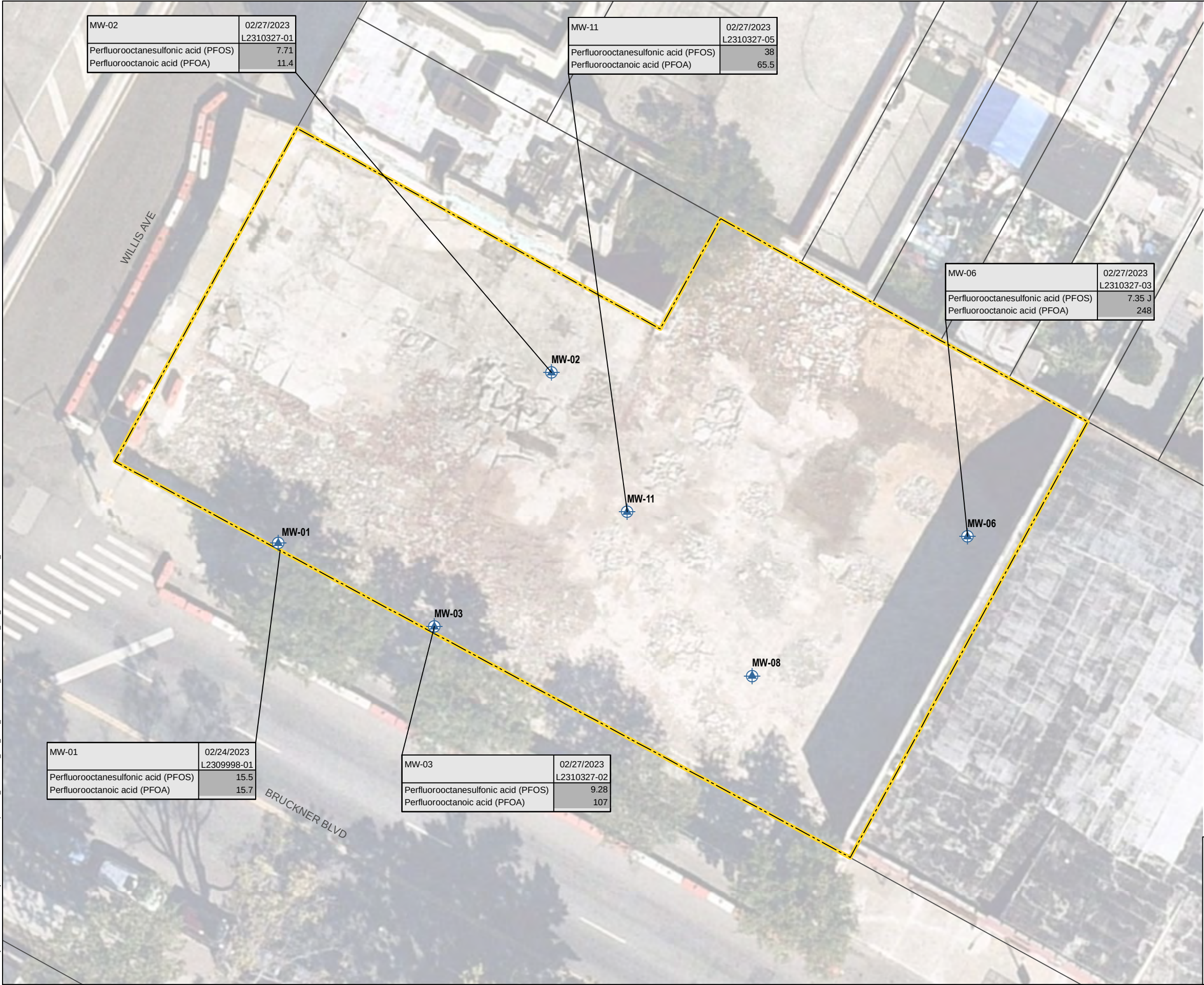
91 BRUCKNER BOULEVARD
BRONX, NEW YORK

GROUNDWATER RESULTS
EXCEEDANCES MAP

MAY 2023

FIGURE 6

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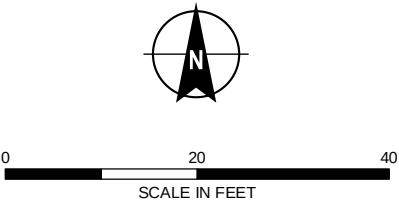
LEGEND

 MONITORING WELL

 SITE BOUNDARY

 PARCEL BOUNDARY

- NOTES**
1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
 2. GROUNDWATER SAMPLE ANALYTICAL RESULTS ARE COMPARED TO THE FEBRUARY 2023 NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES.
 3. RESULTS ARE DISPLAYED IN NANOGRAMS PER LITER (ng/L).
 4. EXCEEDANCES OF 6.7 ng/L FOR PFOA AND 2.7 ng/L FOR PFOS SHOWN ON FIGURE.
 5. ASSESSOR PARCEL DATA SOURCE: NYC DEPARTMENT OF CITY PLANNING
 6. AERIAL IMAGERY SOURCE: NEARMAP, 27 SEPTEMBER 2022



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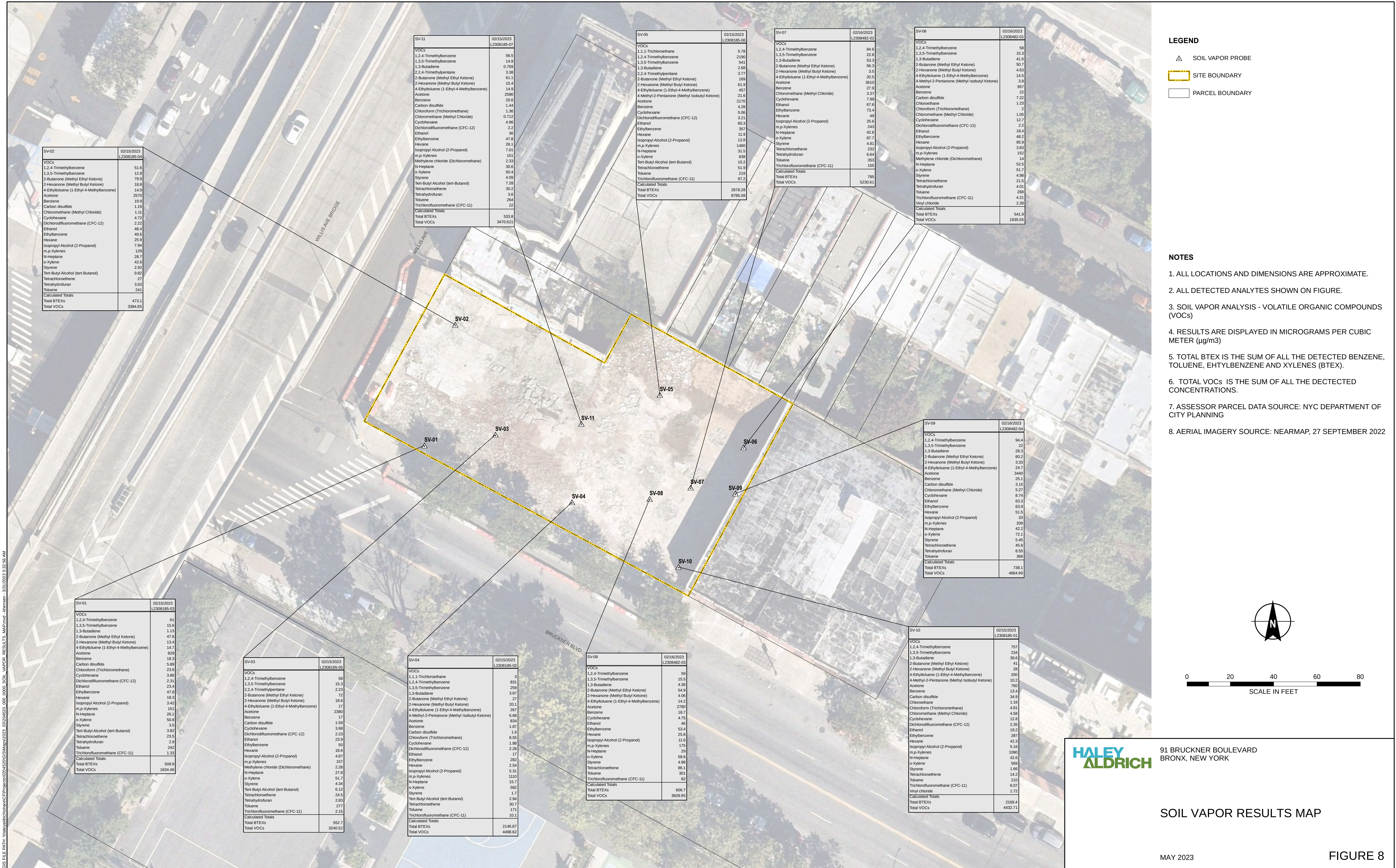
91 BRUCKNER BOULEVARD
BRONX, NEW YORK

EMERGING CONTAMINANT
GROUNDWATER RESULTS
EXCEEDANCES MAP

MAY 2023

FIGURE 7

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LEGEND

- PARCEL BOUNDARY
- SITE BOUNDARY
- 8 FT EXCAVATION
- 5 FT EXCAVATION

NOTES

- ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
- ASSESSOR PARCEL DATA SOURCE: NYC DEPARTMENT OF CITY PLANNING
- AERIAL IMAGERY SOURCE: ESRI



0 40 80
SCALE IN FEET

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91 BRUCKNER BOULEVARD
BRONX, NEW YORK

ALTERNATIVE I EXCAVATION PLAN

MAY 2023

FIGURE 9

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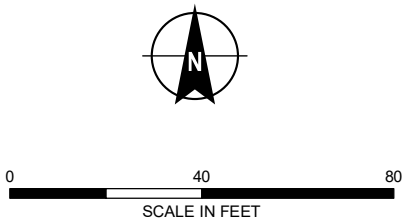


LEGEND

- PARCEL BOUNDARY
- SITE BOUNDARY
- 2 FT EXCAVATION
- 8 FT EXCAVATION

NOTES

- ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
- ASSESSOR PARCEL DATA SOURCE: NYC DEPARTMENT OF CITY PLANNING
- AERIAL IMAGERY SOURCE: ESRI



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91 BRUCKNER BOULEVARD
BRONX, NEW YORK

ALTERNATIVE II EXCAVATION PLAN
(PREFERRED REMEDY)

MAY 2023

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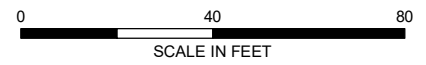


LEGEND

-  PARCEL BOUNDARY
-  SITE BOUNDARY
-  PROPOSED BASE CONFIRMATION SAMPLE LOCATION
-  PROPOSED SIDEWALL CONFIRMATION SAMPLES

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. ASSESSOR PARCEL DATA SOURCE: NYC DEPARTMENT OF CITY PLANNING
3. AERIAL IMAGERY SOURCE: ESRI



91 BRUCKNER BOULEVARD
BRONX, NEW YORK

PROPOSED CONFIRMATION SAMPLE
LOCATION PLAN

MAY 2023

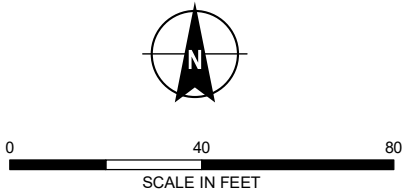
FIGURE 11



LEGEND

- PARCEL BOUNDARY
- SITE BOUNDARY
- CONSTRUCTION ENTRANCE
- TRUCK INGRESS
- TRUCK EGRESS
- PROPOSED TRUCK ROUTE
- LOCAL TRUCK ROUTE
- THROUGH TRUCK ROUTE

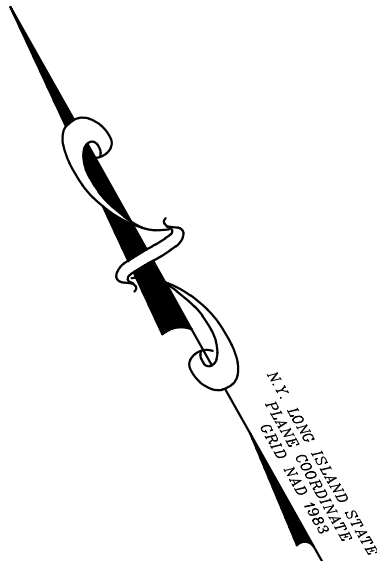
- NOTES**
- ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
 - ASSESSOR PARCEL DATA SOURCE: NYC DEPARTMENT OF CITY PLANNING
 - AERIAL IMAGERY SOURCE: ESRI



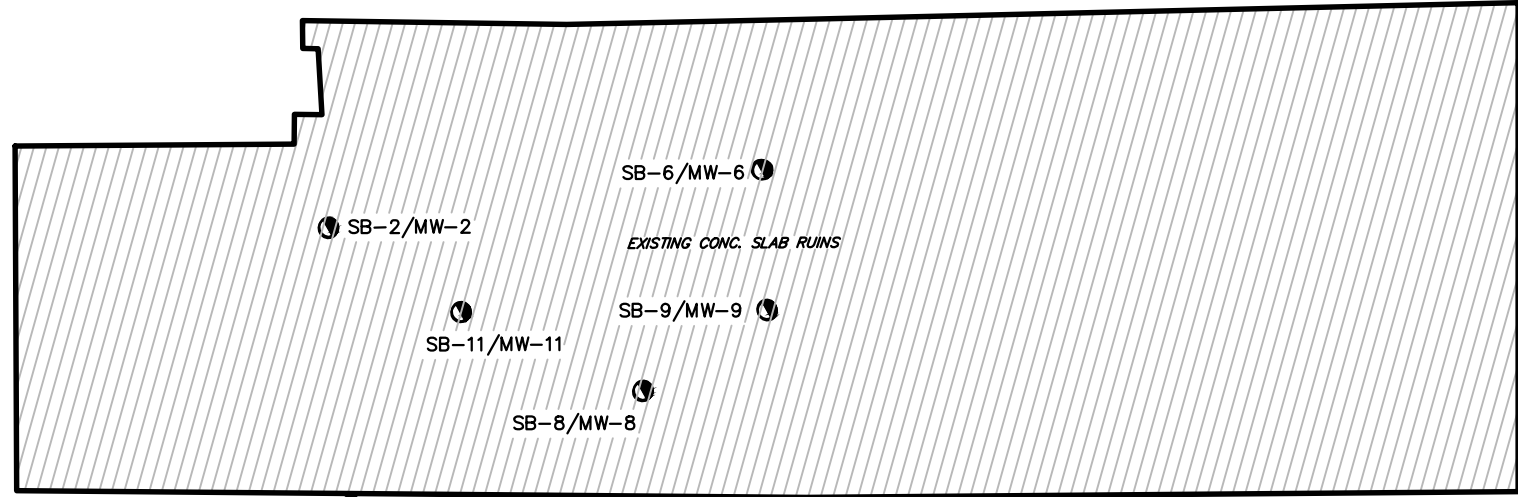
HALEY ALDRICH 91 BRUCKNER BOULEVARD
BRONX, NEW YORK

PROPOSED TRUCK ROUTE MAP

APPENDIX A SURVEY MAP



WILLIS AVENUE

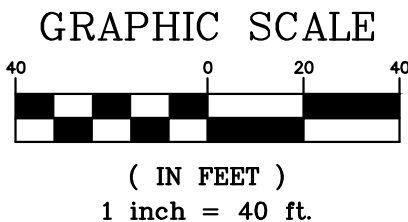


BRUCKNER BOULEVARD

UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR'S SEAL IS A VIOLATION OF SECTION 7209, SUB-DIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

- NOTES:
1. FIELD WORK PERFORMED ON FEBRUARY 24, 2023.
 2. ELEVATION DATUM NAVD 1988 DERIVED USING RTK/KEYNET.NYBP BATTERY PARK CORS ARP ELEV.=57.21' (NAVD 88)

MONITORING WELLS	GROUND	RIM	PVC
SB-1/MW-1	25.45 CONC.	25.48	25.25
SB-2/MW-2	28.22 CONC.	28.31	27.89
SB-3/MW-3	25.93 CONC.	25.96	25.66
SB-6/MW-6	28.21 CONC.	28.22	27.86
SB-8/MW-8	28.08 CONC.	28.09	27.82
SB-9/MW-9	28.10 CONC.	28.12	27.94
SB-11/MW-11	27.65 CONC.	27.66	27.27



James J. Heiser
Professional Land Surveyor
JHEISER@DPKCONSULTING.NET

DATE 02/27/2023
N.J. Lic: 24GS04331100
PA. Lic: SU075616
N.Y. Lic: 050932-1
CT. Lic: 70476

Date: 02/27/2023 Dr.: R.M. Chk.: C.S. SCALE: 1" = 40' JOB No. 23-9858 Dwg: 23-9858 MW00



DPK
LAND SURVEYING
DPK LAND SURVEYING, LLC
200 METROPLEX DRIVE - STE. 285, EDISON, NJ 08817
P: 732-764-0100 F: 732-764-0990
NEW YORK CERTIFICATE OF AUTHORIZATION NO. 0012585

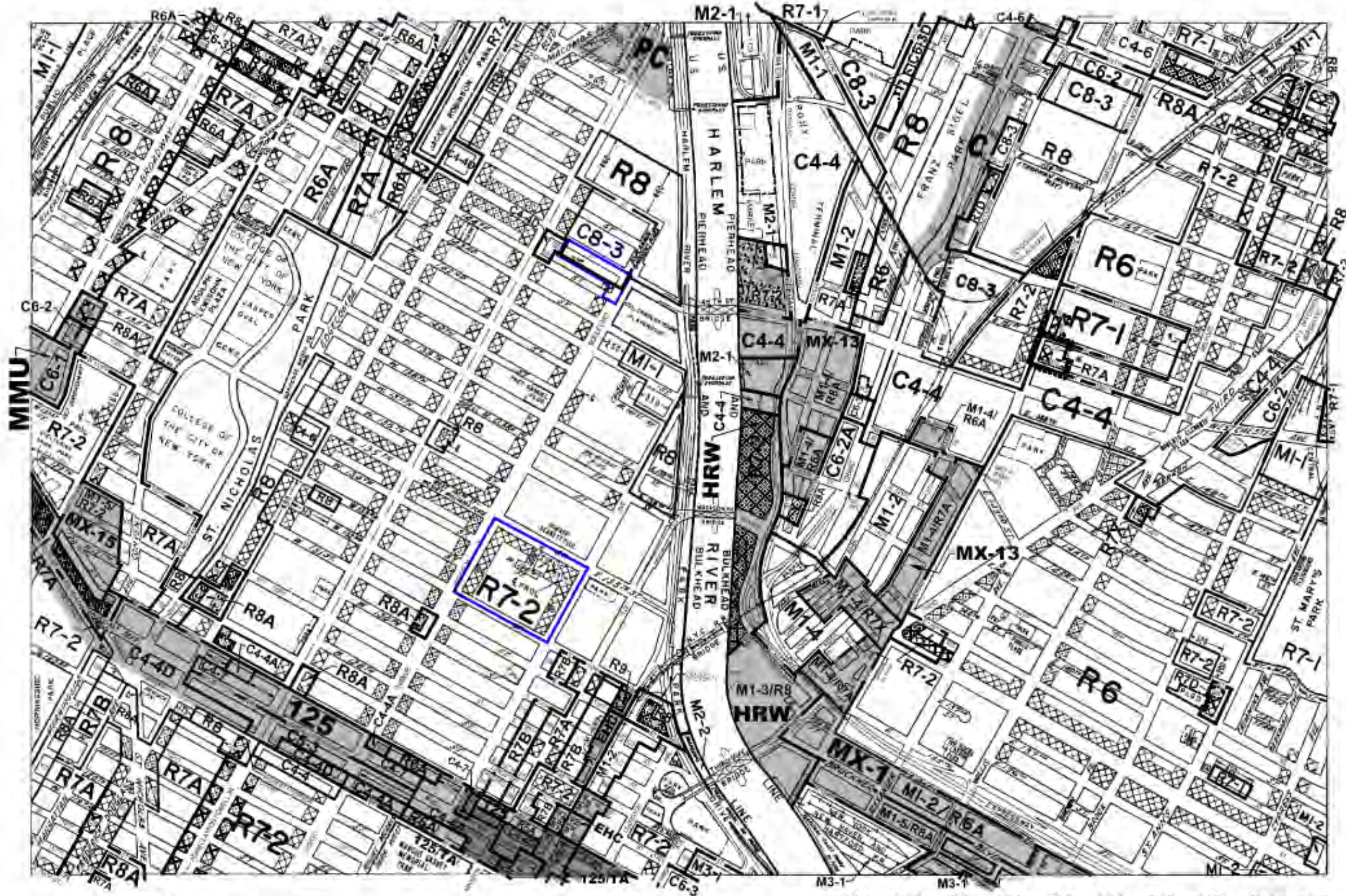
MONITORING WELL LOCATION MAP
FOR:
HALEY & ALDRICH OF NEW YORK

SITE:
91 BRUCKNER BLVD
BRONX, NEW YORK

S:\Projects\2023\23-9858\CAD\23-9858 MW00.dwg Feb 27, 2023 3:58pm BY: (RogerMaandal)

APPENDIX B ZONING MAP

Click blue outline on map to view diagram of proposed zoning change



ZONING MAP

THE NEW YORK CITY PLANNING COMMISSION

Major Zoning Classifications:

The number(s) and/or letter(s) that follows an R, C or M District designation indicates use, bulk and other controls as described in the text of the Zoning Resolution.

- R — RESIDENTIAL DISTRICT
- C — COMMERCIAL DISTRICT
- M — MANUFACTURING DISTRICT

SPECIAL PURPOSE DISTRICT
The letter(s) within the shaded area designates the special purpose district as described in the text of the Zoning Resolution.

AREA(S) REZONED

Effective Date(s) of Rezoning

*04-28-2022 C 210321 ZMX
11-10-2021 C 210339 ZMX

Special Requirements:

For a list of lots subject to CEQR environmental requirements, see APPENDIX C.

For a list of lots subject to "D" restrictive declarations, see APPENDIX D.

For Inclusionary Housing designated areas and Mandatory Inclusionary Housing areas on this map, see APPENDIX F.

MAP KEY

	3b	3d
5c	6a	6c
5d	6b	6d

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NOTE: Zoning information shown on this map is subject to change. For the most up-to-date zoning information for this map, visit the Zoning section of the Department of City Planning website: www.nyc.gov/dcp/zoning or contact the Zoning Information Desk at (212) 312-3231.

C1-1 C1-2 C1-3 C1-4 C1-5 C2-1 C2-2 C2-3 C2-4 C2-5

NOTE: Where no other means for zoning district identification is provided, the zoning district is identified by the color of the lot. The color of the lot is identified by the color of the lot.

ZONING MAP 6a

APPENDIX C

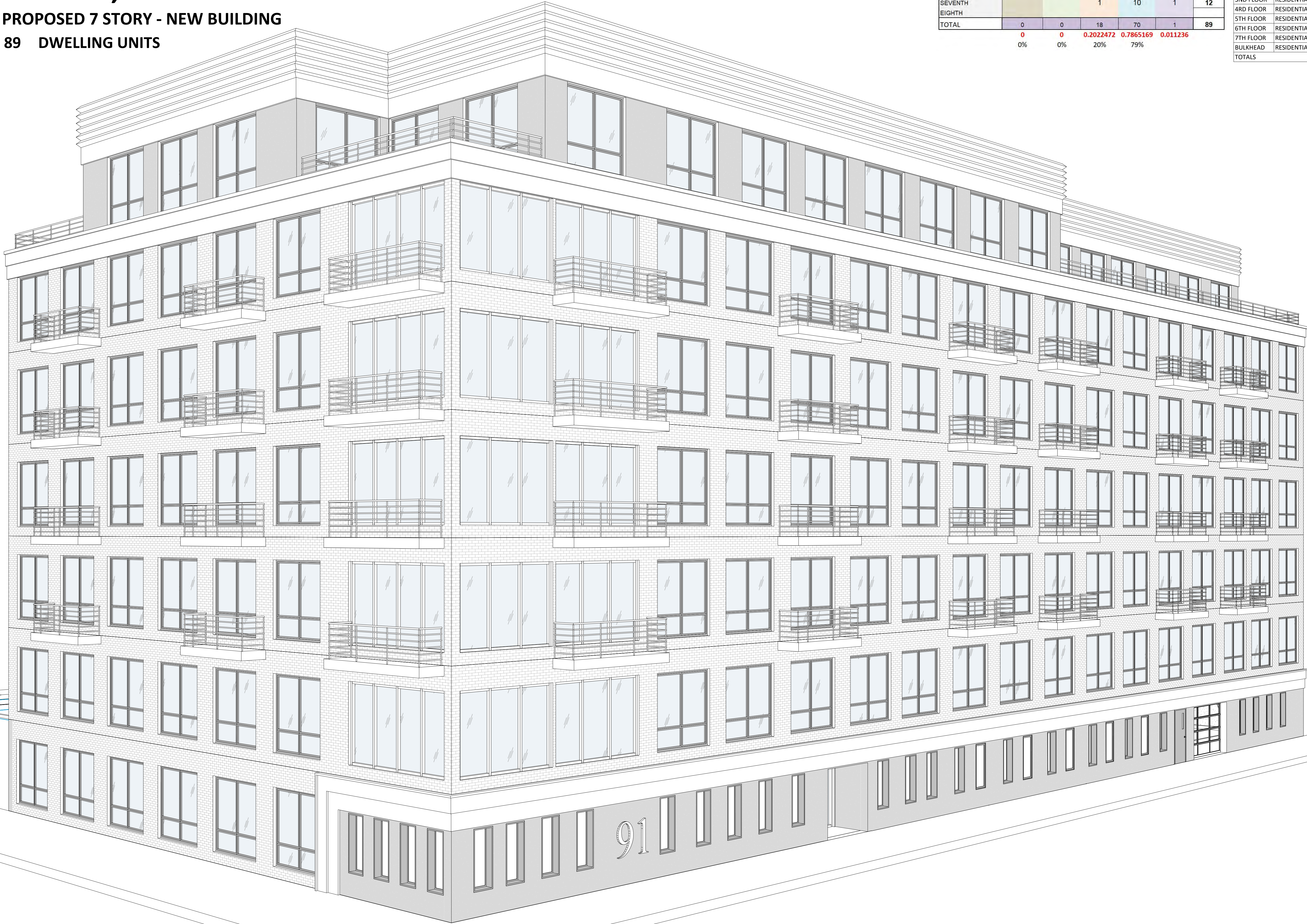
PROPOSED DEVELOPMENT PLANS

91 BRUCKNER BOULEVARD

BRONX, NY

PROPOSED 7 STORY - NEW BUILDING

89 DWELLING UNITS



OPTION - A						
	DUPLEX	STUDIO	1BD	2BD	3BD	
FIRST			7			7
SECOND		0	2	12		14
THIRD		0	2	12		14
FOURTH		0	2	12		14
FIFTH		0	2	12		14
SIXTH		0	2	12		14
SEVENTH			1	10	1	12
EIGHTH						
TOTAL	0	0	18	70	1	89
	0	0	0.2022472	0.7865169	0.011236	
	0%	0%	20%	79%		

ZONING FLOOR AREA SCHEDULE									
LEVEL	USE	GFA	DEDUCTION	ZFA	F.A.R.	LOT_AREA	L.C	D.U	
RESIDENTIAL									
CELLAR	RESIDENTIAL	10,714 SF	10,714 SF	0 SF	0.00	20,333 SF	53%	0	
1ST FLOOR	RESIDENTIAL	6,602 SF	1,300 SF	5,302 SF	0.26	20,333 SF	32%	7	
2ND FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14	
3ND FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14	
4RD FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14	
5TH FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14	
6TH FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14	
7TH FLOOR	RESIDENTIAL	8,997 SF	600 SF	8,397 SF	0.41	20,333 SF	44%	12	
BULKHEAD	RESIDENTIAL	653 SF	600 SF	53 SF	0.00	20,333 SF	3%	0	
TOTALS		77,402 SF	16,464 SF	60,938 SF	3.00			89	

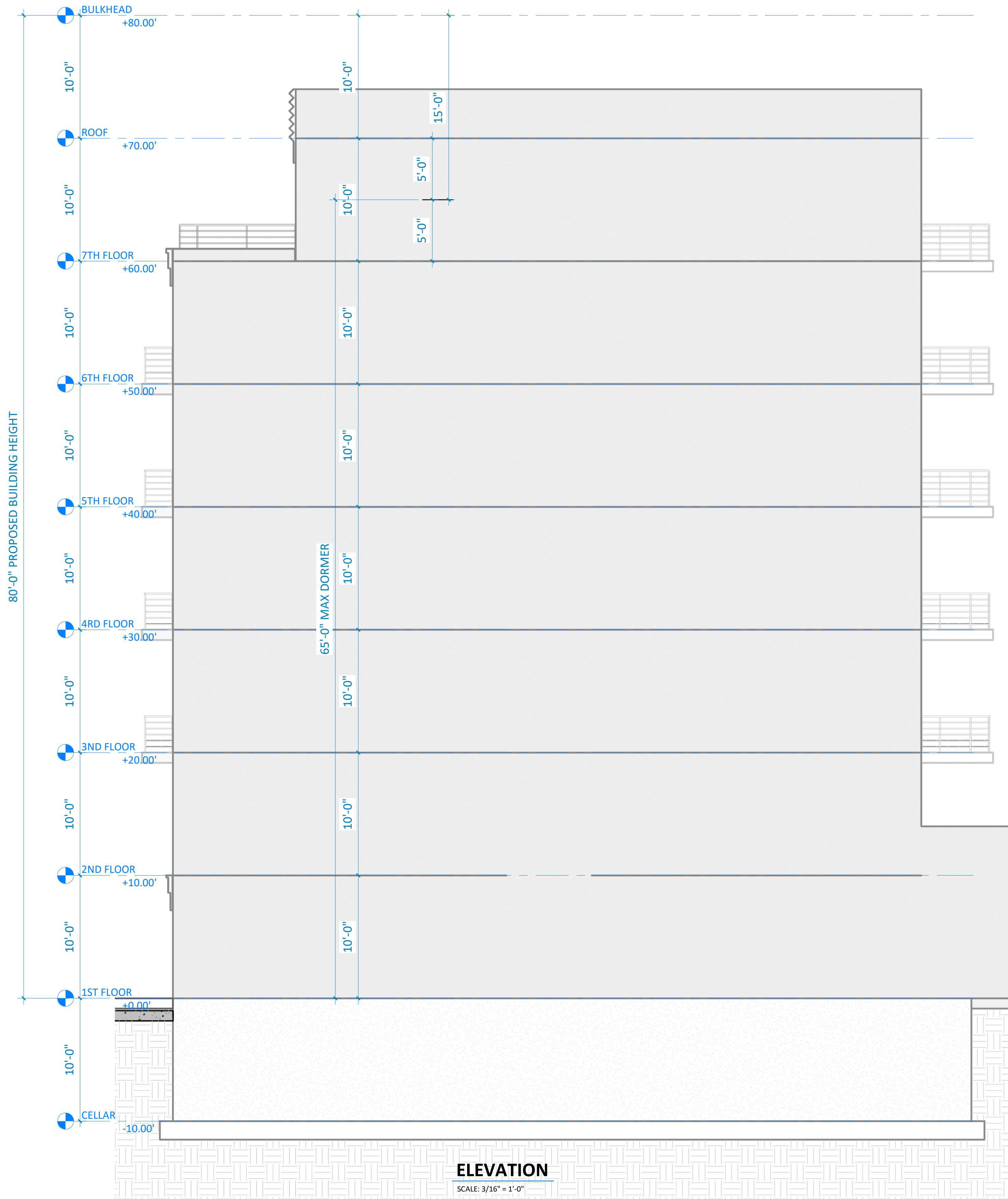
MAX ZFA AT 60,999 SF
MAX DU AT 89



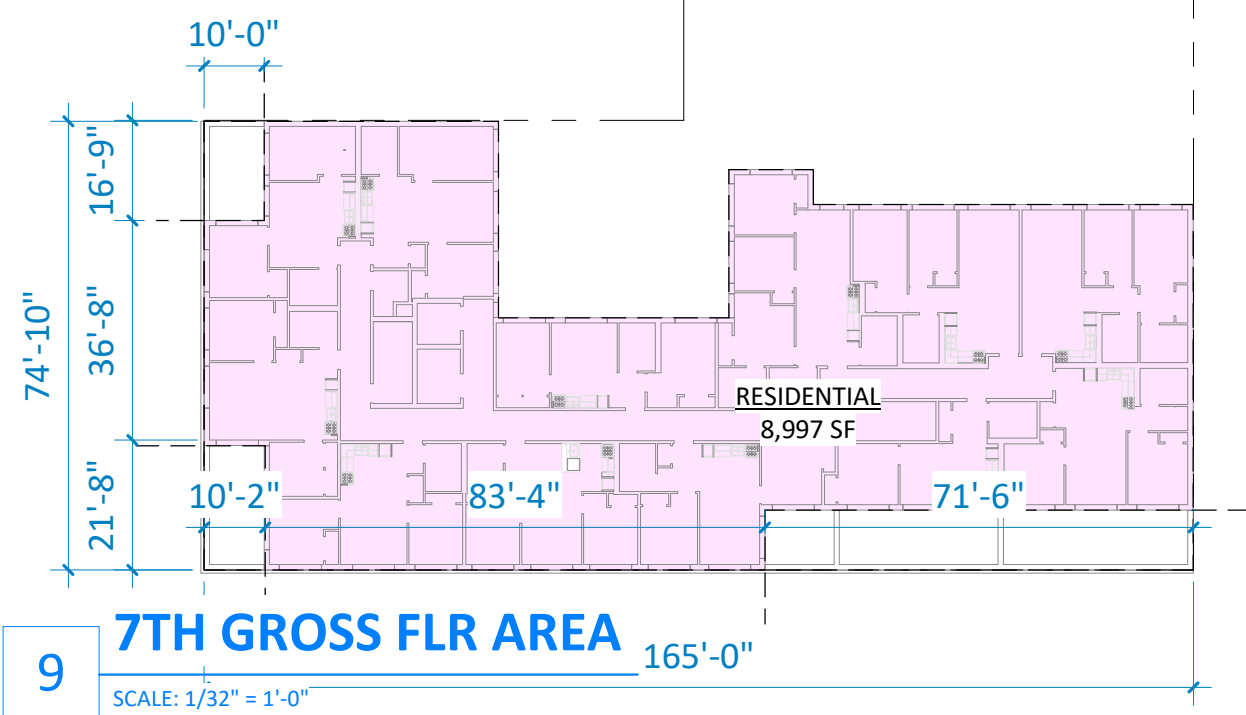
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BROOKLYN NY, 11216
T: (718) 484-3201

91 BRUCKNER BOULEVARD
TITLESHEET

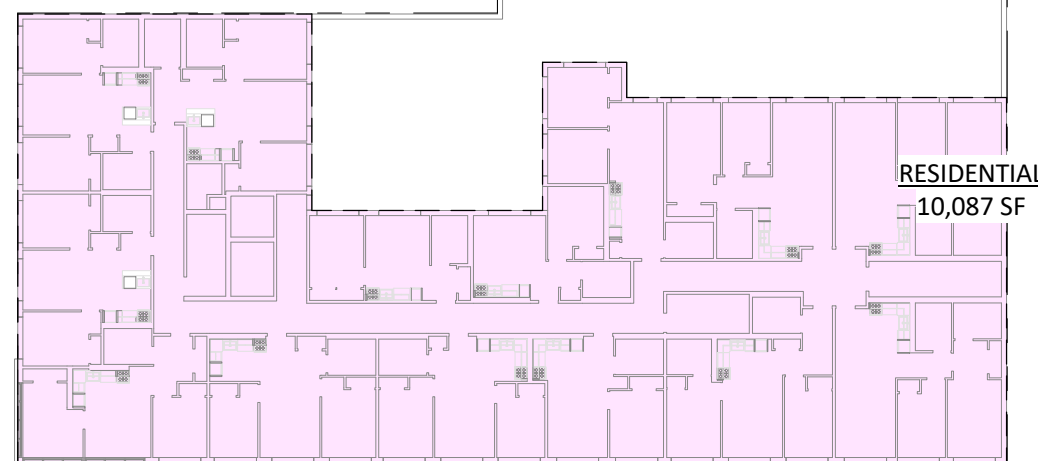
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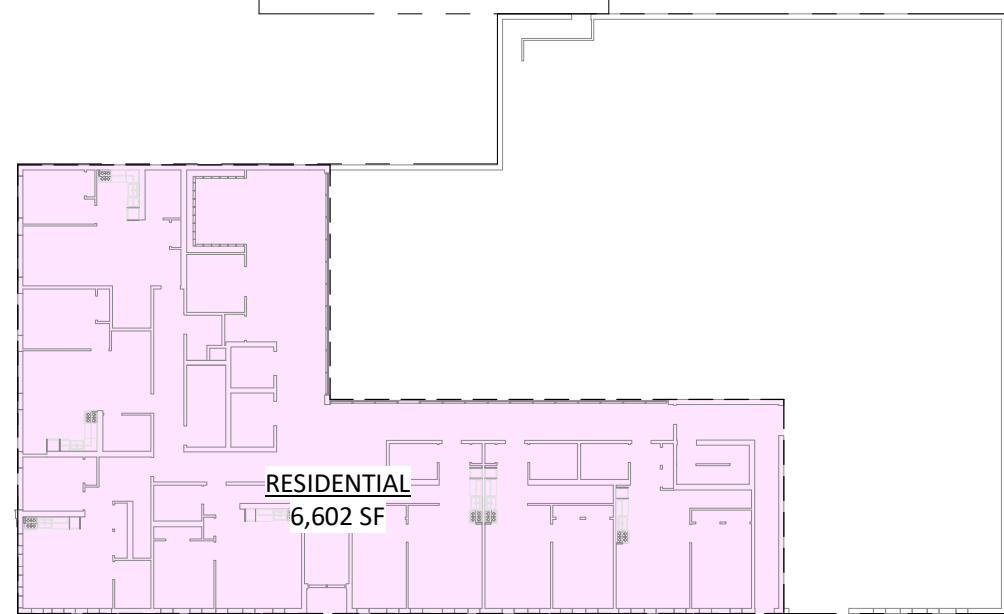
4 ROOF GROSS FLR AREA
SCALE: 1/32" = 1'-0"



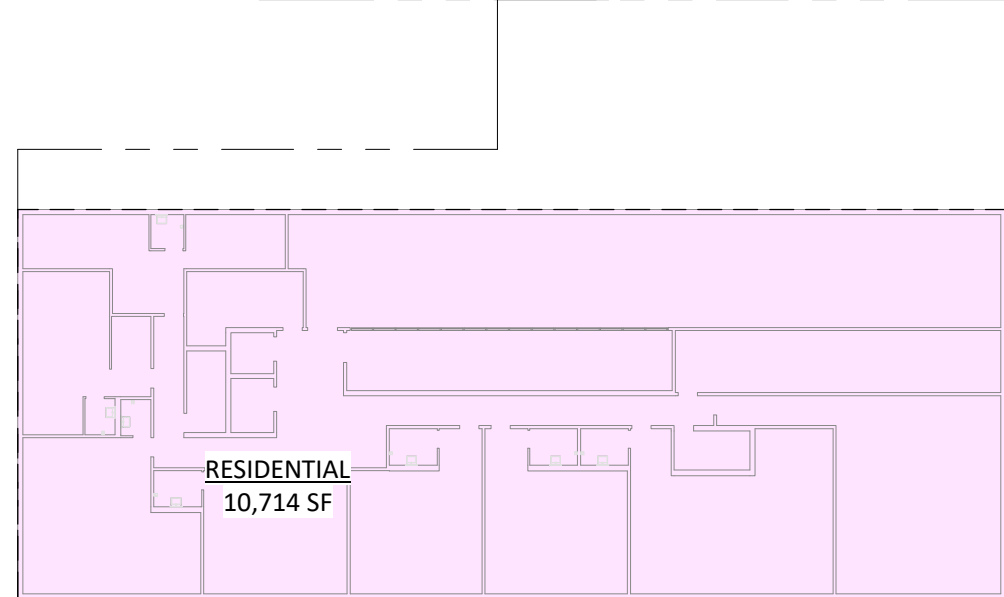
6 3-6TH GROSS FLR AREA
SCALE: 1/32" = 1'-0"



7 2ND GROSS FLR AREA
SCALE: 1/32" = 1'-0"



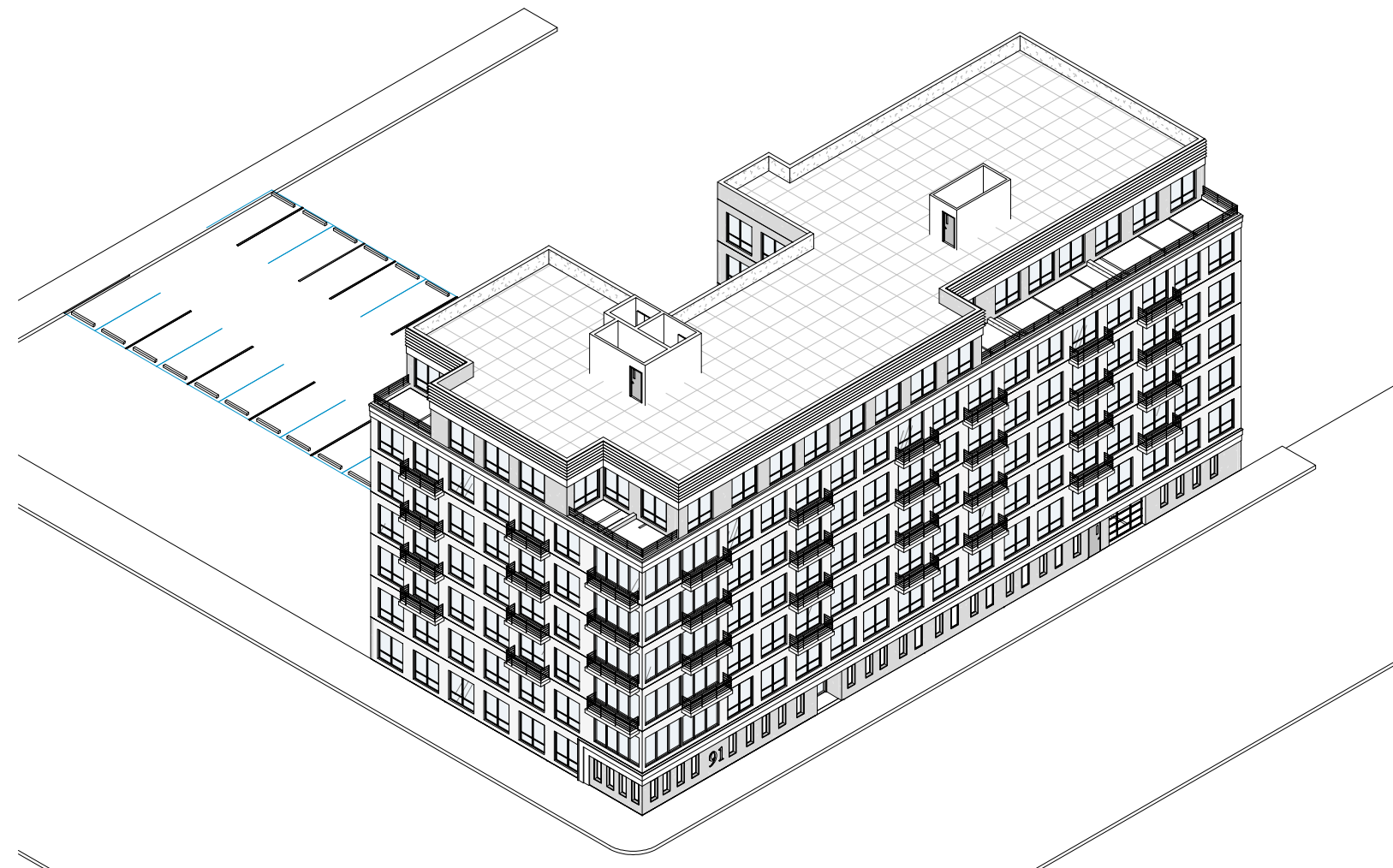
1 1ST GROSS FLR AREA
SCALE: 1/32" = 1'-0"



8 CELLAR GROSS FLR AREA
SCALE: 1/32" = 1'-0"

ZONING FLOOR AREA SCHEDULE									
LEVEL	USE	GFA	DEDUCTION	ZFA	F.A.R.	LOT_AREA	L.C	D.U	
RESIDENTIAL									
CELLAR	RESIDENTIAL	10,714 SF	10,714 SF	0 SF	0.00	20,333 SF	53%	0	
1ST FLOOR	RESIDENTIAL	6,602 SF	1,300 SF	5,302 SF	0.26	20,333 SF	32%	7	
2ND FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14	
3RD FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14	
4RD FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14	
5TH FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14	
6TH FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14	
7TH FLOOR	RESIDENTIAL	8,997 SF	600 SF	8,397 SF	0.41	20,333 SF	44%	12	
BULKHEAD	RESIDENTIAL	653 SF	600 SF	53 SF	0.00	20,333 SF	3%	0	
TOTALS		77,402 SF	16,464 SF	60,938 SF	3.00			89	

MAX ZFA AT 60,999 SF
MAX DU AT 89



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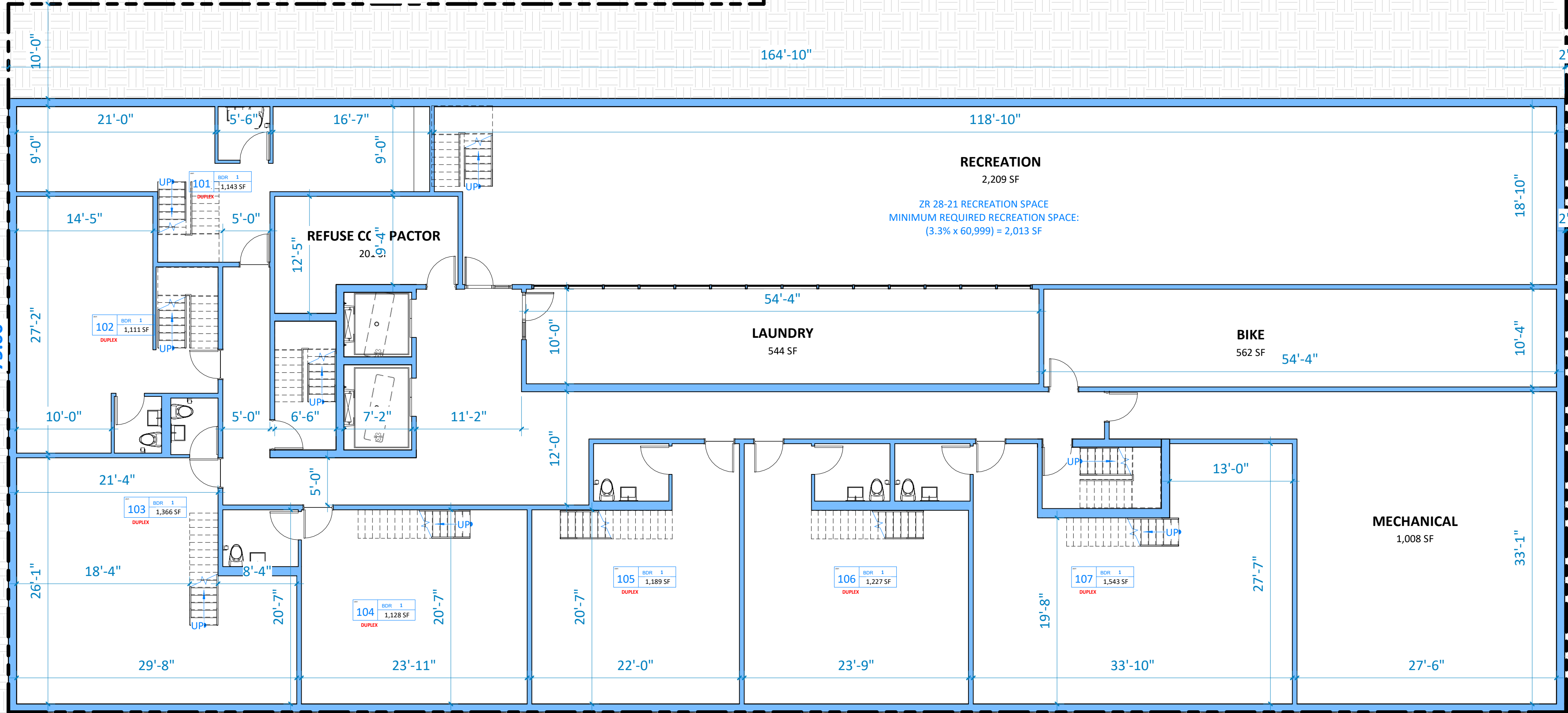
91 BRUCKNER BOULEVARD
GROSS AREA PLANS

PR-003
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DATE: 7/20/2022 1:46:44 PM
SCALE: As indicated

WILLIS AVENUE

100' WIDE

75.00'



BRUCKNER BLVD 165.00'

100' WIDE

1 CELLAR
SCALE: 1/8" = 1'-0"

OPTION - A						
	DUPLEX	STUDIO	1BD	2BD	3BD	
FIRST			7			7
SECOND		0	2	12		14
THIRD		0	2	12		14
FOURTH		0	2	12		14
FIFTH		0	2	12		14
SIXTH		0	2	12		14
SEVENTH			1	10	1	12
EIGHTH						
TOTAL	0	0	18	70	1	89
	0%	0%	0.2022472	0.7865169	0.011236	

ZONING FLOOR AREA SCHEDULE

LEVEL	USE	GFA	DEDUCTION	ZFA	F.A.R.	LOT_AREA	L.C	D.U
RESIDENTIAL								
CELLAR	RESIDENTIAL	10,714 SF	10,714 SF	0 SF	0.00	20,333 SF	53%	0
1ST FLOOR	RESIDENTIAL	6,602 SF	1,300 SF	5,302 SF	0.26	20,333 SF	32%	7
2ND FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
3ND FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
4RD FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
5TH FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
6TH FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
7TH FLOOR	RESIDENTIAL	8,997 SF	600 SF	8,397 SF	0.41	20,333 SF	44%	12
BULKHEAD	RESIDENTIAL	653 SF	600 SF	53 SF	0.00	20,333 SF	3%	0
TOTALS		77,402 SF	16,464 SF	60,938 SF	3.00			89

MAX ZFA AT 60,999 SF
MAX DU AT 89



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91 BRUCKNER BOULEVARD

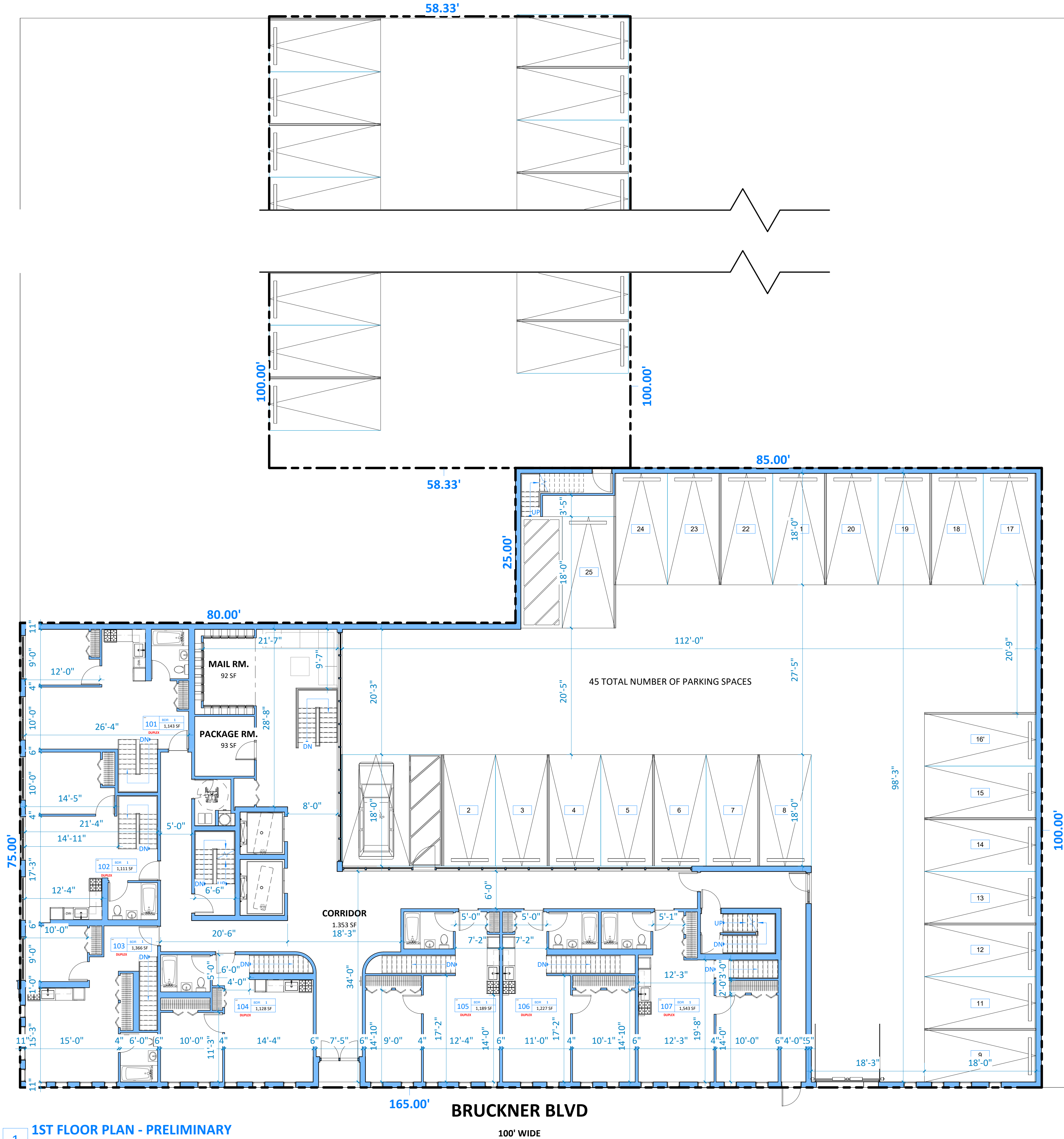
CELLAR

PR-100

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DATE: 7/20/2022 1:46:44 PM
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WILLIS AVENUE

100' WIDE



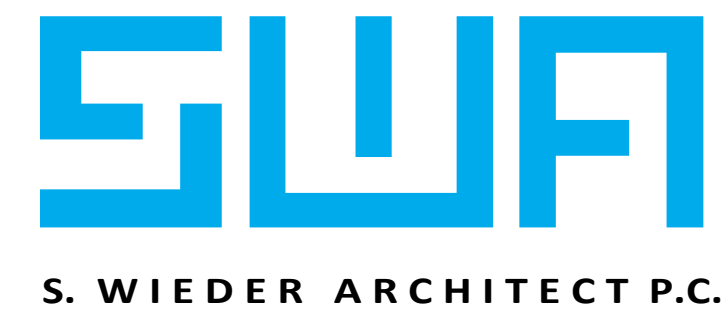
1 1ST FLOOR PLAN - PRELIMINARY

SCALE: 1/8" = 1'-0"

OPTION - A						
	DUPLEX	STUDIO	1BD	2BD	3BD	
FIRST			7			7
SECOND		0	2	12		14
THIRD		0	2	12		14
FOURTH		0	2	12		14
FIFTH		0	2	12		14
SIXTH		0	2	12		14
SEVENTH			1	10	1	12
EIGHTH						
TOTAL	0	0	18	70	1	89
	0%	0%	0.2022472	0.7865169	0.011236	

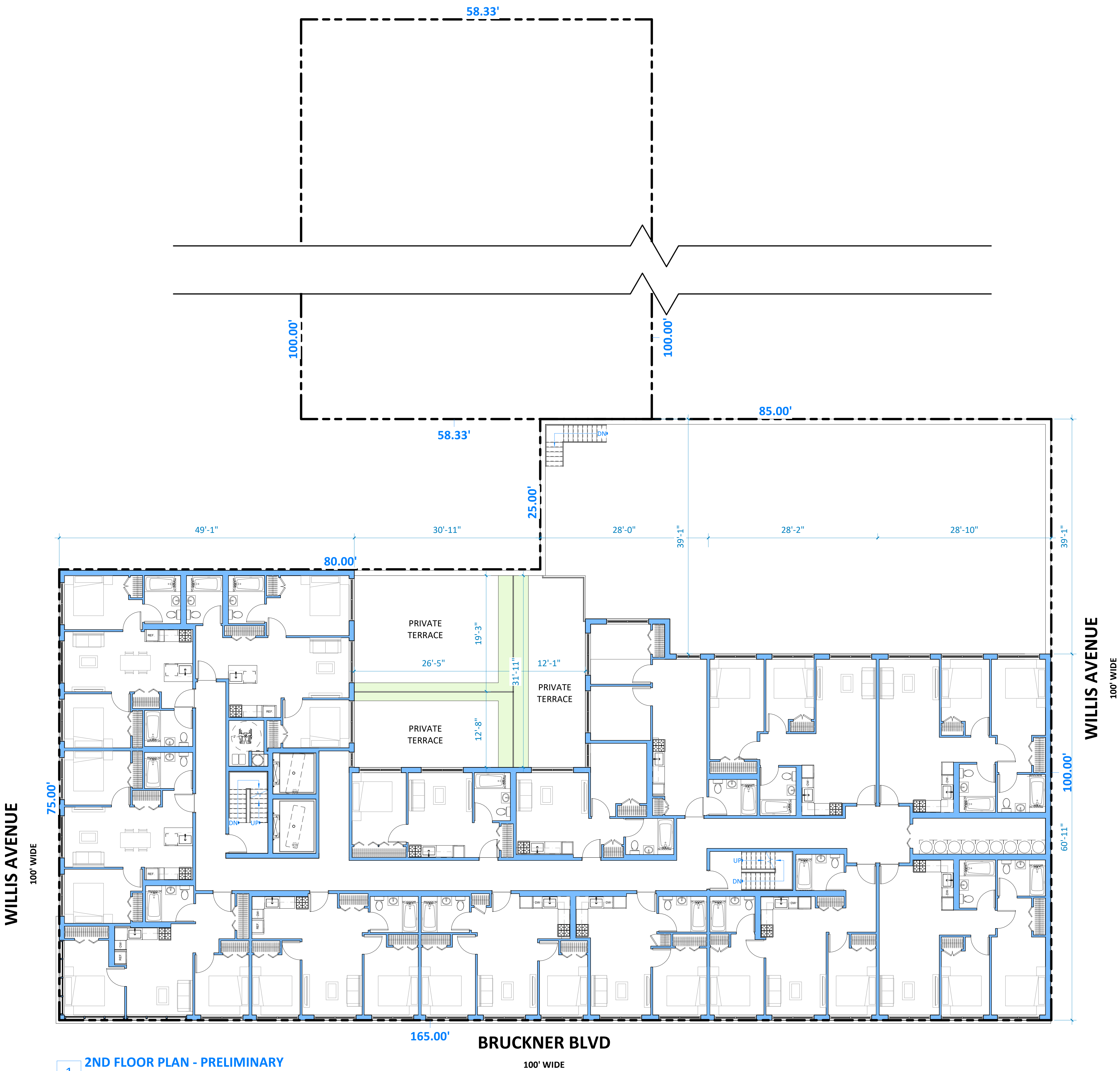
ZONING FLOOR AREA SCHEDULE								
LEVEL	USE	GFA	DEDUCTION	ZFA	F.A.R.	LOT_AREA	L.C	D.U
RESIDENTIAL								
CELLAR	RESIDENTIAL	10,714 SF	10,714 SF	0 SF	0.00	20,333 SF	53%	0
1ST FLOOR	RESIDENTIAL	6,602 SF	1,300 SF	5,302 SF	0.26	20,333 SF	32%	7
2ND FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
3ND FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
4RD FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
5TH FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
6TH FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
7TH FLOOR	RESIDENTIAL	8,997 SF	600 SF	8,397 SF	0.41	20,333 SF	44%	12
BULKHEAD	RESIDENTIAL	653 SF	600 SF	53 SF	0.00	20,333 SF	3%	0
TOTALS		77,402 SF	16,464 SF	60,938 SF	3.00			89

MAX ZFA AT 60,999 SF
MAX DU AT 89



91 BRUCKNER BOULEVARD
1ST FLOOR PLAN

PR-101
DRAWN BY: JASON M.
DATE: 7/20/2022 1:46:45 PM
SCALE: 1/8" = 1'-0"



OPTION - A						
	DUPLEX	STUDIO	1BD	2BD	3BD	
FIRST			7			7
SECOND		0	2	12		14
THIRD		0	2	12		14
FOURTH		0	2	12		14
FIFTH		0	2	12		14
SIXTH		0	2	12		14
SEVENTH			1	10	1	12
EIGHTH						
TOTAL	0	0	18	70	1	89
	0%	0%	0.2022472	0.7865169	0.011236	

ZONING FLOOR AREA SCHEDULE								
LEVEL	USE	GFA	DEDUCTION	ZFA	F.A.R.	LOT_AREA	L.C	D.U
RESIDENTIAL								
CELLAR	RESIDENTIAL	10,714 SF	10,714 SF	0 SF	0.00	20,333 SF	53%	0
1ST FLOOR	RESIDENTIAL	6,602 SF	1,300 SF	5,302 SF	0.26	20,333 SF	32%	7
2ND FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
3ND FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
4RD FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
5TH FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
6TH FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
7TH FLOOR	RESIDENTIAL	8,997 SF	600 SF	8,397 SF	0.41	20,333 SF	44%	12
BULKHEAD	RESIDENTIAL	653 SF	600 SF	53 SF	0.00	20,333 SF	3%	0
TOTALS		77,402 SF	16,464 SF	60,938 SF	3.00			89

MAX ZFA AT 60,999 SF
MAX DU AT 89



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91 BRUCKNER BOULEVARD
2ND FLOOR PLAN - PRELIMINARY

PR-102
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WILLIS AVENUE

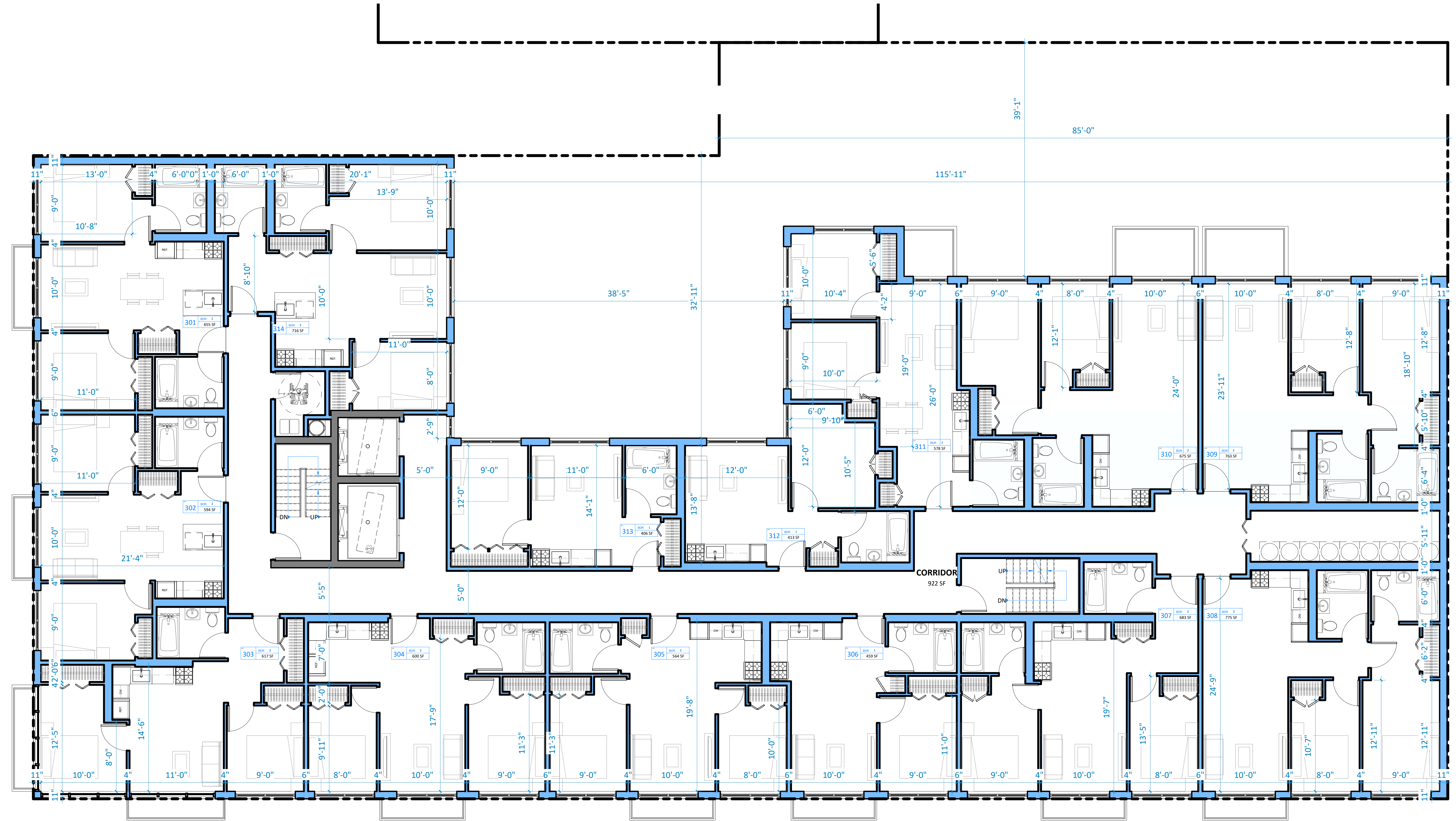
100' WIDE

BRUCKNER BLVD

100' WIDE

1 3-6TH FLOOR PLAN - PRELIMINARY

SCALE: 3/16" = 1'-0"



OPTION - A						
	DUPLEX	STUDIO	1BD	2BD	3BD	
FIRST			7			7
SECOND		0	2	12		14
THIRD		0	2	12		14
FOURTH		0	2	12		14
FIFTH		0	2	12		14
SIXTH		0	2	12		14
SEVENTH			1	10	1	12
EIGHTH						
TOTAL	0	0	18	70	1	89
	0%	0%	20%	79%	0.011236	

ZONING FLOOR AREA SCHEDULE								
LEVEL	USE	GFA	DEDUCTION	ZFA	F.A.R.	LOT_AREA	L.C	D.U
RESIDENTIAL								
CELLAR	RESIDENTIAL	10,714 SF	10,714 SF	0 SF	0.00	20,333 SF	53%	0
1ST FLOOR	RESIDENTIAL	6,602 SF	1,300 SF	5,302 SF	0.26	20,333 SF	32%	7
2ND FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
3ND FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
4RD FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
5TH FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
6TH FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
7TH FLOOR	RESIDENTIAL	8,997 SF	600 SF	8,397 SF	0.41	20,333 SF	44%	12
BULKHEAD	RESIDENTIAL	653 SF	600 SF	53 SF	0.00	20,333 SF	3%	0
TOTALS		77,402 SF	16,464 SF	60,938 SF	3.00			89

MAX ZFA AT 60,999 SF
MAX DU AT 89



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91 BRUCKNER BOULEVARD
3-6 FLOOR PLAN - PRELIMINARY

PR-103

DRAWN BY: JASON M.
DATE: 7/20/2022 1:46:52 PM
SCALE: 3/16" = 1'-0"



100' WIDE

OPTION - A						
	DUPLEX	STUDIO	1BD	2BD	3BD	
FIRST			7			7
SECOND		0	2	12		14
THIRD		0	2	12		14
FOURTH		0	2	12		14
FIFTH		0	2	12		14
SIXTH		0	2	12		14
SEVENTH			1	10	1	12
EIGHTH						
TOTAL	0	0	18	70	1	89
	0%	0%	20.22472	0.7865169	0.011236	
			20%	79%		

ZONING FLOOR AREA SCHEDULE								
LEVEL	USE	GFA	DEDUCTION	ZFA	F.A.R.	LOT_AREA	LC	D.U
RESIDENTIAL								
CELLAR	RESIDENTIAL	10,714 SF	10,714 SF	0 SF	0.00	20,333 SF	53%	0
1ST FLOOR	RESIDENTIAL	6,602 SF	1,300 SF	5,302 SF	0.26	20,333 SF	32%	7
2ND FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
3RD FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
4ND FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
5TH FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
6TH FLOOR	RESIDENTIAL	10,087 SF	650 SF	9,437 SF	0.46	20,333 SF	50%	14
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BULKHEAD	RESIDENTIAL	653 SF	600 SF	53 SF	0.00	20,333 SF	3%	0
TOTALS		77,402 SF	16,464 SF	60,938 SF	3.00			89

MAX ZFA AT 60,999 SF
MAX DU AT 89



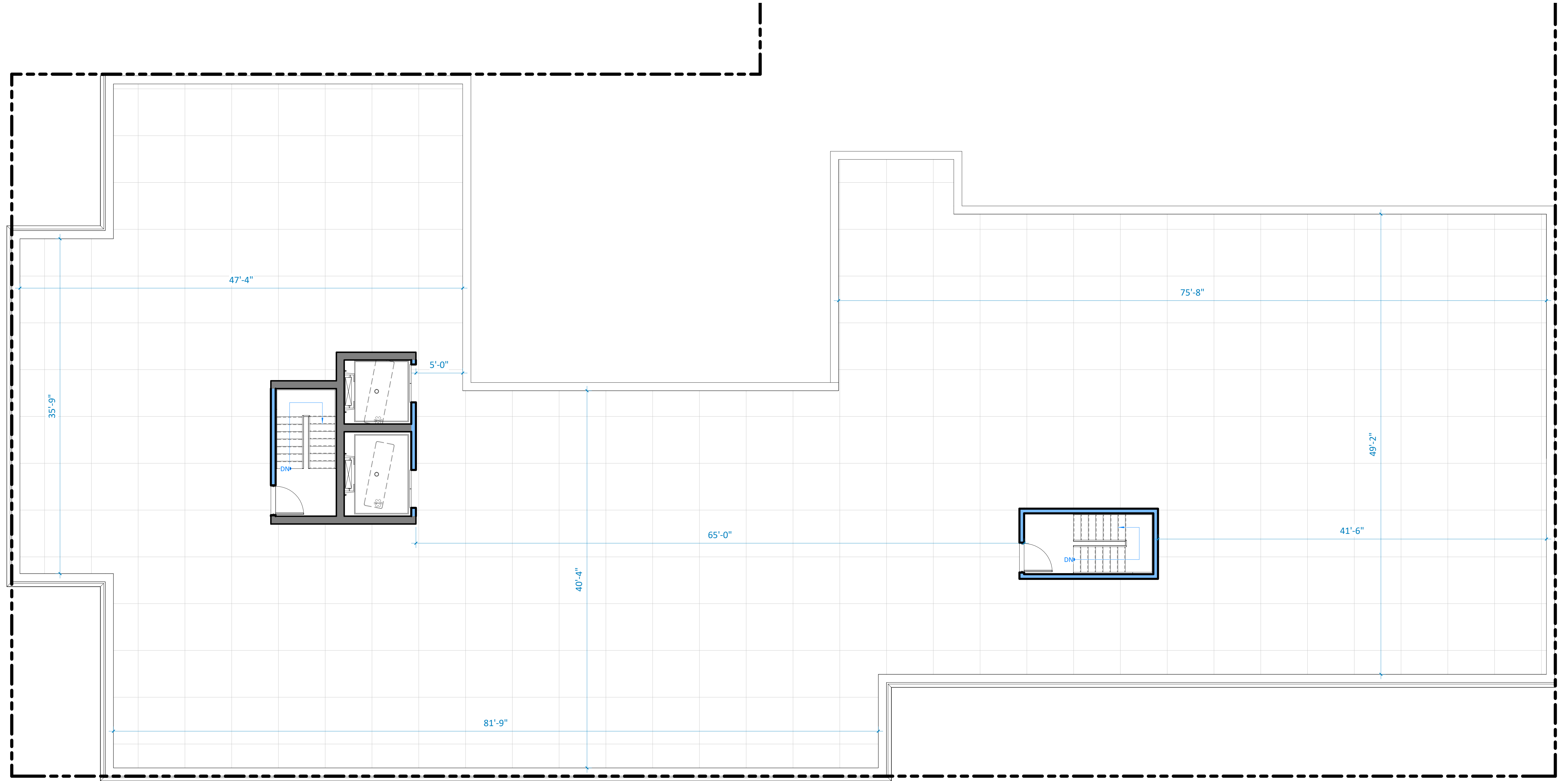
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BROOKLYN NY, 11216
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91 BRUCKNER BOULEVARD
7 TH FLOOR PLAN - PRELIMINARY

PR-104

DRAWN BY: JASON M.
DATE: 7/20/2022 1:46:53 PM
SCALE: 3/16" = 1'-0"

WILLIS AVENUE
100' WIDE



BRUCKNER BLVD
100' WIDE



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BROOKLYN NY, 11216
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91 BRUCKNER BOULEVARD
ROOF PLAN

PR-106
DRAWN BY: JASON M.
DATE: 7/20/2022 1:46:54 PM
SCALE: 3/16" = 1'-0"

1 ROOF PLAN - PRELIMINARY
SCALE: 3/16" = 1'-0"

APPENDIX D
CONSTRUCTION HEALTH AND SAFETY PLAN



**HALEY & ALDRICH, INC.
SITE-SPECIFIC SAFETY PLAN**

FOR

NYSDEC BCP SITE C203160

91 BRUCKNER BOULEVARD, BRONX, NY 10454

Project/File No. 0204520

Gensuite EZ Scan®



BI - Developers

Prepared By: Mari Conlon

Date: 5/3/2023

Approvals: The following signatures constitute approval of this Health & Safety Plan.

Insert Field Safety Managers electronic signature.

Field Safety Manager: Choose an item.

Date: /2023

Insert Project Manager's electronic signature.

Project Manager: Mari Conlon

Date: 5/3/2023

HASP Valid Through: 12/31/2023

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Attachment B	Training Requirements
Attachment C	Roles and Responsibilities
Attachment D	Job Safety Analyses

STOP WORK AUTHORITY

In accordance with Haley & Aldrich (Haley & Aldrich) Stop Work Authority Operating Procedure (OP1035), any individual has the right to refuse to perform work that he or she believes to be unsafe without fear of retaliation. He or she also has the authority, obligation, and responsibility to stop others from working in an unsafe manner.

STOP Work Authority is the stop work policy for all personnel and subcontractors on the Site. When work has been stopped due to an unsafe condition, Haley & Aldrich site management (e.g., Project Manager [PM], Site Health & Safety Officer [SHSO], etc.) and the Haley & Aldrich Senior Project Manager (SPM) will be notified immediately.

Reasons for issuing a stop work order include, but are not limited to:

- The belief/perception that injury to personnel or accident causing significant damage to property or equipment is imminent.
- A Haley & Aldrich subcontractor is in breach of site safety requirements and/or their own site HASP.
- Identifying a substandard condition (e.g., severe weather) or activity that creates an unacceptable safety risk as determined by a qualified person.

Work will not resume until the unsafe act has been stopped OR sufficient safety precautions have been taken to remove or mitigate the risk to an acceptable degree. Stop work orders will be documented as part of an on-site stop work log, on daily field reports to include the activity/activities stopped, the duration, person stopping work, person in-charge of stopped activity/activities, and the corrective action agreed to and/or taken. Once work has been stopped, only the Haley & Aldrich SPM or SHSO can give the order to resume work. Haley & Aldrich senior management is committed to support anyone who exercises his or her "Stop Work" authority.

ISSUANCE AND COMPLIANCE

This HASP has been prepared in accordance with Occupational Safety and Health Administration (OSHA) regulations (CFR 29, Parts 1904, 1910, and 1926) if such are applicable.

The specific requirements of this HASP include precautions for hazards that exist during this project and may be revised as new information is received or as site conditions change.

- This HASP must be signed by all Haley & Aldrich personnel involved in implementation of the SOW (Section 2 of this HASP).
- This HASP, or a current signed copy, must be retained at all times when Haley & Aldrich staff are present.
- Revisions to this HASP must be outlined within the contents of the HASP. If immediate or minor changes are necessary, the Field Safety Manager (FSM), Haley & Aldrich, SSO and/or Project Manager (PM) may use Attachment 1 (HASP Amendment Form), presented at the end of this HASP. Any revision to the HASP requires employees and subcontractors to be informed of the changes so that they understand the requirements of the change.
- Deviations from this HASP are permitted with approval from the Haley & Aldrich FSM, PM, or Senior Health & Safety Manager (SHSM). Unauthorized deviations may constitute a violation of Haley & Aldrich company procedures/policies and may result in disciplinary action.
- This HASP will be relied upon by Haley & Aldrich's subcontractors and visitors to the site. Haley & Aldrich's subcontractors must have their own HASP which will address hazards specific to their trade that is not included in this HASP. This HASP will be made available for review to Haley & Aldrich's subcontractors and other interested parties (e.g. Facility personnel and regulatory agencies) to ensure that Haley & Aldrich has properly informed our subcontractors and others of the potential hazards associated with the implementation of the SOW to the extent that Haley & Aldrich is aware.

This site-specific HASP provides only site-specific descriptions and work procedures. General safety and health compliance programs in support of this HASP (e.g., injury reporting, medical surveillance, personal protective equipment (PPE) selection, etc.) are described in detail in the Haley & Aldrich Corporate Health and Safety Program Manual and within Haley & Aldrich's Standard Operating Procedures. Both the manual and SOPs can be located on the Haley & Aldrich's Company Intranet. When appropriate, users of this HASP should always refer to these resources and incorporate to the extent possible. The manual and SOPs are available to clients and regulators upon request.

EMERGENCY EVENT PROCEDURES	
1 - ASSESS THE SCENE	
• <u>STOP WORK</u> • Review the situation and ascertain if it's safe to enter the area. • Evacuate the site if the conditions are unsafe.	
2 - EVALUATE THE EMERGENCY	
• Call 911, or designated emergency number, if required. • Provide first aid for the victim if qualified and safe to do so. ○ First aid will be addressed using the onsite first aid kit. * ▪ If providing first aid, remember to use proper first aid universal precautions if blood or bodily fluids are present. • If exposure to hazardous substance is suspected, immediately vacate the contaminated area. ○ Remove any contaminated clothing and/or equipment. ○ Wash any affected dermal/ocular area(s) with water for at least 15 minutes. ○ Seek immediate medical assistance if any exposure symptoms are present. <i>* Note: Haley & Aldrich employees are not required or expected to administer first aid / CPR to any Haley & Aldrich staff member, Contractor, or Civilian personnel at any time; it is Haley & Aldrich's position that those who do are doing so on their own behalf and not as a function of their job.</i>	
3 - SECURE THE AREA	
• Cordon off the incident area, if possible. ○ Notify any security personnel, if required. ○ Escort all non-essential personnel out of the area, if able.	
4 - REPORT ON-SITE ACCIDENTS / INCIDENTS TO PM / SSO	
• Notify the PM and SSO as soon as it is safe to do so. ○ Assist PM and SSO in completing any additional tasks, as required.	
5 - INVESTIGATE / REPORT THE INCIDENT	
• Record details of the incident for input to the Gensuite. ○ Complete any additional forms as requested by the PM and SSO.	
6 - TAKE CORRECTIVE ACTION	
• Implement corrective actions per the PM following root cause analysis. ○ Complete Lessons Learned form.	

PROJECT INFORMATION AND CONTACTS	
Project Name: NYSDEC BCP SITE C203160	Haley & Aldrich File No.: 0204520
Location: 91 BRUCKNER BOULEVARD, BRONX, NY 10454	
Client/Site Contact: Phone Number:	91 Bruckner Blvd LLC 917.627-3013
Haley & Aldrich Field Representative: Phone Number: Emergency Phone Number:	Zach Simmel 646.277.5693 516.317.9861
Haley & Aldrich Project Manager: Phone Number: Emergency Phone Number:	Mari Conlon 646.277-5690 646.787-7669
Field Safety Manager: Phone Number: Emergency Phone Number:	Brian Ferguson 617.886.7439 617.908.2761
Subcontractor Project Manager: Phone Number:	N/A N/A
Nearest Hospital: Address: (see map on next page) Phone Number:	Lincoln Medical Center: Emergency Room 234 E 149 th Street Bronx, NY 10451 718.579.5784
Nearest Occ. Health Clinic: http://www.talispoint.com/liberty/ext/ Address: (see map on next page) Phone Number:	City MD Mott Haven Urgent Care 571 E 138th St Bronx, NY 10454 (718) 571-9421
Liberty Mutual Claim Policy	WC6-Z11254100-033
WorkCare Injury & Illness HOTLINE	1-888-449-7787
Emergency Response Number:	911
Other Local Emergency Response Number:	N/A
Other Ambulance, Fire, Police, or Environmental Emergency Resources:	911

DIRECTIONS TO THE NEAREST HOSPITAL



Directions to the Nearest Hospital:

91 Bruckner Blvd

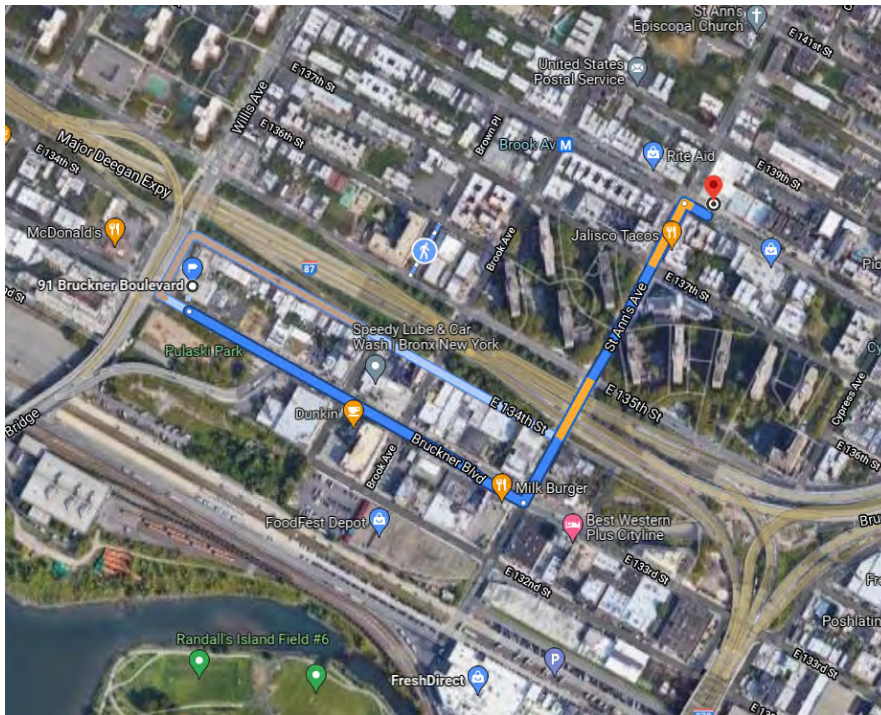
Bronx, NY 10454

- ↑ Head northwest on Bruckner Blvd toward Willis Ave
0.3 mi
- ↪ Turn right onto Lincoln Ave
0.1 mi
- ↶ Turn left onto E 135th St
0.1 mi
- ↪ Turn right onto Rider Ave
0.5 mi
- ↪ Turn right onto E 144th St
39 ft

Lincoln Medical Center

234 E 149th St, Bronx, NY 10451

DIRECTIONS TO THE NEAREST URGENT CARE



Directions to the Nearest Occupational Clinic:

91 Bruckner Blvd

Bronx, NY 10454

- ↑ Head southeast on Bruckner Blvd toward Brown Pl
0.3 mi
- ↩ Turn left onto St Ann's Ave
0.3 mi
- ↪ Turn right onto E 138th St/Msgr. Gerald J. Ryan Blvd
102 ft
Destination will be on the left

CityMD Mott Haven Urgent Care - Bronx

571 E 138th St, Bronx, NY 10454

Paste map and directions showing route to nearest hospital here.

1. WORK SCOPE			
This Site-Specific Health and Safety Plan addresses the health and safety practices and procedures that will be exercised by all Haley & Aldrich employees participating in all work on the Project Site. This plan is based on an assessment of the site-specific health and safety risks available to Haley & Aldrich and Haley & Aldrich's experience with other similar project sites. The scope of work includes the following: Remedial Oversight, Soil & Soil Vapor Sampling (if required)			
Project Task Breakdown			
Task No.	Task Description	Employee(s) Assigned	Work Date(s) or Duration
1.	Remedial Oversight – "ConMon"	Zach Simmel	6 to 12 months
2.	Soil Sampling	Zach Simmel	6 to 12 months
3.	Soil Vapor Sampling (if required)	Zach Simmel	6 to 12 months
Subcontractor(s) Tasks			
Firm Name	Work Activity	Work Date(s) or Duration	
N/A	Enter task description.	Enter dates/duration.	
Projected Start Date: 8/1/2023			
Projected Completion Date: 8/1/2024			

2. SITE OVERVIEW / DESCRIPTION
Site Classification
Commercial
Site Description
The Site, identified as Block 2278 Lot 1 on the New York City tax map in a residential R6A/M1-2 within a Special Mixed-Use MX-1 district, is 14,500 square feet (sf) and is currently a vacant warehouse. The site is listed current a as of right construction with the filing currently being prepared by the development team.
Background and Historic Site Usage
The Site was first developed between 1903 and 1908. The western portion of the property was initially used for residential and commercial purposes and the eastern portion was used for industrial purposes at least by 1935. By 1985, the western portion of the building was also used for industrial purposes
Site Status
Indicate current activity status and describe operations at the site: Inactive Vacant
Site Plan
Is a site plan or sketch available? Yes
Work Areas
List and identify each specific work areas(s) on the job site and indicate its location(s) on the site plan: The work area consists of the entire property.

LEGEND

BLOCK 2278 SITE BOUNDARY

NOTES

1. ASSESSOR PARCEL DATA SOURCE: KINGS COUNTY
2. AERIAL IMAGERY SOURCE: NEARMAP; 19 OCTOBER 2021

WILLS AVE

BRUCKNER BLVD

LOT 1

0 20 40
SCALE IN FEET

HALEY ALDRICH

PHASE II ENVIRONMENTAL SITE INVESTIGATION
91 BRUCKNER BOULEVARD
BRONX, NEW YORK

SITE MAP

FEBRUARY 2022

FIGURE X

3. HAZARD ASSESSMENT

Indicate all hazards that may be present at the site and for each task. If any of these potential hazards are checked, it is the Project Manager's responsibility to determine how to eliminate / minimize the hazard to protect onsite personnel.

Site Chemical Hazards

Is this Site impacted with chemical contamination? Yes

Source of information about contaminants: Previous Investigation

Contaminant of Concern	Location/Media	Concentration	Units
Barium	Soil	1440	mg/kg
Lead	Soil	2610	mg/kg
Mercury	Soil	2.95	mg/kg
Arsenic	Soil	15.1	mg/kg
Polycyclic aromatic hydrocarbons (PAHs)	Soil	24	mg/kg
Tetrachloroethylene	Groundwater; Soil Vapor	8; 232	ug/L; ug/m3
Choose an item.			
Choose an item.			

Barium: is a soft, silvery metal that rapidly tarnishes in air and reacts with water. It is mostly used in drilling fluids for oil and gas wells and used in paint and in glassmaking. All barium compounds are toxic; however, barium sulfate is insoluble and so can be safely swallowed. A suspension of barium sulfate is sometimes given to patients suffering from digestive disorders.

Barium has no known biological role, although barium sulfate has been found in one type of algae. Barium is toxic, as are its water- or acid-soluble compounds. Barium occurs only in combination with other elements. The major ores are barite (barium sulfate) and witherite (barium carbonate). Barium metal can be prepared by electrolysis of molten barium chloride, or by heating barium oxide with aluminum powder.

Lead: The effects of lead are the same whether it enters the body through breathing or swallowing. Lead can affect almost every organ and system in your body. The main target for lead toxicity is the nervous system. Long-term exposure to lead can result in decreased performance in some tests measuring functions of the nervous system in adults. It may also cause weakness in fingers, wrists, or ankles. Lead exposure also causes small increases in blood pressure, particularly in middle-aged and older people and can cause anemia. Exposure to high lead levels can severely damage the brain and kidneys and ultimately cause death.

Arsenic: The Occupational Safety and Health Administration has set limits of 10 microgram arsenic per cubic meter of workplace air (10 µg/m³) for 8 hour shifts and 40 hour work weeks. Several studies have shown that inorganic arsenic can increase the risk of lung cancer, skin cancer, bladder cancer, liver cancer, kidney cancer, and prostate cancer. The World Health Organization (WHO), the Department of Health and Human Services (DHHS), and the EPA have determined that inorganic arsenic is a human carcinogen.

Breathing high levels of inorganic arsenic can give you a sore throat or irritated lungs. Ingesting high levels of inorganic arsenic can result in death. Lower levels of arsenic can cause nausea and vomiting, decreased production of white blood cells, abnormal heart rhythm, damage to blood vessels, and a sensation of "pins and needles" in hands and feet.

Mercury: is an odorless, silver metallic liquid. It can be inhaled or absorbed through the skin. Contact may cause irritation to the skin or eyes. Toxic if ingested. Fume inhalation may cause irritation in the nose, throat or lungs. This is a corrosive chemical. Symptoms of poisoning include, muscle tremors, loss of appetite, and nausea. Long-term exposure may have effects on the central nervous system and kidneys. The PEL is 0.1 mg/m³ averaged over an 8 hour shift.

Polycyclic aromatic hydrocarbons (PAHs): are a class of chemicals that occur naturally in coal, crude oil, and gasoline. They also are produced when coal, oil, gas, wood, garbage, and tobacco are burned. PAHs generated from these sources can bind to or form small particles in the air. High-temperature cooking will form PAHs in meat and in other foods. Naphthalene is a PAH that is produced commercially in the United States to make other chemicals and mothballs. Cigarette smoke contains many PAHs.

Tetrachloroethylene: is a colorless liquid with a sharp sweet odor. Tetrachloroethylene vapor is heavier than air and will be found in low lying areas.

[Click + Add Additional Chemical Language](#)

Site Hazards Checklist

Weather

Hot Temperatures	Cold Temperatures	Lightning Storms	Select Hazard
Select Hazard	Select Hazard	Select Hazard	Select Hazard

Hot Temperatures

Heat stress may occur at any time work is being performed at elevated ambient temperatures. Because heat stress is one of the most common and potentially serious illnesses associated with outdoor work during hot seasons, regular monitoring and other preventative measures are vital. Site workers must learn to recognize and treat the various forms of heat stress. The best approach is preventative heat stress management.

H&A employees and their subcontractors should be aware of potential health effects and/or physical hazards of working when there are hot temperatures or a high heat index. Refer OP1015-Heat Stress for a discussion on hot weather hazards.

Lightning Storms

Where the threat of electrical storms and the hazard of lightning exist staff shall ensure site procedures exist to: (1) detect when lightning is in the near vicinity and when there is a potential for lightning and (2) to notify appropriate site personnel of these conditions and (3) implement protocols to stop work and seek shelter.

The 30-30 Rule states that if time between seeing the lightning and hearing the thunder is less than 30 seconds, you are in danger and must seek shelter. You must also stay indoors for more than 30 minutes after hearing the last clap of thunder.

Cold Temperatures

Cold stress may occur at any time work is being performed at low ambient temperatures and high velocity winds. Because cold stress is common and has potentially serious illnesses associated with outdoor work during cold seasons, regular monitoring and other preventative measures are vital.

Refer to OP1003-Cold Stress for additional information and mitigation controls.

Biological

Small Mammals	Mosquitoes	Stinging Insects	Choose an item.
Choose an item.	Choose an item.	Choose an item.	Choose an item.

Small Mammals

Rodents, are the most abundant order of mammals. There are hundreds of species of rats; the most common are the black and brown rat. Other rodents you may encounter are mice, beavers, squirrels, racoons, skunks, and opossums.

The Brown Rat has small ears, blunt nose, and short hair. It is approximately 14-18" long (with tail). They frequently infest garbage/rubbish, slaughterhouses, domestic dwellings, warehouses, and supermarkets. They also frequent any space with an easy meal and potential nesting sites. The Black Rat is identified by its tail, that is always longer than the length from the head to the body. It is also slimmer and more agile than the Brown rat. Its size varies according to its environment and food supply.

The House Mouse has the amazing ability to adapt and can frequently be found in human dwellings. In buildings, mice will live anywhere and difficult to keep out. Mice are omnivorous, they will eat anything. Rats and mice often become a serious problem in cold winter months when they seek food and warmth inside buildings. They may suddenly appear in large numbers when excavation work disturbs their in-ground nesting locations or their food source is changed.

Some major problems caused by rats and mice are contaminating the food they eat with urine and

excrement. Gnawing into materials such as paper, wood, or upholstery, to use as nest material. Also gnawing plastic, cement, soft metals such as lead and aluminum, and wiring, which may cause a fire hazard. Occasionally biting people and may kill small animals. They, or the parasites they carry, like fleas, mites and worms, spread many diseases such as salmonella, trichinosis, rat bite fever, hantavirus, Weil's disease, and bubonic plague. They damage ornamental plants by burrowing among the roots or feeding on new growth. They also eat garden vegetables, such as corn and squash. These rodents have been a problem for centuries, because of their incredible ability to survive and are so difficult to eliminate. In addition, they are extremely compatible with human behavior and needs.

Avoid contact with rodents, if possible. Avoid contact with rodent excrement. Do not eat food or water that may have encountered rodent excrement. If exposed, wash hands and avoid touching your face with your hands.

Mosquitos

Work outdoors with temperatures above freezing will likely bring staff into contact with mosquitos. There are a variety of mosquito species that can transmit a range of diseases. Birds act as reservoirs for the viruses that can be collected by the mosquito and transmitted to a person. Majority of mosquitos are mainly a nuisance but staff need to take appropriate precautions to minimize the potential transmission of a virus that can result in one of the following diseases: West Nile, Eastern Equine Encephalitides and Western Encephalitides. Knowing some key steps that can minimize the risk of mosquito bites is, therefore, important in reducing the risks. Workers working outdoors should be aware that the use of PPE techniques is essential to preventing mosquito bites especially when working at sites where mosquitoes may be active and biting.

Use repellents containing DEET, picaridin, IR3535, and some oil of lemon eucalyptus and para-menthane-diol products provide longer-lasting protection. To optimize safety and effectiveness, repellents should be used according to the label instructions. Cover as much of your skin as possible by wearing shirts with long-sleeves, long pants, and socks whenever possible. Avoid use of perfumes and colognes when working outdoors during peak times when mosquitoes may be active; mosquitoes may be more attracted to individuals wearing perfumes and colognes.

Stinging Insects

Stinging Insects fall into two major groups: Apidae (honeybees and bumblebees) and vespids (wasps, yellow jackets, and hornets). Apidae are docile and usually do not sting unless provoked. The stinger of the honeybee has multiple barbs, which usually detach after a sting. Vespids have few barbs and can inflict multiple stings.

There are several kinds of stinging insects that might be encountered on the project site. Most stings will only result in a temporary injury. However, sometimes the effects can be more severe, even life-threatening depending on where you are stung and what allergies you have. Being stung in the throat area of the neck may cause edema (swelling caused by fluid build-up in the tissues) around the throat and may make breathing difficult.

In rare cases, a severe allergic reaction can occur. This can cause "anaphylaxis" or anaphylactic shock with symptoms appearing immediately or up to 30 minutes later. Symptoms include; Hives, itching and

swelling in areas other than the sting site, swollen eyes/eyelids, wheezing, chest tightness, difficulty breathing, hoarse voice, swelling of the tongue, dizziness or sharp drop in blood pressure, shock, unconsciousness or cardiac arrest. Reactions can occur the first time you are stung or with subsequent stings. If you see any signs of reaction, or are unsure, call or have a co-worker call emergency medical services (e.g., 911) right away. Get medical help for stings near the eyes, nose or throat. Stay with the person who has been stung to monitor their reaction.

Staff who are allergic to bee stings are encouraged to inform their staff/project manager. If staff member carries an Epi-pen (i.e., epinephrine autoinjector) they are encouraged to inform their colleagues in case they are stung and are incapable of administering the injection. Examine site for any signs of activity or a hive/nest. If you see several insects flying around, see if they are entering/exiting from the same place. Most will not sting unless startled or attacked. Do not swat, let insects fly away on their own. If you must, walk away slowly or gently "blow" them away. If a nest is disturbed and you hear "wild" buzzing, protect your face with your hands and run from the area immediately. Wear long sleeves, long pants, and closed-toed boots. Wear light colored clothes such as khakis. Avoid brightly colored, patterned, or black clothing. Tie back long hair to avoid bees or wasps from entanglement. Do not wear perfumes, colognes or scented soaps as they contain fragrances that are attractive. If bee or wasp is found in your car, stop and leave windows open.

Location/Terrain

Slip/Trip/Falls	SIMOPS	Choose an item.	Choose an item.
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Slips, Trips & Falls

Slip and trip injuries are the most frequent injuries to workers. Statistics show most falls happen on the same level resulting from slips and trips. Both slips and trips result from unintended or unexpected change in the contact between the feet and the ground or walking surface. Good housekeeping, quality of walking surfaces (flooring), awareness of surroundings, selection of proper footwear, and appropriate pace of walking are critical for preventing fall accidents.

Site workers will be walking on a variety of irregular surfaces, that may affect their balance. Extra care must be taken to walk cautiously near rivers because the bottom of the riverbed maybe slick and may not be visible. Rocks, gradient changes, sandy bottoms, and debris may be present but not observable.

Take your time and pay attention to where you are going. Adjust your stride to a pace that is suitable for the walking surface and the tasks you are doing. Check the work area to identify hazards - beware of trip hazards such as wet floors, slippery floors, and uneven surfaces or terrain. Establish and utilize a pathway free of slip and trip hazards. Choose a safer walking route. Carry loads you can see over. Keep work areas clean and free of clutter. Communicate hazards to on-site personnel and remove hazards as appropriate.

SIMOPS

SIMOPS are described as the potential class of activities which could bring about an undesired event or set of circumstances, e.g., safety, environment, damage to assets, schedule, commercial, financial, etc. SIMOPS are defined as performing two or more operations concurrently.

SIMOPS should be identified at an early stage before operations commence to understand issues such as schedule and physical clashes, maintenance activities, failure impacts, interferences between vessels, contracts and third part interfaces and environmental impacts.

Coordinate project with site activities. Identify and understand the hazards associated with the host and client's activities. Integrate site emergency response protocols where appropriate and communicate to all project staff. Integrate site communication protocols and communicate to all project staff.

Click + to Add Additional Hazard Language

Miscellaneous

Extended Shift

Choose an item.

Choose an item.

Choose an item.

Extended Shift

An extended shift can include extending a workday beyond eight hours. Extended or unusual work shifts may be more stressful physically, mentally, and emotionally. Non-traditional shifts and extended work hours may disrupt the body's regular schedule, leading to increased fatigue, stress, and lack of concentration. This leads to an increased risk of operator error, injuries and/or accidents. The degree to which an individual is exposed to fatigue risk factors depends upon the work schedule. As both the duration of the workday and the number of days worked increase so does the fatigue risk factors. Staff Managers need to be aware of the fatigue risk factors and ensure projects are structured to mitigate these factors. Staff Members also have a responsibility to manage the personal fatigue risk factors that they can control outside of work (e.g, duration and quality of sleep, diet, drugs, and alcohol)

Fatigue is a message to the body to rest and can be eliminated with proper rest. However, if rest is not possible, fatigue can increase and becomes distressing and eventually debilitating. Fatigue symptoms, both mental and physical, vary and depend on the person and degree of overexertion. Examples include: weariness, sleepiness, irritability, reduced alertness, lack of memory, concentration and motivation, increased susceptibility to illness, depression, headache, loss of appetite, and digestive problems.

When possible, managers should limit use of extended shifts and increase the number of days worked. Working shifts longer than 8 hours generally result in reduced productivity and alertness. Additional breaks and meals should be provided when working extended shift periods. Tasks requiring heavy physical labor or intense concentration should be performed at the beginning of the shift if possible. This is an important consideration for pre-emergency planning.

Make efforts, when feasible, to ensure that unavoidable extended work shifts and shift changes allow affected employees time for adequate rest and recovery. Project Managers need to plan to have an adequate number of personnel available to enable workers to take breaks, eat meals, relax, and sleep.

Plan for regular and frequent breaks throughout the work shift. If at remote sites, ensure if possible, that there is a quiet, secluded area designated for rest and recuperation. In addition to formal breaks such as lunch or dinner, encourage use of micro breaks to change positions, move about, and shift concentration. Personnel should look to obtain an adequate quantity and quality of sleep.

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Task Hazard Summary

Task 1 – Construction Monitoring

Construction Monitoring by H&A staff on active construction sites can be conducted in conjunction with a wide range activities such as building construction, earthwork and soil management related activities. These activities can include but are not limited to: drill spoil characterization and management during building foundation element installation, characterization of excavated soils for management/disposal/reuse during earthwork activities, and as part of environmental remedial activities such as delineation and confirmation sampling. Familiarity with basic heavy construction safety, site conditions (geotechnical and environmental), and potential soil contaminants are essential components of soil sampling performed on active sites. Potential hazards related to soil sampling at construction sites include but are not limited to: encountering site vehicle traffic and heavy equipment operations, manual lifting, generated waste, contact or exposure to impacted soil, and encountering unknown toxic or hazardous substances. Although soil sampling is commonly performed within active excavations, from stockpiles, or within trench excavations, sampling locations and situations will vary depending on site conditions. Care should be taken while entering and exiting excavations or trenches, and when accessing (climbing up or down) soil stockpiles, ensuring that the work area area is not being actively accessed by construction equipment. It is imperative that staff are aware of emergency / communication protocols with the Contractor prior to the start of work.

Task 1A – Excavation/Trenching

There are multiple hazards associated with working in and around excavations and trenches including cave-ins, potential running soils, dislodged excavated soils, lack of proper access and egress. Nonfatal, and even fatal, injuries may occur in association with excavation and trenching activities with a greater frequency than one might expect. Causes of bodily injury, illness, or death include asphyxiation, internal injuries due to physical crushing, falling objects and toxic exposures.

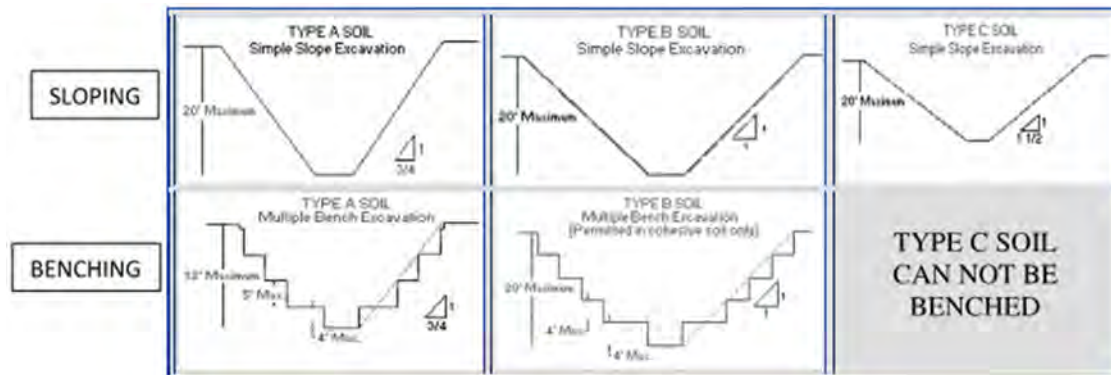
Excavations five (5) feet deep or greater require a protective system unless the excavation is made entirely in stable rock. If the depth is less than five (5) feet deep, a competent person may determine that a protective system is not required. Trenches 20 feet deep or greater require that the protective system be designed by a registered professional engineer or be based on tabulated data prepared and/or approved by a registered professional.

H&A Staff Members shall not enter a trench that is five feet deep or greater unless a protective system is used or the soil(s) have been characterized and benched and/or sloped appropriately.

The following are list identifies the types of protective measures that can be used in the event a staff member is required to enter an excavation or trench.

- **Sloping** involves cutting back the trench wall at an angle inclined away from the excavation.
- **Benching** means a method of protecting workers from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near vertical

surfaces between levels. Benching cannot be done in Type C soil. Below is a diagram indicating the appropriate slope angle for both sloping and benching.



- **Shoring** requires installing aluminum hydraulic or other types of supports to prevent soil movement and cave-ins.
- **Shielding** protects workers by using trench boxes or other types of supports to prevent soil cave-ins.

Designing a protective system can be complex because you must consider many factors: soil classification, depth of cut, water content of soil, changes caused by weather or climate, surcharge loads (e.g., spoil, other materials to be used in the trench) and other operations in the vicinity.

See OP 1001 Excavation and Trenching Safety for more information.

Task 1B - Stockpiling

Stockpiling of soils is conducted for a range of services that can include but are not limited to: building, foundation, utility excavation, drilling spoils containment and environmental cleanup. Familiarity with basic heavy construction safety is an essential component of all hauling projects. Potential hazards related to stockpiling operations include, but are not limited to encountering underground or overhead utilities, traffic and heavy equipment, and the use or unexpected encountering of toxic or hazardous substances. While staff members do not operate heavy equipment, they may work in close proximity to the equipment and may be exposed to many of the same hazards as the Contractor. Care should be taken during material stockpiling that the staff is not in the line of fire of the loading equipment (swing radius/traffic pattern). The staff should be aware of any setback requirements of stockpile surcharges near trenches and excavations.

Task 1C - Hauling Soils Off-site

Hauling Soils Off-site is conducted for a range of services that can include but are not limited to: building, foundation, utility excavation and environmental cleanup. Familiarity with basic heavy construction safety is an essential component of all hauling projects. Potential hazards related to hauling soils off-site operations include, but are not limited to encountering underground or overhead utilities, traffic and heavy equipment, generated waste, and the use or unexpected encountering of toxic or hazardous substances. While staff members do not operate heavy equipment, they may work in close

proximity to the equipment and may be exposed to many of the same hazards as the Contractor. Care should be taken during loading of truck/container that the staff is not in the line of fire of the loading equipment (swing radius/traffic pattern) or of the falling spoils/soil from the loading bucket or truck bed. The staff should be aware at all times of subsurface stability as a truck may tip during truck loading and unloading due items such as but not limited to uneven surface, poorly or uncompacted subsurface, thawing soils, saturated soils and proximity to excavation. It is imperative that staff are aware of emergency / communication protocols with the Contractor prior to the start of work.

Task 2 – Soil Sampling

Soil sampling by H&A staff on active construction sites can be conducted in conjunction with a wide range activities such as building construction, earthwork and soil management related activities. These activities can include, but are not limited to: drill spoil characterization and management during building foundation element installation, characterization of excavated soils for management/disposal/reuse during earthwork activities, and as part of environmental remedial activities such as delineation and confirmation sampling. Familiarity with basic heavy construction safety, site conditions (geotechnical and environmental), and potential soil contaminants are essential components of soil sampling performed on active sites. Potential hazards related to soil sampling at construction sites include, but are not limited to: encountering site vehicle traffic and heavy equipment operations, manual lifting, generated waste, contact or exposure to impacted soil, and encountering unknown toxic or hazardous substances. Although soil sampling is commonly performed within active excavations, from stockpiles, or within trench excavations, sampling locations and situations will vary depending on site conditions. Care should be taken while entering and exiting excavations or trenches, and when accessing (climbing up or down) soil stockpiles, ensuring that the sampling area is not being actively accessed by construction equipment. Care should also be taken with handling of potentially environmentally impacted soil during sampling, with appropriate PPE identified and used. At no time during classification activities are personnel to reach for debris near machinery that is in operation, place any samples in their mouth, or come in contact with the soils without the use of gloves. Staff will have to carry and use a variety of sampling tools, equipment, containers, and potentially heavy sample bags. It is imperative that staff are aware of emergency / communication protocols with the Contractor prior to the start of work.

Task 3 – Soil Vapor

Soil gas sampling is employed as an indirect indicator of contamination in soil or groundwater particularly over and around landfill waste sites, or groundwater plumes. Soil gas sampling points can be installed manually using a slam bar or power driven mechanical devices (e.g., demolition hammer or Geoprobe) may be used based on site conditions (i.e., pavement, frozen ground, very dense clays, etc.). Soil gas samples can be drawn through the probe itself, or through Teflon tubing inserted through the probe and attached to the probe point. Samples are collected and analyzed as described below. Other field air monitoring devices, such as the Combustible Gas Indicator (CGI) and the Organic Vapor Analyzer (OVA), can also be used, depending on specific site conditions.

Because the sample is being drawn from underground, and no contamination is introduced into the breathing zone, soil gas sampling usually occurs in Level D. Nevertheless, ambient air should be constantly monitored to obtain background and breathing zone readings during the sampling procedure

in the event the seal around the sampling point is breached. As long as the levels in ambient air do not rise above background, no upgrade of the level of protection is needed. Also, an underground utility search must be performed prior to sampling.



Task Physical Hazards Checklist			
Potential Task Hazards	Task 1 Remedial Oversight	Task 2 Soil Sampling	Task 3 Soil Vapor Sampling
Congested Area	☒	☒	☒
Energized Equipment	☒	☒	☐
Ergonomics	☐	☒	☒
Excavation/Trenching	☒	☐	☐
Generated Wastes	☒	☐	☐
Ground Disturbance	☒	☐	☐
Hand/Power Tools	☐	☒	☒
Heavy Equipment	☒	☐	☐
Line of Fire	☒	☒	☒
Manual Lifting	☒	☒	☒
Noise	☒	☐	☐
Overhead Utilities	☒	☐	☐
Slippery Surfaces	☒	☒	☒
Sharp Objects	☒	☒	☐
Underground Utilities	☒	☐	☐
Other: Specify	☐	☐	☐

Summary of Physical Hazards & Controls

Congested Areas

Working in congested areas can expose both workers and the public to a wide range of hazards depending upon the specific activities taking place. Staff Members need to understand the work scope, work areas, equipment on-site, and internal traffic patterns to minimize or eliminate exposure potential.

Controls

- Provide barricades, fencing, warning signs/signals and adequate lighting to protect people while working in or around congested areas.
- Vehicles and heavy equipment with restricted views to the rear should have functioning back-up alarms that are audible above the surrounding noise levels. Whenever possible, use a signaler to assist heavy equipment operators and/or drivers in backing up or maneuvering in congested areas.
- Lay out traffic control patterns to eliminate excessive congestion.
- Workers in congested areas should always wear high visibility clothing.
- Be aware of Line of Fire hazards when performing work activities in congested areas.
- Hazards associated with SIMOPs should be discussed daily at Tailgate Safety Meetings.

Energized Equipment

Energy sources including electrical, mechanical, hydraulic, pneumatic, or other sources in machines and equipment can be hazardous to workers. During servicing and maintenance of machines and equipment, the unexpected startup or release of stored energy can result in serious injury or death to workers.

Staff members that are required to work on energized equipment must first ensure that the source of energy is isolated and/or de-energized. In addition, any stored energy must also be released. Staff must ensure that the process to de-energize and isolate energy sources is documented and communicated to those who are working on the equipment. Staff must be trained on and understand the procedure.

See OP 1032 Control of Hazardous Energy for more information.

Controls

- Document process to de-energize or isolate energy sources.
- Ensure staff are appropriately trained to conduct work requiring LOTO.
- Affix log or tag to equipment to ensure improper start-up or release of energy.
- Execute an Energy Isolation Permit.

Ergonomics

Most Work-related Musculoskeletal Disorders (WMSDs) are caused by Ergonomic Stressors. Ergonomic Stressors are caused by poor workplace practices and/or insufficient design, which may present ergonomic risk factors. These stressors include, but not limited to, repetition, force, extreme postures, static postures, quick motions, contact pressure, vibration, and cold temperatures.

WMSDs are injuries to the musculoskeletal system, which involves bones, muscles, tendons, ligaments, and other tissues in the system. Symptoms may include numbness, tightness, tingling, swelling, pain, stiffness, fatigue, and/or redness. WMSD are usually caused by one or more Ergonomic Stressors. There

may be individual differences in susceptibility and symptoms among employees performing similar tasks. Any symptoms are to be taken seriously and reported immediately.

See OP1053 Ergonomics for more information.

Controls

- Ensure workstations are ergonomically correct so bad posture is not required to complete tasks.
- Take periodic breaks over the course of the day.
- Stretch during break times.
- Break up tasks that require repetitive motion.
- Contact Corporate H&S with any ergonomic concerns

Excavation & Trenches

There are multiple hazards associated with working in and around excavations and trenches including cave-ins, potential running soils, dislodged excavated soils, lack of proper access and egress. Nonfatal, and even fatal, injuries may occur in association with excavation and trenching activities with a greater frequency than one might expect. Causes of bodily injury, illness, or death include asphyxiation, internal injuries due to physical crushing, falling objects and toxic exposures.

See OP1001 Excavation and Trenching Safety for more information.

Controls

- Do not enter an excavation unless it has been inspected and has appropriate protective measures in place: shoring, benching, or sloping.
 - Protective measures are required for excavations that are 5 feet or deeper.
- If entry is required verify with the on-site competent person that:
 - no atmospheric hazards exist or have the potential to exist
 - there is no standing water or water removal operations are in place
 - the daily inspection has occurred
 - spoil piles, equipment or other is at least 2 feet from the edge
 - There is safe access and egress to the excavation which can include ladders, steps, ramps or other safe means. The means of access and egress shall be no more than 25' away.
- If there is any doubt about the safety of the excavation personnel will not enter the excavation or trench and will contact the PM and the Regional Safety Manager.
- Do not stand on the long side of the cut. If required ensure there are no tension cracks.

Generated Waste

Activities on environmental sites may generate waste that requires regulated handling and disposal. Excess sample solids, decontamination materials, poly sheeting, used PPE, etc. that are determined to be free of contamination through field or laboratory screening can usually be disposed into client-approved, on-site trash receptacles. Uncontaminated wash water may be discarded onto the ground surface away from surface water bodies in areas where infiltration can occur. Contaminated materials must be segregated into liquids or solids and drummed separately for off-site disposal.

Controls

- Manage waste properly through good work practices.

- Collect, store, containerize waste, and dispose of it properly.
- All wastes generated shall be containerized in an appropriate container (i.e. open or closed top 55-gallon drum, roll-off container, poly tote, cardboard box, etc.) as directed by the PM.
- Containers should be inspected for damages or defects
- Waste containers should be appropriately labeled indicating the contents, date the container was filled, owner of the material (including address) and any unique identification number, if necessary.
- Upon completion of filling the waste container, the container should be inspected for leaks and an appropriate seal.

Ground Disturbance

Ground disturbance is defined as any activity disturbing the ground. Ground disturbance activities include, but are not limited to, excavating, trenching, drilling (either mechanically or by hand), digging, plowing, grading, tunneling and pounding posts or stakes.

Because of the potential hazards associated with striking an underground utility or structure, the operating procedure for underground utility clearance shall be followed prior to performing any ground disturbance activities.

See OP1020 Working Near Utilities

Controls

Prior to performing ground disturbance activities, the following requirements should be applied:

- Confirm all approvals and agreements (as applicable) either verbal or written have been obtained.
- Request for line location has been registered with the applicable One-Call or Dial Before You Dig organization, when applicable.
 - Whenever possible, ground disturbance areas should be adequately marked or staked prior to the utility locators site visit.
- Notification to underground facility operator/owner(s) that may not be associated with any known public notification systems such as the One-Call Program regarding the intent to cause ground disturbance within the search zone.
- Notifications to landowners and/or tenant, where deemed reasonable and practicable.
- Proximity and Common Right of Way Agreements shall be checked if the line locator information is inconclusive.

Hand and Power Tools

Hand and power tools can expose staff to a wide range of hazards depending upon the tool used. Hazards can include but are not limited to: falling, flying, abrasive, and splashing objects, or harmful dusts, fumes, mists, vapors, or gases.

Serious accidents often occur before steps are taken to evaluate and avoid or eliminate tool-related hazards. Staff must recognize the hazards associated with the different types of tools and the safety precautions necessary to prevent those hazards.

See OP 1026 Hand and Power Tools for more information.

Controls

- Keep all tools in good condition with regular maintenance.
- Use the right tool for the job. Do not use a tool for a task which it was not designed for.
- Examine each tool for damage before use and do not use damaged tools.
- For tools that are damaged or defective, red tag the tool and take out of service.
- Operate tools per the manufacturers' instructions.
- Use the appropriate personal protective equipment.
- All electrically powered tools will be connected through a ground fault circuit interrupter (GFCI).
- All personnel must be trained on the use of the tool they are utilizing.

Heavy Equipment

Staff must be careful and alert when working around heavy equipment, failure or breakage and limited visibility can lead to accidents and worker injury. Heavy equipment such as cranes, drills, haul trucks, or other can fail during operation increasing chances of worker injury. Equipment of this nature shall be visually inspected and checked for proper working order prior to commencement of field work. Those operating heavy equipment must meet all requirements to operate the equipment. Haley & Aldrich, Inc. staff that supervise projects or are associated with high risk projects that involve digging or drilling should use due diligence when working with a construction firm.

See OP1052 Heavy Equipment for additional information.

Controls

- Only approach equipment once you have confirmed contact with the operator (e.g., operator places the bucket on the ground).
- Always maintain visual contact with operators and keep out of the strike zone whenever possible.
- Always be alert to the position of the equipment around you.
- Always approach heavy equipment with an awareness of the swing radius and traffic routes of all equipment and never go beneath a hoisted load.
- Avoid fumes created by heavy equipment exhaust.

Line of Fire

Line of fire refers to the path an object will travel. Examples of line of fire situations typically observed on project sites include lifting/hoisting, lines under tension, objects that can fall or roll, pressurized objects or lines, springs or stored energy, work overhead, vehicles and heavy equipment.

Controls

- Never walk under a suspended load.
- Be aware and stay clear of tensioned lines such as cable, chain and rope.
- Be cautious of torque stresses that drilling equipment and truck augers can generate. Equipment can rotate unexpectedly long after applied torque force has been stopped.
- Springs and other items can release tremendous energy if compressed and suddenly released
- Items under tension and pressure can release tremendous energy if it is suddenly released.
- Not all objects may be overhead; be especially mindful of top-heavy items and items being transported by forklift or flatbed.
- Secure objects that can roll such as tools, cylinders, and pipes.
- Stay clear of soil cuttings or soil stockpiles generated during drilling operations and excavations, be aware that chunks of soil, rocks, and debris can fall or roll.

Manual Lifting/Moving

Most materials associated with investigation, remedial, or construction-related activities are moved by hand. The human body is subject to damage in the forms of back injury, muscle strains, and hernia if caution is not observed in the handling process.

Controls

- Under no circumstances should any one person lift more than 49 pounds unassisted.
- Always push, not pull, the object when possible.
- Size up the load before lifting. If it is heavy or clumsy, get a mechanical aid or help from a worker.
- Bend the knees; it is the single most important aspect of lifting.
- When performing the lift:
 - Place your feet close to the object and center yourself over the load.
 - Get a good handhold.
 - Lift straight up, smoothly and let your legs do the work, not your back!
 - Avoid overreaching or stretching to pick up or set down a load.
 - Do not twist or turn your body once you have made the lift.
 - Make sure beforehand that you have a clear path to carry the load.
 - Set the load down properly.

Noise

Working around heavy equipment (drill rigs, excavators, etc.) often creates excessive noise. The effects of noise include physical damage to the ear, pain, and temporary and/or permanent hearing loss. Workers can also be startled, annoyed, or distracted by noise during critical activities. Noise monitoring data that indicates that working within 25 feet of operating heavy equipment result in exposure to hazardous levels of noise (levels greater than 85 dBA).

See OP 1031 Hearing Conservation for additional information.

Controls

- Personnel are required to use hearing protection (earplugs or earmuffs) within 25 feet of any operating piece of heavy equipment.
- Limit the amount of time spent at a noise source.
- Move to a quiet area to gain relief from hazardous noise sources.
- Increase the distance from the noise source to reduce exposure.

Overhead Utilities

When work is undertaken near overhead electrical lines, the distance maintained from those lines shall also meet the minimum distances for electrical hazards as defined in Table 1 below. Note: utilities other than overhead electrical utilities need to be considered when performing work.

Table 1 Minimal Radial Clearance Distances *

Normal System Voltage Kilovolts (kV)	Required Minimal Radial Clearance Distance (feet/meters)
0 – 50	10/3.05
51 – 100	12/3.66
101 – 200	15/4.57
201 – 300	10/6.1
301 – 500	25/7.62
501 – 750	35/10.67
750 - 1000	45/13.72

* For those locations where the utility has specified more stringent safe distances, those distances shall be observed.

Controls

- To prevent damage, guy wires shall be visibly marked and work barriers or spotters provided in those areas where work is being conducted.
 - o When working around guy wires, the minimum radial clearance distances for electrical power shall be observed.
- The PM shall research and determine if the local, responsible utility or client has more restrictive requirements than those stated in Table 1.
- If equipment cannot be positioned in accordance with the requirements established in Table 1 the lines need to be de-energized.

Slippery Surfaces

Both slips and trips result from unintended or unexpected change in the contact between the feet and ground or walking surface. Good housekeeping, quality of walking surfaces, selection of proper footwear, and appropriate pace of walking are critical for preventing fall accidents. Slips happen where there is too little friction or traction between the footwear and walking surface.

Common causes of slips are wet or oily surfaces, spills, weather hazards, loose unanchored rugs or mats and flooring or other walking surfaces that do not have same degree of traction in all areas.

Weather-related slips and falls become a serious hazard as winter conditions often make for wet or icy surfaces outdoors. Even wet organic material or mud can create hazardous walking conditions. Spills and leaks can also lead to slips and falls.

Controls

- Evaluate the work area to identify any conditions that may pose a slip hazard.
- Address any spills, drips or leaks immediately.
- Mark areas where slippery conditions exist.
- Select proper footwear or enhance traction with additional PPE.
- Where conditions are uncertain or environmental conditions result in slippery surfaces walk slowly, take small steps, and slide feet on wet or slippery surfaces.

Sharp Objects

Workers who handle sharp edged objects like sheets of steel or glass are at risk of cuts. Workers who handle sharp edged objects are also at risk of cuts. Injuries may occur to hands, fingers, or legs when they are in the way of the blade, when the blade slips, or if an open blade is handled unexpectedly. Other hazards at job sites include stepping on sharp objects (e.g. wooden boards with protruding nails, sharp work-tools, chisels, etc.) and colliding with sharp and/or protruding objects.

Controls

Always be alert when handling sharps. Never look away or become distracted while handling sharp objects. Use caution when working with tools; use right tool for the job. Keep tools sharp, dull blades are a safety hazard, requiring more force to make cuts which can lead to tool slippage. Wear appropriate PPE and do not handle sharp objects (i.e., broken glass) with bare hands. Use mechanical devices, when possible. Stay away from building debris; avoid handling site debris or placing your hand where you cannot see. Watch out for barbed wire and electrical fences; cover with a car mat or equivalent to cross or walk around; use the buddy system to avoid entanglement; wear gloves. Do not leave unprotected sharps unattended. Use protective shields, cases, styrofoam blocks, etc. Pass a sharp by handing it over carefully by the handle with the blade down or retracted. Fixed open blades are prohibited. Always cut away from the body, making several passes when cutting thicker materials. Make sure blades are fitted properly into the knife. Never cut items with a blade or other sharp object on your lap. Never try to catch a blade or cutting tool that is falling.

Underground Utilities

Various forms of underground/overhead utility lines or conveyance pipes may be encountered during site activities. Prior to the start of intrusive operations, utility clearance is mandated, as well as obtaining authorization from all concerned public utility department offices. Should intrusive operations cause equipment to come into contact with utility lines, the SHSO, Project Manager, and Regional H&S Manager shall be notified immediately. Work will be suspended until the client and applicable utility agency is contacted and the appropriate actions for the situation can be addressed.

See OP1020 Work Near Utilities for complete information.

Controls

- Obtain as-built drawings for the areas being investigated from the property owner;
- Visually review each proposed soil boring locations with the property owner or knowledgeable site representative;
- Perform a geophysical survey to locate utilities;
- Hire a private line locating firm to determine location of utility lines that are present at the property;
- Identifying a no-drill or dig zone;
- Hand dig or use vacuum excavation in the proposed ground disturbance locations if insufficient data is unavailable to accurately determine the location of the utility lines.

4. PROTECTIVE MEASURES

The personal protective equipment and safety equipment (if listed) is specific to the associated task. The required PPE and equipment listed must be onsite during the task being performed. Work shall not commence unless the required PPE or Safety Equipment is present.

Required Safety & Personal Protective Equipment

Required Personal Protective Equipment (PPE)	Task 1	Task 2	Task 3	
	Remedial Oversight	Soil Sampling	Soil Vapor Sampling	Enter task description.
Hard hat	☒	☒	☒	☐
Safety Glasses	☒	☒	☒	☐
Safety Toed Shoes	☒	☒	☒	☐
Class 2 Safety Vest	☒	☒	☒	☐
Hearing Protection	☒	☐	☐	☐
Nitrile Gloves	☒	☒	☒	☐
Cut Resistant Gloves	☒	☒	☒	☐
Level of protection required	D	D	D	Select
Required Safety Equipment				
First Aid Kit	☒	☒	☒	☐
Choose an item.	☐	☐	☐	☐

5. TRAINING REQUIREMENTS			
The table below lists the training requirements staff must have respective to their assigned tasks and that are required to access the Site.			
Site Specific Training Requirements			
HAZWOPER - 40 Hour (Initial)			
HAZWOPER - 8 Hour (Annual Refresher)			
Choose an item.			
Task Specific Training Requirements			
Required Training Type	Task 1	Task 2	Task 3
	Remedial Oversight	Soil Sampling	Soil Vapor Sampling

6. AIR MONITORING PLAN AND EQUIPMENT

Exposures to airborne substances shall be fully characterized throughout project operations to ensure that exposure controls are effectively selected and modified as needed.

Is air/exposure monitoring required at this work site for personal protection? Yes

Is perimeter monitoring required for community protection? Choose an item.

Air monitoring plan not applicable Choose an item.

Air Monitoring/Screening Equipment Requirements

Photo-Ionization Detector (PID) 10.6eV

The required equipment listed above must be on site. Work shall not commence unless the equipment is present and in working order.

Monitoring Plans

Parameter/ Contaminant	Equipment	Action Level	Response Activity
VOCs	PID 10.6 eV	< 5 ppm	Continue work and monitoring.
		>5 ppm for 5 minutes	Clear Instrument and Re-Monitor the Area. Implement PPE upgrades
		>5 ppm for >5 minutes	Evacuate the area and call the RHSM and/or PM for further guidance. Implement engineering controls.

Zone Location and Monitoring Interval

Breathing zone and edge of Exclusion Zone.

***If chemical does not have an action level use TLV or REL, whichever is lowest, to be used as an action level. If TLV or REL are the same as PEL, cut the PEL in half for an action level.**

7. DECONTAMINATION & DISPOSAL METHODS

All possible and necessary steps shall be taken to reduce or minimize contact with chemicals and contaminated/impacted materials while performing field activities (e.g., avoid sitting or leaning on, walking through, dragging equipment through or over, tracking, or splashing potential or known contaminated/impacted materials.)

Personal Hygiene Safeguards

The following minimum personal hygiene safeguards shall be adhered to:

1. No smoking or tobacco products in any project work areas.
2. No eating or drinking in the exclusion zone.
3. It is required that personnel present on site wash hands before eating, smoking, taking medication, chewing gum/tobacco, using the restroom, or applying cosmetics and before leaving the site for the day.

It is recommended that personnel present on site shower or bathe at home at the end of each day of working on the site.

Decontamination Supplies

All decontamination should be conducted at the project site in designated zones or as dictated by Client requirements. Decontamination should not be performed on Haley & Aldrich owned or leased premises.

☐ Acetone	☒ Distilled Water	☐ Polyethylene Sheeting
☒ Alconox Soap	☐ Drums	☐ Pressure/Steam Cleaner
☒ Brushes	☐ Hexane	☒ Tap Water
☒ Disposal Bags	☐ Methanol	☐ Wash tubs
☒ 5 Gallon Buckets	☒ Paper Towels	☐ Other: Specify

Location of Decontamination Station

To be communicated during Site kick-off meeting.

Standard Personal Decontamination Procedures

Outer gloves and boots should be decontaminated periodically as necessary and at the end of the day. Brush off solids with a hard brush and clean with soap and water or other appropriate cleaner whenever possible. Remove inner gloves carefully by turning them inside out during removal. Wash hands and forearms frequently. It is good practice to wear work-designated clothing while on-site which can be removed as soon as possible. Non-disposable overalls and outer work clothing should be bagged onsite prior to laundering. If gross contamination is encountered on-site contact the Project Manager and Field Safety Manager to discuss proper decontamination procedures.

The steps required for decontamination will depend upon the degree and type of contamination but will generally follow the sequence below.

1. Remove and wipe clean hard hat
2. Rinse boots and gloves of gross contamination
3. Scrub boots and gloves clean
4. Rinse boots and gloves
5. Remove outer boots (if applicable)
6. Remove outer gloves (if applicable)
7. Remove Tyvek coverall (if applicable)
8. Remove respirator, wipe clean and store (if applicable)
9. Remove inner gloves (if outer gloves were used)

PPE that is not grossly contaminated can be bagged and disposed in regular trash receptacles.

Small Equipment Decontamination

Pretreatment of heavily contaminated equipment may be conducted as necessary:

1. Remove gross contamination using a brush or wiping with a paper towel
2. Soak in a solution of Alconox and water (if possible)
3. Wipe off excess contamination with a paper towel

Standard decontamination procedure:

4. Wash using a solution of Alconox and water
5. Rinse with potable water
6. Rinse with methanol (or equivalent)
7. Rinse with distilled/deionized water

Inspect the equipment for any remaining contamination and repeat as necessary.

Disposal Methods
Procedures for disposal of contaminated materials, decontamination waste, and single use personal protective equipment shall meet applicable client, local, State, and Federal requirements.
Disposal of Single Use Personal Protective Equipment
PPE that is not grossly contaminated can be bagged and disposed in regular trash receptacles. PPE that is grossly contaminated must be bagged (sealed) and field personnel should communicate with the Project Manager to determine proper disposal.
• Contaminated soil cuttings and spoils must be containerized for disposal off-site unless otherwise specifically directed. • Soil cuttings and spoils determined to be free of contamination through field screening can usually be returned to the boreholes or excavations from which they came.

8. SITE CONTROL

The overall purpose of site control is to minimize potential contamination of workers, protect the public from the site's hazards, and prevent vandalism. Site control is especially important in emergency situations. The degree of site control necessary depends on site characteristics, site size, and the surrounding community. The following information identifies the elements used to control the activities and movements of people and equipment at the project site.

Communication
Internal Haley & Aldrich site personnel will communicate with other Haley & Aldrich staff member and/or subcontractors or contractors with: Face to Face Communication
External H&S site personnel will use the following means to communicate with off-site personnel or emergency services. Cellular Phones
Visitors
Project Site Will visitors be required to check-in prior to accessing the project site? Yes
Visitor Access Authorized visitors that require access to the project site need to be provided with known information with respect to the site operations and hazards as applicable to the purpose of their site visit. Authorized visitors must have the required PPE and appropriate training to access the project site. Sarah Commisso is responsible for facilitating authorized visitor access.
Zoning
Work Zone The work zone will be clearly delineated to ensure that the general public or unauthorized worker access is prevented. The following will be used: Cones Barricades Temporary Fencing

9. SITE SPECIFIC EMERGENCY RESPONSE PLAN

The Emergency Response Plan addresses potential emergencies at this site, procedures for responding to these emergencies, roles, responsibilities during emergency response, and training. This section also describes the provisions this project has made to coordinate its emergency response with other contractors onsite and with offsite emergency response organizations (as applicable).

During the development of this emergency response plan, local, state, and federal agency disaster, fire, and emergency response organizations were consulted (if required) to ensure that this plan is compatible and integrated with plans of those organizations. Documentation of the dates of these consultations and the names of individuals contacted is kept on file and available upon request.

The site has been evaluated for potential emergency occurrences, based on site hazards, and the major categories of emergencies that could occur during project work are:

- Fire(s)/Combustion
- Hazardous Material Event
- Medical Emergency
- Natural Disaster

A detailed list of emergency types and response actions are summarized in Table X below. Prior to the start of work, the SSO will update the table with any additional site-specific information regarding evacuations, muster points, or additional emergency procedures. The SSO will establish evacuation routes and assembly areas for the Site. All personnel entering the Site will be informed of these routes and assembly areas.

Pre-Emergency Planning

Before the start of field activities, the Project Manager will ensure preparation has been made in anticipation of emergencies. Preparatory actions include the following:

Meeting with the subcontractor/and or client concerning the emergency procedures in the event a person is injured. Appropriate actions for specific scenarios will be reviewed. These scenarios will be discussed, and responses determined before the sampling event commences. A form of emergency communication (i.e.; Cell phone, Air horn, etc.) between the Project Manager and subcontractor and/or client will be agreed on before the work commences.

A training session (i.e., "safety meeting") given by the Project Manager or their designee informing all field personnel of emergency procedures, locations of emergency equipment and their use, and proper evacuation procedures.

Ensuring field personnel are aware of the existence of the emergency response HASP and ensuring a copy of the HASP accompanies the field team(s).

Onsite Emergency Response Equipment

Emergency procedures may require specialized equipment to facilitate work rescue, contamination control and reduction or post-emergency cleanup. Emergency response equipment stocked

Table 9.1 Emergency Equipment and Emergency PPE			
Emergency Equipment	Specific Type	Quantity Stocked	Location Stored
First Aid Kit	ANSI	1 Kit	With H&A Staff
Emergency PPE	Specific Type	Quantity Stocked	Location Stored
Gloves	Nitrile	Enter text	With H&A Staff

EVACUATION ALARM
Will be communicated during the Onsite Kickoff Meeting
EVACUATION ROUTES
Will be given a map after site specific training
EVACUATION MUSTER POINT(S)/ SHELTER AREA(S)
Will be given a locations after site specific training
EVACUTION RESPONSE DRILLS
The Site relies on outside emergency responders and a drill is not required.

Table 9-2 – Emergency Planning

Emergency Type	Notification	Response Action	Evacuation Plan/Route
Chemical Exposure	Report event to SSO immediately	Refer to Safety Data Sheet for required actions	Remove personnel from work zone
Fire - Small	Notify SSO and contact 911	Use fire extinguisher if safe and qualified to do so	Mobilize to <i>Muster Point</i>
Fire – Large/Explosion	Notify SSO and contact 911	Evacuate immediately	Mobilize to <i>Muster Point</i>
Hazardous Material – Spill/Release	Notify SSO; SSO will contact PM to determine if additional agency notification is	If practicable don PPE and use spill kit and applicable procedures to contain the release	See Evacuation Map for route, move at least 100 ft upwind of spill location
Medical – Bloodborne Pathogen	Notify SSO	If qualified dispose in container or call client or city to notify for further instruction.	None Anticipated
Medical – First Aid	Notify SSO	If qualified perform first aid duties	None Anticipated
Medical – Trauma	If life threatening or transport is required call 911, immediately	Wait at site entrance for ambulance	Noe Anticipated
Security Threat	Notify SSO who will call 911 as warranted	Keep all valuables out of site and work zones delineated.	None Anticipated
Weather – Earthquake/Tsunami’s	STOP WORK and evacuate Site upon any earthquake	Turn off equipment and evacuate as soon as is safe to do so	Mobilize to <i>Shelter Location</i>
Weather – Lightning Storm	STOP WORK	Work may resume 30 minutes after the last observed lightning.	None Anticipated
Weather – Tornadoes/Hurricanes	Monitor weather conditions STOP WORK and evacuate the site	Evacuate to shelter location or shelter in place immediately	Mobilize to <i>Shelter Location</i>
<u>MUSTER POINT</u> To be communicated during Site kick-off meeting		<u>SHELTER LOCATION</u> To be communicated during Site kick-off meeting	
In case of site emergencies, site personnel shall be evacuated per this table and will not participate in emergency response activities. Site emergencies shall be reported to local, state, and federal governmental agencies as required.			

10. HASP ACKNOWLEDGEMENT FORM

All Haley & Aldrich employees onsite must sign this form prior to entering the site.

I hereby acknowledge receipt of, and briefing on, this HASP prior to the start of on-site work. I declare that I understand and agree to follow the provisions, processes, and procedures set forth herein at all times while working on this site.

[illegible]

**ATTACHMENT A
HASP AMENDMENT FORM**

HASP AMENDMENT FORM

This form is to be used whenever there is an immediate change in the project scope that will require an amendment to the HASP. For project scope changes associated with “add-on” tasks, the changes must be made in the body of the HASP. Before changes can be made, a review of the potential hazards must be initiated by the Haley & Aldrich Project Manager.

This original form must remain on site with the original HASP. If additional copies of this HASP have been distributed, it is the Project Manager’s responsibility to forward a signed copy of this amendment to those who have copies.

Amendment No.	
Site Name	
Work Assignment No.	
Date	
Type of Amendment	
Reason for Amendment	
Alternate Safeguard Procedures	
Required Changes in PPE	

Project Manager Name (Print)

Project Manager Signature

Date

Health & Safety Approver Name
(Print)

Health & Safety Approver Signature

Date

**ATTACHMENT B
TRAINING REQUIREMENTS**

TRAINING REQUIREMENTS
Health and Safety Training Requirements
Personnel will not be permitted to supervise or participate in field activities until they have been trained to a level required by their job function and responsibility. Haley & Aldrich staff members, contractors, subcontractors, and consultants who have the potential to be exposed to contaminated materials or physical hazards must complete the training described in the following sections. The Haley & Aldrich Project Manager/FSM will be responsible for maintaining and providing to the client/site manager documentation of Haley & Aldrich staff members' compliance with required training as requested. Records shall be maintained per OSHA requirements.
40-Hour Health and Safety Training
The 40-Hour Health and Safety Training course provides instruction on the nature of hazardous waste work, protective measures, proper use of personal protective equipment, recognition of signs and symptoms which might indicate exposure to hazardous substances, and decontamination procedures. It is required for all personnel working on-site, such as equipment operators, general laborers, and supervisors, who may be potentially exposed to hazardous substances, health hazards, or safety hazards consistent with 29 CFR 1910.120.
8-hour Annual Refresher Training
Personnel who complete the 40-hour health and safety training are subsequently required to attend an annual 8-hour refresher course to remain current in their training. When required, site personnel must be able to show proof of completion (i.e., certification) at an 8-hour refresher training course within the past 12 months.
8-Hour Supervisor Training
On-site managers and supervisors directly responsible for, or who supervise staff members engaged in hazardous waste operations, should have eight additional hours of Supervisor training in accordance with 29 CFR 1910.120. Supervisor Training includes, but is not limited to, accident reporting/investigation, regulatory compliance, work practice observations, auditing, and emergency response procedures.
Additional Training for Specific Projects
Haley & Aldrich personnel will ensure their personnel have received additional training on specific instrumentation, equipment, confined space entry, construction hazards, etc., as necessary to perform their duties. This specialized training will be provided to personnel before engaging in the specific work activities including: • Client specific training or orientation • Competent person excavations • Confined space entry (entrant, supervisor, and attendant) • Heavy equipment including aerial lifts and forklifts • First aid/ CPR • Use of fall protection • Use of nuclear density gauges • Asbestos awareness

ATTACHMENT C
ROLES AND RESPONSIBILITIES

SITE ROLES AND RESPONSIBILITIES	
Haley & Aldrich Personnel	
Field Safety Manager (FSM)	The Haley & Aldrich FSM is a full-time Haley & Aldrich staff member, trained as a safety and health professional, who is responsible for the interpretation and approval of this Safety Plan. Modifications to this Safety Plan cannot be undertaken by the PM or the SSO without the approval of the FSM. Specific duties of the FSM include: • Approving and amending the Safety Plan for this project • Advising the PM and SHSOs on matter relating to health and safety • Recommending appropriate personal protective equipment (PPE) and air monitoring instrumentation • Maintaining regular contact with the PM and SSO to evaluate the conditions at the property and new information which might require modifications to the HASP and • Reviewing and approving JSAs developed for the site-specific hazards.
Project Manager (PM)	The Haley & Aldrich PM is responsible for ensuring that the requirements of this HASP are implemented at that project location. Some of the PM's specific responsibilities include: • Assuring that all personnel to whom this HASP applies have received a copy of it; • Providing the FSM with updated information regarding environmental conditions at the site and the scope of site work; • Providing adequate authority and resources to the on-site SHSO to allow for the successful implementation of all necessary safety procedures; • Supporting the decisions made by the SHSO; • Maintaining regular communications with the SHSO and, if necessary, the FSM; • Coordinating the activities of all subcontractors and ensuring that they are aware of the pertinent health and safety requirements for this project; • Providing project scheduling and planning activities; and • Providing guidance to field personnel in the development of appropriate Job Safety Analysis (JSA) relative to the site conditions and hazard assessment.
Site Health & Safety Officer (SHSO)	The SHSO is responsible for field implementation of this HASP and enforcement of safety rules and regulations. SHSO functions may include some or all of the following: • Act as Haley & Aldrich's liaison for health and safety issues with client, staff, subcontractors, and agencies. • Verify that utility clearance has been performed by Haley & Aldrich subcontractors. • Oversee day-to-day implementation of the Safety Plan by Haley & Aldrich personnel on site.

- Interact with subcontractor project personnel on health and safety matters.
- Verify use of required PPE as outlined in the safety plan.
- Inspect and maintain Haley & Aldrich safety equipment, including calibration of air monitoring instrumentation used by Haley & Aldrich.
- Perform changes to HASP and document in Appendix A of the HASP as needed and notify appropriate persons of changes.
- Investigate and report on-site accidents and incidents involving Haley & Aldrich and its subcontractors.
- Verify that site personnel are familiar with site safety requirements (e.g., the hospital route and emergency contact numbers).
- Report accidents, injuries, and near misses to the Haley & Aldrich PM and FSM as needed.

The SHSO will conduct initial site safety orientations with site personnel (including subcontractors) and conduct toolbox and safety meetings thereafter with Haley & Aldrich employees and Haley & Aldrich subcontractors at regular intervals and in accordance with Haley & Aldrich policy and contractual obligations. The SHSO will track the attendance of site personnel at Haley & Aldrich orientations, toolbox talks, and safety meetings.

Field Personnel

Haley & Aldrich personnel are responsible for following the health and safety procedures specified in this HASP and for performing their work in a safe and responsible manner. Some of the specific responsibilities of the field personnel are as follows:

- Reading the HASP in its entirety prior to the start of on-site work;
- Submitting a completed Safety Plan Acceptance Form and documentation of medical surveillance and training to the SHSO prior to the start of work;
- Attending the pre-entry briefing prior to beginning on-site work;
- Bringing forth any questions or concerns regarding the content of the Safety Plan to the PM or the SHSO prior to the start of work;
- Stopping work when it is not believed it can be performed safely;
- Reporting all accidents, injuries and illnesses, regardless of their severity, to the SHSO;
- Complying with the requirements of this safety plan and the requests of the SHSO; and
- Reviewing the established JSAs for the site-specific hazards on a daily basis and prior to each shift change, if applicable.

Visitors

Authorized visitors (e.g., Client Representatives, Regulators, Haley & Aldrich management staff, etc.) requiring entry to any work location on the site will be briefed by the Site Supervisor on the hazards present at that location. Visitors will be escorted at all times at the work location and will be responsible for compliance with their employer's health and safety policies. In addition, this safety plan specifies the minimum acceptable qualifications, training and personal protective equipment which are required for entry to any controlled work area; visitors must comply with these

requirements at all times. Unauthorized visitors, and visitors not meeting the specified qualifications, will not be permitted within established controlled work areas.

SUBCONTRACTOR PERSONNEL

Subcontractor Site Representative

Each contractor and subcontractor shall designate a Contractor Site Representative. The Contractor Site Representative will interface directly with Insert Staff Name Here, the Subcontractor Site Safety Manager, with regards to all areas that relate to this safety plan and safety performance of work conducted by the contractor and/or subcontractor workforce. Contractor Site Representatives for this site are listed in the Contact Summary Table at the beginning of the Safety Plan.

Subcontractor Site Safety Manager

Each contractor / subcontractor will provide a qualified representative who will act as their Site Safety Manager (Sub-SSM). This person will be responsible for the planning, coordination, and safe execution of subcontractor tasks, including preparation of job hazard analyses (JHA), performing daily safety planning, and coordinating directly with the Haley & Aldrich SHSO for other site safety activities. This person will play a lead role in safety planning for Subcontractor tasks, and in ensuring that all their employees and lower tier subcontractors are in adherence with applicable local, state, and/or federal regulations, and/or industry and project specific safety standards or best management practices.

General contractors / subcontractors are responsible for preparing a site-specific HASP and/or other task specific safety documents (e.g., JHAs), which are, at a minimum, in compliance with local, state, and/or federal other regulations, and/or industry and project specific safety standards or best management practices. The contractor(s)/subcontractor(s) safety documentation will be at least as stringent as the health and safety requirements of the Haley & Aldrich Project specific HASP.

Safety requirements include, but are not limited to: legal requirements, contractual obligations and industry best practices. Contractors/subcontractors will identify a site safety representative during times when contractor/subcontractor personnel are on the Site. All contractor/subcontractor personnel will undergo a field safety orientation conducted by the Haley & Aldrich SHSO and/or PM prior to commencing site work activities. All contractors / subcontractors will participate in Haley & Aldrich site safety meetings and their personnel will be subject to training and monitoring requirements identified in this Safety Plan. If the contractors / subcontractors means and methods deviate from the scope of work described in Section 1 of this Safety Plan, the alternate means and methods must be submitted, reviewed and approved by the Haley & Aldrich SHSO and/or PM prior to the commencement of the work task. Once approved by the Haley & Aldrich SHSO and/or PM, the alternate means and methods submittal will be attached to this Safety Plan as an Addendum.

**ATTACHMENT D
JOB SAFETY ANALYSES**



Safety
in everything we do

NYSDEC BCP SITE C203160

KEY TASK ENTER TASK NUMBER.: ENTER TASK NAME.

Subtask Category	Potential Hazards	Controls
Enter subtask information.	Choose category.	Enter control(s) for each hazard.
Enter subtask information.	Choose category.	Enter control(s) for each hazard.
Enter subtask information.	Choose category.	Enter control(s) for each hazard.
Enter subtask information.	Choose category.	Enter control(s) for each hazard.
Enter subtask information.	Choose category.	Enter control(s) for each hazard.
Enter subtask information.	Choose category.	Enter control(s) for each hazard.
Enter subtask information.	Choose category.	Enter control(s) for each hazard.
Enter subtask information.	Choose category.	Enter control(s) for each hazard.
Enter subtask information.	Choose category.	Enter control(s) for each hazard.
Enter subtask information.	Choose category.	Enter control(s) for each hazard.
Enter subtask information.	Choose category.	Enter control(s) for each hazard.
Enter subtask information.	Choose category.	Enter control(s) for each hazard.
Enter subtask information.	Choose category.	Enter control(s) for each hazard.



APPENDIX E
REQUEST TO IMPORT/REUSE FORM



**NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION**



Request to Import/Reuse Fill or Soil

This form is based on the information required by DER-10, Section 5.4(e). Use of this form is not a substitute for reading the applicable Technical Guidance document.

SECTION 1 – SITE BACKGROUND

The allowable site use is:

Have Ecological Resources been identified?

Is this soil originating from the site?

How many cubic yards of soil will be imported/reused?

If greater than 1000 cubic yards will be imported, enter volume to be imported:

SECTION 2 – MATERIAL OTHER THAN SOIL

Is the material to be imported gravel, rock or stone?

Does it contain less than 10%, by weight, material that would pass a size 10 sieve?

Does it contain less than 10%, by weight, material that would pass a size 100 sieve?

Is this virgin material from a permitted mine or quarry?

Is this material recycled concrete or brick from a DEC registered processing facility?

SECTION 3 - SAMPLING

Provide a brief description of the number and type of samples collected in the space below:

Example Text: 5 discrete samples were collected and analyzed for VOCs. 2 composite samples were collected and analyzed for SVOCs, Inorganics & PCBs/Pesticides.

If the material meets requirements of DER-10 section 5.4(e)5 (other material), no chemical testing needed.

SECTION 3 CONT'D - SAMPLING

Provide a brief written summary of the sampling results or attach evaluation tables (compare to DER-10, Appendix 5):

Example Text: Arsenic was detected up to 17 ppm in 1 (of 5) samples; the allowable level is 16 ppm.

If Ecological Resources have been identified use the "If Ecological Resources are Present" column in Appendix 5.

SECTION 4 – SOURCE OF FILL

Name of person providing fill and relationship to the source:

Location where fill was obtained:

Identification of any state or local approvals as a fill source:

If no approvals are available, provide a brief history of the use of the property that is the fill source:

Provide a list of supporting documentation included with this request:

The information provided on this form is accurate and complete.

Signature

Date

Print Name

Firm

APPENDIX F
CITIZEN PARTICIPATION PLAN



Department of
Environmental
Conservation

Brownfield Cleanup Program

Citizen Participation Plan

for

Former Fiedler Masonry & Waterproofing Site

91 Bruckner Boulevard

January 2023

BCP Site No. C203160
91 Bruckner Boulevard
The Bronx, New York 10454

Contents

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Note: The information presented in this Citizen Participation Plan was current as of the date of its approval by the New York State Department of Environmental Conservation. Portions of this Citizen Participation Plan may be revised during the site's investigation and cleanup process.

Applicant: **91 Bruckner Blvd LLC (“Applicant”)**
Site Name: **Former Fiedler Waterproofing & Masonry Site**
Site Address: **91 Brucker Boulevard, Bronx, NY 10454**
Site County: **Bronx County**
Site Number: **C203160**

1. What is New York’s Brownfield Cleanup Program?

New York’s Brownfield Cleanup Program (BCP) works with private developers to encourage the voluntary cleanup of contaminated properties known as “brownfields” so that they can be reused and developed. These uses include recreation, housing, and business.

A *brownfield* is any real property that is difficult to reuse or redevelop because of the presence or potential presence of contamination. A brownfield typically is a former industrial or commercial property where operations may have resulted in environmental contamination. A brownfield can pose environmental, legal, and financial burdens on a community. If a brownfield is not addressed, it can reduce property values in the area and affect economic development of nearby properties.

The BCP is administered by the New York State Department of Environmental Conservation (NYSDEC) which oversees Applicants who conduct brownfield site investigation and cleanup activities. An Applicant is a person who has requested to participate in the BCP and has been accepted by NYSDEC. The BCP contains investigation and cleanup requirements, ensuring that cleanups protect public health and the environment. When NYSDEC certifies that these requirements have been met, the property can be reused or redeveloped for the intended use.

For more information about the BCP, go online at: <http://www.dec.ny.gov/chemical/8450.html>.

2. Citizen Participation Activities

Why NYSDEC Involves the Public and Why It Is Important

NYSDEC involves the public to improve the process of investigating and cleaning up contaminated sites, and to enable citizens to participate more fully in decisions that affect their health, environment, and social well-being. NYSDEC provides opportunities for citizen involvement and encourages early two-way communication with citizens before decision makers form or adopt final positions.

Involving citizens affected and interested in site investigation and cleanup programs is important for many reasons. These include:

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- Promoting the development of timely, effective site investigation and cleanup programs that protect public health and the environment.
- Improving public access to, and understanding of, issues and information related to a particular site and that site's investigation and cleanup process.
- Providing citizens with early and continuing opportunities to participate in NYSDEC's site investigation and cleanup process.
- Ensuring that NYSDEC makes site investigation and cleanup decisions that benefit from input that reflects the interests and perspectives found within the affected community.
- Encouraging dialogue to promote the exchange of information among the affected/interested public, State agencies, and other interested parties that strengthens trust among the parties, increases understanding of site and community issues and concerns, and improves decision making.

This Citizen Participation (CP) Plan provides information about how NYSDEC will inform and involve the public during the investigation and cleanup of the site identified above. The public information and involvement program will be carried out with assistance, as appropriate, from the Applicant.

Project Contacts

Appendix A identifies NYSDEC project contact(s) to whom the public should address questions or request information about the site's investigation and cleanup program. The public's suggestions about this CP Plan and the CP program for the site are always welcome. Interested people are encouraged to share their ideas and suggestions with the project contacts at any time.

Locations of Reports and Information

The locations of the reports and information related to the site's investigation and cleanup program also are identified in Appendix A. These locations provide convenient access to important project documents for public review and comment. Some documents may be placed on the NYSDEC web site. If this occurs, NYSDEC will inform the public in fact sheets distributed about the site and by other means, as appropriate.

Site Contact List

Appendix B contains the site contact list. This list has been developed to keep the community informed about, and involved in, the site's investigation and cleanup process. The site contact list will be used periodically to distribute fact sheets that provide updates about the status of the project. These will include notifications of upcoming activities at the site (such as fieldwork), as well as availability of project documents and announcements about public comment periods. The site contact list includes, at a minimum:

- Chief executive officer and planning board chairperson of each county, city, town and village in which the site is located;
- Residents, owners, and occupants of the site and properties adjacent to the site;
- The public water supplier which services the area in which the site is located;
- Any person who has requested to be placed on the site contact list;
- The administrator of any school or day care facility located on or near the site for purposes of posting and/or dissemination of information at the facility;
- Location(s) of reports and information.

The site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the site contact list upon request. Such requests should be submitted to the NYSDEC project contact(s) identified in Appendix A. Other additions to the site contact list may be made at the discretion of the NYSDEC project manager, in consultation with other NYSDEC staff as appropriate.

Note: The first site fact sheet (usually related to the draft Remedial Investigation Work Plan) is distributed both by paper mailing through the postal service and through DEC Delivers, its email listserv service. The fact sheet includes instructions for signing up with the appropriate county listserv to receive future notifications about the site. See <http://www.dec.ny.gov/chemical/61092.html> .

Subsequent fact sheets about the site will be distributed exclusively through the listserv, except for households without internet access that have indicated the need to continue to receive site information in paper form. Please advise the NYSDEC site project manager identified in Appendix A if that is the case. Paper mailings may continue during the investigation and cleanup process for some sites, based on public interest and need.

CP Activities

The table at the end of this section identifies the CP activities, at a minimum, that have been and will be conducted during the site's investigation and cleanup program. The flowchart in

Appendix D shows how these CP activities integrate with the site investigation and cleanup process. The public is informed about these CP activities through fact sheets and notices distributed at significant points during the program. Elements of the investigation and cleanup process that match up with the CP activities are explained briefly in Section 5.

- **Notices and fact sheets** help the interested and affected public to understand contamination issues related to a site, and the nature and progress of efforts to investigate and clean up a site.
- **Public forums, comment periods and contact with project managers** provide opportunities for the public to contribute information, opinions and perspectives that have potential to influence decisions about a site's investigation and cleanup.

The public is encouraged to contact project staff at any time during the site's investigation and cleanup process with questions, comments, or requests for information.

This CP Plan may be revised due to changes in major issues of public concern identified in Section 3 or in the nature and scope of investigation and cleanup activities. Modifications may include additions to the site contact list and changes in planned citizen participation activities.

Technical Assistance Grant

NYSDEC must determine if the site poses a significant threat to public health or the environment. This determination generally is made using information developed during the investigation of the site, as described in Section 5.

If the site is determined to be a significant threat, a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret and understand existing environmental information about the nature and extent of contamination related to the site and the development/implementation of a remedy.

An eligible community group must certify that its membership represents the interests of the community affected by the site, and that its members' health, economic well-being or enjoyment of the environment may be affected by a release or threatened release of contamination at the site.

As of the date the declaration (page 2) was signed by the NYSDEC project manager, the significant threat determination for the site had not yet been made.

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To verify the significant threat status of the site, the interested public may contact the NYSDEC project manager identified in Appendix A.

For more information about TAGs, go online at <http://www.dec.ny.gov/regulations/2590.html>

Note: The table identifying the citizen participation activities related to the site's investigation and cleanup program follows on the next page:

Citizen Participation Activities	Timing of CP Activity(ies)
Application Process:	
• Prepare site contact list • Establish document repository(ies)	At time of preparation of application to participate in the BCP.
• Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30-day public comment period • Publish above ENB content in local newspaper • Mail above ENB content to site contact list • Conduct 30-day public comment period	When NYSDEC determines that BCP application is complete. The 30-day public comment period begins on date of publication of notice in ENB. End date of public comment period is as stated in ENB notice. Therefore, ENB notice, newspaper notice, and notice to the site contact list should be provided to the public at the same time.
After Execution of Brownfield Site Cleanup Agreement (BCA):	
• Prepare Citizen Participation (CP) Plan	Before start of Remedial Investigation Note: Applicant must submit CP Plan to NYSDEC for review and approval within 20 days of the effective date of the BCA.
Before NYSDEC Approves Remedial Investigation (RI) Work Plan:	
• Distribute fact sheet to site contact list about proposed RI activities and announcing 30-day public comment period about draft RI Work Plan • Conduct 30-day public comment period	Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, public comment periods will be combined and public notice will include fact sheet. Thirty-day public comment period begins/ends as per dates identified in fact sheet.
After Applicant Completes Remedial Investigation:	
• Distribute fact sheet to site contact list that describes RI results	Before NYSDEC approves RI Report
Before NYSDEC Approves Remedial Work Plan (RWP):	
• Distribute fact sheet to site contact list about draft RWP and announcing 45-day public comment period • Public meeting by NYSDEC about proposed RWP (if requested by affected community or at discretion of NYSDEC project manager) • Conduct 45-day public comment period	Before NYSDEC approves RWP. Forty-five day public comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45-day public comment period.
Before Applicant Starts Cleanup Action:	
• Distribute fact sheet to site contact list that describes upcoming cleanup action	Before the start of cleanup action.
After Applicant Completes Cleanup Action:	
• Distribute fact sheet to site contact list that announces that cleanup action has been completed and that NYSDEC is reviewing the Final Engineering Report • Distribute fact sheet to site contact list announcing NYSDEC approval of Final Engineering Report and issuance of Certificate of Completion (COC)	At the time the cleanup action has been completed. Note: The two fact sheets are combined when possible if there is not a delay in issuing the COC.

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3. Major Issues of Public Concern

This section of the CP Plan identifies major issues of public concern that relate to the site. Additional major issues of public concern may be identified during the course of the site's investigation and cleanup process.

Based on the analytical results of the Limited Phase II, the primary contaminants of concern for the Site are semivolatile organic compounds (SVOCs) (specially PAHs), heavy metals, and chlorinated volatile organic compounds (CVOCs). A lead hotspot was identified in soil collected from one boring in the north-central region of the Site immediately below the concrete slab. CVOCs were identified in soil vapor, specifically PCE which was identified above the NYSDOH AGVs in one sub-slab soil vapor sample in the southeast region of the Site. Further delineation would be required to determine the extent of hazardous lead in soils in the north-central region of the Site. Considering PCE was identified in Site sub-slab soil vapor, an on-site source may exist.

The Site is located within a potential Environmental Justice Area. Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and politics.

Environmental justice efforts focus on improving the environment in communities, specifically minority and low-income communities, and addressing disproportionate adverse environmental impacts that may exist in those communities.

Because there is a large Hispanic-American population near the Site, all future fact sheets will be translated into Spanish.

4. Site Information

Appendix C contains a map identifying the location of the site.

Site Description

The Site's address is 91 Bruckner Boulevard, Bronx, NY. The Site is 0.33-acres in size and consist of one vacant lot identified on the New York City Tax Map as Block 2278 Lot.

The Site is bound by mixed-use commercial and residential properties to the north, a warehouse utilized for parking to the east, Bruckner Boulevard followed by Pulaski Park to the south, and Willis Avenue followed by a McDonald's restaurant and parking lot to the west. The Site is located within a mixed-use area characterized by multi-story commercial and residential

buildings and industrial-use buildings.

History of Site Use, Investigation, and Cleanup

The Site was developed in the early 1900s with two 5-story dwellings with storefronts on the western portion of the Site, while the eastern portion of the Site remained vacant. The Site was listed as an alcohol denaturing plant in the 1927 city directory. By the mid-1930s, the eastern portion of the Site began to be utilized as a “Universal Car Loading Freight Station” and an additional store was developed on the southwest corner of the Site. By the mid-1940s, the “Universal Car Loading Freight Station” was no longer in use and this portion of the Site began to be utilized for wine storage and bottling. The Site remained relatively unchanged until the early 1950s when the portion of the building utilized for wine storage and bottling began to be utilized as a garage. Three gasoline tanks of unknown capacity were identified on the Sanborn Fire Insurance Maps on the southeastern portion of the Site from 1951 to 2007. Since the 1970s, Fiedler Waterproofing and Masonry Company began operating at the Site and continued operations through the early 2000s. In the early 1980s, the three storefronts were demolished and redeveloped with a one-story building in 1985. The one-story warehouse previously encompassing the Site was razed in 2022.

A Phase I Environmental Site Assessment conducted in 2021 identified two Recognized Environmental Conditions including 1) former use of the Site as a alcohol denaturing plant and a former private garage equipped with three gasoline tanks of unknown capacity and 2) a spill incident on the east adjacent property which identified fuel oil in soil in April 2014. The Site was also listed in the LTANKS database with two closed spill cases associated with failed tank tightness tests for underground storage tanks (USTs). This is considered a Historic Recognized Environmental Condition as USTs were cleaned, closed-in-place and associated spill cases closed with NYSDEC.

Based on results of limited subsurface investigations conducted in 2021 and 2022, the primary contaminants of concern for the Site are CVOCs in sub-slab vapor, SVOCs, including PAHs, and metals in soil. Impacts were observed throughout the Site in shallow soil as well as some areas in deeper soil, and in sub-slab vapor samples.

5. Investigation and Cleanup Process

Application

The Applicant has applied for and been accepted into New York’s Brownfield Cleanup Program as a Volunteer. This means that the Applicant was not responsible for the disposal or discharge of the contaminants or whose ownership or operation of the site took place after the discharge

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or disposal of contaminants. The Volunteer must fully characterize the nature and extent of contamination onsite, and must conduct a “qualitative exposure assessment,” a process that characterizes the actual or potential exposures of people, fish and wildlife to contaminants on the site and to contamination that has migrated from the site.

The Applicant in its Application proposes that the site will be used for unrestricted purposes.

To achieve this goal, the Applicant will conduct investigation and/or cleanup activities at the site with oversight provided by NYSDEC. The Brownfield Cleanup Agreement executed by NYSDEC and the Applicant sets forth the responsibilities of each party in conducting these activities at the site.

Investigation

The Applicant will conduct an investigation of the site officially called a “remedial investigation” (RI). This investigation will be performed with NYSDEC oversight. The Applicant must develop a remedial investigation workplan, which is subject to public comment.

The site investigation has several goals:

- 1) define the nature and extent of contamination in soil, surface water, groundwater and any other parts of the environment that may be affected;
- 2) identify the source(s) of the contamination;
- 3) assess the impact of the contamination on public health and the environment; and
- 4) provide information to support the development of a proposed remedy to address the contamination or the determination that cleanup is not necessary.

The Applicant has submitted a draft “Remedial Investigation Work Plan” to NYSDEC for review and approval. NYSDEC made the draft plan available to the public review during a 30-day public comment period.

When the investigation is complete, the Applicant will prepare and submit a report that summarizes the results. This report also will recommend whether cleanup action is needed to address site-related contamination. The investigation report is subject to review and approval by NYSDEC.

NYSDEC will use the information in the investigation report to determine if the site poses a significant threat to public health or the environment. If the site is a “significant threat,” it must be cleaned up using a remedy selected by NYSDEC from an analysis of alternatives prepared by the Applicant and approved by NYSDEC. If the site does not pose a significant threat, the

Applicant may select the remedy from the approved analysis of alternatives.

Interim Remedial Measures

An Interim Remedial Measure (IRM) is an action that can be undertaken at a site when a source of contamination or exposure pathway can be effectively addressed before the site investigation and analysis of alternatives are completed. If an IRM is likely to represent all or a significant part of the final remedy, NYSDEC will require a 30-day public comment period.

Remedy Selection

When the investigation of the site has been determined to be complete, the project likely would proceed in one of two directions:

1. The Applicant may recommend in its investigation report that no action is necessary at the site. In this case, NYSDEC would make the investigation report available for public comment for 45 days. NYSDEC then would complete its review, make any necessary revisions, and, if appropriate, approve the investigation report. NYSDEC would then issue a “Certificate of Completion” (described below) to the Applicant.

or

2. The Applicant may recommend in its investigation report that action needs to be taken to address site contamination. After NYSDEC approves the investigation report, the Applicant may then develop a cleanup plan, officially called a “Remedial Work Plan”. The Remedial Work Plan describes the Applicant’s proposed remedy for addressing contamination related to the site.

When the Applicant submits a draft Remedial Work Plan for approval, NYSDEC would announce the availability of the draft plan for public review during a 45-day public comment period.

Cleanup Action

NYSDEC will consider public comments, and revise the draft cleanup plan if necessary, before approving the proposed remedy. The New York State Department of Health (NYSDOH) must concur with the proposed remedy. After approval, the proposed remedy becomes the selected remedy. The selected remedy is formalized in the site Decision Document.

The Applicant may then design and perform the cleanup action to address the site contamination. NYSDEC and NYSDOH oversee the activities. When the Applicant completes cleanup activities, it will prepare a final engineering report that certifies that cleanup

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requirements have been achieved or will be achieved within a specific time frame. NYSDEC will review the report to be certain that the cleanup is protective of public health and the environment for the intended use of the site.

Certificate of Completion

When NYSDEC is satisfied that cleanup requirements have been achieved or will be achieved for the site, it will approve the final engineering report. NYSDEC then will issue a Certificate of Completion (COC) to the Applicant. The COC states that cleanup goals have been achieved, and relieves the Applicant from future liability for site-related contamination, subject to certain conditions. The Applicant would be eligible to redevelop the site after it receives a COC.

Site Management

The purpose of site management is to ensure the safe reuse of the property if contamination will remain in place. Site management is the last phase of the site cleanup program. This phase begins when the COC is issued. Site management incorporates any institutional and engineering controls required to ensure that the remedy implemented for the site remains protective of public health and the environment. All significant activities are detailed in a Site Management Plan.

An *institutional control* is a non-physical restriction on use of the site, such as a deed restriction that would prevent or restrict certain uses of the property. An institutional control may be used when the cleanup action leaves some contamination that makes the site suitable for some, but not all uses.

An *engineering control* is a physical barrier or method to manage contamination. Examples include: caps, covers, barriers, fences, and treatment of water supplies.

Site management also may include the operation and maintenance of a component of the remedy, such as a system that pumps and treats groundwater. Site management continues until NYSDEC determines that it is no longer needed.

**Appendix A -
Project Contacts and Locations of Reports and Information**

Project Contacts

For information about the site's investigation and cleanup program, the public may contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC):

Ronnie Lee
Project Manager
NYSDEC
Division of Environmental Remediation
625 Broadway
Albany, NY 12233-5060
(518) 402-9615
Ronnie.lee@dec.ny.gov

Thomas V. Panzone
Public Participation Specialist
NYSDEC Region 2
47-40 21st Street,
Long Island City, NY 11101
(718) 482-4953
Thomas.panzone@dec.ny.gov

New York State Department of Health (NYSDOH):

Christopher Budd
NYSDOH, Public Health Specialist
Bureau of Environmental Exposure
Investigation
Empire State Plaza, Corning Tower,
Room 1787
Albany, NY 12203
(518) 402-1769
BEEI@health.ny.gov

NYSDEC InfoTracker

<https://www.dec.ny.gov/data/DecDocs/C203160/>

Locations of Reports and Information

The facilities identified below are being used to provide the public with convenient access to important project documents:

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Mott Haven Branch – NY Public Library
312 E 140th St
Bronx, NY 10454
Phone: 718-665-4878
Email: kathleencarrasco@nypl.org
Attn: Kathleen Carrasco
Hours: M-Th – 10am-7pm
F-S – 10am-5pm
Su – Closed

Woodstock Branch-NY Public Library
761 E 160th St
Bronx, NY 10456
Phone: 718-665-6255
Email: daishatopping@npyl.org
Attn: Daisha Topping
Hours: M-F– 10am-6pm
S – 10am-5pm
Su – Closed

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Appendix B - Site Contact List

Owners, Residents, Occupants:

The Site is currently vacant.

Owner	Contact Name	Phone	Mailing Address	Email
91 Bruckner Blvd LLC	Yoel Barminka	917-627-3013	162 Manhattan Avenue 1 st Floor, Brooklyn, NY 11206	barminyc@gmail.com

Executive

Role	Name	Phone	Mailing Address	Email / Contact
NYC Mayor	Eric Adams	212-NEW-YORK	City Hall New York, NY 10007	https://www1.nyc.gov/office-of-the-mayor/mayor-contact.page
NYC Department of City Planning	Anita Laremont - Chair	718-220-8500	1775 Grand Concourse Suite 503, Bronx, NY 10453	https://www1.nyc.gov/site/planning/about/contact-us.page
Bronx Borough President	Vanessa L. Gibson	718-590-3500	851 Grand Concourse, 3 rd Floor Bronx, NY 10451	webmail@bronxbp.nyc.gov
Bronx Community Board 1 Board Chair	Arlene Parks - Chair	718-292-0558	3024 Third Avenue, Bronx, NY 10455	Brxcb1@optonline.net
New York City Council District 8	Diana Ayala	347-297-4922	214 St. Ann's Avenue, Bronx, NY 10454	DAyala@council.nyc.gov
NY Senate District 29 Senator	Jose Serrano	212-828-5829	335 E 100 th Street, New York, NY 10029	serrano@nysenate.gov
NY State Assembly District 084 Member	Amanda Septimo	718-292-2901	384 E 149 th Street Suite 202 Bronx, NY 10455	septimoa@nyassembly.gov
NYC Comptroller	Brad Lander	212-669-3916	One Centre Street New York, NY 10007	https://comptroller.nyc.gov/about/contact-our-office/
NYC Councilman	Diana Ayala	212-722-6378	105 East 116th Street New York, NY 10029	
NYC OER	Mark McIntyre, Director	212-788-8841	100 Gold Street - 2nd Floor New York, NY 10038	
Office of Environmental Assessment & Planning	Julie Stein	718-595-7000	NYC Dept. Of Environmental Protection 96-05 Horace Harding Expressway, Flushing, NY 11373	
U.S. Senator	Hon Charles Schumer	212-486-4460	780 Third Avenue, Suite 2301 New York, NY 11373	

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U.S. Senator	Hon Kristen Gillibrand	212-688-6262	780 Third Avenue, Suite 2601 New York, NY 11373	
Bronx County Clerk	Kevin Rothermel		851 Grand Concourse, Room 118, Bronx, NY 10451	

Adjacent Properties

Owner/Entity Name	Contact Name	Site Use	Property Address	Owner Mailing Address
Willis Avenue Property LLC	Unknown	Mixed Residential & Commercial	128 Willis Avenue, Bronx, NY 10454	15 Hilltop Road, Katonah, NY 10535
East 134 Holdings LLC	Jeffrey Zwick	Industrial & Manufacturing	402 East 134 Street, Bronx, NY 10454	162 Manhattan Ave, 1 st Floor Brooklyn, NY 11206
Janda LLC	Alexander Grunhut	Multi-Family Walk-Up	408 East 134 Street, Bronx, NY 10454	4818 14 th Ave, Suite 125 Brooklyn, NY 11219
E. 139 th St. Cluster LP	Luis Garcia	Multi-Family Walk-Up	410 East 134 Street, Bronx, NY 10454	943 Bruckner Blvd, Bronx, NY 10459
134 Lofts LLC	Alexander Grunhut	Multi-Family Walk-Up	412 East 134 Street, Bronx, NY 10454	PO Box 343 Brooklyn, NY 11219
414 East 134 th St. Housing Development Fund Corp.	Cynthia King	Multi-Family Walk-Up	414 East 134 Street, Bronx, NY 10454	414 East 134 th Street, Bronx, NY 10454
Phyllip Augustin	Phyllip Augustin	One & Two Family	416 East 134 Street, Bronx, NY 10454	216 Pulaski St, Apt 4R Brooklyn, NY 11206
95 Bruckner Realty	Gerald Goldman	Parking Facilities	95 Bruckner Blvd, Bronx, NY 10454	475 Park Avenue South 25 th Floor, New York, NY 10016
New York City Parks Department	Lawrence Scoones	Open Space & Outdoor Recreation	Willis Avenue, Bronx, NY 10454	1 Bronx River Parkway, Bronx, NY 10462
Bruckner By the Bridge Condo	Unknown	Mixed Residential & Commercial	85 Willis Avenue, Bronx, NY 10454	450 W 14 th Street 8 th Floor, New York, NY 10014
Franchise Interstate Realty Corp	Brian Sheedy	Commercial & Office	85 Bruckner Blvd, Bronx, NY 10454	110 N Carpenter Street Springfield, IL 60607

Local News and Media:

Owner/Entity Name	Type	Address	Phone	Website
Mott Haven Herald	Online Media	N/A	N/A	www.motthavenherald.com
New York Daily News		4 New York Plaza, New York, NY 10014		
New York Post		1211 Ave of The Americas, New York, NY 10036		
Spectrum 1 News	Television	75 Ninth Avenue, New York, NY 10011	212-379-3311	https://www.ny1.com/nyc/bronx
Hoy Nueva York		15 Metrotech Center		

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		Floor 7 Brooklyn, NY 11201		
Bronx Times Reporter		3604 East Tremont Avenue Bronx, NY 10465		
Inner City Press		P.O. Box 20047 Dag Hammarjold Station New York, NY 10017		
El Diario La Presnsa		15 Metrotech Center Floor 7 Brooklyn, NY 11201		

Public Water Supply:

Public water supply is a shared responsibility between the New York City Department of Environmental Protection (NYCDEP) and the Municipal Water Finance Authority.

Owner/Entity Name	Contact	Address	Phone	Email
NYCDEP	Vincent Sapienza - Commissioner	59-17 Junction Blvd. Flushing, NY 11373	718-595-6565	ltcp@dep.nyc.gov
NYC Municipal Water Finance Authority	Olga Chernat- Executive Director	255 Greenwich Street 6th Floor, New York, NY 10007	212-788-5889	Not Available

School or Day Care Located on or Proximal to the Site

Following schools or day care facilities are located within ½-mile radius to the Site:

School/Day Care Name	Approximate distance from Site in feet and (directional)	Administrator	Phone	Address
The Bronx Charter School for Children	1,300 ft (northeast)	Denise Alexander	929-399-8100	423 E 138 th Street Bronx, NY 10454
Tender Tots Day Care, Preschool, After School Programs	1,450 ft (northeast)	Denise Fairman	718-215-4125	531 E 137 th Street Bronx, NY 10454
P.S. 49 Willis Avenue School	1,600 ft (north)	Monica Walker	718-292-4623	383 E 139 th Street Bronx, NY 10454
Young Leaders Elementary School	1,600 ft (northeast)	Jaleelah Cooke	718-292-7391	468 E 140 th Street Bronx, NY 10454
P.S. 030 Wilton	2,000 ft (northeast)	Debra Michaux	718-292-8817	510 E 141 st Street Bronx, NY 10454

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Document Repositories

Owner/Entity Name	Contact	Repository Address	Contact Info
New York Public Library – Mott Haven Branch	Kathleen Carrasco	321 E 140 th Street, Bronx, NY 10454	kathleencarrasco@nypl.org ; 718-665-4878
New York Public Library – Woodstock Branch	Daisha Topping	761 E 160th St, Bronx, NY 10456	daishatopping@nypl.org ; 718-665-6255

Community Board (no response to repository request)

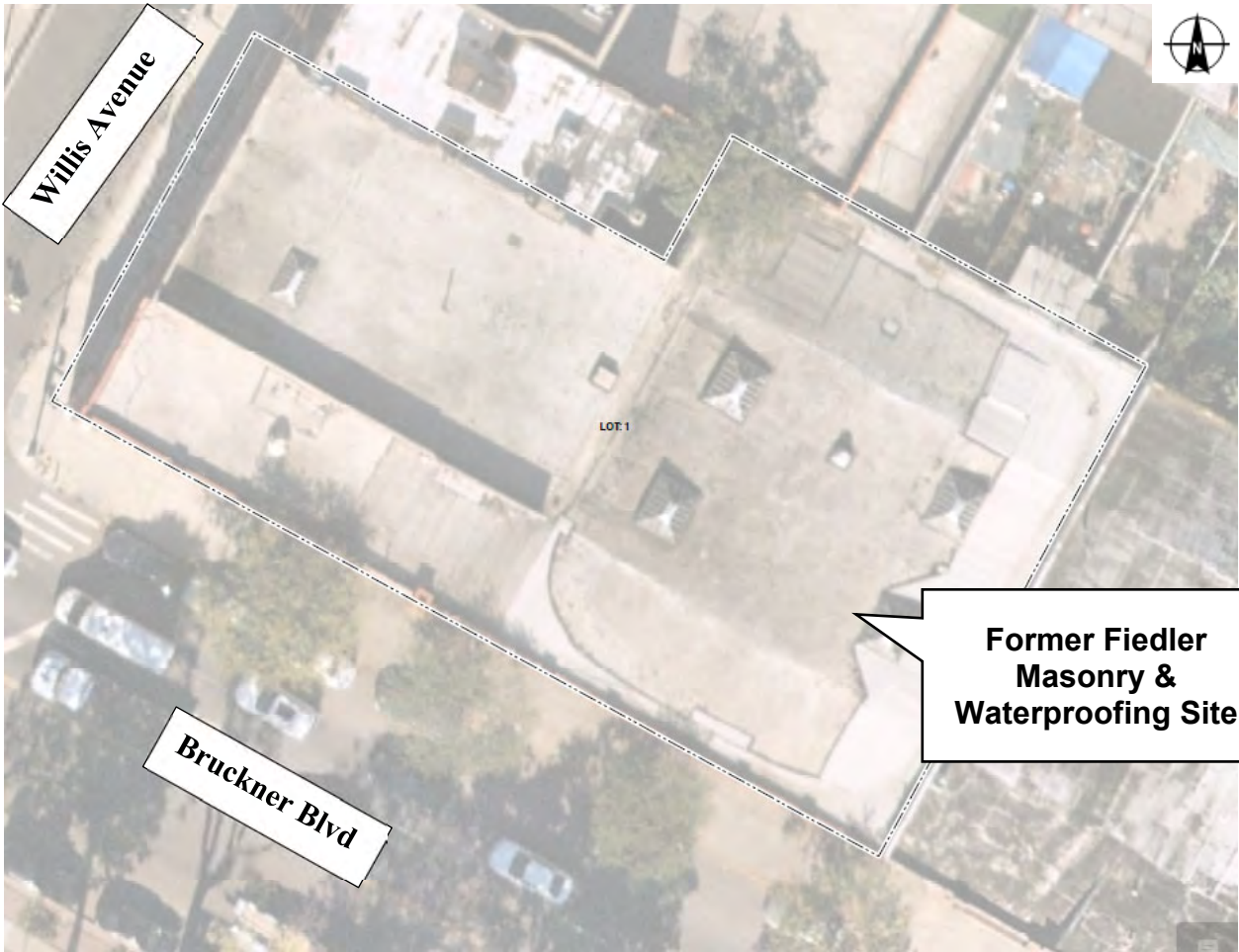
Owner/Entity Name	Contact	Repository Address	Contact Info
Bronx Community Board 1	Cedric Loftin	3030 3rd Avenue, Bronx, NY 10455	718-585-7117, Brxcb1@optonline.net

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Appendix C - Site Location Map



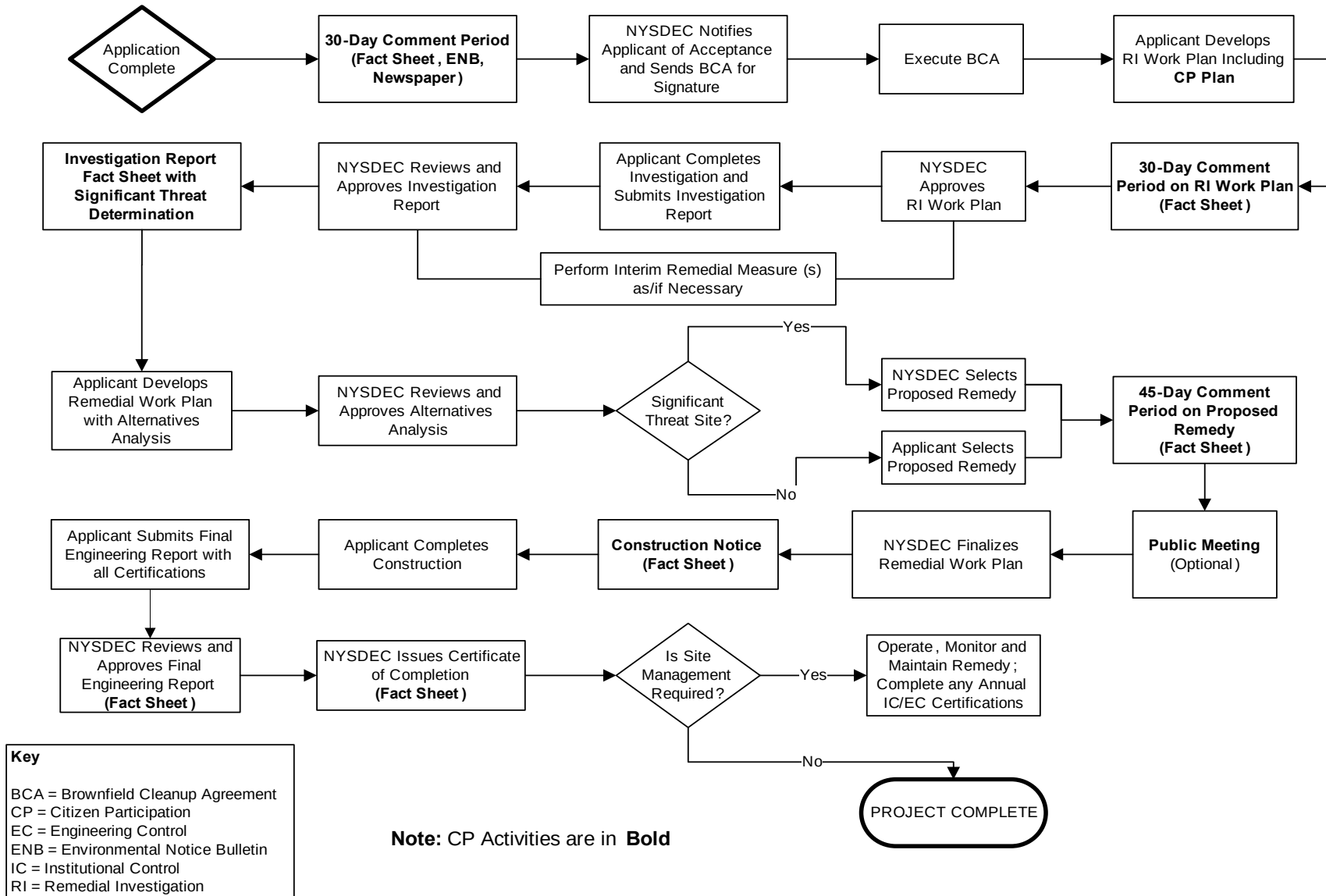
- Site Boundary

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Appendix D– Brownfield Cleanup Program Process





Division of Environmental Remediation

Remedial Programs

Scoping Sheet for Major Issues of Public Concern

Instructions

This Scoping Sheet assesses major issues of public concern; impacts of the site and its remedial program on the community; community interest in the site; information the public needs; and information needed from the public.

The information generated helps to plan and conduct required citizen participation (CP) activities, and to choose and conduct additional CP activities, if appropriate. The scoping sheet can be revisited and updated as appropriate during the site's remedial process to more effectively implement the site's CP program.

Note: Use the information as an aid to prepare and update the Major Issues of Public Concern section of the site CP Plan.

General Instructions

- When to prepare: During preparation of the CP Plan for the site. It can be revisited and updated anytime during the site remedial process.
- Fill in site name and other information as appropriate.
- The Scoping Sheet may be prepared by DEC or a remedial party, but must be reviewed and approved by the DER site project manager or his/her designee.

Instructions for Numbered Parts

Consider the bulleted issues and questions below and any others that may be unique or appropriate to the site and the community to help complete the five Parts of this Scoping Sheet. Identify the issue stakeholders in Parts 1 through 3 and adjust the site's contact list accordingly.

Part 1. List Major Issues of Public Concern and Information the Community Wants.

- Is our health being impacted? (e.g. Are there problems with our drinking water or air? Are you going to test our water, yards, sumps, basements? Have health studies been done?)
- There are odors in the neighborhood. Do they come from the site and are they hazardous?
- Are there restrictions on what we may do (e.g. Can our children play outside? Can we garden? Must we avoid certain areas? Can we recreate (fish, hunt, hike, etc. on/around the site?)
- How and when were the site's contamination problems created?
- What contaminants are of concern and why? How will you look for contamination and find out where it is going? What is the schedule for doing that?
- The site is affecting our property values!
- How can we get more information (e.g. who are the project contacts?)
- How will we be kept informed and involved during the site remedial process?
- Who has been contacted in the community about site remedial activities?
- What has been done to this point? What happens next and when?
- The site is going to be cleaned up for restricted use. What does that mean? We don't want redevelopment on a "dirty" site.

Part 2. List Important Information Needed From the Community, if Applicable.

- Can the community supplement knowledge about past/current uses of the site?
- Does the community have knowledge that the site may be significantly impacting nearby people, properties, natural resources, etc.?
- Are activities currently taking place at the site or at nearby properties that may need to be restricted?
- Who may be interested or affected by the site that has not yet been identified?
- Are there unique community characteristics that could affect how information is exchanged?
- Does the community and/or individuals have any concerns they want monitored?
- Does the community have information about other sources in the area for the contamination?

Part 3. List Major Issues and Information That Need to be Communicated to the Community.

- Specific site investigation or remediation activities currently underway, or that will begin in the near future.
- The process and general schedule to investigate, remediate and, if applicable, redevelop the site.
- Current understanding about the site contamination and effects, if any, on public health and the environment.
- Site impacts on the community and any restrictions on the public's use of the site and/or nearby properties.
- Planned CP activities, their schedule, and how they relate to the site's remedial process.
- Ways for the community to obtain/provide information (document repositories, contacts, etc.).

Part 4. Community Characteristics

a. - e. Obtain information from local officials, property owners and residents, site reports, site visits, "windshield surveys," other staff, etc.

f. Has the affected community experienced other **significant** present or past environmental problems unrelated to this site? Such experiences could significantly affect public concerns and perspectives about the site; how the community will relate to project staff; the image and credibility of project staff within the community; and the ways in which project staff communicate with the community.

g. In its remedial programs, DER seeks to integrate, and be consistent with, environmental justice principles set forth in *DEC Commissioner Policy 29 on Environmental Justice* and *DER 23 – Citizen Participation Handbook for Remedial Programs*. Is the site and/or affected community wholly or partly in an Environmental Justice (EJ) Area? Use the Search feature on DEC's public web site for "environmental justice". DEC's EJ pages define an EJ area, and link to county maps to help determine if the site and/or community are in an EJ area.

h. Consider factors such as:

- Is English the primary language of the affected community? If not, provisions should be considered regarding public outreach activities such as fact sheets, meetings, door-to-door visits and other activities to ensure their effectiveness.
- The age demographics of the community. For example, is there a significant number of senior citizens in the community? It may be difficult for some to attend public meetings and use document repositories. This may suggest adopting more direct interaction with the community with activities such as door-to-door visits, additional fact sheets, visits to community and church centers, nursing homes, etc.
- How do people travel about the community? Would most people drive to a public meeting or document repository? Is there adequate public transportation?

Part 5. Affected/Interested Public.

Individuals and organizations who need or want information and input can change during the site's remedial process. This need is influenced by real, potential, or perceived impacts of the site or the remedial process. Some people may want information and input throughout the remedial process. Others may participate only during specific remedial stages, or may only be interested in particular issues.

It is important to revisit this question when reviewing this scoping sheet. Knowing who is interested in the site – and the issues that are important to them – will help to select and conduct appropriate outreach activities, and to identify their timing and the information to be exchanged.

Check all affected/interested parties that apply to the site. **Note: Adjust the site's contact list appropriately.** The following are some ways to identify affected/interested parties:

- Tax maps of adjacent property owners
- Attendees at public meetings
- Telephone discussions
- Letters and e-mails to DER, the remedial party, and other agencies
- Political jurisdictions and boundaries
- Media coverage
- Current/proposed uses of site and/or nearby properties (recreational, commercial, industrial)
- Discussions with community organizations: grass roots organizations, local environmental groups, environmental justice groups, churches, and neighborhood advisory groups



Division of Environmental Remediation

Remedial Programs
Scoping Sheet for Major Issues of Public Concern (see instructions)

Site Name: Former Fiedler Masonry & Waterproofing Site

Site Number: C203160

Site Address and County: 91 Bruckner Blvd, Bronx, NY

Remedial Party(ies): 91 Bruckner Blvd LLC

Note: For Parts 1. – 3. the individuals, groups, organizations, businesses and units of government identified should be added to the site contact list as appropriate.

Part 1. List major issues of public concern and information the community wants. Identify individuals, groups, organizations, businesses and/or units of government related to the issue(s) and information needs. **Use this information as an aid to prepare or update the Major Issues of Public Concern section of the site Citizen Participation Plan.**

1. Contaminants of concern for the Site are CVOCs in sub-slab vapor, SVOCs, including PAHs, and Metals in soil
2. The Site is located in an Environmental Justice Area. Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

Environmental justice efforts focus on improving the environment in communities, specifically minority and low-income communities, and addressing disproportionate adverse environmental impacts that may exist in those communities.

How were these issues and/or information needs identified?

These issues were identified through the previous Phase II Investigation results, correspondence with NYSDEC and from resources available through the NYSDEC Office of Environmental Justice.

Part 2. List important information needed **from** the community, if applicable. Identify individuals, groups, organizations, businesses and/or units of government related to the information needed.

he sources of the contaminants of concern detailed in Part 1 was not fully identified during the previous investigations completed at the Site. If the community can provide any knowledge regarding previous site use or previous nearby property use it may assist in determining the onsite or offsite source of impact.

How were these information needs identified?

Previous investigations

Part 3. List major issues and information that need to be communicated **to** the community. Identify individuals, groups, organizations, businesses and/or units of government related to the issue(s) and/or information.

The anticipated schedule for the proposed Remedial Investigation is February 2023. Based on results of

this investigation a Remedial Action Work Plan (RAWP) will be drafted and implemented in late 2023 and early 2024. The site is a privately owned vacant property therefore the public does not use the site so there will be no additional restrictions. The remedial action will be in accordance with all applicable regulations and upon RAWP approval and implementation additional communications will be made to the public as necessary.

How were these issues and/or information needs identified?

These issues were identified through review of the project schedule, site background and contaminants of concern.

Part 4. Identify the following characteristics of the affected/interested community. This knowledge will help to identify and understand issues and information important to the community, and ways to effectively develop and implement the site citizen participation plan (mark all that apply):

a. Land use/zoning at and around site:

☒ **Residential** ☐ **Agricultural** ☐ **Recreational** ☒ **Commercial** ☒ **Industrial**

b. Residential type around site:

☒ **Urban** ☐ **Suburban** ☐ **Rural**

c. Population density around site:

☒ **High** ☐ **Medium** ☐ **Low**

d. Water supply of nearby residences:

☒ **Public** ☐ **Private Wells** ☐ **Mixed**

e. Is part or all of the water supply of the affected/interested community currently impacted by the site?

☐ **Yes** ☒ **No**

Provide details if appropriate:

[Click here to enter text.](#)

f. Other environmental issues significantly impacted/impacting the affected community?

☐ **Yes** ☒ **No**

Provide details if appropriate:

[Click here to enter text.](#)

g. Is the site and/or the affected/interested community wholly or partly in an Environmental Justice Area?

☒ **Yes** ☐ **No**

h. Special considerations:

☒ **Language** ☐ **Age** ☐ **Transportation** ☐ **Other**

Explain any marked categories in **h**:

Spanish

Part 5. The site contact list must include, at a minimum, the individuals, groups, and organizations identified in Part 2. of the Citizen Participation Plan under 'Site Contact List'. Are *other* individuals, groups, organizations, and units of government affected by, or interested in, the site, or its remedial program? (Mark and identify all that apply, then adjust the site contact list as appropriate.)

☐ **Non-Adjacent Residents/Property Owners:** [Click here to enter text.](#)

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☒ **Local Officials:** Local Officials: NYC Mayor , NYC Department of City Planning Chairperson, Bronx Borough President., Bronx Community Board 1 Manager, NY Senator, NY State Assembly District 84, NYC Comptroller, Public Advocate, NY Councilman Hon., US House of Representatives, NYC Office of Environmental Remediation Director, Office of Environmental Assessment & Planning, U.S. Senator Hon. Charles Shumer, U.S. Senator Hon. Kirsten Gillibrand, Bronx County Clerk

☒ **Media:** Mott Haven Herald, The Brooklyn Eagle, Spectrum 1 News, New York Daily News

☒ **Business/Commercial Interests:** 91 Bruckner Blvd LLC

☐ **Labor Group(s)/Employees:** Click here to enter text.

☐ **Indian Nation:** Click here to enter text.

☒ **Citizens/Community Group(s):** Click here to enter text.

☒ **Environmental Justice Group(s):** Click here to enter text.

☒ **Environmental Group(s):** Click here to enter text.

☒ **Civic Group(s):** Mott Haven Library, Woodstock Library, Community Board 1

☐ **Recreational Group(s):** Click here to enter text.

☐ **Other(s):** Click here to enter text.

Prepared/Updated By: Mari Conlon

Date: 1/16/23

Reviewed/Approved By: James Bellew

Date: 1/16/23

APPENDIX G

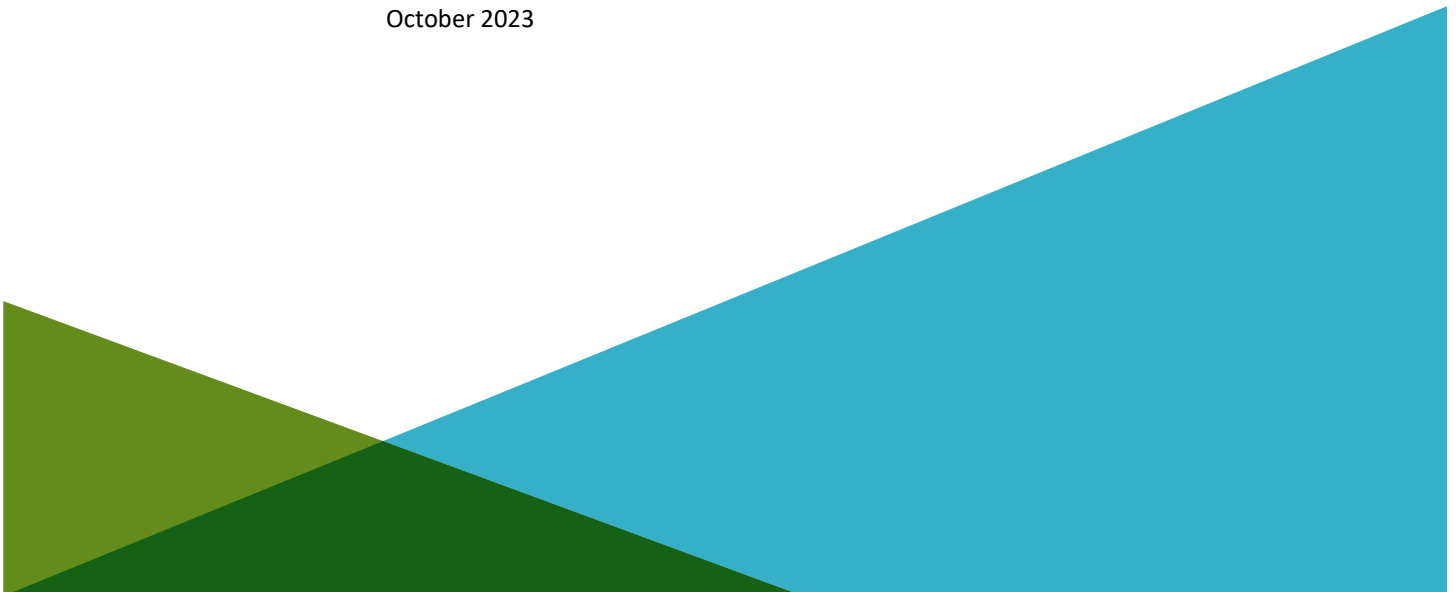
QUALITY ASSURANCE PROJECT PLAN

QUALITY ASSURANCE PROJECT PLAN
FORMER FIEDLER WATERPROOFING & MASONRY SITE
BCP SITE C203160
91 BRUCKNER BOULEVARD
BRONX, NEW YORK

by
Haley & Aldrich of New York
New York, New York

for
91 Bruckner Blvd LLC
Brooklyn, New York

File No. 0204520
October 2023



Executive Summary

This Quality Assurance Project Plan (QAPP) outlines the scope of the quality assurance and quality control (QA/QC) activities associated with the site monitoring activities associated with the Remedial Action Work Plan (RAWP) for 91 Bruckner Boulevard (Site) in Bronx, New York.

Protocols for sample collection, sample handling and storage, chain-of-custody procedures, and laboratory and field analyses are described herein or specifically referenced to related project documents.

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1. Project Description

This Quality Assurance Project Plan (QAPP) has been prepared as a component of the RAWP for the Site located at 91 Bruckner Boulevard in Bronx, New York.

1.1 PROJECT OBJECTIVES

The primary objective for data collection activities is to collect sufficient data necessary to confirm the results of the previous site characterization activities, potentially identify an on-site source, and to determine a course for remedial action. In addition, a qualitative exposure assessment will be conducted and will consider the nature of populations currently exposed or that have the potential to be exposed to Site-related contaminants both on- and off-site, along with describing the reasonably anticipated future land use of the site and affected off-site areas.

1.2 SITE DESCRIPTION AND HISTORY

The general Site description and Site history are provided in the Site Description and History Summary that accompanies the RAWP for the Site and incorporated herein by reference.

1.3 LABORATORY PARAMETERS

The laboratory parameters for soil include:

- Target Compound List volatile organic compounds (VOCs) using USEPA method 8260C/5035
- Target Compound List semi-volatile organic compounds (SVOCs) using USEPA method 8270D
- Total Analyte List (TAL) Metals (including hexavalent chromium, and cyanide) using USEPA method 6010C/7471B/9010C/7196A
- Polychlorinated biphenyls (PCBs) using USEPA method 8082A
- TCL Pesticides and Herbicides using USEPA methods 8081B and 8151A for historic fill samples, respectively
- Per- and polyfluoroalkyl substances (PFAS) using USEPA method 1633
- 1,4-Dioxane using USEPA method 8270 SIM

The laboratory parameters for groundwater include:

- Target Compound List VOCs using USEPA method 8260B
- Target Compound List SVOCs using USEPA method 8270C
- Total Analyte List (TAL) Metals using USEPA method 6010/7471
- PCBs using USEPA method 8082
- Pesticides and herbicides by USEPA methods 8081B and 8151A, respectively
- PFAS using USEPA method 1633
- 1,4-Dioxane using USEPA method 8270D SIM isotope dilution

Note: PFAS will be collected in accordance with the NYSDEC, Division of Environmental Remediation, Sampling, Analysis and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) under NYSDEC Part 375 Remedial Program, April 2023.

During the collection of groundwater samples, pH, specific conductivity, temperature, dissolved oxygen (DO), and oxidation/reduction potential (ORP) will be measured until stabilized.

The laboratory parameter for soil vapor, indoor air, and ambient air includes:

- VOCs using EPA method TO-15

Laboratory parameters for disposal samples will be determined by the disposal facility after an approved facility has been determined.

1.4 SAMPLING LOCATIONS

The RAWP provides the locations of soil borings, soil vapor points, indoor air/ambient air locations, and/or groundwater monitoring well locations that may be sampled as part of implementation of the remedy.

2. Project Organization and Responsibilities

This section defines the roles and responsibilities of the individuals who will perform the RAWP monitoring activities. A NYSDOH certified analytical laboratory will perform the analyses of environmental samples collected at the Site.

2.1 PROJECT TEAM

The following project personnel are anticipated for oversight of the RAWP implementation. Applicable Project personnel resumes are provided in Appendix G of the RAWP. Project team resumes are included in Attachment A.

NYSDEC Case Manager	Shawn Roberts
NYSDOH Case Manager	Christopher Budd
Remediation Engineer	Suzanne Bell, P.E.
Project Manager/Qualified Environmental Professional	Mari Conlon
Haley & Aldrich Health & Safety Director	Brian Fitzpatrick, CHMM
Health & Safety Officer	Brian Ferguson
Quality Assurance Officer	Zach Simmel
Third Party Validator	Katherine Miller

2.2 MANAGEMENT RESPONSIBILITIES

The Project Manager is responsible for managing the implementation of the RAWP and monitoring and coordinating the collection of data. The Project Manager is responsible for technical quality control and project oversight. The Project Manager's responsibilities include the following:

- Acquire and apply technical and corporate resources as needed to ensure performance within budget and schedule restraints;
- Review work performed to ensure quality, responsiveness, and timeliness;
- Communicate with the client point of contact concerning the progress of the monitoring activities;
- Assure corrective actions are taken for deficiencies cited during audits of RIWP monitoring activities; and
- Overall Site health and safety plan compliance.

2.3 QUALITY ASSURANCE RESPONSIBILITIES

The Quality Assurance team will consist of a Quality Assurance Officer and the Data Validation staff. Quality Assurance responsibilities are described as follows:

2.3.1 Quality Assurance (QA) Officer

The QA Officer reports directly to the Project Manager and will be responsible for overseeing the review of field and laboratory data. Additional responsibilities include the following:

- Assure the application and effectiveness of the QAPP by the analytical laboratory and the project staff;
- Provide input to the Project Manager as to corrective actions that may be required as a result of the above-mentioned evaluations;
- Prepare and/or review data validation and audit reports.

The QA Officer will be assisted by the data validation staff in the evaluation and validation of field and laboratory-generated data.

2.3.2 Data Validation Staff

The data validation staff will be independent of the laboratory and familiar with the analytical procedures performed. The validation will include a review of each validation criterion as prescribed by the guidelines presented in Section 9.2 of this document and be presented in a Data Usability Summary Report (DUSR) for submittal to the QA Officer.

2.4 LABORATORY RESPONSIBILITIES

The ELAP-approved laboratory to be used will be Eurofins Environment Testing Northeast, LLC located in Edison, NJ. Laboratory services in support of the RAWP monitoring include the following personnel:

2.4.1 Laboratory Project Manager

The Laboratory Project Manager will report directly to the QA Officer and Project Manager and will be responsible for ensuring all resources of the laboratory are available on an as-required basis. The Laboratory Project Manager will also be responsible for the approval of the final analytical reports.

2.4.2 Laboratory Operations Manager

The Laboratory Operations Manager will report to the Laboratory Project Manager and will be responsible for coordinating laboratory analysis, supervising in-house chain-of-custody reports, scheduling sample analyses, overseeing data review, and overseeing preparation of analytical reports.

2.4.3 Laboratory QA Officer

The Laboratory QA Officer will have sole responsibility for review and validation of the analytical laboratory data. The Laboratory QA Officer will provide Case Narrative descriptions of any data quality issues encountered during the analyses conducted by the laboratory. The QA Officer will also define appropriate QA procedures, overseeing QA/QC documentation.

2.4.4 Laboratory Sample Custodian

The Laboratory Sample Custodian will report to the Laboratory Operations Manager and will be responsible for the following:

- Receive and inspect the incoming sample containers;
- Record the condition of the incoming sample containers;
- Sign appropriate documents;

- Verify chain-of-custody and its correctness;
- Notify the Project Manager and Operations Manager of sample receipt and inspection;
- Assign a unique identification number and enter each into the sample receiving log;
- Initiate transfer of samples to laboratory analytical sections; and
- Control and monitor access/storage of samples and extracts.

2.4.5 Laboratory Technical Personnel

The laboratory technical staff will have the primary responsibility in the performance of sample analysis and the execution of the QA procedures developed to determine the data quality. These activities will include the proper preparation and analysis of the project samples in accordance with the laboratory's Quality Assurance Manual (QAM) and associated Standard Operating Procedures (SOP).

2.5 FIELD RESPONSIBILITIES

2.5.1 Field Coordinator

The Field Coordinator is responsible for the overall operation of the field team and reports directly to the Project Manager. The Field Coordinator works with the project Health & Safety Officer (HSO) to conduct operations in compliance with the project Health & Safety Plan (HASP). The Field Coordinator will facilitate communication and coordinate efforts between the Project Manager and the field team members.

Other responsibilities include the following:

- Develop and implement field-related work plans, ensuring schedule compliance, and adhering to management-developed project requirements;
- Coordinate and manage field staff;
- Perform field system audits;
- Oversee quality control for technical data provided by the field staff;
- Prepare and approve text and graphics required for field team efforts;
- Coordinate and oversee technical efforts of subcontractors assisting the field team;
- Identify problems in the field; resolve difficulties in consultation with the Project QAO, and Project Manager; implement and document corrective action procedures; and,
- Participate in preparation of the final reports.

2.5.2 Field Team Personnel

Field Team Personnel will be responsible for the following:

- Perform field activities as detailed in the RAWP and in compliance with the Field Sampling Plan (FSP) provided in the NYSDEC-approved RIWP and QAPP.
- Immediately report any accidents and/or unsafe conditions to the Site Health & Safety Officer and take reasonable precautions to prevent injury.

3. Sampling Procedures

The FSP in the NYSDEC-approved RIWP provides the SOPs for sampling required by the RAWP. Sampling will be conducted in general accordance with the New York State Department of Conservation (NYSDEC) Technical Guidance for Site Investigation and Remediation (DER-10) and the Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) under NYSDEC Part 375 Remedial Program (April 2023) when applicable.

3.1 SAMPLE CONTAINERS

Sample containers for each sampling task will be provided by the laboratory performing the analysis. The containers will be cleaned by the manufacturer to meet or exceed the analyte specifications established in the U.S. EPA, “Specifications and Guidance for Obtaining Contaminant-Free Sample Containers”, April 1992, OSWER Directive #9240.0-0.5A. Certificates of analysis for each lot of sample containers used will be maintained by the laboratory.

The appropriate sample containers, preservation method, maximum holding times, and handling requirements for each sampling task are provided in Table I.

3.2 SAMPLE LABELING

Each sample will be labeled with a unique sample identifier that will facilitate tracking and cross-referencing of sample information. Equipment rinse blank and field duplicate samples also will be numbered with a unique sample identifier to prevent analytical bias of field QC samples.

Refer to the FSP in the NYSDEC-approved RIWP for the sample labeling procedures.

3.3 FIELD QC SAMPLE COLLECTION

3.3.1 Field Duplicate Sample Collection

3.3.1.1 *Water Samples*

Field duplicate samples will be collected by filling the first sample container to the proper level and sealing and then repeated for the second set of sample containers.

1. The samples are properly labeled as specified in Section 3.2.
2. Steps 1 through 4 are repeated for the bottles for each analysis. The samples are collected in order of decreasing analyte volatility as detailed in Section 3.3.1.
3. Chain-of-custody documents are executed.
4. The samples will be handled as specified in Table I.

3.3.1.2 *Soil Samples*

Soil field duplicates will be collected as specified in the following procedure:

1. Soils will be sampled directly from acetate liners or from decontaminated, stainless-steel hand tools.
2. Soil for VOC analysis will be removed from the sampling device as specified in the FSP.
3. Soil for non-VOC analysis will be removed from the sampling device and collected into clean laboratory-provided containers.

3.4 GENERAL DECONTAMINATION PROCEDURES

Care must be taken to minimize the potential for transfer of contaminated materials to the ground or onto other materials. Regardless of the size or nature of the equipment being decontaminated, the process will utilize a series of steps that involve removal of gross material (dirt, grease, oil, etc.), washing with a detergent, and multiple rinsing steps. In lieu of a series of washes and rinse steps, steam cleaning with low-volume, high-pressure equipment (i.e., steam cleaner) is acceptable.

Exploration equipment, and all monitoring equipment in contact with the sampling media must be decontaminated prior to initiating site activities, in between exploration locations to minimize cross-contamination, and prior to mobilizing off-site after completion of site work.

The following specific decontamination procedure is recommended for sampling equipment and tools:

- Brush loose soil off equipment;
- Wash equipment with laboratory-grade detergent (i.e., Alconox or equivalent);
- Rinse with tap water;
- Rinse equipment with distilled water;
- Allow water to evaporate before reusing equipment; and
- Wrap equipment in aluminum foil when not being used.

4. Custody Procedures

Sample custody is addressed in three parts: field sample collection, laboratory analysis, and final project files. Custody of a sample begins when it is collected by or transferred to an individual and ends when that individual relinquishes or disposes of the sample.

A sample is under custody if:

1. The item is in actual possession of a person;
2. The item is in the view of the person after being in actual possession of the person;
3. The item was in actual possession and subsequently stored to prevent tampering; or
4. The item is in a designated and identified secure area.

4.1 FIELD CUSTODY PROCEDURES

Field personnel will keep written records of field activities on applicable preprinted field forms or in a bound field notebook to record data-collecting activities. These records will be written legibly in ink and will contain pertinent field data and observations. Entry errors or changes will be crossed out with a single line, dated, and initialed by the person making the correction. Field forms and notebooks will be periodically reviewed by the Field Coordinator.

The beginning of each entry in the logbook or preprinted field form will contain the following information:

- Date
- Start time
- Weather
- Names of field personnel (including subcontractors)
- Level of personal protection used at the Site
- Names of all visitors and the purpose of their visit.

For each measurement and sample collected, the following information will be recorded:

- Detailed description of sample location,
- Equipment used to collect samples or make measurements and the date equipment was calibrated,
- Time sample was collected,
- Description of the sample conditions,
- Depth sample was collected (if applicable),
- Volume and number of containers filled with the sample; and,
- Sampler's identification.

4.1.1 Field Procedures

The following procedure describes the process to maintain the integrity of the samples:

- Upon collection, samples are placed in the proper containers. In general, samples collected for organic analysis will be placed in pre-cleaned glass containers and samples collected for inorganic analysis will be placed in pre-cleaned plastic (polyethylene) bottles. Refer to the FSP for sample packaging procedures.
- Samples will be assigned a unique sample number and will be affixed to a sample label. Refer to the FSP for sample labeling procedures.
- Samples will be properly and appropriately preserved by field personnel in order to minimize loss of the constituent(s) of interest due to physical, chemical, or biological mechanisms.
- Appropriate volumes will be collected to ensure that the appropriate reporting limits can be successfully achieved and that the required QC sample analyses can be performed.

4.1.2 Transfer of Custody and Shipment Procedures

- A chain-of-custody (COC) record will be completed at the time of sample collection and will accompany each shipment of project samples to the laboratory. The field personnel collecting the samples will be responsible for the custody of the samples until the samples are relinquished to the laboratory. Sample transfer will require the individuals relinquishing and receiving the samples to sign, date, and note the time of sample transfer on the COC record.
- Samples will be shipped or delivered in a timely fashion to the laboratory so that holding times and/or analysis times as prescribed by the methodology can be met.
- Samples will be transported in containers (coolers) which will maintain the refrigeration temperature for those parameters for which refrigeration is required in the prescribed preservation protocols.
- Samples will be placed in an upright position and limited to one layer of samples per cooler. Additional bubble wrap or packaging material will be added to fill the cooler. Shipping containers will be secured with strapping tape and custody tape for shipment to the laboratory.
- When samples are split with the NYSDEC representatives, a separate chain-of-custody will be prepared and marked to indicate with whom the samples are shared. The person relinquishing the samples will require the representative's signature acknowledging sample receipt.
- If samples are sent by a commercial carrier, a bill of lading will be used. A copy of the bill of lading will be retained as part of the permanent record. Commercial carriers will not sign the custody record as long as the custody record is sealed inside the sample cooler and the custody tape remains intact.
- Samples will be picked up by a laboratory courier or transported to the laboratory the same day they are collected unless collected on a weekend or holiday. In these cases, the samples will be

stored in a secure location until delivery to the laboratory. Additional ice will be added to the cooler as needed to maintain proper preservation temperatures.

4.2 LABORATORY CHAIN-OF-CUSTODY PROCEDURES

A sample custodian will be designated by the laboratory and will have the responsibility to receive all incoming samples. Once received, the custodian will document if the sample is received in good condition (i.e., unbroken, cooled, etc.) and that the associated paperwork, such as chain-of-custody forms has been completed. The custodian will sign the chain-of-custody forms.

The custodian will also document if sufficient sample volume has been received to complete the analytical program. The sample custodian will then place the samples into secure, limited access storage (refrigerated storage, if required). The sample custodian will assign a unique number to each incoming sample for use in the laboratory. The unique number will then be entered into the sample-receiving log with the verified time and date of receipt also noted.

Consistent with the analyses requested on the chain-of-custody form, analyses by the laboratory's analysts will begin in accordance with the appropriate methodologies. Samples will be removed from secure storage with internal chain-of-custody sign-out procedures followed.

4.3 STORAGE OF SAMPLES

Empty sample bottles will be returned to secure and limited access storage after the available volume has been consumed by the analysis. Upon completion of the entire analytical work effort, samples will be disposed of by the sample custodian. The length of time that samples are held will be at least thirty (30) days after reports have been submitted. Disposal of remaining samples will be completed in compliance with all Federal, State, and local requirements.

4.4 FINAL PROJECT FILES CUSTODY PROCEDURES

The final project files will be the central repository for all documents with information relevant to sampling and analysis activities as described in this QAPP. The Haley & Aldrich Project Manager will be the custodian of the project file. The project files including all relevant records, reports, logs, field notebooks, pictures, subcontractor reports, and data reviews will be maintained in a secured, limited access area and under custody of the Project Director or his designee.

The final project file will include the following:

- Project plans and drawings
- Field data records
- Sample identification documents and soil boring/monitoring well logs
- All chain-of-custody documentation
- Correspondence
- References, Literature
- Laboratory data deliverables
- Data validation and assessment reports
- Progress reports, QA reports
- Final report

The laboratory will be responsible for maintaining analytical logbooks, laboratory data, and sample chain of custody documents. Raw laboratory data files and copies of hard copy reports will be inventoried and maintained by the laboratory for a period of six (6) years at which time the laboratory will contact the Haley & Aldrich Project Manager regarding the disposition of the project-related files.

5. Calibration Procedures and Frequency

5.1 FIELD INSTRUMENT CALIBRATION PROCEDURES

Several field instruments will be used for both on-site screening of samples and for health and safety monitoring, as described in the Health and Safety Plan (HASP). On-site air monitoring for health and safety purposes may be accomplished using a vapor detection device, such as a photoionization detector (PID).

Field instruments will be calibrated at the beginning of each day and checked during field activities to verify performance. Instrument-specific calibration procedures will be performed in accordance with the instrument manufacturer's requirements.

5.2 LABORATORY INSTRUMENT CALIBRATION PROCEDURES

Reference materials of known purity and quality will be utilized for the analysis of environmental samples. The laboratory will carefully monitor the preparation and use of reference materials including solutions, standards, and reagents through well-documented procedures.

All solid chemicals and acids/bases used by the laboratory will be rated as "reagent grade" or better. All gases will be "high" purity or better. All Standard Reference Materials (SRMs) or Performance Evaluation (PE) materials will be obtained from approved vendors of the National Institute of Standards and Technology (formerly National Bureau of Standards), the U.S. EPA Environmental Monitoring Support Laboratories (EMSL), or reliable Cooperative Research and Development Agreement (CRADA) certified commercial sources.

6. Analytical Procedures

Analytical procedures to be utilized for analysis of environmental samples will be based on referenced USEPA analytical protocols and/or project-specific SOP.

6.1 FIELD ANALYTICAL PROCEDURES

Field analytical procedures include the measurement of pH, temperature, ORP, DO, and specific conductivity during sampling of groundwater, and the qualitative measurement of volatile organic compounds (VOC) during the collection of soil samples.

6.2 LABORATORY ANALYTICAL PROCEDURES

Laboratory analyses will be based on the U.S. EPA methodology requirements promulgated in:

- "Test Methods for Evaluating Solid Waste," SW-846 EPA, Office of Solid Waste, and promulgated updates, 1986.

6.2.1 List of Project Target Compounds and Laboratory Detection Limits

The laboratory reporting limits (RLs) and associated method detection limits (MDLs) for the target analytes and compounds for the environmental media to be analyzed are presented in Table I. MDLs have been experimentally determined by the project laboratory using the method provided in 40 CFR, Part 136 Appendix B.

Laboratory parameters for soil samples are listed in the RAWP. Laboratory parameters for disposal samples will be determined by the disposal facility after an approved facility has been determined.

6.2.2 List of Method Specific Quality Control (QC) Criteria

Method-specific quality control (QC) limits are provided by the laboratory. Section 7.0 references the frequency of the associated QC samples for each sampling effort and matrix.

7. Internal Quality Control Checks

This section presents the internal quality control checks that will be employed for field and laboratory measurements.

7.1 FIELD QUALITY CONTROL

7.1.1 Field Blanks

Internal quality control checks will include analysis of field blanks to validate equipment cleanliness. Whenever possible, dedicated equipment will be employed to reduce the possibility of cross-contamination of samples.

7.1.2 Trip Blanks

Trip blanks samples will be prepared by the project laboratory using ASTM Type II or equivalent water placed within pre-cleaned 40 milliliter (ml) VOC vials equipped with Teflon septa. Trip blanks will accompany each sample delivery group (SDG) of environmental samples collected for analysis of VOCs.

Trip blank samples will be placed in each cooler that stores and transports project samples that are to be analyzed for VOCs.

7.2 LABORATORY PROCEDURES

Procedures which contribute to maintenance of overall laboratory quality assurance and control include appropriately cleaned sample containers, proper sample identification and logging, applicable sample preservation, storage, and analysis within prescribed holding times, and use of controlled materials.

7.2.1 Field Duplicate Samples

The precision or reproducibility of the data generated will be monitored through the use of field duplicate samples. Field duplicate analysis will be performed at a frequency of 1 in 20 project samples.

Precision will be measured in terms of the absolute value of the relative percent difference (RPD) as expressed by the following equation:

$$RPD = [|R1 - R2| / [(R1 + R2) / 2]] \times 100\%$$

Acceptance criteria for duplicate analyses performed on solid matrices will be 100% and aqueous matrices will be 35%. RPD values outside these limits will require an evaluation of the sampling and/or analysis procedures by the project QA Officer and/or laboratory QA Director. Corrective actions may include re-analysis of additional sample aliquots and/or qualification of the data for use.

7.2.2 Matrix Spike Samples

Ten percent of each project sample matrix for each analytical method performed will be spiked with known concentrations of the specific target compounds/analytes.

The amount of the compound recovered from the sample compared to the amount added will be expressed as a percent recovery. The percent recovery of an analyte is an indication of the accuracy of an analysis within the site-specific sample matrix. Percent recovery will be calculated for MS/MSD using the following equation.

$$\% \text{ Recovery} = \frac{\text{Spiked Sample} - \text{Background}}{\text{Known Value of Spike}} \times 100\%$$

If the quality control value falls outside the control limits (UCL or LCL) due to sample matrix effects, the results will be reported with appropriate data qualifiers. To determine the effect a non-compliant MS recovery has on the reported results, the recovery data will be evaluated as part of the validation process.

7.2.3 Laboratory Control Sample (LCS) Analyses

The laboratory will perform LCS analyses prepared from Standard Reference Materials (SRMs). The SRMs will be supplied from an independent manufacturer and traceable to NIST materials with known concentrations of each target analyte to be determined by the analytical methods performed. In cases where an independently supplied SRM is not available, the LCS may be prepared by the laboratory from a reagent lot other than that used for instrument calibration.

The laboratory will evaluate LCS analyses in terms of percent recovery using the most recent laboratory-generated control limits.

LCS recoveries that do not meet acceptance criteria will be deemed invalid. Analysis of project samples will cease until an acceptable LCS analysis has been performed. If sample analysis is performed in association with an out-of-control LCS sample analysis, the data will be deemed invalid.

Corrective actions will be initiated by the Haley & Aldrich QA Officer and/or Laboratory QA Officer to investigate the problem. After the problem has been identified and corrected, the solution will be noted in the instrument run logbook and re-analysis of project samples will be performed, if possible.

The analytical anomaly will be noted in the sample delivery group (SDG) Case Narrative and reviewed by the data validator. The data validator will confirm that appropriate corrective actions were implemented and recommend the applicable use of the affected data.

7.2.4 Surrogate Compound/Internal Standard Recoveries

For VOCs, surrogates will be added to each sample prior to analysis to establish purge and trap efficiency. Quantitation will be accomplished via internal standardization techniques.

The recovery of surrogate compounds and internal standards will be monitored by laboratory personnel to assess possible site-specific matrix effects on instrument performance.

For semi-volatile organics analyses, surrogates will be added to the raw sample to assess extraction efficiency. Internal standards will be added to all sample extracts and instrument calibration standards immediately before analysis for quantitation via internal standardization techniques.

Method-specific quality control (QC) limits are provided by the laboratory. Surrogate compound/internal standard recoveries that do not fall within accepted QC limits for the analytical methodology performed will have the analytical results flagged with data qualifiers as appropriate by the laboratory and will not be noted in the laboratory report Case Narrative.

To ascertain the effect non-compliant surrogate compound/internal standard recoveries may have on the reported results, the recovery data will be evaluated as part of the validation process. The data validator will provide recommendations for corrective actions including but not limited to additional data qualification.

7.2.5 Calibration Verification Standards

Calibration verification (CV) standards will be utilized to confirm instrument calibrations and performance throughout the analytical process. CV standards will be prepared as prescribed by the respective analytical protocols. Continuing calibration will be verified by compliance with method-specific criteria prior to additional analysis of project samples.

Non-compliant analysis of CV standards will require immediate corrective action by the project laboratory QA officer and/or designated personnel. Corrective action may include re-analysis of each affected project sample, a detailed description of the problem, the corrective action undertaken, the person who performed the action, and the resolution of the problem.

7.2.6 Laboratory Method Blank Analyses

Method blank sample analysis will be performed as part of each analytical batch for each methodology performed. If target compounds are detected in the method blank samples, the reported results will be flagged by the laboratory in accordance with standard operating procedures. The data validator will provide recommendations for corrective actions including but not limited to additional data qualification.

8. Data Quality Objectives

Sampling that will be performed as described in the RAWP is designed to produce data of the quality necessary to achieve the minimum standard requirements of the field and laboratory analytical objectives described below. These data are being obtained with the primary objective to assess levels of contaminants of concern associated with the Site.

The overall project data quality objective (DQO) is to implement procedures for field data collection, sample collection, handling, and laboratory analysis and reporting that achieve the project objectives. The following section is a general discussion of the criteria that will be used to measure achievement of the project DQO.

8.1 PRECISION

8.1.1 Definition

Precision is defined as a quantitative measure of the degree to which two or more measurements are in agreement. Precision will be determined by collecting and analyzing field duplicate samples and by creating and analyzing laboratory duplicates from one or more of the field samples. The overall precision of measurement data is a mixture of sampling and analytical factors. The analytical results from the field duplicate samples will provide data on sampling precision. The results from duplicate samples created by the laboratory will provide data on analytical precision. The measurement of precision will be stated in terms of relative percent difference (RPD).

8.1.2 Field Precision Sample Objectives

Field precision will be assessed through collection and measurement of field duplicate samples at a rate of 1 duplicate per 20 investigative samples. The RPD criteria for the project field duplicate samples will be +/- 100% for soil, and +/- 35 % for groundwater for parameters of analysis detected at concentrations greater than 5 times (5X) the laboratory reporting limit (RL).

8.1.3 Laboratory Precision Sample Objectives

Laboratory precision will be assessed through the analysis of laboratory control and laboratory control duplicate samples (LCS/LCSD) and matrix spike and matrix spike duplicate (MS/MSD) samples for groundwater and soil samples and the analysis of laboratory duplicate samples for air and soil vapor samples. Air and soil vapor laboratory duplicate sample analyses will be performed by analyzing the same SUMMA canister twice. The RPD criteria for the air/soil vapor laboratory duplicate samples will be +/- 35 % for parameters of analysis detected at concentrations greater than 5 times (5X) the laboratory reporting limit (RL).

8.2 ACCURACY

8.2.1 Definition

Accuracy relates to the bias in a measurement system. Bias is the difference between the observed and the "true" value. Sources of error are the sampling process, field contamination, preservation techniques, sample handling, sample matrix, sample preparation, and analytical procedure limitations.

8.2.2 Field Accuracy Objectives

Sampling bias will be assessed by evaluating the results of field equipment rinse and trip blanks. Equipment rinse and trip blanks will be collected as appropriate based on sampling and analytical methods for each sampling effort.

If non-dedicated sampling equipment is used, equipment rinse blanks will be collected by passing ASTM Type II water over and/or through the respective sampling equipment utilized during each sampling effort. One equipment rinse blank will be collected for each type of non-dedicated sampling equipment used for the sampling effort. Equipment rinse blanks will be analyzed for each target parameter for the respective sampling effort for which environmental media have been collected. (Note: If dedicated or disposable sampling equipment is used, equipment rinse samples will not be collected as part of that field effort.)

Trip blank samples will be prepared by the laboratory and provided with each shipping container that includes containers for the collection of groundwater samples for the analysis of VOC. Trip blank samples will be analyzed for each VOC for which groundwater samples have been collected for analysis.

8.3 LABORATORY ACCURACY OBJECTIVES

Analytical bias will be assessed through the use of laboratory control samples (LCS) and Site-specific matrix spike (MS) sample analyses. LCS analyses will be performed with each analytical batch of project samples to determine the accuracy of the analytical system.

One (1) set of MS/MSD analyses will be performed with each batch of 20 project samples collected for analysis to assess the accuracy of the identification and quantification of analytes within the Site-specific sample matrices. Additional sample volume will be collected at sample locations selected for the preparation of MS/MSD samples so that the standard laboratory reporting limits (RLs) are achieved.

The accuracy of analyses that include a sample extraction procedure will be evaluated through the use of system monitoring or surrogate compounds. Surrogate compounds will be added to each sample, standard, blank, and QC sample prior to sample preparation and analysis. Surrogate compound percent recoveries will provide information on the effect of the sample matrix on the accuracy of the analyses.

8.4 REPRESENTATIVENESS

8.4.1 Definition

Representativeness expresses the degree to which sample data represent a characteristic of a population, a parameter variation at a sampling point, or an environmental condition. Representativeness is a qualitative parameter that is dependent upon the design of the sampling program. The representativeness criterion is satisfied through the proper selection of sampling locations, the quantity of samples, and the use of appropriate procedures to collect and analyze the samples.

8.4.2 Measures to Ensure Representativeness of Field Data

Representativeness will be addressed by prescribing sampling techniques and the rationale used to select sampling locations. Sampling locations may be biased (based on existing data, instrument surveys, observations, etc.) or unbiased (completely random or stratified-random approaches).

8.5 COMPLETENESS

8.5.1 Definition

Completeness is a measure of the amount of valid (usable) data obtained from a measuring system compared to the total amount of the anticipated to be obtained. The completeness goal for all data uses is that a sufficient amount of valid data be generated so that determinations can be made related to the intended data use with a sufficient degree of confidence.

8.5.2 Field Completeness Objectives

Completeness is a measure of the amount of valid measurements obtained from measurements taken in this project versus the number planned. Field completeness objective for this project will be greater than (>) 90%.

8.5.3 Laboratory Completeness Objectives

Laboratory data completeness objective is a measure of the amount of valid data obtained from laboratory measurements. The evaluation of the data completeness will be performed at the conclusion of each sampling and analysis effort.

The completeness of the data generated will be determined by comparing the amount of valid data, based on independent validation, with the total laboratory data set. The completeness goal will be >90%.

8.6 COMPARABILITY

8.6.1 Definition

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared to another.

8.6.2 Measures to Ensure Comparability of Laboratory Data

Comparability of laboratory data will be measured from the analysis of Standard Reference Materials (SRM) obtained from either EPA Cooperative Research and Development Agreement (CRADA) suppliers or the National Institute of Standards and Technology (NIST). The reported analytical data will also be presented in standard units of mass of contaminant within a known volume of environmental media. The standard units for various sample matrices are as follows:

- Solid Matrices – mg/kg of media (Dry Weight).
- Aqueous Matrices – ng/L for PFAS analyses, ug/L of media for organic analyses, and mg/L for inorganic analyses.

8.7 LEVEL OF QUALITY CONTROL EFFORT

If non-dedicated sampling equipment is used, equipment rinse blanks will be prepared by field personnel and submitted for analysis of target parameters. Equipment rinse blank samples will be analyzed to check for potential cross-contamination between sampling locations that may be introduced during the investigation. One (1) equipment rinse blank will be collected per sampling event to the extent that non-dedicated sampling equipment is used.

If necessary, A separate equipment rinse blank sample will be collected for PFAS using the sample collection procedure described in Section 8.1.1 of the NYSDEC-approved Avangrid Field Sampling Plan. (Note: If dedicated or disposable sampling equipment is used, equipment rinse samples will not be collected as part of that field effort.)

Trip blanks will be used to assess the potential for contamination during sample storage and shipment. Trip blanks will be provided with the sample containers to be used for the collection of groundwater samples for the analysis of VOC. Trip blanks will be preserved and handled in the same manner as the project samples. One (1) trip blank will be included along with each shipping container containing project samples to be analyzed for VOC.

Method blank samples will be prepared by the laboratory and analyzed concurrently with all project samples to assess potential contamination introduced during the analytical process.

Field duplicate samples will be collected and analyzed to determine sampling and analytical reproducibility. One (1) field duplicate will be collected for every 20 or fewer investigative samples collected for off-Site laboratory analysis.

Matrix spikes will provide information to assess the precision and accuracy of the analysis of the target parameters within the environmental media collected. One (1) matrix spike/matrix spike duplicate (MS/MSD) will be collected for every 20 or fewer investigative samples per sample matrix.

(Note: Soil MS/MSD samples require triple sample volume for VOC only. Aqueous MS/MSD samples require triple the normal sample volume for VOC analysis and double the volume for the remaining parameters.)

9. Data Reduction, Validation and Reporting

Data generated by the laboratory operation will be reduced and validated prior to reporting in accordance with the following procedures:

9.1 DATA REDUCTION

9.1.1 Field Data Reduction Procedures

Field data reduction procedures will be minimal in scope compared to those implemented in the laboratory setting. The pH, conductivity, temperature, turbidity, DO, ORP, and breathing zone VOC readings collected in the field will be generated from direct-read instruments. The data will be written into field logbooks immediately after measurements are taken. If errors are made, data will be legibly crossed out, initialed, and dated by the field member, and corrected in a space adjacent to the original entry.

9.1.2 Laboratory Data Reduction Procedures

Laboratory data reduction procedures are provided by the appropriate chapter of USEPA, "Test Methods for Evaluating Solid Waste", SW-846, Third Edition. Errors will be noted; corrections made with the original notations crossed out legibly. Analytical results for soil samples will be calculated and reported on a dry-weight basis.

9.1.3 Quality Control Data

Quality control data (e.g., laboratory duplicates, surrogates, matrix spikes, and matrix spike duplicates) will be compared to the method acceptance criteria. Data determined to be acceptable will be entered into the laboratory information management system.

Unacceptable data will be appropriately qualified in the project report. Case narratives will be prepared which will include information concerning data that fell outside acceptance limits and any other anomalous conditions encountered during sample analysis.

9.2 DATA VALIDATION

Data validation procedures of the analytical data will be performed by the Haley & Aldrich QA Officer or designee using the following documents as guidance for the review process:

- "U.S. EPA National Functional Guidelines for Organic Data Review", and the "U.S. EPA National Functional Guidelines for Inorganic Data Review".
- The specific data qualifiers used will be applied to the reported results as presented and defined in the EPA National Functional Guidelines. Validation will be performed by qualified personnel at the direction of the Haley & Aldrich QAO. Tier 1 data validation (the equivalent of USEPA's Stage 2A validation) will be performed to evaluate data quality.

- The completeness of each data package will be evaluated by the Data Validator. Completeness checks will be administered on all data to determine that the deliverables are consistent with the NYSDEC Analytical Services Protocol (ASP) Category A and Category B data package requirements. The validator will determine whether the required items are present and request copies of missing deliverables (if necessary) from the laboratory.

9.3 DATA REPORTING

Data reporting procedures will be carried out for field and laboratory operations as indicated below:

- Field Data Reporting: Field data reporting will be conducted principally through the transmission of report sheets containing tabulated results of measurements made in the field and documentation of field calibration activities.
- Laboratory Data Reporting: The laboratory data reporting package will enable data validation based on the protocols described above. The final laboratory data report format will include the QA/QC sample analysis deliverables to enable the development of a data usability summary report (DUSR) based on Department DER-10 Appendix 2B.

10. Performance and System Audits

A performance audit is an independent quantitative comparison with data routinely obtained in the field or the laboratory. Performance audits include two separate, independent parts: internal and external audits.

10.1 FIELD PERFORMANCE AND SYSTEM AUDITS

10.1.1 Internal Field Audit Responsibilities

Internal audits of field activities will be initiated at the discretion of the Project Manager and will include the review of sampling and field measurements. The audits will verify that all procedures are being followed. Internal field audits will be conducted periodically during the project. The audits will include an examination of the following:

- Field sampling records, screening results, instrument operating records
- Sample collection
- Handling and packaging in compliance with procedures
- Maintenance of QA procedures
- Chain-of-custody reports

10.1.2 External Field Audit Responsibilities

External audits may be conducted by the Project Coordinator at any time during the field operations. These audits may or may not be announced and are at the discretion of the NYSDEC. The external field audits can include (but are not limited to) the following:

- Sampling equipment decontamination procedures
- Sample bottle preparation procedures
- Sampling procedures
- Examination of health and safety plans
- Procedures for verification of field duplicates
- Field screening practices

10.2 LABORATORY PERFORMANCE AND SYSTEM AUDITS

10.2.1 Internal Laboratory Audit Responsibilities

The laboratory system audits are typically conducted by the laboratory QA Officer or designee on an annual basis. The system audit will include an examination of laboratory documentation including sample receiving logs, sample storage, chain-of-custody procedures, sample preparation and analysis, and instrument operating records.

At the conclusion of internal system audits, reports will be provided to the laboratory's operating divisions for appropriate comment and remedial/corrective action where necessary. Records of audits and corrective actions will be maintained by the Laboratory QA Officer.

10.2.2 External Laboratory Audit Responsibilities

External audits will be conducted as required, by the NYSDOH or designee. External audits may include any of the following:

- Review of laboratory analytical procedures
- Laboratory on-site visits
- Submission of performance evaluation samples for analysis

Failure of any of the above audit procedures can lead to laboratory de-certification. An audit may consist of but not limited to:

- Sample receipt procedures
- Custody, sample security, and log-in procedures
- Review of instrument calibration logs
- Review of QA procedures
- Review of log books
- Review of analytical SOPs
- Personnel interviews

A review of a data package from samples recently analyzed by the laboratory can include (but not be limited to) the following:

- Comparison of resulting data to the SOP or method
- Verification of initial and continuing calibrations within control limits
- Verification of surrogate recoveries and instrument timing results
- Review of extended quantitation reports for comparisons of library spectra to instrument spectra, where applicable
- Assurance that samples are run within holding times

11. Preventive Maintenance

11.1 FIELD INSTRUMENT PREVENTIVE MAINTENANCE

The field equipment preventive maintenance program is designed to ensure the effective completion of the sampling effort and to minimize equipment down time. Program implementation is concentrated in three areas:

- Maintenance responsibilities
- Maintenance schedules
- Inventory of critical spare parts and equipment

The maintenance responsibilities for field equipment will be assigned to the task leaders in charge of specific field operations. Field personnel will be responsible for daily field checks and calibrations and for reporting any problems with the equipment. The maintenance schedule will follow the manufacturer's recommendations. In addition, the field personnel will be responsible for determining that an inventory of spare parts will be maintained with the field equipment. The inventory will primarily contain parts that are subject to frequent failure, have limited useful lifetimes, and/or cannot be obtained in a timely manner.

11.2 LABORATORY INSTRUMENT PREVENTIVE MAINTENANCE

Analytical instruments at the laboratory will undergo routine and/or preventive maintenance. The extent of the preventive maintenance will be a function of the complexity of the equipment.

Generally, annual preventive maintenance service will involve cleaning, adjusting, inspecting, and testing procedures designed to deduce instrument failure and/or extend useful instrument life. Between visits, routine operator maintenance and cleaning will be performed according to manufacturer's specifications by laboratory personnel.

12. Specific Routine Procedures Used to Assess Data Precision, Accuracy, and Completeness

12.1 FIELD MEASUREMENTS

Field-generated information will be reviewed by the Field Coordinator and typically includes evaluation of bound logbooks/forms, data entry, and calculation checks. Field data will be assessed by the Project Coordinator who will review the field results for compliance with the established QC criteria that are specified in Section 7.0 of this QAPP. The accuracy of pH and specific conductance will be assessed using daily instrument calibration, calibration checks, and blank data. Accuracy will be measured by determining the percent recovery (% R) of calibration check standards. Precision of the pH and specific conductance measurements will be assessed on the basis of the reproducibility of duplicate readings of a field sample and will be measured by determining the relative percent difference (RPD). Accuracy and precision of the soil VOC screening will be determined using duplicate readings of calibration checks. Field data completeness will be calculated using the following equation:

$$\text{Completeness} = \frac{\text{Valid (usable) Data Obtained}}{\text{Total Data Planned}} \times 100$$

12.2 LABORATORY DATA

Surrogate, internal standard, and matrix spike recoveries will be used to evaluate data quality. The laboratory quality assurance/quality control program will include the following elements:

- Precision, in terms of relative percent difference (RPD), will be determined by relative sample analysis at a frequency of one duplicate analysis for each batch of ten project samples or a frequency of 10 percent (10%). RPD is defined as the absolute difference of duplicate measurements divided by the mean of these analyses normalized to percentage.
- Accuracy, in terms of percent recovery (recovery of known constituent additions or surrogate recoveries), will be determined by the analysis of spiked and unspiked samples. MS/MSD will be used to determine analytical accuracy. The frequency of MS/MSD analyses will be one project sample MS/MSD per set of 20 project samples.
- One method blank will be prepared and analyzed with each batch of project samples. The total number of method blank sample analyses will be determined by the laboratory analytical batch size.
- Standard Reference Materials (SRMs) will be used for each analysis. Sources of SRM's include the U.S. EPA, commercially available material from CRADA-certified vendors, and/or laboratory-produced solutions. SRMs, when available and appropriate, will be processed and analyzed on a frequency of one per set of samples.
- Completeness is the evaluation of the amount of valid data generated versus the total set of data produced from a particular sampling and analysis event. Valid data is determined by independent confirmation of compliance with method-specific and project-specific data quality

objectives. The calculation of data set completeness will be performed by the following equation.

$$\frac{\text{Number of Valid Sample Results}}{\text{Total Number of Samples Planned}} \times 100 = \% \text{ Complete}$$

13. Quality Assurance (QA) Reports

Critically important to the successful implementation of the QA Plan is a reporting system that provides the means by which the program can be reviewed, problems identified, and programmatic changes made to improve the plan.

QA reports to management can include:

- Audit reports, internal and external audits with responses
- Performance evaluation sample results; internal and external sources
- Daily QA/QC exception reports/corrective actions

QA/QC corrective action reports will be prepared by the Haley & Aldrich QA Officer when appropriate and presented to the project and/or laboratory management personnel so that performance criteria can be monitored for all analyses from each analytical department. The updated trend/QA charts prepared by the laboratory QA personnel will be distributed and reviewed by various levels of the laboratory management.

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2. United States Environmental Protection Agency (1991). Preparation Aids for the Development of Category I Quality Assurance Project Plans. U.S. EPA/600/8-91/003, Risk Reduction Engineering Laboratory, Office of Research and Development, Cincinnati, Ohio, February 1991.
3. United States Environmental Protection Agency, (1993). Data Quality Objectives Process for Superfund Interim Final Guidance. U.S. EPA/540/R-93-071, Office of Solid Waste and Emergency Response (OSWER), September 1993.
4. United States Environmental Protection Agency, (1992). Specifications and Guidance for Contaminant-Free Sample Containers. OSWER Directive 9240.0-05A, April 1992.
5. United States Environmental Protection Agency. U.S. EPA National Functional Guidelines for Organic Data Review. U.S. EPA 540/R-2017-002.
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7. United States Environmental Protection Agency. Test Methods for Evaluating Solid Waste, Office of Solid Waste, U.S. EPA, SW-846, November 1986, with updates.
8. New York State Department of Environmental Conservation, NYSDEC Analytical Services Protocol (ASP), Bureau of Environmental Investigation, 1991 with updates.
9. New York State Department of Environmental Conservation, NYSDEC, Division of Environmental Remediation, Technical Guidance for Site Investigation and Remediation, DER-10, May 2010.
10. New York State Department of Environmental Conservation, NYSDEC, Division of Environmental Remediation, Sampling, Analysis and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) under NYSDEC Part 375 Remedial Program, April 2023.

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TABLE

TABLE I

SUMMARY OF ANALYSIS METHOD, PRESERVATION METHOD, HOLDING TIME, SAMPLE SIZE REQUIREMENTS AND SAMPLE CONTAINERS

91 BRUCKNER BOULEVARD

BRONX, NEW YORK

Analysis/Method	Sample Type	Preservation	Holding Time	Volume/Weight	Container
Volatile Organic Compounds/8260C	Soil	1 - 1 Vial MeOH/2 Vial Water, Cool, 4 ± 2 °C	14 days ¹	120 mL	3 - 40ml glass vials
Semivolatile Organic Compounds/8270D	Soil	Cool, 4 ± 2 °C	14 days	250 mL	1 - 8 oz Glass
Pesticides (8081B)	Soil	Cool, 4 ± 2 °C	14 days	250 mL	1 - 8 oz Glass
Polychlorinated Biphenyls/8082A	Soil	Cool, 4 ± 2 °C	14 days	250 mL	1 - 8 oz Glass
Metals/6010D	Soil	Cool, 4 ± 2 °C	180 days	60 mL	1 - 2 oz Glass
PFAS 1633	Soil	Cool, 4 ± 2 °C	14 days	250 mL	1 - 4 oz high-density polyethylene container
1,4-Dioxane 8270	Soil	Cool, 4 ± 2 °C	14 days	250 mL	1 - 8 oz Glass
Toxicity Characteristic Leaching Procedure Metals	Soil	Cool, 4 ± 2 °C	180 days	120 mL	1 - 4 oz Glass
Volatile Organic Compounds/8260C	Groundwater	HCl, Cool, 4 ± 2 °C	14 days	120 mL	3 - 40ml glass vials
Semivolatile Organic Compounds/8270D	Groundwater	Cool, 4 ± 2 °C	7 days	500 mL	2 - 250 mL amber glass
TAL Metals 6020	Groundwater	HNO ₃ Cool, 4 ± 2 °C	180 days	500 mL	1 - 500 mL plastic bottle
PFAS 1633	Groundwater	H ₂ O Cool, 4 ± 2 °C	14 days	500 mL	2 - high-density polyethylene 250 ml containers
1,4-Dioxane 8270 SIM	Groundwater	Cool, 4 ± 2 °C	7 days	500 mL	1 - 500 mL plastic bottle
Volatile Organic Compounds/TO-15	Indoor Air	N/A	30 days	2.7 - 6 L	1 2.7 or 6 L Summa Canister

Notes:

1. Terracores and encores must be frozen within 48 hours of collection
2. Approximately 21 soil confirmation samples and one indoor air samples anticipated. Groundwater samples not anticipated.
3. Field blanks and matrix spike/matrix spike duplicates to be collected one per 20 confirmation soil samples.
4. Trip blanks collected one per sampling event analyzing for VOCs.
5. Field duplicates to be collected one per 20 samples (two field duplicates of confirmation samples anticipated).
6. Refer to text for additional information.

ATTACHMENT A
Project Team Resumes



MARI C. CONLON

Project Manager

EDUCATION

M.S., Geology, Boston College

B.S., Geology with a minor in Economics and Business, Lafayette College

PROFESSIONAL REGISTRATIONS

NY: Professional Geologist (License No. 000769)

PROFESSIONAL SOCIETIES

Big Apple Brownfield Awards, Co-Chair, 2018-2019

Big Apple Brownfield Awards Nomination Committee, 2016-2017

SPECIAL STUDIES AND COURSES

40-Hour OSHA Hazardous Waste Operations and Emergency Response Training (29 CFR 1910.120)

10-Hour OSHA Construction Safety

8-Hour OSHA Supervisor of Hazardous Waste (29 CFR 1910.120 & 29 CFR 1926.65)

Mari is a project manager with experience in soil, groundwater and soil vapor investigation and a focus on remedial design and implementation, and will focus her time at Haley & Aldrich serving the environmental and real estate markets. She is also experienced in completion of numerous Phase I Environmental Site Assessments and Phase II Environmental Site Investigations, site characterization, hazardous materials analysis, regulatory closure reports as well as remedial design and implementation.

Mari has experience in composing site closure documentation including Remedial Closure Reports and Noise Installation Reports reviewed by the Office of Environmental Remediation as well as Final Engineering Reports reviewed by the New York State Department of Environmental Conservation. Her background includes developing and complying with approved site management plans overseeing the operation and maintenance of on-site engineering controls and ensuring the protection of human health and the environment.

Mari has also worked on city rezoning proposals by performing work associated with and composing the Hazardous Materials Analysis chapter included in Final Environmental Impact Statements published by New York City Department of Planning. Analysis methods were performed in accordance with the City Environmental Quality Review (CEQR) guidelines for neighborhoods including East New York, Brooklyn, Jerome Avenue, Brooklyn, Inwood, and Manhattan.

RELEVANT PROJECT EXPERIENCE

State and City Agencies

School Construction Authority, Waste Characterization and Excavation Materials Disposal Plan, Brooklyn, New York.

Project manager for consulting services for New York Public School 127. Services included composition of an Excavated Materials Disposal Plan, collection of waste characterization samples and preparation of and preparation of a findings and recommendations report.

Department of City Planning, Rezoning Environmental Impact Statement, Bronx, New York. Project lead for analysis and composing the Hazardous Materials Chapter as per City Environmental Quality Review (CEQR) Technical Manual guidelines included in the Final Environmental Impact Statement (FEIS) for an approximately 92-block area primarily along Jerome Avenue and its east-west commercial corridors in the Bronx. The review assessed the potential for the presence of hazardous materials in soil and/or groundwater at both the projected and potential development sites identified in the reasonable worst-case development scenario under the proposed East New York Rezoning Proposal. Procedures involved site inspections and review of historic Sanborn fire insurance maps, city directories and city/state regulatory databases. The assessment identified that each of the 146 projected and potential development sites has

some associated concern regarding environmental conditions. As a result, the proposed zoning map actions include (E) designations (E-366) for all privately-held projected and potential development sites.

Department of City Planning, Rezoning Environmental Impact Statement, Brooklyn, New York. Project lead for performance analysis and composing the Hazardous Materials Chapter as per CEQR Technical Manual guidelines included in the FEIS for an approximately 190-block area of East New York, Cypress Hills, and Ocean Hill neighborhoods of Brooklyn, New York. The review assessed the potential for the presence of hazardous materials in soil and/or groundwater at both the projected and potential development sites identified in the reasonable worst-case development scenario under the proposed East New York Rezoning Proposal. Procedures involved site inspections and review of historic Sanborn fire insurance maps, city directories and city/state regulatory databases. The assessment identified that each of the 186 projected and potential development sites has some associated concern regarding environmental conditions. As a result, the proposed zoning map actions include (E) designations (E-366) for all privately-held projected and potential development sites.

Redevelopment and Remediation

Titan Equity Group, Hotel Redevelopment, Bronx, New York. Project manager for a hotel redevelopment in the south Bronx. The site has been assigned New York City Office of Environmental Remediation (NYC OER) E-Designation status for hazardous materials, noise and air quality. Services included completion of a remedial investigation, composition of a Remedial Investigation Report and development of Hazardous Material Remedial Action Work Plan and Air Quality/Noise Remedial Action Plan as per NYC OER requirements.

The Related Companies, Chelsea Mixed-Use Redevelopment, New York, New York. Field geologist for oversight of the remediation of a mixed-use residential and commercial building, the second of a two-building development on 30th Street. Contaminants of concern included volatile and semi-volatile organic compounds associated with historic operations and underground storage tanks (USTs) located on the Site. The Site was given an E-designation (E-142) for hazardous materials and noise as part of the Highline/West Chelsea rezoning proposal. To satisfy the requirements of the E-designation program, soil was excavated to at least 12 feet below grade and bottom endpoint collected showing no contaminants of concern exceeding the New York State Department of Environmental Conservation (NYSDEC) Unrestricted Use Soil Cleanup Objectives (SCO). By achieving Unrestricted Use SCOs, no engineering controls were necessary, although the building slab was included as part of development, and removal of the hazardous materials E-designation was requested.

Tishman Speyer, Long Island City Residential Development, Long Island City, New York. Field geologist for remedial oversight and implementation of a Community Air Monitoring Program during concurrent remediation and development of three Brownfield Cleanup Program (BCP) sites located in Long Island City, New York. The Sites were grossly contaminated with creosote, a carcinogenic chemical formed from the distillation of various tars. Remediation strategies included soil excavation and in-situ soil stabilization. To prevent migration of groundwater off-site, a temporary and later a permanent capture well system was installed on the western boundary of the property. The BCP site located on the western portion of the property left residual contamination in place requiring installation of a sub-slab depressurization system.

Queens West Development Corporation, Queens Waterfront Development, Long Island City, New York. Field geologist for performance of site management post remedial action. Services included annual groundwater monitoring, evaluation of engineering and institutional controls completion and Period Review Reports. In addition to conducting annual site management activities, responsibilities included composing a work plan to evaluate the transition from active sub-slab depressurization systems to passive. Upon NYSDEC approval, active systems were shut down for 30 days prior to a sub-slab vapor sampling event evaluation soil vapor, indoor and outdoor air conditions for potential vapor intrusion risk. As results indicated no evidence of vapor intrusion, continued pressure monitoring was conducted for from the existing monitoring ports for one year assessing whether negative pressure was held by the existing slab by stack-effect or other passive processes.

Jim Beam Brands Co., Brownfield Cleanup Program Remediation Site, Long Island City, New York. Field geologist for oversight of the installation of an Electrical Resistive Heating (ERH) system implemented in order to remediate trichloroethylene groundwater plumes in shallow/intermediate and deep groundwater on- and off-site. The Site, a former stapler manufacturing facility, underwent various remedies, including a Soil Vapor Extraction system, air sparging, ozone injection and chemical oxidation using potassium permanganate injections, which resulted in little reduction to contamination levels and rebounding chlorinated solvents. Components of the ERH system installed included electrodes for delivery of steam, vapor recovery wells, and groundwater monitoring wells. The site is currently under remediation in the state BCP program.

Due Diligence and Site Characterization

Manufacturing Plants, Multiple Investors, Environmental and Compliance Assessment Portfolio United States.

Project lead for completion of Phase I Environmental Site Assessments (ESAs) and Limited Compliance Reviews for multiple auto parts manufacturing facilities throughout the United States. Services included completion of Phase I ESAs in accordance with the American Society for Testing and Materials E1527-13 requirements and a limited review of each facility's compliance liabilities including issues pertaining to the Resource Conservation and Recovery Act, Greenhouse Gas Emission Standards and Tier II Emergency and Hazardous Chemical Inventory reporting requirements.

ARM Parking, Environmental Site Assessment and Subsurface Investigation, Brooklyn, New York. Project manager for site assessment and subsurface investigation of parking facility in Sunset Park neighborhood, Brooklyn, New York. Services included ground penetrating radar survey for former and current petroleum USTs, completion of a subsurface investigation of soils and composition of Limited Subsurface Investigation Report.

Spill Consulting

The Trump Organization, Spill Consulting Services, New York, New York. Project manager for consulting services provided after incidental release of calcium carbonate ice rink paint to the Central Park Pond from Wollman Rink. Services included liaising with NYSDEC regarding violations, consent order and required corrective action. Corrective action included designing alterations to the existing on-site drainage plans and routing all meltwater containing paint into the combined sewer system. Coordination was required with property owner, operations personnel, New York City Department of Parks and NYSDEC.

Richmond Gardens Apartments, Spill Management and Closure Services, Staten Island, New York. Project lead responsible for spill closure activities and reporting for Spill 1105661 located at the Richmond Gardens Apartment Complex in the Richmond neighborhood of Staten Island, New York. The spill was opened in 2011 when several underground storage tanks were identified adjacent to the apartments at Jersey Street and Hendricks Avenue. The tanks were cleaned and removed and impacted soils surrounding the tank area excavated to the extent possible. Excavation of all impacted material was not feasible due to the proximity of the tanks to the apartment buildings. Residual contamination in soil and groundwater remained and was monitored through 2016. Upon reviewing the groundwater monitoring data from over 12 consecutive quarters, it was apparent monitored natural attenuation was not a feasible option and an in situ chemical oxidation (ISCO) remedy was approved by NYSDEC. Due to success of the pilot test, the ISCO injection event was implemented utilizing pressure pulse technology to deliver the alkaline activated persulfate solution to the subsurface.



BRIAN A. FERGUSON

Senior Engineer

EDUCATION

M. S. Geotechnical Engineering, Tufts University, Medford, Massachusetts; 2012

B. S. Civil Engineering, State University of New York - Environmental, Science, and Forestry, Syracuse, New York; 2000

Ass. Science Degree in Applied Science and Technology (Nuclear Engineering), Thomas A. Edison State College, Trenton, New Jersey; 2000

PROFESSIONAL SOCIETIES

Order of the Engineer – 2000

Boston Society of Civil Engineers (BSCE)

American Society of Civil Engineers (ASCE)

SPECIAL STUDIES AND COURSES

American Concrete Institute – Certified Field Technician Certified Grade 1

Radiation Safety and Operations of Nuclear Testing Equipment – Troxler

40-Hour OSHA Hazardous Waste Operations Training (+ 8-Hour annual refresher)

10-Hour OSHA Construction training

Confined Space Entry Training

16-Hour Asbestos Operations and Maintenance

Mr. Ferguson has over six years of experience serving as project engineer on a variety of real estate development projects. His project experience has included monitoring field investigations and performing construction oversight, performing due diligence and engineering analyses, performing geotechnical analyses and developing geotechnical recommendations, and preparing geotechnical reports and project specifications.

In addition to providing engineering design support, Mr. Ferguson has managed and participated in a number of field service activities. Field work has included construction monitoring and documentation of contractors' deep and shallow foundation related construction, including slurry walls, caissons, pile driving, pile cap installation, earthwork, backfilling and compaction, installation of soldier pile and wood lagging support systems, installation of tie backs, reading inclinometers, conducting in-place field unit weight tests, tie-back load testing, seismograph installation, monitoring, and evaluating, and preparation of footing bearing surfaces. Other responsibilities have included site development activities, including placement of utilities and subgrade preparation for roads; observations and testing to determine that work is completed in compliance with contract documents; on-site soil management; sampling of soil and groundwater for chemical laboratory testing and conducting in situ field screening; maintenance of job records including pile driving logs, results of field density tests, records of caisson and footing installations; preparation of daily field reports; in contact with key personnel; and resolution of field related problems.

RELEVANT PROJECT EXPERIENCE

St. Elizabeths Hospital – West Campus Forensic Evaluations, Washington, D.C. Project Engineer for forensic evaluations on the adaptive reuse of former hospital buildings. Responsibilities included coordination of a field exploration program, including test borings and test pits to obtain subsurface information for project design and construction, overseeing multiple field personnel, subcontractors, assisting with project management, reviewing subcontractors invoices, reviewing and summarizing subsurface data and writing data reports.

TUFTS University, New Central Energy Plant, Medford, MA. Project engineer for a new Central Energy Plant that will house new co-generation steam boilers, centralized chilled water and electrical transformer switchgear that is planned to occupy approximately 20,000 square feet across two or three levels. Responsibilities included coordination of construction monitoring, observing SOE and footing installation, assisting with project management,

reviewing weekly field construction reports, reviewing and responding to geotechnical design submittals and attending project meetings.

Lahey Hospital and Medical Center – Stilts Infill Project, Burlington, MA Project Engineer for an addition to the existing Stilts building on the Lahey campus. Responsibilities included coordination and overseeing geotechnical and environmental subsurface investigations, coordination of construction monitoring, observing footing installation, assisting with project management, reviewing weekly field construction reports, reviewing and responding to geotechnical design submittals and attending project meetings.

Gloucester Beauport Hotel, Gloucester, MA Project engineer for a four story hotel with a seawall constructed adjacent to tidal beach. Responsibilities included coordination and overseeing geotechnical and environmental subsurface investigations, coordination of construction monitoring, assisting with project management, reviewing weekly field construction reports, reviewing and responding to geotechnical design submittals and attending project meetings, design and implementation of a sub-slab gas mitigation system.

275 Wyman Street, New Office Building, Waltham, MA. Project engineer for a new office building and parking garage founded on a shallow foundation system. Responsibilities included preparing proposals, assisting with management and planning of a subsurface investigation program, summarizing subsurface data and reviewing geotechnical test boring logs, coordination of construction monitoring and instrumentation monitoring programs, reviewing weekly field construction reports, reviewing and responding to specialty geotechnical design submittals and RFIs by others and attending project meetings.

Suffolk University - 20 Somerset Street, Boston, MA Project engineer for design of 8-story academic building with two levels of below grade finished space. Responsibilities included coordination of construction monitoring, observing SOE and footing installation, assisting with project management, reviewing weekly field construction reports, reviewing and responding to geotechnical design submittals and attending project meetings.

Worcester State University, New Student Housing, Worcester, MA Project engineer for design and construction of a 7-story residence/dining hall with a single level basement and a major site retaining wall structure. Responsibilities included overseeing geotechnical subsurface investigations, provided foundation recommendations and specifications, and prepared a retaining wall contract document. Responsibilities included coordination of construction monitoring, excavation and construction of footings, and soil reuse and management, assisting with project management, reviewing weekly field construction reports, reviewing and responding to geotechnical design submittals and attending project meetings.

University of Massachusetts Boston, General Academic Building No.1, Boston, MA. Project engineer responsible for assisting project manager in preliminary foundation engineering recommendations and construction considerations for a new academic building on a part of Columbia Point, a historic landfill area. Assisted in design phase services that included preparing foundation support design recommendations including the use of high allowable stresses for 190-ft long end-bearing H-piles and application of Slickcoat coating to address downdrag concerns and reduce foundation costs.

Waltham Watch Factory, Waltham, MA project engineer for redevelopment of former watch factory. Responsibilities included construction oversight of new precast parking garage, utility upgrades, soil remediation and management, installation of gas mitigation systems, assisting with project management, reviewing weekly field construction reports, reviewing and responding to geotechnical design submittals and attending project meetings.

Massachusetts Green High Performance Computing Center, Holyoke, MA. Project engineer for 60,000 sq. ft high level computing center and associated support utilities. Redevelopment of the site included recycling 50,000 cy of construction debris into the site fills at this historic site along the Connecticut River. Responsibilities included coordinating geotechnical and environmental field investigations, coordination of construction monitoring, seismic analysis, reviewing weekly field construction reports, reviewing and responding to geotechnical design submittals and attending project meetings.

The Shops at Riverwood, Hyde Park, MA. The project consisted of the redevelopment of a colonial era paper mill. The multi-building complex was demolished and the concrete and brick from the previous buildings were recycled. The project involved crushing 50,000 cy of brick and concrete and placement of excavated soils and recycled brick and concrete as compacted fill materials to support proposed buildings, pavement areas, and achieve 5 to 9 ft. raises in grade. Field Representative was responsible for management and reuse of brick and concrete stockpiles, in-place density testing, coordination of test pits, installation of soldier pile and versa-lok walls, and backfilling of underground vaults. Remedial activities included: excavation of 5,000 cy of petroleum contaminated soils, on-site cement batching in a pug mill, and placement of compacted recycled materials in roadway areas; delineation, excavation and off-site disposal of TSCA-regulated PCB contaminated soils associated with historical Askarel transformers and dioxin-contaminated soils associated with historical bleaching operations; and disposition of 1,000 tons of paper mill sludge encountered within an abandoned granite-walled sluiceway structure. In addition, assisted with weekly project meetings, maintaining a record of material reuse, and providing weekly field reports.

Harvard Law School, Cambridge, MA. The Harvard Law School project is located on Massachusetts Avenue in Cambridge. The project consisted of a multistory building above ground with 5 levels below ground for a parking garage. Field Representative was responsible for overseeing the installation of slurry walls into bedrock and LBEs with three installation rigs while monitoring the removal of urban fill and transfer to several different receiving facilities from another portion of the site. The slurry walls were constructed into bedrock. Other Field Representative activities were: testing of the slurry, management of the excavated soils, and record keeping of the Contractor's obstruction and down time of the equipment. In addition, assisted with weekly project meetings, maintaining a record of obstruction and machine time, and providing weekly field reports.

**BRIAN FITZPATRICK, CHMM**

Corporate Director, Health and Safety

EDUCATION

M.P.A., Environmental Policy, Syracuse University
B.S., Environmental Science, University of Massachusetts-Amherst
A.S., Chemistry, Valley Forge Military Junior College
Commissioned Officer, United States Army

CERTIFICATIONS

Certified Hazardous Materials Manager (Reg. No. 13454)
Certified Department of Transportation Shipper
Certified International Air Transport Authority Shipper

PROFESSIONAL SOCIETIES

Alliance of Hazardous Materials Professionals
Academy of Certified Hazardous Materials Managers, New England Chapter

SPECIAL STUDIES AND COURSES

Department of Transportation	Radiation Safety Officer
International Air Transport Authority	RCRA Hazardous Waste
Incident Commander	Massachusetts Industrial Waste Water
Confined Space Entry and Rescue	Operator Grade 2I (expired)

AWARDS

Presidents Club Award (one million hours worked without a recordable injury, Cabot Corporation)
Chancellors Award for Excellence, Syracuse University

Brian has over 25 years of experience in developing, implementing, and managing a wide range of environmental, health, and safety (EH&S) solutions for a variety of clients. Brian has served as the Health and Safety Manager and Incident Commander at several research and development sites and has managed extensive programs to maintain and clean contaminated sites under Federal and State regulatory programs. He has provided expertise in managing EH&S programs as a consultant, and has actively developed, implemented, and managed these programs as an EH&S professional for various industries.

Brian is currently working as the Chief Health and Safety Officer for Haley & Aldrich, Inc. He, and his staff, are involved in every project Haley & Aldrich, Inc. undertakes. Brian is involved on several projects, directly overseeing the health and safety on the project site of our staff, our contractors, and the public. Brian also acts as support for our on-site health and safety staff on other larger construction and remediation projects.

Through Brian's leadership our safety culture and focus extend from the top of our organization to each and every Haley & Aldrich employee as well as subconsultants and subcontractors. Utilizing a Behavior Based Safety approach, Haley & Aldrich expects every project team member to play an important role in making our projects safe and has given authority to every Haley & Aldrich employee, subconsultant, and subcontractor to stop any activity at any time for health or safety concerns. Our record illustrates that our hard work is paying off. The company has gone 4 years without a lost time injury, and our TRIR and EMR have consistently improved each of the last 3 years.

RELEVANT PROJECT EXPERIENCE

Haley & Aldrich, Inc., Burlington, Massachusetts. As Chief Health and Safety Officer, Brian has led and facilitated the development and implementation of corporate health and safety (H&S) improvement plans to enhance compliance and improve H&S performance. In Brian's time with Haley & Aldrich, Inc., the company has realized dramatic improvement on H&S goals and in Key Performance Indicators. Brian is responsible for developing a risk competence culture, where our staff are empowered to look for and engage to address risk before anyone is injured. Brian oversees the development, implementation and continuous improvement of all H&S programs for the company.

Additional responsibilities include:

- Developing a safety culture through incident reporting, root cause analysis, behavior-based safety, hazard recognition and risk assessment, communication, and developing leaders;
- Monitoring proposed and existing SH&E regulations and legislation to determine their impact on operations and to ensure continued compliance;
- Overseeing the safety, industrial hygiene, and toxicology programs for over 600 staff members engaged in remediation, construction, health and safety, consulting, and general office work across 28 offices in the United States and on assignment to international project sites;
- Continuously seeks to improve H&S performance as measured by the OSHA Incident Rating (IR) and Worker's Compensation Experience Modification Rating (EMR), as well as Leading Indicators developed with the management team; and
- Participating in the corporate audit program as an auditor or lead auditor;

Energy Client, California. As Chief Health and Safety Officer, Brian led and facilitated the Alliance Partnership Safety Council in 2017, is still an active contributor to the council, and hosts routine contractor safety forums for the client. Brian is actively involved in the development and implementation of program safety, health, and environmental (SH&E) plans to ensure safe operations on project sites. Brian developed permits and Health and Safety Plans for large projects and routinely audits the site safety. Additional responsibilities include:

- Driving reporting and behavior-based safety initiatives to support our internal safety culture and developing monthly summary reports to illustrate performance to our client.
- Develop, assess and continuously improve site safety plans and practices, including specific safety protocols for working safely over and around water.
- Worked as an extension of the client's organization to provide assurance that the remedy was completed safely and consistent with client-specific requirements.
- Support on-site safety personnel in ensuring the health and safety of the general public, our staff, and our sub-contracted employees.
- Audits and visits sites to ensure compliance with our internal policies and client-specific requirements.

Energy Client, Ohio. As Chief Health and Safety Officer, Brian supports the project team in developing and executing client and project specific health and safety measures, such as a site specific Health and Safety Plan, Job Hazard Analyses, Industrial Hygiene program, and site specific training. Brian also routinely visits the site to assess current practices and condition and to ensure continuous improvement. Additional responsibilities include:

- Develop, assess, and continuously improve site safety plans and practices, including specific safety protocols to comply with supplemental EH&S requirements such as the Duke Health and Safety Handbook, Environmental Supplemental, and EHS Keys to Life.
- Develop, assess, and continuously improve site safety plans and practices to address the risks associated with the work being performed on site, as well as the environmental conditions and simultaneous operations, including trenching and excavation, hot work, work over and near water, heavy equipment, HAZWOPER, etc.
- Worked as an extension of the client's organization to provide assurance that the remedy was completed safely and consistent with client-specific requirements.
- Support on-site safety personnel in ensuring the health and safety of the general public, our staff, and our sub-contracted employees.
- Audits and visits site to ensure compliance with our internal policies and client-specific requirements.



ZACHARY SIMMEL

Staff Environmental Engineer

EDUCATION

B.S., Environmental Engineering, Syracuse University

SPECIAL STUDIES AND COURSES

40-Hour OSHA Hazardous Waste Operations and Emergency Response Training (29 CFR 1910.120)

8-Hour OSHA HAZWOPER Refresher Training

10-Hour OSHA Construction Safety Training

8-Hour DOT Hazmat Employee & RCRA Hazardous Waste Generator Training

American Red Cross First Aid Training and CPR Course

XRF Training (2019)

Asbestos Inspector Training (2019)

Zachary is an engineer with experience in remedial site investigations, subsurface investigations, observations of rock blasting/excavation, preparation of technical reports, and data collection and analysis. He also has extensive experience with conducting Phase I environmental site assessments and Phase II environmental site assessments, and other forms of environmental due diligence. He has performed groundwater sampling events, soil gas/vapor surveys, and assisted with preparation of soils management plans. Zachary regularly utilizes computer programs such as Microsoft Excel, Microsoft Word, and Bluebeam in his daily job functions.

He will focus his time at Haley & Aldrich serving the Building and Infrastructure markets with performing site reconnaissance to observe existing conditions, assess site access for subsurface explorations, and identify important site features. He will also monitor subsurface exploration activities to collect soil, bedrock, groundwater, as well as other pertinent information for project design, and assist in the development of remedial work plans.

RELEVANT PROJECT EXPERIENCE

Environmental

310 Grand Concourse Residential Construction, South Bronx, New York. As a field engineer, Zachary performed excavation oversight and was responsible for the collection of endpoint samples, air monitoring, and logging trucks for off-site disposal. He assisted in the development of a map that accounted for the different impacted zones on the site including hazardous lead and petroleum areas. He was exposed to general support of excavation (SOE) practices including the installation of soldier piles, structural piles, timber lagging, walers, and rakers. Approximately 24,000 tons of soil was excavated and transported off-site (includes hazardous lead, petroleum impacted, urban fill, and native soil) and approximately 10,250 tons of broken-up bedrock was removed from the site. Thirteen underground storage tanks containing gasoline were encountered and removed as part of the remediation. The site achieved the most stringent remediation standards in New York state.

Former Techtronics Facility, 8 Walworth Street, Brooklyn, New York. As field engineer, Zachary was responsible for the oversight of soil borings by Direct Push and installation of fifteen permanent groundwater monitoring wells using mud-rotary drilling. Cluster wells were installed to vertically delineate chlorinated volatile organic compounds (CVOs) on-site plume and to evaluate other plumes migrating onto the site. Adjusted well locations due to site-specific challenges, specifically shallow refusal. His responsibilities included collecting soil and groundwater environmental samples, gauging wells, overseeing survey performed by license surveyor, and compiling laboratory data and hydrogeologic information to formulate an interim remedial measure (IRM) design involving soil vapor extraction/air sparging systems and implementing a bioremediation injection barrier wall.

297 Wallabout Street, Brooklyn, New York. As field engineer, Zachary was responsible for the oversight of soil borings and installation of five permanent groundwater monitoring wells. His responsibilities included classifying soil, developing/purging wells, collecting environmental soil samples, and conducting low-flow groundwater sampling for various analyses.

Excavation Oversight and CAMP Monitoring, Various Sites, Bronx and Brooklyn, New York. Zachary served as field engineer for several projects under the NYC Mayor's Office of Environmental Remediation (NYCOER) program. His responsibilities included performing excavation oversight, air monitoring, vapor barrier installation oversight, and logging trucks for off-site disposal.

Former NuHart Plastics Manufacturing Plant, Brooklyn, New York. Zachary worked as field engineer for multiple monitoring events which consisted of the removal of light non-aqueous-phase liquid (LNAPL) performed in compliance with the site-specific, NYSDEC-approved Operation, Maintenance, and Monitoring Plan (OM&M Plan) for the product recovery system.

Rock Brokerage Environmental Site Assessments, New York City, New York. Zachary served as field engineer for environmental waste characterization services as required by the disposal facility at several sites throughout the greater New York City area.

Building & Infrastructure Construction/Development

I-95 Express Lanes Fredericksburg Extension, Fredericksburg/Stafford, Virginia. As field engineer, Zachary was responsible for the oversight of geotechnical borings using (HSAs) along Interstate 95. Work areas included both road work and limited access areas (i.e. wetlands, medians). He provided quality real-time data under an intense project deadline and collaborated daily with earthwork firm (i.e. branch civil). Logged soils using Virginia Department of Transportation Classification System and collected both split spoon and Shelby tube samples. Equipment used for soil classification included a pocket penetrometer.

Greenwich Country Day School South Campus Addition, Greenwich, Connecticut. As field engineer, Zachary observed construction activities for south campus addition which included rock removal (line drilling and blasting), installing footings, preparing bearing surfaces, installing underslab and perimeter drainage systems, and earthworks. Project responsibilities also included collecting blast vibration monitoring information from the blaster and regularly checking in with surveyor to maintain elevation control of excavation.

Corbin Avenue Mixed-Use Residential Development, Darien, Connecticut. Zachary served field engineer for subsequent site investigation for a mixed-use residential development. The development will consist of several, mixed-use residential buildings, and an underground parking structure. His responsibilities included monitoring of test borings (using HAS and mud rotary) and rock drilling, collecting pertinent information from drill rig crews (monitored two at a time), collecting environmental samples, and gauging previously installed groundwater monitoring wells. Adjusted test boring locations due to site specific challenges including shallow refusal depth, utilities, and other site (i.e. parked vehicles, access restrictions).

Lambert Houses Parcel 5, Bronx, New York. As field engineer for site investigation of proposed development at E 179th Street, Zachary monitored 15 test borings and one test it to obtain information on subgrade and depth of bedrock across the site.

Lincoln Avenue Bridge Replacement, Trenton, New Jersey. As field engineer for site investigation of proposed replacement of bridge, Zachary monitored test borings to obtain information on subgrade and depth to bedrock. Test boring extended down to approximately 100 feet; 25 feet was rock cored. Both soil and rock cores were collected, observed, and properly identified in logs.

Keeler Brook Force Main Final Design, Connecticut Avenue, Norwalk, Connecticut. Zachary served as field engineer for site investigation of proposed installation of 2,475 linear feet (lf) of 16-in.-dia., HDPE-force main running along the south side on Connecticut Avenue. Final design included 1,100 lf horizontal directional drilling (HDD) and 725 lf pipe jacking area. His responsibilities included monitoring of test borings and rock drilling to obtain information on subgrade and depth to bedrock.

Environmental Remediation Experience

The Stanwich School, Environmental Remediation Investigation, Greenwich, Connecticut. As field engineer, Zachary was responsible for the oversight of the remediation of former hiking trails impacted by historical placement of fill material (e.g., primarily ash, coal, slag). Primary contaminants of concern included heavy metals, specifically arsenic and lead. Assisted with preliminary subsurface investigation involving the installation of test pits in order to characterize and assess distribution of fill material. Primary responsibilities included oversight of the removal of fill material, segregating cut stone for re-use, collecting endpoint samples to determine performance of the remedy, compiling laboratory data, oversight of the installation of filter fabric, and preparing a site remediation report with appropriate figures. Acted as liaison between general contractor and both soil brokerage firm and environmental laboratory.

Marc Service Station, Environmental Remediation, Stamford, Connecticut. As field engineer, Zachary was responsible for the remedial oversight of former gasoline service station. He conducted both Phase I and Phase II Environmental Site Assessments prior to remediation. Primary responsibilities included oversight of the excavation and removal of two abandoned in-ground hydraulic lifts, an out-of-service oil/water separator, and interior drain lines. Project also called for the removal of historic impacted soil in the vicinity of a former pump island and locations of former underground storage tanks grossly contaminated with primarily Benzene, Toluene, Ethylbenzene and Xylene (BTEX) contaminants and petroleum. He was responsible for the collection and analysis of soil samples, verification of completeness of the work, documentation, and preparation of a closure/soil remediation report.

Rubino Brothers Scrap Metal, Environmental Remediation Investigation, Stamford, Connecticut. As field engineer, Zachary was responsible for the remedial oversight of former storage lot operated by scrap metal yard. The storage lot was comprised of three different parcels which were formerly operated by a variety of light industrial and commercial businesses including a foundry and lumber yard. Assisted in the development of a grid system across the entirety of the site, each approximately 25 ft x 25 ft. Remediation was conducted in several phases: removal of top layer of asphalt and millings, removal of reinforced concrete slabs across the entirety of the site, and removal of impacted soil (primary contaminants of concern [Extractable Total Petroleum Hydrocarbons], arsenic, and lead). Encountered orphan underground gasoline storage tanks and a waste oil tank. Primary responsibilities included oversight of the removal of impacted soil, segregating non-native material, collecting endpoint samples, and documenting completion of work. Collected composite samples from stockpiles for waste characterization and disposal facility. Created spreadsheet and tables of laboratory results, prepared appropriate site plans, and assisted with compilation of remediation report.

Environmental Investigation Experience

Multiple Confidential Clients, Phase I ESAs and Due Diligence, Multiple Locations in Connecticut, New York, New Jersey. Zachary conducted Phase I ESAs, for buyer and vendor sides, on a variety of properties including commercial, industrial, and residential sites. Experience with conducting Phase I ESAs and Transaction Screens (in CT) on dry cleaners, auto body shops, and service stations.

Multiple Confidential Clients, Phase II, Multiple Locations, Connecticut. As field engineer, Zachary conducted Phase II ESAs and supplemental Phase III ESAs on a variety of different sites. He assisted with the development of sampling plans primarily based off previous environmental investigations and due diligence. Primary responsibilities for Phase II investigations included oversight of the installation of test borings and/or test pits and the installation of groundwater monitoring wells. Some project scopes also called for the completion of a soil gas survey using a photoionization

detector as a field instrument. Phase III investigations involved further intrusive environmental media sampling to further delineate the vertical and horizontal extent of contamination.

Other Experience

Spill Management and Closure Services, Multiple Sites, Connecticut. As field engineer, Zachary was responsible for spill closure activities including monitoring removal of underground storage tanks and at times, overseeing excavation of contaminated soil related to leaking underground storage tanks. Primary responsibilities for underground storage tank closure/removal included oversight of the removal of impacted soil, collecting endpoint samples, preparing soil samples for laboratory analysis, and preparing a closure report to be submitted to state agency.

Multiple Dry Cleaners, Stamford, Connecticut. Zachary's responsibilities included conducting quarterly groundwater sampling events using low flow sampling technique, preparing data and reports. Air monitoring and routine soil vapor extraction system maintenance checks were also required at several of the dry cleaners.



SUZANNE BELL, PE

Senior Project Manager

EDUCATION

B.S., Biosystems Engineering, University of Arizona

PROFESSIONAL REGISTRATIONS

AZ: Environmental Engineer (Reg. No. 61995)

NY: Professional Engineer (Reg No. 106301)

SPECIAL STUDIES AND COURSES

40-Hour OSHA Hazardous Waste and Operations Emergency Response Training (29 CFR 1910.120 and 40 CFR 265.16)

8-Hour HAZWOPER Refresher Course

Suzanne is a senior project manager with over 14 years of experience in the environmental consulting industry. She has worked on soil and groundwater environmental investigations, remediation projects, and prepared reports for private, industrial, and government clients. Her technical experience includes remediation systems; soil and groundwater feasibility studies; Phase I site investigations; environmental file review and historical research; stormwater assessments and SWPPP preparation; reclamation planning for the sand and gravel mining industry; air permitting; and data interpretation.

RELEVANT PROJECT EXPERIENCE

Waterfront Property Management, 89-91 Gerry Street and 93 Gerry Street, Brooklyn, New York. Suzanne served as project manager for execution of Remedial Action Work Plans at the former Just4Wheels Site and Just4Wheels Site 2 under the New York State Brownfield Cleanup Program (NYSBCP). Responsible for remedial oversight of excavation and removal of non-hazardous and hazardous soil, endpoint sample collection, air monitoring, dewatering system installation support, communication with soil brokerage firm and environmental laboratory, preparation of Daily Field Reports (DFRs and the Final Engineering Report (FER).

Multiple Clients, Remedial Investigation Work Plans and BCP Applications, New York City, New York. As project manager and engineer, Suzanne has prepared NYSBCP Applications and Remedial Investigation Work Plans for the New York State Department of Environmental Conservation (NYSDEC) for sites within the New York City boroughs.

Excavation Oversight and CAMP Monitoring, Various Sites, New York City, New York. Suzanne has served as project manager for projects under the New York City Office of Environmental Remediation (NYCOER) program and NYSBCP. Her responsibilities included managing excavation oversight, air monitoring, and logging trucks for off-site disposal.

Aerospace Manufacturing Facility, Feasibility Study and Remedial Action Plan, Chula Vista, CA. Suzanne co-authored feasibility studies for soil and ground water impacted by chlorinated solvents, metals, and PCBs. She screened ex-situ and in-situ remedial alternatives for effectiveness, implementability, and protectiveness of human health. She also assessed alternative cleanup levels for technical and economic feasibility of achieving background concentrations in accordance with State Water Resources Control Board Resolution 92-49. Additionally, she evaluated groundwater remedial alternatives, including bioremediation, monitored natural attenuation (MNA), pump and treat, chemical oxidation, chemical reduction, and engineered and institutional controls. Lastly, she prepared engineering cost estimates and conceptual designs. Assisted with the preparation of remedial action plans: a bioremediation remedy and MNA program for groundwater, and excavation of contaminated soil.

Aerospace Manufacturing Facility, Groundwater Remediation and Bioremediation Pilot Test, Riverside, CA. Suzanne assisted with data analysis and reporting for the bioremediation pilot test study for groundwater impacted by chlorinated solvents, hexavalent chromium, and 1,4-dioxane. She evaluated site data for trends indicative of MNA using statistical analysis.

Goodyear Tire & Rubber Company, Phoenix Goodyear Airport South Superfund Site, Goodyear, Arizona. Suzanne prepared reports and performed data analysis related to the groundwater monitoring program and operation and maintenance of groundwater treatment systems. Currently, two groundwater extraction and remediation systems are capable of treating more than 1MGD of groundwater contaminated with trichloroethylene. The upper groundwater zone is treated with an air stripper, while the lower zone is treated with granulated activated carbon. Treated groundwater is reinjected into their respective zones.

Soil and Groundwater Remediation Systems, Arizona. Suzanne performed operation, maintenance, and sampling activities for two soil vapor extraction systems to remove tetrachloroethylene from subsurface soils at two different dry-cleaning facilities. She prepared soil vapor extraction GAC system test reports in accordance with Maricopa County Air Quality Department Permits.

ASTM Phase I Environmental Site Assessments, Arizona. Suzanne assisted with ASTM Phase I ESAs at various industrial facilities in central and southern Arizona. She evaluated site conditions and regulatory implications as they related to the owner's or potential buyer's property development plans.

Phoenix-Goodyear Airport-North Superfund Site, Focused Feasibility Study, Goodyear, Arizona. Suzanne was a member of team that prepared a source area remediation focused feasibility study report. She evaluated several technologies and alternatives to treat groundwater contaminated with trichloroethylene (TCE) and perchlorate. She analyzed remedial alternatives, including in-well air stripping, a hydraulic barrier, nano- and macro-scale zero-valent iron, anaerobic reductive dechlorination, in-situ chemical oxidation (permanganate), and electrical resistive heating. She prepared cost estimates, conceptual designs, remediation technology summaries, and sustainability evaluation of the alternatives.

Enhanced In-Situ Bioremediation (EISB) and Chemical Reduction Using a Nanoscale, Zero-Valent Metallic Alloy to Treat Co-disposed Chloroethanes and Chloroethenes in Groundwater, Manufacturing Facility, Canton, MA. Suzanne performed data analysis and prepared status reports on effectiveness of EISB in treating chlorinated solvents in shallow groundwater. She reported on the performance monitoring results for the permeable reactive barrier in deep zone groundwater.

Hayden Facilities RI/FS, ASARCO LLC, Hayden, Arizona. Suzanne served as Quality Assurance Officer for the air monitoring program at a copper smelting facility. She developed site-specific data validation procedures according EPA guidelines for several analytical methods.

Market Evaluation for Nanoscale Zero-Valent Iron, Stamford, Connecticut. Suzanne used EPA CERCLIS Public Access Database and select State databases to estimate the market size for potential use of nanoscale zero-valent iron (nZVI) as a remediation technology. She compiled competing vendor information and quotes to estimate the average cost of similar products. She utilized the U.S. Patent and Trademark Office database to analyze competing technologies.

AZPDES and NPDES Permits, Arizona. Suzanne prepared Arizona Pollutant Discharge Elimination System (AZPDES) and National Pollutant Discharge Elimination System (NPDES) permit renewal applications for a copper mining facility in Southern Arizona, which included updates to the facility's Storm Water Pollution Prevention Plan (SWPPP) and QA Manual.

Spill Prevention, Control and Countermeasure Plans, Aggregate Mining Facilities, Arizona. Suzanne assisted with a Spill Prevention, Control and Countermeasure Plans (SPCC) for aggregate mining facilities in Arizona. She performed site visit, evaluated fuel and oil tanks and secondary containment areas, assisted with calculations to verify compliance, and prepared report.

Copper Mining Facility, Miami, Arizona. Suzanne assisted with Toxic Release Inventory (TRI) and Toxic Substances Control Act (TSCA) reporting, both submitted to the EPA.

Storm Water Pollution Prevention Plan, Franciscan Friars of California, Gila County, Arizona. Suzanne updated the SWPPP for construction activities related to the closure of a historic Gibson copper mine, authorized under the Arizona Pollutant Discharge Elimination System "General Permit for Discharge from Construction Activities to Waters of the United States." The Former Gibson Mine is a small, historic copper mine, located approximately 7 miles southwest of Miami, Arizona, in Gila County. Construction activities covered under the updated SWPPP consisted of the excavation, hauling, and removal of approximately 80,000 tons of soil cover from the Mineral Creek side of the site to mine-scarred areas on the Pinto Creek side of the site. Also included was final grading of the site, which consisted of re-contouring and re-defining any portion of the drainages that were on site; and revegetation.

Stormwater Pollution Prevention Plans, Vulcan Materials Company, Western Division, Arizona. Suzanne prepared SWPPP for 11 aggregate mining facilities in Arizona. Performed site visits, analyzed stormwater flows, prepared reports, and completed Notices of Intent for the Arizona Department of Environmental Quality under a Multi-Sector General Permit.

Uranium Enrichment Facility, Lea County, New Mexico. Suzanne prepared quarterly and annual groundwater monitoring reports, semi-annual radioactive effluent release reports, and radiological environmental monitoring program reports in accordance with New Mexico Environment Department regulations and the Nuclear Regulatory Commission. Performed quarterly data validation on a variety of matrices and analytical methods. She prepared site-specific environmental monitoring procedures, which included field sampling techniques; data collection, management and validation; and an air modeling software package.

Rocket Testing and Research Facility, Western U.S. Suzanne analyzed and evaluated groundwater quality data, prepared reports, and managed data for this Resource Conservation and Recovery Act (RCRA) site. Assisted with management of sampling, analysis, and reporting of constituents of concern for fractured sandstone bedrock aquifer impacted by chlorinated solvents and emergent chemicals 1,4-dioxane, perchlorate, and n-nitrosodimethylamine (NDMA). Performed data validation of water quality data according to U.S. EPA National Functional Guidelines. Queried data from client environmental data management system and prepared summary tables, concentration plots, and water level hydrographs using Microsoft Excel programs. She prepared a quarterly analytical schedule using an Access database application, updated the site-specific Health & Safety Plan, and participated in lean training, which reduced cost of groundwater monitoring tasks by 25 percent.

Federal Superfund Site, Eastern Massachusetts. Suzanne performed data validation and quality assurance/quality control of soil and groundwater data according to U.S. EPA National Functional Guidelines. She performed third-party database updates.

Great Western Bank, Cortaro Ranch Property, Marana, Arizona. For site characterization of undeveloped land, Suzanne performed surficial soil sampling, analytical laboratory coordination, data analysis, and report preparation.

Twin Buttes Properties, Inc., Southern Arizona. Suzanne assisted with report and analytical table preparation for the characterization and analysis of current and historical hydrologic conditions at an inactive mine site near Sahuarita, Arizona in support of regulatory compliance.

Skyworks Solutions, Inc. Site, Newbury Park, California. Suzanne assisted with report and analytical table preparation for a subsurface investigation characterizing the lateral and vertical extent of soil and groundwater impacts from known releases of TCE, 1,4-dioxane and other organic compounds.

PUBLICATIONS

“Mixed Redox Catalytic Destruction of Chlorinated Solvents in Soils and Groundwater,” with S. Gao, E. Rupp, M. Willinger, T. Foley, B. Barbaris, A.E., Saez, R.G. Arnold and E. Betterton. In Environmental Challenges In The Pacific Basin, 2008; Annals of the New York Academy of Sciences, Vol. 1140, pp 435-445. PMID: 18991945

INVITED LECTURER OR SPEAKER

“Catalytic Destruction of Perchloroethylene,” with E. Betterton, R. Arnold and Eduardo Saez, Presenter - NASA Space Grant Student Symposium, Phoenix, Arizona. April 2007.



KATHERINE R. MILLER

Project Manager

EDUCATION

B.S., Chemistry, University of Arizona

SPECIAL STUDIES AND COURSES

40-Hour OSHA Hazardous Waste Operations and Emergency Response Training (29 CFR 1910.120 and 40 CFR 265.16)

8-Hour OSHA Refresher Training (29 CFR 1910.120)

Level IV Data Validation Training

AWARDS

Pinnacle Award, 2009

Pathfinder Award, 2014

In her 10 years at Haley & Aldrich, Katherine has worked on soil and groundwater environmental investigations and the preparation of environmental reports for private, industrial, and government-based project clients. She is a qualified Data Validator capable of performing various levels of validation on laboratory water quality data according to U.S. Environmental Protection Agency (EPA) National Functional Guidelines and to U.S. Department of Energy radiochemical guidelines. She also has experience designing and maintaining databases for project-specific needs.

Project management responsibilities for a \$1.5 million per year stormwater project include preparation of subcontractor bids and contracts; preparation of cost estimates, proposals, and reports; coordination of field testing programs; and interpretation of chemical testing results. She has interacted with local regulatory agencies.

RELEVANT PROJECT EXPERIENCE

Confidential Aerospace Manufacturer, Groundwater Monitoring, Western U.S. Katherine served as project manager for the comprehensive stormwater management program. Responsibilities included project finance management and data management including quality assurance/quality control (QA/QC) and interpretation of chemical testing results. Evaluated QA/QC of groundwater quality data, prepared reports and managed data for the site. Performed data validation of quarterly water quality data from over 300 locations according to EPA National Functional Guidelines and to DOE radiochemical guidelines over a six-year period. Also, responsible for updating and maintaining the integrity of over 200,000 records during that time period. Assisted with management of sampling, analysis, and reporting of constituents of concern, ensured compliance with post-closure permit monitoring and reporting requirements, Data Management Plan, QAPP, and Environmental Data Management System, and ensured and maintained 100% compliance with the QAPP and Data Management Plan. Additionally, prepared groundwater data summaries for proposed extraction wells including comparisons to site NPDES outfall limits in support of Groundwater Interim Measures planning.

Asarco Hayden Plant Site, Hayden, Arizona. Katherine assisted with field preparation, QA/QC of analytical data, and data validation as part of the Remedial Investigation/Feasibility Work Plan including soil, sediment, air, process water, surface water, and stormwater.

Former MGP Site, California. Katherine assisted with report preparation, QA/QC of soil and/or groundwater quality data, and data validation for the investigation of three large former MGP sites in an urban, residential setting; includes over 200 residential properties.

General Manufacturing, Leitchfield, Kentucky. Katherine assisted with report preparation, QA/QC of soil and/or groundwater quality data, and data validation for a soil and groundwater RCRA site. Groundwater monitoring is conducted annually at more than 50 locations for volatile organic compounds (VOCs), including 1,4-dioxane and semi-volatile organic compound (SVOCs).

Skyworks Solutions, Inc., Newbury Park, California. Katherine assisted with report preparation, QA/QC of soil and/or groundwater quality data, and data validation at groundwater remediation site. She monitored for VOCs, including 1,4-dioxane, and inorganic chemicals, including hexavalent chromium.

Teledyne Scientific Company, Thousand Oaks, California. Katherine assisted with report preparation for this groundwater assessment site. Monitored natural attenuation has been instituted as the long-term site remedy.

Port of Redwood City, Permitting and Sediment Characterization, California. Katherine assisted with report preparation, QA/QC of sampling data, and data validation.

Kiewit Infrastructure West, Sediment Quality Study, California. Katherine assisted with report preparation, QA/QC of sampling data, and data validation.

Aeolian Yacht Harbor, Permitting, Eel Grass Conservation and Sediment Characterization, California. Katherine assisted with report preparation, QA/QC of sampling data, and data validation.

Marin County, Paradise Cay Permitting and Sediment Characterization, California. Katherine assisted with report preparation, QA/QC of sampling data, and data validation.

APPENDIX H
PROPOSED REMEDIAL ACTION PROJECT SCHEDULE

Remedial Action Project Schedule

91 Bruckner Boulevard, Bronx, NY

BCP Project C203160

PROJECT SCHEDULE		2023												2024						
Task	Description	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April	May	June	July	
1	Design, Investigatoin, Permitting																			
2	RIR Submittal to NYSDEC/NYSDOH																			
3	RAWP Submission to NYSDEC/NYSDOH																			
4	NYSDEC RAWP Review																			
5	45-Day Public Comment Period																			
6	Final RAWP Submittal/DD Issuance																			
7	Implementation of Remedy																			
8	SVI Evaluation																			
9	Preparation of FER																			
10	NYSDEC/NYSDOH Review of FER																			
11	Issuance of COC																			

Notes:

1. Schedule is estimated and subject to change.
2. Implementation of RAWP does not include completion of building construction
3. NYSDEC - New York State Department of Environmental Conservation
4. NYSDOH - New York State Department of Health
5. BCP - Brownfield Cleanup Program
6. RAWP - Remedial Action Work Plan
7. FER - Final Engineering Report
8. SVI - Soil Vapor Intrusion
9. COC - Certificate of Completion
10. COC issuance estimated for summer 2024