REMEDIAL ACTION WORK PLAN

for

THE BEACON – 413 EAST 120TH STREET
413 East 120th Street
New York, New York
NYSDEC BCP No. C231155

Prepared for:

TCB Beacon East Harlem Limited Partnership
8 West 38th Street, Suite 1102
New York, NY 10018

Prepared by:

Langan Engineering, Environmental, Surveying
Landscape Architecture and Geology, D.P.C.
368 Ninth Avenue, 8th Floor
New York, New York 10001

DRAFT

Jennifer Armstrong, CHMM, LEED AP
Senior Project Manager

DRAFT

Ryan Manderbach, CHMM
Associate Principal

January 8, 2026
Langan Project No. 170745301

DRAFT

CERTIFICATION

I, Gerald Nicholls, certify that I am currently a Qualified Environmental Professional as defined in Title 6 of the New York Codes, Rules, and Regulations (6 NYCRR) Part 375 and that this Remedial Action Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the Division of Environmental Remediation (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.

NYS Professional Engineer #089491	Date	Signature

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

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LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
AST	Aboveground Storage Tank
BCA	Brownfield Cleanup Agreement
bcg	Below Cellar Grade
BCP	Brownfield Cleanup Program
bgs	Below Grade Surface
BMP	Best Management Practice
C&D	Construction and Demolition
CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulations
CHASP	Construction Health and Safety Plan
COC	Certificate of Completion
CP	Commissioner Policy
CQAP	Construction Quality Assurance Plan
CSM	Conceptual site model
CVA	Climate Vulnerability Assessment
CVOC	Chlorinated Volatile Organic Compound
DER	Division of Environmental Remediation
DER-10	Division of Environmental Remediation Program Policy: Technical Guidance for Site Investigation and Remediation, May 2010
DER-31	Division of Environmental Remediation Policy: Green Remediation Policy, January 2011
DMM	Division of Materials Management
Eastern	Eastern Environmental Solutions, Inc.
EC	Engineering Control
ECL	Environmental Conservation Law
EE	Environmental Easement
el	Elevation
ELAP	Environmental Laboratory Approval Program
ESA	Environmental Site Assessment
ESI	Environmental Site Investigation
FEMA	Federal Emergency Management Agency
FER	Final Engineering Report
FWRIA	United States Fish and Wildlife Resources Impact Analysis
GHG	Greenhouse Gas
GSR	Green and Sustainable Remediation
HASP	Health and Safety Plan

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Acronym	Definition
IC	Institutional Control
Langan	Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
LEED	Leadership in Energy and Environmental Design
NOVA	NOVA Geophysical Services
NO_x	Nitrogen Oxides
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OSHA	Occupational Safety and Health Administration
PBS	Petroleum Bulk Storage
PCB	Polychlorinated Biphenyl
PE	Professional Engineer
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic Acid
PFAS	Per- and Polyfluoroalkyl Substances
PID	Photoionization Detector
PM10	Particulate Matter Less Than 10 Micrometers in Size
PPE	Personal Protective Equipment
PPM	Parts per Million
PVC	Polyvinyl Chloride
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
QEP	Qualified Environmental Professional
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RE	Remedial Engineer
REC	Recognized Environmental Condition
RI	Remedial Investigation
RIR	Remedial Investigation Report
RUR	Restricted Use Residential
RURR	Restricted Use Restricted-Residential
SCG	Standards, Criteria, and Guidance
SCO	Soil Cleanup Objective
SGV	Standards and Guidance Values
SMMP	Soil/Materials Management Plan
SMP	Site Management Plan
SOE	Support of Excavation

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Acronym	Definition
SO_x	Sulphur Oxides
SPDES	State Pollutant Discharge Elimination System
STARS	Spills Technology and Remediation Series
SVOC	Semivolatile Organic Compound
SWPPP	Stormwater Pollution Prevention Plan
TAL	Target Analyte List
TCL	Target Compound List
TOGS	Technical and Operational Guidance Series
$\mu g/m^3$	Microgram per Cubic Meter
UN/DOT	United Nations/Department of Transportation
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
UU	Unrestricted Use
VOC	Volatile Organic Compound
York	York Analytical Laboratories, Inc.
6 NYCRR	Title 6 of the New York Codes, Rules, and Regulations

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EXECUTIVE SUMMARY

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. (Langan) prepared this Remedial Action Work Plan (RAWP) on behalf TCB Beacon East Harlem Limited Partnership (the Volunteer) for the property at 413 East 120th Street in the East Harlem neighborhood of Manhattan, New York (the site). The site is identified as Tax Block 1808, Lot 8 on the Manhattan Borough Tax Map. The Volunteer entered the (NYSDEC) Brownfield Cleanup Program (BCP) to remediate the site in accordance with a Brownfield Cleanup Agreement (BCA), Index No. C231155-02-24 executed on April 3, 2024, for Site No. C231155. Upon completion of the remedial action described herein and the subsequent redevelopment, the site will be improved with a new 21-story affordable housing residential building and a renovated portion of the existing building to be used as a community center. The new building will occupy about 60 percent of the lot area and will include a stormwater detention tank, a community space on the 1st floor, and about 254 affordable dwelling units. Renovations of the existing building will include the addition of a sixth floor, and this structure will include an educational greenhouse, basketball court, and community recreation space.

This RAWP identifies and evaluates remedial action alternatives and recommends a split Track 1/Track 4 remedy to address petroleum- and/or tar-like impacts in soil, groundwater, and soil vapor; fill impacted with semivolatile organic compounds (SVOC) and metals; and chlorinated and petroleum volatile organic compound (VOC)-impacted soil vapor. The proposed remedy was developed based on data gathered during the following Langan investigations:

- Phase II Environmental Site Investigation (ESI) conducted on October 6 and 7, 2022
- Remedial Investigation (RI) conducted between February 18 and April 15, 2025

The recommended remedy described in this document is consistent with the procedures defined in the NYSDEC Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10) and complies with applicable standards, criteria, and guidance. The recommended remedy also complies with applicable federal, state, and local laws, regulations, and requirements. As of the date of this report, the NYSDEC and the New York State Department of Health (NYSDOH) have not determined whether this site poses a significant threat to human health and the environment. The Phase II ESI and RI did not identify impacts to fish and wildlife resources.

Site Description/Physical Setting/Site History

The approximately 35,000-square-foot (0.80-acre) site is developed with a 6-story former school building used for offices and community services, and an asphalt parking lot. The building is situated in the southern part of the site and has an area of about 18,300 square feet with a full cellar. The site is bound to the north and east by two 16-story, multi-family residential buildings

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[New York City Housing Authority Wagner development (Block 1808, Lot 1)]; to the south by East 120th Street, followed by 4- and 6-story residential buildings (Block 1807, Lots 36 through 41, 136, and 138); and to the west by a 10-story, mixed-use commercial and residential building [Acacia Gardens (Block 1808, Lot 7501)].

The site was formerly used as a coal and lumber yard from 1897 to 1911. The present-day, 5-story site building was constructed in 1923, used as a school until 1981, and then as a community service center from 1981 to present. The site has been under the ownership and operation of the City of New York since April 6, 1954.

Summary of the Remedial Investigation

The RI was implemented between February 18 and April 15, 2025 to investigate the areas of concern (AOC), determine the nature and extent of contamination in soil, groundwater, and soil vapor, evaluate the nature of any impacts emanating from the site, and to design a remedy that will be protective of human health and the environment. Findings and conclusions of the Phase II ESI and RI are as follows:

1. Stratigraphy: Fill predominately consisting of gray to orangish brown fine- to medium-grained sand with varying amounts of silt, gravel, vegetation, and anthropogenic materials (brick, concrete, glass, slag, and ash) was encountered from below the asphalt or concrete slab to depths ranging from 1 to 15 feet below sidewalk grade (bsg). Gray to orange or red to brown silty fine- to medium-grained sand, with varying amounts of gravel and vegetation, was encountered beneath the fill.
2. Hydrogeology: Groundwater depths measured in on-site wells ranged from about 8.87 to 9.26 feet bsg, corresponding to elevation (el) 2.19 to 2.73[1]. Regional groundwater flow is estimated to the southeast towards the Harlem River.
3. Petroleum- and/or Tar-Impacted Soil, Groundwater, and Sub-Slab Soil Vapor: Petroleum- or tar-related impacts, including staining, odors, elevated photoionization detector (PID) readings, and/or positive sheen test in soil boings and on groundwater, appear limited to the central and southern parts of the site within the current building footprint (AOC 1). The noted impacts were generally limited to about 1 to 7 feet below cellar grade (about 9 to 15 feet bsg), which the exception of one boring (SB-18) in the center of the portion of the building to be renovated/proposed community center building, where staining extended to 13 feet bsg and PID readings above background extended to 18 feet bsg. Petroleum-related VOCs and SVOCs in soil exceeded the NYSDEC Part 375 Unrestricted

[1] Elevations in this report are with respect to the North American Vertical Datum of 1988 (NAVD88).

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Use (UU), Restricted Use Restricted – Residential (RURR), and/or Restricted Commercial Use (CU) Soil Cleanup Objectives (SCO) in soil samples collected throughout the building footprint.

PID headspace readings above background, a petroleum-like odor, and a tar-like sheen were also observed in groundwater monitoring wells within or immediately adjacent to AOC 1. Petroleum-related VOCs detected in one groundwater sample (MW04) in the center of the site, and SVOCs detected in several wells throughout the site.

Petroleum-related VOCs were also identified in sub-slab soil vapor and indoor air samples collected within AOC 1 at concentrations that yielded recommendations, including monitoring and/or mitigation for samples located within the original building footprint (portion of the building to be renovated) and auditorium (within the proposed open-air courtyard for the new residential building footprint). The noted petroleum- and tar-related impacts are attributed primarily to tar-like material (presumed waterproofing) and potential impacts from the on-site petroleum bulk storage, including two No. 2 fuel oil, 10,000-gallon aboveground storage tanks (AST) located in the cellar boiler room.

4. SVOC and Metals Impacts in Fill: SVOCs and metals were detected in fill across the site at concentrations exceeding the UU, RURR, and/or CU SCOs in samples collected from depths up to 10 feet bsg; exceedances for one metal (hexavalent chromium) extended to a depth of 10 feet below the top of cellar slab (about 18 feet bsg) in one sample collected from within the building footprint and 12 feet bsg in one sample collected from outside the building footprint. Metal and SVOC impacts are attributed to historical site use as a coal yard and/or anthropogenic materials comingled in the soil.
5. Petroleum- and Chlorinated VOC-Impacts in Soil Vapor: The chlorinated VOC, tetrachloroethene (PCE), was reported in sub-slab soil vapor samples collected within the portion of the building to undergo renovations; however, when compared with the co-located indoor air samples to the NYSDOH Decision Matrices, recommendations are 'no further action'. Petroleum-related VOCs were identified in sub-slab soil vapor and indoor air samples collected from the portion of the building to undergo renovations at concentrations which yielded NYSDOH Matrix recommendations to monitor and/or mitigate for the southeastern and central parts of the site. PCE and petroleum-related VOCs were reported in subsurface samples collected from within the proposed residential building footprint. An on-site source of PCE was not identified via soil or groundwater sample results. The source of the petroleum-related VOCs is attributed to historical site operations, including petroleum bulk storage and the use of two 10,000-gallon No. 2 fuel oil ASTs, and the presence of tar-like material (presumed waterproofing) beneath the building.

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Qualitative Human Health Exposure Assessment

The following conclusions were developed from the human health exposure assessment:

1. Human exposure to site contaminants is currently limited because about 95 percent of the site is covered with an impermeable surface. The primary exposure pathways are dermal contact, ingestion, and/or inhalation of soil and/or soil vapor by site workers and site visitors. The exposure risks can be avoided or minimized by following the appropriate Health and Safety Plan (HASP) and vapor and dust suppression measures, and by implementing a Community Air Monitoring Plan (CAMP) during any soil disturbance.
2. In the absence of mitigation measures and controls, there is potential for exposure during remediation. The primary exposure pathways are:
    a. Dermal contact, ingestion, and inhalation of contaminated soil, groundwater, and/or soil vapor by construction and remediation workers
    b. Dermal contact, ingestion, and inhalation of soil (dust) and inhalation of soil vapor by the community in the vicinity of the site

    These contacts can be avoided or minimized by implementing CAMP and by following the appropriate HASP, vapor and dust suppression, soil erosion and sediment control, and site security measures, and following a NYSDEC-approved RAWP.
3. The existence of a complete exposure pathway for site contaminants to human receptors during the proposed future use condition is unlikely, as contaminated soil would be excavated (from the Track 1 area) and transported to an off-site disposal facility, and residual contaminated media will be capped (in the Track 4 area).
4. Regional groundwater is not used as a potable water source in Manhattan; therefore, exposure to regional groundwater contaminants is unlikely.
5. Potential soil vapor intrusion in the portion of the building to remain will be mitigated.
6. A complete exposure pathway may exist for the migration of site contaminants to off-site human receptors during current and remediation conditions, but such potential exposure will be prevented or mitigated by the implementation of monitoring and control measures. Monitoring and control measures have been and will continue to be used during investigation and remediation to prevent completion of this pathway. Under future conditions, the site would be remediated, and engineering and institutional controls will be implemented (in the Track 4 area), as necessary, to prevent completion of this pathway.

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Summary of the Remedy

A split Track 1 (Unrestricted Use)/Track 4 (Restricted Use – Restricted Residential [RURR]) remedy is proposed and will include implementation of the following remedial elements:

- Development and implementation of a Construction Health and Safety Plan (CHASP) and CAMP for the protection of on-site workers, visitors, the community, and the environment, including during remediation and construction
- To facilitate site remediation:
    - Abatement of regulated building materials prior to demolition in the northern and western parts of the current building and renovations in remaining portions of the building
    - Removal of subsurface obstructions (e.g., remnant foundation elements) and surficial asphalt cover by the Contractor
    - Management of removed asphalt/foundation elements as construction and demolition (C&D) debris in accordance with Part 360 and 361 regulations. Review and certification of C&D debris transport and disposal methodologies would be the responsibility of contractors performing off-site transportation and disposal of C&D debris. The Remedial Engineer (RE) is responsible for documenting that C&D debris is not commingled with contaminated site soil and fill.
- Decommissioning of existing groundwater monitoring wells in accordance with NYSDEC Commissioners Policy (CP)-43
- Construction of the support of excavation (SOE) system to facilitate the Track 1 portion of the recommended remedy
- Excavation and stockpiling of soil/fill exceeding Part 375 UU SCOs throughout the Track 1 area as follows:
    - About 14,492 square feet to 2 feet bsg in southern and northern parts of the site;
    - About 565 square feet to 5 feet bsg in the central parts of the site;
    - About 6,398 square feet to 8 feet bsg in the eastern part of the site;
    - About 7,859 square feet to 10 feet bsg (about 2 feet below cellar slab) in the central and western parts of the site;
    - About 100 square feet to 11 feet bsg (about 3 feet below cellar slab) in the central part of the site; and
    - About 100 square feet to 12 feet bsg in the eastern part of the site.

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- Excavation and stockpiling of soil/fill exceeding Site-Specific SCOs in an about 646 square foot portion of the Track 4 area

  Excavation is not proposed for the remainder of the Track 4 area, as the existing slab will be enhanced with a topping slap as an engineering control to prevent exposure to residual contaminants.

- Screening for indications of contamination source areas during any intrusive site work by visual, olfactory, or instrumental methods
- Appropriate off-site disposal of removed fill and soil in accordance with federal, state, and local rules and regulations for handling, transport, and disposal
- Decommissioning and removal of any encountered underground storage tanks (USTs) in accordance with 6 NYCRR Part 613 and NYSDEC DER-10 Section 5.5
- Localized dewatering, as necessary, to accommodate remedial excavation completed within the Track 1 area
- Collection and analysis of post-excavation confirmation soil samples in the Track 1 area in accordance with DER-10 to evaluate the performance of the remedy with respect to attainment of Track 1 SCOs
- Collection and analysis of post-excavation documentation endpoint soil samples in the portion of the Track 4 area to be excavated in accordance with DER-10 to document post-remediation conditions.
- Installation of a sub-membrane depressurization system (SMDS) and a continuous waterproofing/vapor barrier membrane between the existing slab and a topping slab within the portion of the building to remain (majority of Track 4 area) as an engineering control. As a general construction element continuous waterproofing/vapor barrier membrane will be installed under the slab and along subsurface foundation walls throughout the new residential building
- Import and backfill of soil meeting the UU SCOs or virgin crushed stone, as needed to backfill over-excavated areas to development depth within the Track 1 area. Import requests are subject to NYSDEC review and approval and would include a Request to Import/Reuse Soil Form.
- Green remediation principles and techniques would be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31.
- Completion of a post-construction soil vapor intrusion (SVI) evaluation

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- Recording of an Environmental Easement (EE) for the Track 4 area to memorialize the remedial action and the ICs to ensure that future owners of the site continue to maintain these controls as required
- Preparation of a Site Management Plan (SMP) for the Track 4 area that describes management of the institutional and engineering controls (ICs and ECs) – Implementation of the SMP following completion of the remedy will be stipulated by the EE

Remediation will be performed in accordance with this NYSDEC-approved RAWP and NYSDEC-issued Decision Document.

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1.0 INTRODUCTION

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. (Langan) prepared this Remedial Action Work Plan (RAWP) on behalf of TCB Beacon East Harlem Limited Partnership (the Volunteer) for the property at 413 East 120th Street in the East Harlem neighborhood of Manhattan, New York (the site). The site is identified as Tax Block 1808, Lot 8 on the Manhattan Borough Tax Map.

The Volunteer entered the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) to remediate the site in accordance with a Brownfield Cleanup Agreement (BCA), Index No. C231155-02-24 executed on April 3, 2024, for Site No. C231155.

This RAWP identifies and evaluates remedial action alternatives and recommends a split Track 1 (Unrestricted Use)/Track 4 (Restricted-Residential) remedy to address petroleum- and/or tar-like impacts in soil, groundwater, and soil vapor; fill impacted with semivolatile organic compounds (SVOC) and metals; and chlorinated and petroleum volatile organic compound (VOC)-impacted soil vapor. The proposed remedy was developed based on data gathered during the following Langan investigations:

- Phase II Environmental Site Investigation (ESI) conducted on October 6 and 7, 2022
- Remedial Investigation (RI) conducted between February 18 and April 15, 2025

The recommended remedy described in this document is consistent with the procedures defined in the NYSDEC Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10) and complies with applicable standards, criteria, and guidance. The recommended remedy also complies with applicable federal, state, and local laws, regulations, and requirements. As of the date of this report, the NYSDEC and the New York State Department of Health (NYSDOH) have not determined whether this site poses a significant threat to human health and the environment. The Phase II ESI and RI did not identify impacts to fish and wildlife resources.

1.1 Site Location and Description

The approximately 35,000-square-foot (0.80-acre) site is identified as Tax Block 1808, Lot 8 on the Manhattan Borough Tax Map. The site is developed with a 6-story former school building used for offices and community services, and an asphalt parking lot. The building is situated in the southern part of the site and has an area of about 18,300 square feet with a full cellar. The site is bound to the north and east by two 16-story, multi-family residential buildings [New York City Housing Authority Wagner development (Block 1808, Lot 1)]; to the south by East 120th Street, followed by 4- and 6-story residential buildings (Block 1807, Lots 36 through 41, 136, and 138); and to the west by a 10-story, mixed-use commercial and residential building [Acacia

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Gardens (Block 1808, Lot 7501)]. A Site Location Map and Site Plan are provided as Figure 1 and Figure 2, respectively.

Following a recent rezoning, the New York City (NYC) Planning Commission Zoning Map, indicates the site is located within R8 zoning district, which can range from mid-rise, eight- to ten-story buildings to much taller buildings set back from the street on large zoning lots. New buildings in R8 districts may be developed under either height factor regulations or the optional Quality Housing regulations that often reflect the older, pre-1961 neighborhood streetscape.

1.2 Redevelopment Plan

The proposed redevelopment will include demolition of the northern and western parts of the current building, construction of a new 21-story affordable housing residential building, and renovation of the portion of the current building to remain. The new building will occupy about 60 percent of the lot area and will include a stormwater detention tank, a community space on the 1st floor, and about 254 affordable dwelling units. Renovations of the existing building will include the addition of a sixth floor, and this structure will include an educational greenhouse, basketball court, and community recreation space. A copy of the proposed redevelopment plans is included in Appendix A.

1.3 Description of Surrounding Properties

The site is in an urban setting that is characterized by residential, commercial, and mixed-use residential and commercial buildings.

The following table summarizes the surrounding property usage:

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Direction	Adjoining Properties				Surrounding Properties
	Block No.	Lot No.	Description	Owner	
North	1808	1	Multi-family residential buildings	NYC Housing Authority	Residential, commercial, and institutional properties
East	1808	1		NYC Housing Authority	
South	1807	143		Paul Durstenberg	
		43		David Aaron	
		7501		Unavailable (Condominium)	
		41		416 East 120 LLC	
		40		RJN Realty LLC	
		39		RJN Realty LLC	
		138		RJN Realty LLC	
		38		424 E 120th Street LLC	
		37		426 HBH LLC	
		136		Nelson Erazo	
		36		William Artis Jr.	
West	1808	7501		Acacia Gardens Housing Development Fund Company	

Major infrastructure (storm drains, sewers, and underground utility lines) exists within sidewalks, streets, and properties surrounding the site. The nearest ecological receptor is the Harlem River, which is located about 800 feet east of the site.

Land use within a half mile of the site is urbanized and includes residential, commercial, and mixed-use residential and commercial buildings. Sensitive receptors, as defined in DER-10, located within a half mile of the site, include those listed below:

Success Academy Charter School – Harlem 2 – M384 (approximately 0.52 miles to the northwest of the site)
Chief Executive Officer: Eva Moskowitz
144-176 East 128 Street
New York, NY 10035

Kings Academy (The) (approximately 0.49 miles northwest of the site)
Principal: Elder S-A, Streitferdt, Sr.
2345 3rd Avenue
New York, NY 10035

Addie Mae Collins 3 – MASA/Collins Daycare + Lewis Senior (approximately 0.47 miles northwest of the site)
Daycare Director: Diane Spann
2322 3rd Avenue
New York, NY 10035

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Harlem Prep Charter School – M708/Touro College – Harlem (approximately 0.25 miles northwest of the site)
Principal: Bryan Stroud
240 East 123 Street,
New York, NY 10035

P.S. 007 – Samuel Stern – M007 (approximately 0.38 miles west of the site)
Principal: Michelle Martinez
160 East 120th Street,
New York, NY 10035

P.S. 096 Joseph Lanzetta – M096 (approximately 0.28 miles west of the site)
Principal: James Konstantinakos
216 East 120th Street
New York, NY 10035

GED Plus Youth Actions & Homes Program (approximately 0.32 miles west of the site)
Executive Director: Robert Taylor
206 East 118th Street
New York, NY 10035

James Weldon Johnson – M057 (approximately 0.45 miles southwest of the site)
Principal: Yaira Jimenez
176 East 115th Street
New York, NY 10029

P.S. 155 William Paca/Renaissance School of the Arts – M377 (approximately 0.19 miles southwest of the site)
Principal: Rick Wilson
319 East 117th Street
New York, NY 10035

Harlem Village Academy East Charter School – M335 (approximately 0.09 miles northwest of the site)
Principal: Kimberly Clincy
2351 First Avenue
New York, NY 10035

P.S. 102 Jacques Cartier – M102 (approximately 0.38 miles southwest of the site)
Principal: Erica O Connor
315 East 113th Street
New York, NY 10029

P.S. M169 – Robert F. Kennedy (approximately 0.29 miles southeast of the site)
Principal: Eleyna Rivas
260 Pleasant Avenue
New York, NY 10029

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Isaac Newton Middle School for Math & Science – M825 (approximately 0.30 miles southeast of the site)
Principal: Flourin Purice
260 Pleasant Avenue
New York, NY 10029

Mt. Carmel Holy Rosary School (approximately 0.08 miles southeast of the site)
Principal: Trista Rivera
371 Pleasant Avenue
New York, NY 10035

River East Elementary/P.S. 206 Jose Celso Barbosa – M206 (approximately 0.17 miles east of the site)
Principal: Camille Forbes
508 East 120 Street
New York, NY 10035

1.4 Site History

1.4.1 Historical Site Use

The site was formerly used as a coal and lumber yard from 1897 to 1911. The present-day, 5-story site building was constructed in 1923, used as a school until 1981, and then as a community service center from 1981 to present. The site has been under the ownership and operation of the City of New York since April 6, 1954.

1.4.2 Previous Environmental Reports and Investigations

Previous environmental reports (pre-RI) were reviewed and are summarized in chronological order below.

- Phase I Environmental Site Assessment (ESA) for 413 East 120th Street, New York, New York, prepared by ALC Environmental, dated June 28, 2022
- Phase II ESI Report for 413 East 120th Street, New York, New York, prepared by Langan, dated February 1, 2023

The following previous reports are included in Appendix B.

June 28, 2022, Phase I ESA prepared by ALC Environmental

ALC Environmental completed a Phase I ESA report for the site prior to the site's entry into the NYSDEC BCP. The report identified a recognized environmental condition (REC) related to on-site petroleum bulk storage, including two active, 10,000-gallon No. 2 fuel oil aboveground storage tanks (AST) in the cellar boiler room. NYSDEC Petroleum Bulk Storage (PBS) Database Registration # 2-604478 for the site notes that the in-service ASTs were installed in 1980.

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February 1, 2023, Phase II ESI Report prepared by Langan

Langan completed the Phase II ESI on October 6 and 7, 2022. The Phase II ESI included the following:

- Geophysical survey
- Advancement of six soil borings and collection and laboratory analysis of 10 soil samples, including one duplicate
- Installation of two temporary groundwater monitoring wells, and collection and laboratory analysis of three groundwater samples, including one duplicate
- Installation of four soil vapor points (two sub-slab and two subsurface), and collection and laboratory analysis of four soil vapor samples, two indoor air samples, and one ambient air sample

Field observations and laboratory analytical results are summarized below:

- The geophysical survey identified anomalies resembling an out-of-use utilities pit in the northern central part of the site and an about 3,000-square-foot vault north of the site building and adjoining the cellar boiler room. Two active fill lines and one cut/capped fill line were observed northwest of the boiler room. Anomalies resembling potential underground storage tanks (UST) were not identified.
- A layer of fill was observed beneath the surface cover to depths of up to 3 feet below the cellar slab (about 13 feet below sidewalk grade [bsg]) within the building footprint and about 3 to 8 feet bsg outside of the building footprint. The fill generally consists of fine-to-medium-grained sand, with varying amounts of silt, gravel, brick, and concrete. Layers of silt and fine-to-medium-grained sand with fine gravel and coarse sand were observed beneath the fill layer.
- Tar-like material (presumed waterproofing) was observed in the soil below the concrete cellar slab. The material exhibited a maximum photoionization detector (PID) response of 350.6 parts per million (ppm) in the northern part of the building cellar and was observed at each interior boring location between about 1 and 2 feet below the slab.
- Groundwater was observed at depths of about 10 to 12 feet bsg.
- Soil analytical results:
    - The volatile organic compound (VOC) naphthalene exceeded NYSDEC Title 6 of the Official Compilation of New York Codes, Rules, and Regulations (NYCRR) Part 375 Restricted Use – Restricted Residential (RURR) soil cleanup objectives (SCO) in a soil sample collected from below the cellar slab.

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  - Several semivolatile organic compounds (SVOC), specifically polynuclear aromatic hydrocarbons (PAH), were reported at concentrations above Unrestricted Use (UU) and RURR SCOs throughout most of the site at depths between about 3 to 13 feet bsg.
  - The metals lead, mercury, and zinc exceeded UU and/or RURR SCOs throughout the site to depths between 1 and 5 feet bsg.

- Groundwater analytical results:
  - The VOC naphthalene exceeded the NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (AWQS) and Guidance Values for Class GA groundwater (collectively referred to as SGVs).
  - Several SVOCs were reported above the SGVs.
  - Two per- and polyfluoroalkyl Substances PFAS exceeded the NYSDEC guidance values; however, soil results and the site history do not indicate an on-site source of PFAS.
- Petroleum-related and chlorinated VOCs were detected in subsurface and sub-slab vapor, as well as indoor air. No regulatory standards currently exist for sub-slab soil vapor samples in New York State.

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2.0 DESCRIPTION OF REMEDIAL INVESTIGATION FINDINGS

The RI was implemented from February 18 through April 15, 2025, to determine the nature and extent of contamination in soil, groundwater, and soil vapor, evaluate the nature of any impacts emanating from the site, and design a remedy that will be protective of human health and the environment.

Langan completed the BCP RI in accordance with the NYSDEC-approved October 18, 2024 RIWP; 6 NYCRR Part 375-3.8; NYSDEC DER-10 (May 2010); the NYSDEC Draft BCP Guide (May 2004); the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006 and subsequent updates); and the Sampling, Analysis and Assessment of PFAS under NYSDEC's Part 375 Remedial Programs, dated April 2023. The Draft Remedial Investigation Report (RIR) was submitted to NYSDEC on October 9, 2025 and is pending review and approval.

2.1 Summary of the Remedial Investigation

The RI consisted of the following:

Geophysical Survey

- Completion of a site-wide geophysical survey to clear sample locations and identify potential subsurface utilities and structures, including USTs. Sample locations were relocated as needed, based on the findings of the geophysical survey and other available utility information.

Soil Borings and Sampling

- Advancement of 15 soil borings throughout the site. Soil borings that were converted to groundwater monitoring wells were advanced to about 5 feet below the observed groundwater interface.
- Continuous field screening of recovered soil for environmental impacts using visual and olfactory methods, and with a PID equipped with a 10.6 electron volt (eV) lamp
- Collection of up to three samples from each soil boring, for a total of 32 samples (plus quality assurance/quality control [QA/QC] samples) for laboratory analysis. Samples for laboratory analysis were collected from within fill, terminus of fill, the groundwater interface, soil/fill that exhibited evidence of a chemical or petroleum release, and/or the clean interval below soil/fill that exhibited evidence of a chemical or petroleum release (if observed).

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Vault Evaluation

- Further evaluation of a sub-grade vault below the north, central parking area by opening accessible, unsealed hatches to inspect vault contents and general construction type.

Monitoring Well Installation and Sampling

- Installation of nine groundwater monitoring wells
- Development of groundwater monitoring wells by surging and pumping upon installation
- Collection of one groundwater sample from each monitoring well (plus quality QA/QC samples) for laboratory analysis
- Surveying and gauging the monitoring wells to measure groundwater elevation and evaluate flow direction

Soil Vapor and Ambient Air Sampling

- Installation of five sub-surface soil vapor points to about one foot above groundwater and five sub-slab vapor points immediately below the cellar slab
- Collection of one soil vapor sample from each point, for a total of 10 samples for laboratory analysis
- Collection of four indoor air samples co-located with sub-slab soil vapor points.
- Collection of one outdoor ambient air sample for each day that soil vapor samples were collected

The findings and conclusions of the Phase II ESI and RI include:

1. Stratigraphy: Fill predominately consisting of gray to orangish brown fine to medium-grained sand with varying amounts of silt, gravel, vegetation, and anthropogenic materials (brick, concrete, glass, slag, and ash) was encountered from below the asphalt or concrete slab to depths ranging from 1 to 15 feet bsg. Gray to orange or red to brown silty fine- to medium-grained sand, with varying amounts of gravel and vegetation, was encountered beneath the fill.
2. Hydrogeology: Groundwater depths measured in on-site wells ranged from about 8.87 to 9.26 feet bsg, corresponding to elevation (el) 2.19 to 2.73[1]. Regional groundwater flow is estimated to the southeast towards the Harlem River.

[1] Elevations in this report are with respect to the North American Vertical Datum of 1988 (NAVD88).

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3. Petroleum- and/or Tar-Impacted Soil, Groundwater, and Sub-Slab Soil Vapor: Petroleum- or tar-related impacts, including staining, odors, elevated PID readings, and/or positive sheen test in soil boings and on groundwater, appear limited to the central and southern parts of the site within the current building footprint (AOC 1). The noted impacts were generally limited to about 1 to 7 feet below cellar grade (about 9 to 15 feet bsg), which the exception of boring one boring (SB-18) in the center of the portion of the building to be renovated/proposed community center building, where staining extended to 13 feet bsg and PID readings above background extended to 18 feet bsg. Petroleum-related VOCs and SVOCs in soil exceeded UU, RURR, and/or Part 375 Restricted Use Commercial (CU) SCOs in soil samples collected throughout the building footprint.

   PID headspace readings above background, a petroleum-like odor, and a tar-like sheen were also observed in groundwater monitoring wells within or immediately adjacent to AOC 1. Petroleum-related VOCs detected in one groundwater sample (MW04) in the center of the site, and SVOCs detected in several wells throughout the site.

   Petroleum-related VOCs were also identified in sub-slab soil vapor and indoor air samples collected within AOC 1 at concentrations that yielded recommendations, including monitoring and/or mitigation for samples located within the original building footprint (portion of the building to be renovated) and auditorium (within the proposed open-air courtyard for the new residential building footprint). The noted petroleum- and tar-related impacts are attributed primarily to tar-like material (presumed waterproofing) and potential impacts from the on-site petroleum bulk storage, including two No. 2 fuel oil, 10,000-gallon ASTs located in the cellar boiler room.

4. SVOC and Metals Impacts in Fill: SVOCs and metals were detected in fill across the site at concentrations exceeding the UU, RURR, and/or CU SCOs in samples collected from depths up to 10 feet bsg; exceedances for one metal (hexavalent chromium) extended to a depth of 10 feet below the top of cellar slab (about 18 feet bsg) in one sample collected from within the building footprint and 12 feet bsg in one sample collected from outside the building footprint. Metal and SVOC impacts are attributed to historical site use as a coal yard and/or anthropogenic materials comingled in the soil.

5. Petroleum- and Chlorinated VOC-Impacts in Soil Vapor: The chlorinated VOC, tetrachloroethene (PCE), was reported in sub-slab soil vapor samples collected within the portion of the building to undergo renovations; however, when compared with the co-located indoor air samples to the NYSDOH Decision Matrices, recommendations are 'no further action'. Petroleum-related VOCs were identified in sub-slab soil vapor and indoor air samples collected from the portion of the building to undergo renovations at concentrations which yielded NYSDOH Matrix recommendations to monitor and/or

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mitigate for the southeastern and central parts of the site. PCE and petroleum-related VOCs were reported in subsurface samples collected from within the proposed residential building footprint. An on-site source of PCE was not identified via soil or groundwater sample results. The source of the petroleum-related VOCs is attributed to historical site operations, including petroleum bulk storage and the use of two 10,000-gallon No. 2 fuel oil ASTs, and the presence of tar-like material (presumed waterproofing) beneath the building.

2.2 Best Management Practices

Best Management Practices (BMP) for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice were incorporated into the RI, as appropriate to reduce the environmental footprint of the RI. BMPs incorporated included limiting the use of generators, drilling equipment, and vehicles, and use of public transportation to the extent practicable to reduce emissions; using local subcontractors and vendors to minimize vehicle emissions during commutes; managing resources efficiently to limit use of consumable items and natural resources; and reducing waste and increasing recycling of materials where practicable.

2.3 Significant Threat

As of the date of this RAWP, NYSDEC and NYSDOH have not determined whether this site poses a significant threat to human health and the environment. The significant threat determination will be made following the NYSDEC and NYSDOH review of the RIR. The RI for this site did not identify impacts to fish and wildlife resources.

2.4 Geological Conditions

2.4.1 Regional and Site Geology

According to the United States Geological Survey (USGS) Bedrock and Engineering Geologic Maps of New York County and Parts of Kings and Queens Counties, New York and Parts of Bergen and Hudson Counties New Jersey (1994), the site is underlain by bedrock of white calcite-dolomite marble (Inwood Marble with lenses of the Hartland Formation), and coarse-grained siliceous dolomite. Soil and bedrock stratigraphy throughout Manhattan typically consists of a layer of fill that overlies glacial till, decomposed unconsolidated bedrock, and bedrock.

During the Phase II ESI and RI, fill was observed from below the approximately 1-foot-thick concrete building cellar slab to depths up to 6.5 feet below the top of cellar slab (about 9 to 14.5 feet bsg) within the building footprint and from below ground surface to 15 feet bsg outside of the building footprint. The fill predominantly consists of gray to orangish brown fine- to medium-grained sand with varying amounts of silt, gravel, vegetation, and anthropogenic materials (brick, concrete, glass, slag, and ash). Gray to orange or red to brown fine- to medium-grained sand,

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with varying amounts of silt, gravel and vegetation, was encountered beneath the fill. Bedrock was not encountered during the Phase II ESI or RI but is estimated at about 60 feet bsg. Geological surface features (e.g., rock outcroppings) were not observed at the site.

2.4.2 Regional and Site Hydrogeology

Groundwater flow is typically topographically influenced, as shallow groundwater tends to originate in areas of topographic highs and flows toward areas of topographic lows such as rivers, stream valleys, ponds, and wetlands. A broader, interconnected hydrogeologic network often governs groundwater flow at depth or in the bedrock aquifer. Groundwater depth and flow direction are also subject to hydrogeologic and anthropogenic variables such as precipitation, evaporation, extent of vegetation cover, coverage by impervious surfaces, and subsurface structures. Other factors influencing groundwater include depth to bedrock, the presence of anthropogenic fill, and variability in local geology and groundwater sources or sinks.

Groundwater was encountered at elevations ranging from about el 2.19 to 2.73 (about 8.87 to 9.26 feet bsg) during the RI and flows southeast based on gauging during the RI. Groundwater in NYC is not used as a potable water source. Potable water is provided by the City of New York and is derived from surface impoundments in the Croton, Catskill, and Delaware watersheds. A groundwater elevation contour map is included as Figure 3.

2.4.3 Wetlands and Floodplain

According to the United States Fish & Wildlife Service National Wetlands Inventory and NYSDEC regulated wetlands map, there are no wetlands at the site or adjacent to the site. The Harlem River is about 800 feet east of the site and is identified as an estuarine and marine deep-water wetland with adjacent tidal wetlands.

According to the current Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) dated September 5, 2007 (Map No. 3604970091F), the northern and western portion of the site are in Zone AE, which is an area 1% annual chance flood hazard, and the southeastern part of the site is in Zone X, which is an area of 0.2% chance annual flood.

2.5 Contamination Conditions

2.5.1 Conceptual Model of Site Contamination

A conceptual site model (CSM) was developed based on the findings of the Phase II ESI and RI. The purpose of the CSM is to develop a simplified framework for understanding the distribution of impacted materials, potential migration pathways, and potentially complete exposure pathways.

2.5.1.1 Potential Sources of Contamination

Potential sources of contamination include:

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- Petroleum-impacted soil and groundwater resulting from on-site petroleum bulk storage including the use of two 10,000-gallon No. 2 fuel oil ASTs, and the suspected presence of tar-like waterproofing beneath the building (AOC 1)
- SVOC and metal impacts from historical site use as a coal yard and/or anthropogenic materials comingled in the soil (AOC 2)
- Potential off-site sources of CVOCs (AOC 3)

2.5.1.2 Exposure Media

Impacted media include the following:

- Soil:
    - Petroleum-related VOCs and SVOCs
    - SVOCs and metals related to historic site use or anthropogenic materials identified in soil
- Groundwater: Petroleum-related VOCs and SVOCs
- Soil Vapor: Petroleum-related VOCs and CVOCs

2.5.1.3 Receptor Populations

The site is currently used as a NYC community service center. Current receptor populations include employees, community members who frequent the site, the community surrounding the site, and authorized individuals completing investigations. During site redevelopment, human receptors will be limited to construction and remediation workers, authorized guests, the community, and pedestrians adjacent to the site. Under future conditions, receptors will include the residential and commercial use occupants, employees, and the nearby community.

2.5.2 Description of Areas of Concern

The following AOCs have been identified based on the results of the RI. AOC locations are shown on Figure 4.

2.5.2.1 AOC 1: Petroleum- and/or Tar-related Impacts to Soil and Groundwater

Petroleum- or tar-related impacts, including staining, odors, elevated PID readings, and/or positive sheen test in soil boings and on groundwater, appear limited to the central and southern parts of the site within the current building footprint. The noted impacts were generally limited to about 1 to 7 feet below cellar grade (about 9 to 15 feet bsg), which the exception of boring SB-18, where staining extended to 13 feet bsg and PID readings above background extended to 18 feet bsg. Petroleum-related VOCs and SVOCs in soil exceed UU, RURR, and/or CU SCOs in soil samples collected throughout the building footprint. PID headspace readings above background,

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a petroleum-like odor, and a tar-like sheen were also observed in groundwater monitoring wells within or immediately adjacent to AOC 1. Petroleum-related VOCs detected in one groundwater sample (MW04) and SVOCs detected in wells MW03, MW04, MW07, MW12, MW16, MW18, and MW22 exceeded SGVs. Petroleum-related VOCs were also identified in sub-slab soil vapor and indoor air samples collected within AOC 1 at concentrations that yielded recommendations, including monitoring and/or mitigation for samples located within the original building footprint (portion of the building to be renovated) and auditorium (within the proposed open-air courtyard for the new residential building footprint). The noted petroleum- and tar-related impacts are attributed primarily to tar-like material (presumed waterproofing) and potential impacts from the on-site petroleum bulk storage, including two No. 2 fuel oil, 10,000-gallon ASTs located in the cellar boiler room.

2.5.2.2 AOC 2: SVOC and Metal Impacts in Fill

SVOC and metal impacts to fill were encountered throughout the site at varying depths to 10 feet bsg (up to 18 feet bsg for one metal, hexavalent chromium) and are attributed to historical site use as a coal yard and/or anthropogenic materials comingled in the soil.

2.5.2.3 AOC 3: Petroleum- and Chlorinated VOC-Impacted Soil Vapor

PCE concentrations in sub-slab soil vapor samples for the portion of the building to undergo renovations (SS19, SS20, and SS21) ranged from 2.9 µg/m^3 to 580 µg/m^3; however, when compared with the co-located indoor air samples to the NYSDOH Decision Matrices, recommendations are 'no further action'. Petroleum-related VOCs were identified in sub-slab soil vapor and indoor air samples collected from the portion of the building to undergo renovations (SS19, SS20, and SS21) at concentrations which yielded NYSDOH Matrix recommendations to monitor and/or mitigate for the southeastern and central parts of the site.

PCE was reported at concentrations ranging from 220 µg/m^3 to 320 µg/m^3 in all subsurface soil vapor samples (SV09, SV10, and SV13) located within the proposed residential building footprint. Petroleum-related VOCs were also identified in all subsurface soil vapor samples (SV09, SV10, and SV13) located within the proposed residential building footprint.

An on-site source of PCE was not identified via soil or groundwater sample results; therefore, PCE in soil vapor is inferred to be from an off-site source. Petroleum-related impacts to subsurface and sub-slab soil vapor and indoor air may be attributed to tar-like material (presumed waterproofing) and/or off-site sources.

2.5.3 Nature and Extent of Contamination

This section summarizes the nature and extent of soil, groundwater, and soil vapor contamination.

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2.5.3.1 Soil Contamination

Fill predominantly consisting of gray to orangish brown fine- to medium-grained sand with varying amounts of silt, gravel, vegetation, and anthropogenic materials (brick, concrete, glass, slag, and ash), was encountered across the site from below the approximately 1-foot-thick concrete building cellar slab to depths up to 6.5 feet below the top of cellar slab (about 9 to 14.5 feet bsg) within the building footprint and from below the surface cover to 15 feet bsg outside of the building footprint. Concentrations of SVOCs and metals were detected in fill across the site at concentrations exceeding the UU, RURR, and/or CU SCOs in samples collected from depths between 0 and 10 feet bsg; exceedances for one metal (hexavalent chromium) extended to a depth of 10 feet below the top of cellar slab (about 18 feet bsg) in one sample collected from within the building footprint in the central part of the site and 12 feet bsg in one sample collected from outside the building footprint in the eastern part of the site. Metal and SVOC impacts are attributed to historical site use as a coal yard and/or anthropogenic materials comingled in the soil.

Petroleum- or tar-like staining, odors, elevated PID readings, and/or a positive sheen test were encountered in soil borings located within the building footprint. The petroleum- or tar-impacted area is estimated to be an approximately 14,500-square-foot area including the portion of the building to undergo renovations and the northern part of the building to be demolished. The noted impacts were generally limited to about 1 to 7 feet below cellar grade (about 9 to 15 feet bsg), with the exception of one boring (SB-18) in the center of the portion of the building to be renovated/proposed community center building, where staining extended to 13 feet bsg and PID readings above background extended to 18 feet bsg. Petroleum-related VOCs and SVOCs in soil exceeded the NYSDEC Part 375 UU, RURR, and/or CU SCOs in soil samples collected throughout the building footprint. The petroleum- and/or tar-impacts are attributed to the historical site operations, including petroleum bulk storage and the use of two 10,000-gallon No. 2 fuel oil ASTs, and the presence of tar-like material (presumed waterproofing).

The PFAS compounds PFOS and PFOA were detected above UU SCOs, but below RURR and CU SCOs in one soil sample, and the site is not considered a source of PFAS contamination.

Soil sample analytical results are shown on Figures 5A, 5B, and 5C and detailed in Table 3 of the RIR, which is included in Appendix B of this RAWP.

2.5.3.2 Groundwater Contamination

PID headspace readings during the Phase II and RI were recorded above background levels at four monitoring wells located in or directly adjacent to the current building. Three of the four wells coincide with boring locations where tar-like material (presumed waterproofing) was observed below the cellar slab. On-site monitoring wells were gauged for non-aqueous phase liquid (NAPL)

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with an oil-water interface probe between March 18 and April 15, 2025. No NAPL was observed; however, a petroleum-like odor and tar-like sheen were observed in one monitoring well in the southeastern part of the site.

One petroleum-related VOC, naphthalene, was detected above the SGV in one groundwater sample and its duplicate (MW04) in the center of the site during the Phase II ESI. One or more of the seven SVOCs, including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, indeno(1,2,3-cd)pyrene, and naphthalene, were detected at concentrations exceeding the SGVs in several monitoring wells throughout the site.

The metals identified above SGVs in groundwater include iron, lead, magnesium, manganese, and sodium, most of which are typical of regional groundwater and not indicative of a contamination source. Lead exceeded the SGV in the total metals analysis; however, lead was not detected in the dissolved phase above the SGV and is therefore attributed to entrained sediment within the water column. SVOCs, in particular PAHs, were observed in groundwater throughout the site.

The PFAS compounds PFOS and PFOA were detected above SGVs in nine of the eleven monitoring wells throughout the site. Based on publicly available data for nearby NYSDEC remediation sites, PFOS and PFOA concentrations detected in groundwater at the site appear to be consistent with background and regional concentrations. The site is not considered a source of PFAS contamination.

Groundwater sample analytical results are shown on Figures 6A, 6B, and 6C and detailed in Table 4 of the RIR, which is included in Appendix B of this RAWP.

2.5.3.3 Soil Vapor Contamination

The chlorinated VOC, PCE, was reported at concentrations ranging from 2.9 µg/m^3 to 580 µg/m^3 in sub-slab samples collected within the portion of the building to undergo renovations; however, when compared with the co-located indoor air samples to the NYSDOH Decision Matrices, recommendations are 'no further action'. Petroleum-related VOCs were identified in sub-slab soil vapor and indoor air samples collected from the portion of the building to undergo renovations at concentrations which yielded NYSDOH Matrix recommendations to monitor and/or mitigate for the southeastern and central parts of the site.

PCE was reported in subsurface samples collected from within the proposed residential building footprint at concentrations ranging from 220 µg/m^3 to 320 µg/m^3. Petroleum-related VOCs were also identified in these subsurface soil vapor samples.

PCE was not detected in soil or groundwater samples and an on-site source of chlorinated solvents was not identified; therefore, the elevated concentrations of PCE observed in soil vapor during the RI are likely attributed to an off-site source. The source of the petroleum- or tar-related

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impacts is attributed to historical site operations, including petroleum bulk storage and the use of two 10,000-gallon No. 2 fuel oil ASTs, and the presence of tar-like material (presumed waterproofing) beneath the building.

Soil vapor sample analytical results are shown on Figure 7 and detailed in Tables 5 and 6 of the RIR, which is included in Appendix B of this RAWP.

2.6 Environmental and Public Health Assessments

2.6.1 Qualitative Human Health Exposure Assessment

Based on the CSM and review of environmental data, complete on-site exposure pathways appear to be present in the absence of remediation, monitoring and mitigation, or engineering controls (EC) (ex., Construction Health and Safety Plan [CHASP] with a Community Air Monitoring Plan [CAMP], capping system, etc.), in construction/remediation and future use conditions.

Complete exposure pathways have the following five elements: (1) a contaminant source; (2) a contaminant release and transport mechanism; (3) a point of exposure; (4) a route of exposure; and (5) a receptor population. A discussion of the five elements comprising a complete pathway as they pertain to the site is provided below.

2.6.1.1 Current Conditions

Contaminant sources include 1) petroleum- or tar-impacted soil, groundwater, and soil vapor 2) soil/fill with varying concentrations of SVOCs and metals, 3) groundwater containing varying concentrations of VOCs and SVOCs; and 4) VOCs in soil vapor.

Contaminant release and transport mechanisms include contaminated soil transported as dust (dermal, ingestion, inhalation). The potential receptors on-site include employees and community members who frequent the community service center at the site, the community surrounding the site, and authorized individuals completing investigations. Under current conditions, the likelihood of exposure to humans is limited due to the following:

- The site footprint is predominantly covered by a concrete slab and/or asphalt pavement, which limits direct contact with soil and groundwater.
- Landscaped areas are enclosed with fencing.
- Groundwater at the site is not a potable water source.
- Because the site has several occupied spaces, exposure pathways for soil vapor intrusion do exist; however, results for indoor air did not exceed NYSDOH Air Guideline values (AGVs) for immediate, corrective action.

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- There is a potential exposure pathway to contaminated soil vapor through inhalation during soil vapor sampling. This pathway is controlled through implementation of the HASP and CAMP.

2.6.1.2 Remediation

During the remedial excavation and foundation construction/renovation stage of redevelopment, points of exposure include disturbed and exposed soil and groundwater during excavation and possible dewatering, and dust and potential organic vapors generated during excavation. Routes of exposure include ingestion and dermal absorption of contaminated soil and groundwater, inhalation of potential organic vapors arising from contaminated groundwater and soil, and inhalation of dust originating from contaminated soil. The receptor population includes construction and remediation workers. The community adjacent to the site will be protected via the implementation of the HASP, CAMP, and other dust control measures to prevent off-site impacts.

The potential for completed on-site exposure pathways is present since all five elements exist; however, the risk can be avoided or minimized by applying appropriate health and safety measures during construction and remediation, such as monitoring the air for organic vapors and dust, using vapor and dust suppression measures, cleaning truck undercarriages and securing tarp covers before they leave the site to prevent off-site soil tracking, maintaining site security, and wearing the appropriate personal protective equipment. These measures are also designed to prevent off-site impacts.

A RAWP with a HASP and a CAMP that include measures such as conducting a community air-monitoring program, donning personal protective equipment, covering soil stockpiles, altering work sequencing, restricting eating and drinking on-site, maintaining a secure construction entrance, proper housekeeping, and applying vapor and dust suppression measures to prevent off-site migration of vapors and particulates during construction will be implemented. Such measures will prevent the completion of exposure pathways for soil, groundwater, and soil vapor contaminants.

2.6.1.3 Proposed Future Conditions

Under the proposed future conditions, contaminants may remain beneath the portion of the existing building to remain on-site. If residual impacts exist and engineering/institutional controls are not implemented, points of exposure could include potential cracks in the foundation of the building to be renovated, exposure during future ground-intrusive work, or inhalation of vapors entering the building. The receptor population includes community members who frequent the community service center at the site, employees, and the adjacent community. The possible routes of exposure can be avoided or mitigated by removal of contaminated media from the site,

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installation of vapor mitigation, enhancement of the site capping system in the building to be renovated within the Track 4 area and remedial excavation of soil exceeding UU SCOs in the footprint of the new, residential building with a waterproofing/vapor barrier as a general construction element. A Site Management Plan (SMP) and EE will be implemented for the Track 4 area.

2.6.1.4 Human Health Exposure Assessment Conclusions

1. Human exposure to site contaminants is currently limited because about 95 percent of the site is covered with an impermeable surface. The primary exposure pathways are dermal contact, ingestion, and/or inhalation of soil and/or soil vapor by site workers and site visitors. The exposure risks can be avoided or minimized by following the appropriate HASP and vapor and dust suppression measures, and by implementing a CAMP during any soil disturbance.
2. In the absence of mitigation measures and controls, there is potential for exposure during remediation. The primary exposure pathways are:
    a. Dermal contact, ingestion, and inhalation of contaminated soil, groundwater, and/or soil vapor by construction and remediation workers
    b. Dermal contact, ingestion, and inhalation of soil (dust) and inhalation of soil vapor by the community in the vicinity of the site

    These contacts can be avoided or minimized by implementing CAMP and by following the appropriate HASP, vapor and dust suppression, soil erosion and sediment control, and site security measures, and following a NYSDEC-approved RAWP.
3. The existence of a complete exposure pathway for site contaminants to human receptors during the proposed future use condition is unlikely, as most contaminated soil would be excavated and transported to an off-site disposal facility, and residual contaminated media will be capped.
4. Regional groundwater is not used as a potable water source in Manhattan; therefore, exposure to regional groundwater contaminants is unlikely.
5. Monitoring and control measures have been and will continue to be used during investigation and remediation/construction to prevent completion of exposure pathways that would exist for the migration of site contaminants to off-site human receptors. Under future conditions, the site will be remediated and engineering and ICs will be implemented, if necessary, to prevent completion of this pathway.

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2.6.2 Fish & Wildlife Resources Impact Analysis

In addition to the human health exposure assessment, NYSDEC DER-10 requires an on-site and off-site United States Fish and Wildlife Resources Impact Analysis (FWRIA) if certain criteria are met. Based on the requirements stipulated in Section 3.10 and Appendix 3C of DER-10, there was no need to prepare an FWRIA for the site.

2.7 Remedial Action Objectives

Based on the results of the Phase II ESI and RI, the following Remedial Action Objectives (RAO) have been identified:

RAOs	RAOs for Public Health Protection	RAOs for Environmental Protection
Soil	• Prevent ingestion/direct contact with contaminated soil • Prevent inhalation of, or exposure to, contaminants volatilizing from contaminated soil	• Prevent migration of contaminants that would result in groundwater contamination
Groundwater	• Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards • Prevent contact with, or inhalation of, volatiles emanating from contaminated groundwater	• Restore groundwater aquifer to pre-disposal/pre-release conditions, to the extent practicable
Soil Vapor	• Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at the site	

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3.0 DESCRIPTION OF REMEDIAL ACTION PLAN

This section presents an evaluation of the proposed remedial alternatives. The proposed remedial alternatives are a Track 1 remedy for Alternative I and a split Track 1 (UU)/Track 4 (RURR) remedy for Alternative II. Both alternatives are expected to achieve the established RAOs.

The recommended remedial alternative, based on an evaluation of the alternatives, is a split Track 1/Track 4 remedy.

This section is organized as follows:

- Section 3.1 describes the remedial standards, criteria, guidance, and objectives
- Sections 3.2 and 3.3 provide technical descriptions of:
    - Alternative I, a Track 1 remedy
    - Alternative II, a split Track 1 (UU) /Track 4 (RURR) remedy
- Section 3.4 describes green remediation standards
- Section 3.5 evaluates the remedial alternatives based on the BCP Remedy Selection Evaluation Criteria
- Section 3.6 discusses the recommended remedial alternative

3.1 Standards, Criteria, and Guidance and Remedial Action Objectives

In accordance with Environmental Conservation Law (ECL) § 27-1415 and DER-10, the objectives of the remedial action are to: 1) reduce the concentrations of contaminants of concern at the site to meet those levels that will protect public health and the environment, and 2) isolate the site from on-site migration of contaminated groundwater and soil vapor, to the extent feasible, from potential off-site sources. In accordance with DER-10, the Volunteer will have no remedial responsibilities with respect to groundwater contamination migrating to the site from an off-site source; however, remedial alternatives will be developed for such a case that eliminate or mitigate on-site human exposures, to the extent feasible, resulting from potential off-site contamination entering the site since there are other suspect and known contaminated sites in the vicinity of this site. Where identifiable sources of contamination are found on the site, the sources will be removed, treated to the extent feasible, or contained.

Also, in accordance with DER-10, the RAOs for this site are defined as medium-specific objectives for the protection of public health and the environment and are developed based on contaminant-specific standards, criteria, and guidance (SCG), which include:

- 6 NYCRR Part 175 - Special Licenses and Permits--Definitions and Uniform Procedures
- 6 NYCRR Part 360 – Solid Waste Management Facilities General Requirements

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- 6 NYCRR Part 361 - Material Recovery Facilities
- 6 NYCRR Part 364 – Waste Transporters
- 6 NYCRR Part 370 – Hazardous Waste Management System
- 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 374-1 – Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
- 6 NYCRR Subpart 374-2 – Standards for the Management of Used Oil
- 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 612 – Registration for Petroleum Storage Facilities (February 1992)
- 6 NYCRR Part 613 – Petroleum Bulk Storage
- 6 NYCRR Part 700-706 – Surface Water and Groundwater Classification Standards
- 6 NYCRR Part 750 – State Pollutant Discharge Elimination System (SPDES) Regulations
- 10 NYCRR Part 67 – Lead Poisoning Prevention and Control
- 12 NYCRR Part 56 – Industrial Code Rule 56 (Asbestos)
- Code of Federal Regulations (CFR) Title 29 Part 1910.120 – Hazardous Waste Operations and Emergency Response Standard
- CFR Title 29 Part 1926 – Safety and Health Regulations for Construction
- 40 CFR Part 280 – Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks
- 29 CFR Part 1910.120 – Hazardous Waste Operations and Emergency Response
- DAR-1 (formerly Air Guide 1) (1997) – Guidelines for the Control of Toxic Ambient Air Contaminants
- NYSDEC Title 6 of the New York Codes, Rules and Regulations
- NYSDEC – Permanent Closure of Petroleum Storage Tanks (July 1988)

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- NYSDEC – Sampling, Analysis, and Assessment of PFAS Under NYSDEC's Part 375 Remedial Programs (April 2023)
- NYSDEC – Spill Response Guidance Manual
- NYSDEC Commissioner Policy (CP)-43 – Groundwater Monitoring Well Decommissioning Policy (2009)
- NYSDEC CP-51 – Soil Cleanup Guidance (2010)
- NYSDEC DER-2 – Making Changes to Selected Remedies (Revised April, 2008)
- NYSDEC DER-10 – Technical Guidance for Site Investigation and Remediation (2010)
- NYSDEC DER-23 – Citizen Participation Handbook for Remedial Programs (March 2010)
- NYSDEC DER-31 – Green Remediation (August 2010)
- NYSDEC DER-32 – Brownfield Cleanup Program Applications and Agreements (June 2017)
- NYSDEC TOGS 1.1.1 – Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (1998)
- NYSDEC TOGS 1.3.8 – New Discharges to Publicly Owned Treatment Works
- TOGS 2.1.2 – Underground Injection/Recirculation at Groundwater Remediation Sites
- NYSDEC TOGS 5.1.8 – New York State Stormwater Management Design Manual (2008)
- NYSDEC TOGS 5.1.10 – New York Standards and Specifications for Erosion and Sediment Controls (2005)
- NYSDOH – Guidance for Evaluating Soil Vapor Intrusions in the State of New York (2006) and Subsequent Updates
- NYSDOH Environmental Health Manual CSFP-530 – "Individual Water Supplies - Activated Carbon Treatment Systems"
- NYSDEC Permanent Closure of Petroleum Storage Tanks (2003)
- Spills Technology and Remediation Series (STARS) #1 – Petroleum-Contaminated Soil Guidance Policy (1992) (Sections III and IV have been replaced by CP-51)
- STARS #2 – Biocell and Biopile Designs for Small-Scale Petroleum-Contaminated Soil Projects (1996)
- NYSDEC Spill Response Guidance Manual (1995)

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- Technical and Administrative Guidance Memorandum 3028 – "Contained In" Criteria for Environmental Media: Soil Action Levels (August 1997)
- TOGS 1.1.1 – Ambient Water Quality Standards & Guidance Values and Groundwater Effluent Limitations (1998, Addenda 2000 and 2004)
- Title 10 of the Official Compilation of Codes, Rules and Regulations of the State of New York, Chapter 1, Part 5-1 – Drinking Water Supplies, Public Water Systems
- United States Environmental Protection Agency (USEPA) Title 40, Code of Federal Regulations

3.2 Alternative I – Technical Description

Alternative I, a Track 1 remedy, would include the following remedial elements:

- Development and implementation of a CHASP and CAMP for the protection of on-site workers, visitors, the community, and the environment, including during remediation and construction
- To facilitate site remediation
    - Abatement of regulated building materials and demolition of the entire site building,
    - Management of removed asphalt as C&D debris in accordance with Part 360 and 361 regulations. Review and certification of C&D debris transport and disposal methodologies would be the responsibility of contractors performing off-site transportation and disposal of C&D debris. The Remedial Engineer (RE) is responsible for documenting that C&D debris is not commingled with contaminated site soil and fill.
- Decommissioning of existing groundwater monitoring wells in accordance with NYSDEC Commissioner's Policy 43: Groundwater Monitoring Well Decommissioning Policy (CP-43)
- Construction of the support of excavation (SOE) system to facilitate the site-wide Track 1 remedial excavation
- Excavation and removal of all fill/soil exceeding UU SCOs to depths ranging from 2 to 18 feet bsg or until UU SCOs are achieved, including to about 10 feet below the current cellar of the proposed community center footprint.
- Screening for indications of contamination source areas during any intrusive site work by visual, olfactory, or instrumental methods

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- Appropriate off-site disposal of excavated fill and soil in accordance with federal, state, and local rules and regulations for handling, transport, and disposal
- Decommissioning and removal of any encountered USTs in accordance with 6 NYCRR Part 613 and NYSDEC DER-10 Section 5.5
- Dewatering to accommodate remedial excavation and treatment and discharge of dewatering fluids in accordance with applicable regulations and municipal permit requirements
- Collection and analysis of post-excavation confirmation soil samples in accordance with DER-10 to evaluate the performance of the remedy with respect to attainment of Track 1 UU SCOs
- Import and backfill of clean fill (i.e., soil meeting the UU SCOs as defined by 6 NYCRR Part 375-6.5) or virgin crushed stone, as needed to backfill over-excavated areas to development depth. Import requests are subject to NYSDEC review and approval and would include a Request to Import/Reuse Soil Form.
- In accordance with NYSDEC's green remediation principles and techniques from NYSDEC Program Policy DER-31: Green Remediation, the future on-site building would include at a minimum, a 20-mil waterproofing/vapor barrier on the foundation that may improve energy efficiency as an element of construction.

The Track 1 UU SCOs are presented in Table 1. The Alternative I remediation extent is shown on Figure 8, and the requirements for each of the Alternative I tasks are described below.

3.2.1 On-Site Worker, Public Health, and Environmental Protection

A site-specific CHASP would be implemented during excavation and foundation construction to protect on-site Langan personnel from accidents and acute and chronic exposures to the identified contaminated media. Contractors performing RAWP operations would be required to develop and enforce their own HASP that is consistent with Occupational Safety and Health Administration (OSHA) requirements and, at a minimum, meets the requirements of the CHASP. 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 perimeters for visible dust and odors. The environment would be further protected by implementing and enforcing soil erosion prevention measures.

The CHASP is included in Appendix C. A site-specific CAMP was developed in accordance with the NYSDOH Generic CAMP is provided as Appendix D.

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3.2.2 Demolition and Removal of Construction and Demolition Debris

Demolition of the entire site building would be required to achieve a Track 1 cleanup, or partial demolition coupled with slab removal and extensive underpinning within the proposed renovation area. Prior to renovation/demolition, hazardous building materials will be abated.

C&D debris generated during the remedial excavation would be handled, transported, and disposed of in accordance with federal, state, and city regulations (including 6 NYCRR Part 360 Series regulations). Review and certification of hazardous building materials, C&D transport, and disposal methodologies would be the responsibility of contractors performing demolition and off-site transportation and disposal of C&D debris. The RE is responsible for documenting that C&D debris is not commingled with contaminated site soil and fill.

3.2.3 Monitoring Well Decommissioning

The existing groundwater monitoring wells would be decommissioned in accordance with NYSDEC CP-43. The only exception to this is if the full length of the well is to be excavated during remediation and development. In that case, all well materials would be removed in conjunction with the excavation. Well decommissioning would be performed by an experienced driller and logged by the driller and field personnel supervised by the RE. Decommissioning documentation would be provided in the Final Engineering Report (FER).

3.2.4 Excavation, SOE, and Contaminated Soil and Fill Removal

Remedial excavation would include the removal of fill/soil exceeding the UU SCOs across the site. The estimated volume of fill and soil requiring removal and off-site disposal for a Track 1 cleanup is about 4,700 cubic yards. This estimate is based on the complete removal of fill and soil exceeding UU SCOs across the site. Excavation depths would be from about 2 to 10 feet bsg (el. 9.5 to 1.5) throughout most of the site except fortwo about 100-square -foot areas around RI borings SB14 (in the eastern part of the site) and SB18 (in the southern part of the site, within the existing building), where hexavalent chromium was detected in soil at concentrations exceeding the UU SCOs down to 12 feet bsg (el. -0.5) and 18 feet bsg (el.-6.5), respectively. The extent of the Track 1 remedial excavation is shown on Figure 8. An SOE system would be designed and constructed to accommodate Track 1 excavation depths. The Contractor would install excavation support to permit excavation to the remedial depths outside the existing building footprint and excavation support, as well as bracing to permit excavation to the requisite remedial depth within the existing building in the case that the entire building is not demolished.

3.2.5 Excavation Dewatering

Construction dewatering would be required to accommodate excavation of soil exceeding UU SCOs. Prior to mobilization, the contractor would follow the Rules of the City of New York (RCNY) Title 15, Chapter 19, Use of the Public Sewers and the NYC Department of Environmental

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Protection (NYCDEP) "Procedure for Obtaining Letter of Approval for Groundwater Discharge to Sanitary or Combined Sewer" and use the approval to obtain a Temporary Discharge of Groundwater into the City Sewer System Permit. The dewatering system would include pretreatment (e.g., settling tank, bag filters, carbon filtration, as required) to reduce contaminant concentrations below NYCDEP effluent limitations prior to discharge to the NYC sewer system. If the contractor will discharge more than 10,000 gallons per day, they would also have to obtain approval from the NYCDEP's Bureau of Water and Sewer Operations, Chief of Permitting and Compliance. The dewatering and treatment system would be designed, operated, and maintained by the Contractor's NYS-licensed Professional Engineer. If the dewatering system has a capacity to withdraw 100,000 gallons per day or more, the contractor would have to obtain a Water Withdrawal Permit or its equivalent from the NYSDEC.

3.2.6 AST Decommissioning and Removal

Two active, 10,000-gallon No. 2 fuel oil ASTs are present in the cellar boiler room of the existing building. As part of the site redevelopment, the ASTs would be decommissioned and disposed of off-site in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC Commissioner's Policy (CP)-51, and other applicable NYSDEC closure requirements. Any impacted concrete and/or soil, if encountered, would be excavated, stockpiled separately, characterized and disposed off-site at a permitted facility.

3.2.7 UST Removal (Contingency)

Any encountered USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) would be decommissioned and disposed of off-site during site redevelopment in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements. Any impacted soil, if encountered, would be excavated, stockpiled separately, characterized, and disposed of off-site at a permitted facility. If required per Article 12 of the Navigation Law and consultation with NYSDEC, a spill would be reported to NYSDEC. Following the removal of any UST and associated grossly impacted soil, if encountered, post-excavation soil samples will be collected per the NYSDEC DER-10 requirements, if deemed necessary by the NYSDEC and RE. Post-excavation soil sampling is not expected where the remedial excavation will extend below the UST.. Newly discovered USTs would be registered with the NYSDEC PBS unit under PBS No. 2-604478. Closure documentation, such as Contractor affidavits, bills of lading for sludge disposal, and tank disposal receipts, would be provided as appendices in the FER.

3.2.8 Confirmation Soil Sampling

Post-excavation confirmation soil samples would be collected from the excavation base at a frequency of one per 900 square feet per NYSDEC DER-10 5.4(b)(5)(ii). It is anticipated that sidewall samples would not be collected because SOE measures (e.g., sheeting, lagging or

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sloping) or adjoining foundations would preclude access to soil sidewalls. An estimated 43 confirmation endpoint soil samples, plus QA/QC samples, would be collected to confirm remedial performance and would be analyzed for the Part 375 list of VOCs, SVOCs, PCBs, pesticides, herbicides, metals (including hexavalent and trivalent chromium), cyanide, PFAS, and 1,4-dioxane. Over-excavation may be required as necessary to remove soil that does not comply with the SCOs. If over-excavation is completed, additional confirmation samples would be required.

3.2.9 Excavation Backfill

In areas that are excavated deeper than development grade for remedial purposes, the excavation areas would be backfilled to raise the site to development grade. Imported material would consist of fill that meets UU SCOs or other acceptable fill such as virgin stone from a New York State- permitted quarry. Virgin stone must originate from a mine or quarry and contain less than 10% by weight passing a No. 80 sieve to be excluded from NYSDEC DER-10 sampling requirements. Sampling may be required by NYSDEC under the terms for operation of the facility. An estimated 6,300 cubic yards of backfill would be required to raise the site to development grade upon completion of the Track 1 remediation.

3.2.10 Soil Vapor Intrusion Evaluation

A soil vapor intrusion (SVI) evaluation would be conducted after remediation(including excavation and backfill) and general construction. Additional sampling/laboratory analysis is not proposed as part of this evaluation.

3.3 Alternative II – Technical Description

A split Track 1 (UU) /Track 4 (RURR) remedy is proposed and would include implementation of the following remedial elements:

- Development and implementation of a CHASP and CAMP for the protection of on-site workers, visitors, the community, and the environment, including during remediation and construction
- To facilitate site remediation
    - Abatement of regulated building materials prior to demolition in the northern and western parts of the current building and renovations in remaining portions of the building
    - Removal of subsurface obstructions (e.g., remnant foundation elements), and surficial asphalt cover by the Contractor
    - Management of removed asphalt/foundation elements as C&D debris in accordance with Part 360 and 361 regulations. Review and certification of C&D debris transport and disposal methodologies would be the responsibility of

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contractors performing off-site transportation and disposal of C&D debris. The RE is responsible for documenting that C&D debris is not commingled with contaminated site soil and fill.

- Decommissioning of existing groundwater monitoring wells in accordance with NYSDEC CP-43
- Construction of the SOE systems or sloping to facilitate the remedy
- Excavation and stockpiling of soil/fill exceeding Part 375 UU SCOs throughout the Track 1 area as follows:
    - About 14,492 square feet to 2 feet bsg in southern and northern parts of the site;
    - About 565 square feet to 5 feet bsg in the central parts of the site;
    - About 6,398 square feet to 8 feet bsg in the eastern part of the site;
    - About 7,859 square feet to 10 feet bsg (about 2 feet below cellar slab) in the central and western parts of the site;
    - About 100 square feet to 11 feet bsg (about 3 feet below cellar slab) in the central part of the site; and
    - About 100 square feet to 12 feet bsg in the eastern part of the site.
- Excavation and stockpiling of soil/fill exceeding Site-Specific SCOs in an about 646 square foot portion of the Track 4 area
    - Excavation is not proposed for the remainder of the Track 4 area, as the existing slab will be enhanced with a topping slap as an engineering control to prevent exposure to residual contaminants.
- Screening for indications of contamination source areas during any intrusive site work by visual, olfactory, or instrumental methods
- Appropriate off-site disposal of removed fill and soil in accordance with federal, state, and local rules and regulations for handling, transport, and disposal
- Decommissioning and removal of any encountered USTs in accordance with 6 NYCRR Part 613 and NYSDEC DER-10 Section 5.5
- Localized dewatering, as necessary, to accommodate remedial excavation completed within the Track 1 area

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- Collection and analysis of post-excavation confirmation soil samples in the Track 1 area in accordance with DER-10 to evaluate the performance of the remedy with respect to attainment of Track 1 SCOs
- Collection and analysis of post-excavation documentation endpoint soil samples in the portion of the Track 4 area to be excavated in accordance with DER-10 to document post-remediation conditions.
- Installation of a sub-membrane depressurization system (SMDS) and a continuous waterproofing/vapor barrier membrane between the existing slab and a topping slab within the portion of the building to remain (majority of Track 4 area) as an engineering control. As a general construction element a continuous waterproofing/vapor barrier membrane will be installed under the slab and along subsurface foundation walls throughout the new residential building
- Import and backfill of soil meeting the UU SCOs or virgin crushed stone, as needed to backfill over-excavated areas to development depth within the Track 1 area. Import requests are subject to NYSDEC review and approval and would include a Request to Import/Reuse Soil Form.
- Green remediation principles and techniques would be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31.
- Completion of a post-construction soil vapor intrusion (SVI) evaluation
- Recording of an Environmental Easement (EE) for the Track 4 area to memorialize the remedial action and the ICs to ensure that future owners of the site continue to maintain these controls as required
- Preparation of an SMP for the Track 4 area that describes management of the ICs and ECs – Implementation of the SMP following completion of the remedy will be stipulated by the EE

The split Track 1 UU SCOs and Track 4 Site-Specific SCOs are presented in Table 2. The Alternative II remediation extent is shown on Figure 9, and the requirements for each of the Alternative II tasks are described below.

3.3.1 On-Site Worker, Public Health, and Environmental Protection

A site-specific CHASP would be implemented during excavation and foundation construction to protect on-site Langan personnel from accidents and acute and chronic exposures to the identified contaminated media. Contractors performing RAWP operations would be required to develop and enforce their own HASP that is consistent with OSHA requirements and, at a

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minimum, meets the requirements of the CHASP. 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 perimeters for visible dust and odors. The environment would be further protected by implementing and enforcing soil erosion prevention measures.

The CHASP is included in Appendix C. A site-specific CAMP was developed in accordance with the NYSDOH Generic CAMP is provided as Appendix D.

3.3.2 Demolition and Removal of Construction and Demolition Debris

Western and northern potions of the building will be demolished and the southern part of the building will be renovated. Prior to renovation/demolition, hazardous building materials will be abated.

C&D debris generated during the remediation would be handled, transported, and disposed of in accordance with federal, state, and city regulations (including 6 NYCRR Part 360 Series regulations). Review and certification of hazardous building materials, C&D transport, and disposal methodologies would be the responsibility of contractors performing demolition and off-site transportation and disposal of C&D debris. The RE is responsible for documenting that C&D debris is not commingled with contaminated site soil and fill.

3.3.3 Monitoring Well Decommissioning

The existing groundwater monitoring wells would be decommissioned in accordance with NYSDEC CP-43. The only exception to this is if the full length of the well is to be excavated during remediation and development. In that case, all well materials would be removed in conjunction with the excavation. Well decommissioning would be performed by an experienced driller and logged by the driller and field personnel supervised by the RE. Decommissioning documentation would be provided in the FER.

3.3.4 Excavation, SOE, and Contaminated Soil and Fill Removal

An SOE system would be constructed, as necessary, in portions of the Track 1 area to accommodate remedial excavations to remove soil exceeding UU SCOs. The Track 1 excavation would include the following:

- Excavation of about 14,492 square feet to 2 feet bsg in the southern and northern parts of the site;
- Excavation of about 565 square feet to 5 feet bsg in the central parts of the site;
- Excavation of about 6,398 square feet to 8 feet bsg in the eastern part of the site;

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- Excavation of about 7,859 square feet to 10 feet bsg (about 2 feet below cellar slab) in the central and western parts of the site;
- Excavation of about 100 square feet to 11 feet bsg (about 3 feet below cellar slab) in the central part of the site; and
- Excavation of about 100 square feet to 12 feet bsg in the eastern part of the site.

Track 4 SCOs (for the portion of the building to be renovated) are the Part 375 RURR SCOs, except for total SVOCs, for which a site-specific SCO is proposed. Excavation of soil/fill in an about 646-square-foot area is proposed to 10 feet bsg (about 2 feet below cellar slab). Excavation is not proposed for the remainder of the Track 4 area as the current slab will be enhanced with a topping slab as an EC to prevent exposure to contaminated soil below.

The estimated total volume of soil and fill requiring removal and off-site disposal for a split Track 1/Track 4 cleanup is about 3,800 cubic yards. Excavation depths were established based on the Phase II ESI and RI sample concentrations that exceeded the UU SCOs within the Track 1 area and the RURR SCOs within the Track 4 area. Additional excavation of soil with evidence of source material, including petroleum or tar-like impacts in the Track 1 area (visual, olfactory, and/or organic vapors above background), if observed, would be completed, as necessary.

The Track 1 UU SCOs are shown on Table 1 and Track 4 Site-Specific SCOs are shown in Table 2. The extent of the split Track 1/Track 4 remedial excavation is shown on Figure 9.

3.3.5 Excavation Dewatering

Localized dewatering of groundwater would be required to accommodate excavation of soil exceeding UU SCOs in portions of the Track 1 area. Prior to mobilization, the contractor would follow the Rules of the City of New York (RCNY) Title 15, Chapter 19, Use of the Public Sewers and the NYCDEP "Procedure for Obtaining Letter of Approval for Groundwater Discharge to Sanitary or Combined Sewer" and use the approval to obtain a Temporary Discharge of Groundwater into the City Sewer System Permit. The dewatering system would likely include pretreatment (e.g., settling tank, bag filters, carbon filtration) to reduce contaminant concentrations below NYCDEP effluent limitations prior to discharge to the NYC sewer system. If the contractor would discharge more than 10,000 gallons per day, they would also have to obtain approval from the NYCDEP's Bureau of Water and Sewer Operations, Chief of Permitting and Compliance. The dewatering and treatment system would be designed, operated, and maintained by the Contractor's NYS-licensed Professional Engineer. If the dewatering system has a capacity to withdraw 100,000 gallons per day or more, the contractor would have to obtain a Water Withdrawal Permit or its equivalent from the NYSDEC.

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3.3.6 AST Decommissioning and Removal

Two active, 10,000-gallon No. 2 fuel oil ASTs are present in the cellar boiler room of the existing building. As part of the site redevelopment, the ASTs would be decommissioned and disposed of off-site in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC CP-51, and other applicable NYSDEC closure requirements. Any impacted concrete and/or soil, if encountered, would be excavated, stockpiled separately, characterized and disposed off-site at a permitted facility.

3.3.7 UST Removal (Contingency)

Any encountered USTs and/or associated appurtenances (e.g., fill lines, vent line, and electrical conduit) would be decommissioned and disposed of off-site during site redevelopment in accordance with DER-10, 6 NYCRR Part 613.9, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements. Any impacted soil, if encountered, would be excavated, stockpiled separately, characterized, and disposed of off-site at a permitted facility. If required per Article 12 of the Navigation Law and consultation with NYSDEC, a spill would be reported to NYSDEC. Following the removal of any UST and associated grossly impacted soil, if encountered, post-excavation soil samples will be collected per the NYSDEC DER-10 requirements, if deemed necessary by the NYSDEC and RE. Post-excavation soil sampling is not expected where the remedial excavation will extend below the UST. Newly discovered USTs would be registered with the NYSDEC PBS unit under PBS No. 2-604478. Closure documentation, such as Contractor affidavits, bills of lading for sludge disposal, and tank disposal receipts, would be provided as appendices in the FER.

3.3.8 Confirmation Soil Sampling

Post-excavation confirmation soil samples would be collected from the Track 1 area at a frequency of one per 900 square feet per NYSDEC DER-10 5.4(b)(5)(ii). An estimated 34 base confirmation soil samples (plus QA/QC samples) would be collected. It is anticipated that sidewall samples would not be collected because SOE measures (e.g., sheeting, lagging or sloping) or adjoining foundations would preclude access to soil sidewalls. Confirmation endpoint samples would be analyzed for the Part 375 list of VOCs, SVOCs, PCBs, pesticides, herbicides, metals (including hexavalent and trivalent chromium and total cyanide), PFAS, and 1,4-dioxane.

3.3.9 Documentation Soil Sampling

One documentation soil samples would be collected from the portion of the Track 4 area to be excavated per NYSDEC DER-10 5.4(b)(5)(ii). It is anticipated that sidewall samples would not be collected because SOE measures (e.g., sheeting, lagging or sloping) or adjoining foundations would preclude access to soil sidewalls. Confirmation endpoint samples would be analyzed for the Part 375 list of VOCs, SVOCs, PCBs, pesticides, herbicides, metals (including hexavalent and trivalent chromium and total cyanide), PFAS, and 1,4-dioxane.

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Samples collected from the Track 4 area during the RI will serve as a reference to document the level of residual contamination that would remain within the portion of the building to be renovated and would be controlled with ICs and ECs.

3.3.10 Soil Vapor Mitigation

To mitigate against potential infiltration of petroleum-VOC and chlorinated VOC (CVOC)-impacted soil vapor into the renovated building in the Track 4 area, an SMDS (including a continuous waterproofing/vapor barrier membrane) would be installed as an EC. The system would be installed between the existing slab and a topping slab within the portion of the building to remain. The SMDS would be designed and developed in general accordance with the NYSDOH Guidance.

The SMDS would include a sub-membrane collection layer (3-inch layer of virgin ¾-inch stone) with 12-inch-width by 1-inch-height vapor collection screen (Terravent or approved equivalent). The collection layer would underlie a continuous waterproofing/vapor barrier membrane that is integrally bonded to the concrete topping slab. The membrane would be resistant to petroleum and tar-related contaminants, as well as CVOCs and have a minimum thickness of 20 mils. Permanent sub-slab vapor monitoring points would be installed in the topping slab to allow for future pressure field extension testing. SMDS drawings are included in Appendix E.

Riser pipes would be installed to transport the collected vapor from between the slabs to roof of the renovated structure. Each riser pipe would be connected to an active vacuum blower. Completion and commissioning of the SMDS would occur during the site management phase of the project, but prior to building occupancy.

As a general construction element, not an EC, a waterproofing/vapor barrier would be installed below/around the foundation of the new building in the Track 1 area.

3.3.11 Excavation Backfilling

In areas that are excavated deeper than development grade for remedial purposes, the excavation areas would be backfilled to raise the site to development grade. Imported material would consist of fill that meets UU SCOs or other acceptable fill such as virgin stone from a New York State- permitted quarry. Virgin stone must originate from a mine or quarry and contain less than 10% by weight passing a No. 80 sieve to be excluded from NYSDEC DER-10 sampling requirements. Sampling may be required by NYSDEC under the terms for operation of the facility.

An estimated 5,700 cubic yards of backfill would be required for the vapor collection layer and to raise the site to development grade upon completion of the split Track 1/Track 4 remediation.

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3.3.12 Soil Vapor Intrusion Evaluation

An SVI evaluation will be conducted after remediation (excavation, backfill, engineering controls) and general construction are completed. Additional sampling/laboratory analysis is not proposed as part of this evaluation; however, the SMDS in the Track 4 area will require start up testing, including confirmation of pressure differentials.

3.3.13 Site Management Plan and Environmental Easement

An EE would be recorded referencing ICs and ECs that are part of the selected remedy for the Track 4 area only, which would be binding upon all subsequent owners and occupants of the site. The ICs would 1) restrict the portion of the building to be renovated to commercial and industrial uses; 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 implementation of an NYSDEC-approved SMP; and 4) require the completion and submission of a periodic certification of ICs and ECs in accordance with Part 375. The EE ICs would include requirements for the operation, maintenance, and monitoring of the ECs, which consist of the composite cover system and SMDS described in this alternative and any additional ECs established through the SMP under future site development.

The SMP would apply to the Track 4 area only and would identify all use restrictions, ECs, and long-term monitoring and maintenance requirements. The Track 1 area would not require an SMP. The SMP provides a plan that, if followed, would ensure the ICs and/or ECs remain in place and are effective, and if found to be not effective, would be corrected.

3.4 Green Remediation Program

The green and sustainable remediation (GSR) components that would be considered for the selected alternative are as follows:

- Environmental impacts of treatment technologies and remedy stewardship over the long term
- Reducing direct and indirect greenhouse gases (GHG) and other emissions
- Increasing energy efficiency, including but not limited to the installation of the vapor barrier membrane, and minimizing the use of non-renewable energy
- Conserving and efficiently managing resources and materials
- Reducing waste, increasing recycling, and increasing the reuse of materials that would otherwise be considered waste
- Maximizing habitat value and creating habitat when possible, including maximizing the planning of trees, shrubs, and other carbon dioxide sinks in redevelopment

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- Fostering green and healthy communities and working landscapes that balance ecological, economic, and social goals
- Integrating the remedy with the end use, where possible, and encouraging green and sustainable redevelopment with respect to the remedy
- Incorporating the GSR principles and techniques to the extent feasible in the future development at this site (i.e., future on-site buildings shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York [or most recent edition] to improve energy efficiency as an element of construction)

To evaluate the remedy with respect to GSR principles as part of the remedial program, a Best Management Practice (BMP) assessment was conducted in accordance with the ASTM Guide for Standard Cleanups, and an environmental footprint analysis was conducted for each remedial alternative using SiteWise. The results of the environmental footprint analysis are provided in Appendix F.

BMPs for the project related to these GSR metrics, and BMPs for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, would be incorporated into the remedial program, as appropriate. The project design specifications would include detailed requirements, including implementation of the BMPs described in Section 4.1.1. A BMP assessment and an environmental footprint analysis would also be conducted after the remedy is complete. As practicable, water consumption, GHG emissions, renewable and non-renewable energy use, waste reduction, and material use would be estimated at the end of the remediation phase. Progress with respect to GSR metrics would be tracked during implementation of the remedial action and reported in the FER.

A climate screening assessment was conducted for the site, which concluded that the site is vulnerable to severe storms, flooding, and sea level rise; however, the proposed redevelopment would reduce these vulnerabilities and mitigate the effects of climate change at the site. The climate screening checklist is provided in Appendix G.

3.5 Evaluation of Remedial Alternatives

The following is an evaluation of the proposed remedial alternatives based on the NYSDEC 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 SCGs
- Short-term effectiveness and impacts

- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, or volume of contaminated media
- Feasibility
- Cost effectiveness
- Community Acceptance
- GSR (including climate resiliency)
- Land use

3.5.1 Protection of Public Health and the Environment

Alternative I – The Track 1 remedy would mitigate the potential for exposure pathways by removing soil exceeding Track 1 SCOs. Groundwater and soil vapor would be remediated through the removal of contaminated soil source areas and dewatering. The RAOs for public health and environmental protection would be met by eliminating the possibility for ingestion and inhalation of, or dermal contact with, contaminated soil, groundwater and/or soil vapor.

Alternative II – The split Track 1/Track 4 remedy would mitigate pathways of exposure through a combination of contaminant removal in the Track 1 area and ECs and ICs (including an EE and SMP) in the Track 4 area. The RAOs for public health and environmental protection will be met in the Track 1 area through the removal of contaminated soil and remediation of groundwater through dewatering, which will eliminate any possibility for ingestion and inhalation of, or dermal contact with contaminated soil groundwater and/or soil vapor. The RAOs for public health and environmental protection will also be met in the Track 4 area through the installation of a composite cover, waterproofing/vapor barrier, and SMDS, which will preclude direct contact, ingestion and inhalation of contaminated soil particles and mitigate potential exposure pathways from soil vapor.

3.5.2 Compliance with Standards, Criteria, and Guidance

Each alternative would follow all applicable SCGs listed in Section 3.1 by eliminating the sources of contamination and/or mitigation and management of contamination. While implementing either of the proposed remedies, protection of public health and the environment would be maintained by enforcing a site-specific CHASP and CAMP. OSHA requirements for on-site construction safety would be followed by all site contractors performing work.

3.5.3 Short-Term Effectiveness and Impacts

For both alternatives, the most significant short-term adverse impacts and risks to the community are potential complications and risk involved with constructing SOE, bulk soil excavation and dewatering, and import of backfill. Potential impositions on roadway traffic associated with

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construction would result from the remedial excavations and the subsequent import of backfill to bring the site up to development grade.

Alternative II would have less short-term impact compared to Alternative I because the proposed redevelopment includes plans for portions of the existing building to remain. Excavation to achieve a Track 1 cleanup beneath the building would not be possible without either additional demolition or extensive underpinning, leading to construction delay and a potential increase in dust, odors, and/or organic vapor from the excavation, and an increase in construction-related noise. The effects of these potential adverse impacts to the community, workers, and the environment would be minimized by implementing Alternative II.

Under both remedial alternatives, dust would be controlled by the on-site application of water spray as needed. ECs, such as slowing the pace of work, applying foam and/or dust suppressant, and/or covering parts of the excavation would be used to suppress odors/dust when required. Work would be modified or stopped according to the action levels defined in the CAMP.

3.5.4 Long-Term Effectiveness and Impacts

Alternative I – A Track 1 remedy would remove all contaminated media exceeding UU SCOs from the site. Contaminated groundwater would be addressed via source removal during excavation and dewatering. Because an EE and SMP are not required as part of the Track 1 remedy, Article 141 of the New York City Department of Health code would be relied upon to prevent ingestion of groundwater, which prohibits potable use of groundwater without prior approval. Future site use would be unrestricted, as removal of contaminants across the site would be complete and permanent, thereby eliminating environmental risks and satisfying the objectives of this criterion.

Alternative II – In the Track 1 area, which would be about 70% of the site, all contaminated media exceeding UU SCOs would be removed and contaminated groundwater would be addressed via source removal and excavation dewatering. Contaminants in soil would remain in the Track 4 area beneath the building; however, potential exposure to remaining contaminated soil in this part of the site would be prevented by the cover system and potential vapor intrusion would be mitigated by the SMDS. Groundwater is not a source of potable water in NYC. Long-term effectiveness and impacts of this alternative would be achieved through contaminant removal in the Track 1 area and the implementation of the EE and a SMP for the Track 4 area.

3.5.5 Reduction of Toxicity, Mobility, or Volume of Contaminated Soil/Fill

Alternative I – The Track 1 remedy would permanently and significantly reduce the toxicity, mobility, and volume of contamination through excavation and off-site disposal of all soil exceeding UU SCOs. Therefore, this remedy provides the highest level of toxicity, mobility and volume reduction of contaminated material.

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Alternative II – The combined Track 1/Track 4 remedy would significantly reduce the toxicity, mobility, and volume of contaminated material by removing contaminated soil exceeding UU SCOs in the Track 1 area and installation of an engineered cover system and SMDS in the Track 4 area. Remaining contamination in the Track 4 area would be managed according to an SMP.

3.5.6 Cost Effectiveness

Alternative I –The estimated remediation cost of a Track 1 Cleanup is about $6.7 million. Because the site would be remediated to UU SCOs, there are no long-term operation, maintenance, or monitoring costs associated with the proposed remedy. This alternative is the costliest because of additional time and costs associated with demolition of the entire on-site building footprint, handling and disposal of fill and soil above UU SCOs, SOE, import of backfill, and dewatering.

Alternative II –The estimated remediation cost of the split Conditional Track 1/Track 4 Cleanup is about $5.8 million. This alternative is less expensive than a site-wide Track 1 remedy because of the reduced demolition and excavation and related SOE, dewatering, and backfill. Alternative II is the more cost-effective alternative.

3.5.7 Implementability

Alternative I – Implementing a Track 1 remedy across the entire site is feasible; however, it is more technically challenging to design and achieve because of the need for demolition of the entire site building or partial demolition coupled with slab removal and underpinning within the proposed renovation area. In addition, Alternative I would include an increase in excavation depth and backfill volume required, and an increase in dewatering and support of excavation to reach the excavation depths in source areas within the current building footprint. Due to these technical challenges, the duration of a Track 1 remedy across the entire site would be greater and would be more challenging to implement than a split Track 1/Track 4 remedy.

Alternative II – Implementing the split Track 1/Track 4 remedy is feasible and more easily implementable because it will allow for the portion of the building to be renovated to remain in place, therefore partial demolition coupled with slab removal and underpinning would not be necessary within the proposed renovation area. In addition, dewatering would be limited to localized areas to accommodate excavation of soil exceeding UU SCOs in portions of the Track 1 area. The resulting duration of cleanup is less. For these reasons, the split Track 1/Track 4 remedy is easier to implement than the Track 1 remedy.

Contractors experienced in implementing both remedies are readily available in the area of the site.

3.5.8 Community Acceptance

Alternative II is expected to be more acceptable to the community because the potential exposure pathways to on-site contamination would be eliminated or significantly reduced upon

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completion of the remedial actions, with less of an impact to the community because truck traffic would be slightly, reduced, relative to Alternative I and there would be less invasive work done on the existing building. The end-use of the site would provide new, attractive residential spaces, affordable housing and retain the community space within a portion of the pre-existing building. The selected remedy would be subject to a 45-day public comment period in accordance with the Citizen Participation Plan (CPP). Any substantive public comments received would be addressed before the remedy is approved.

3.5.9 Green and Sustainable Remediation (Including Climate Resiliency)

To assess potential remedial alternatives with respect to GSR principles, an environmental footprint analysis was conducted for each remedial alternative using SiteWise. The environmental footprint analyses assess the environmental footprint at each stage of remediation (site preparation, excavation, and restoration). The following metrics were quantified:

- GHG Emissions
- Total Energy Used
- Water Consumption
- Electrical Usage
- Total Nitrogen Oxides (NO_x) Emissions
- Total Sulphur Oxides (SO_x) Emissions
- Total Particulate Matter Emissions (specifically particulate matter less than 10 microns in diameter [PM10])

Alternative I would produce 45% more onsite NOx and SOx emissions, 10% more total NOx emissions, 43% more onsite PM10 emissions, and 36% more total PM10 emissions than Alternative II. It would also consume 7% more energy and have a greater accident risk due to the longer and more intrusive remediation.

Alternative II would produce 11% more GHG emissions and 28% more total SOx emissions than Alternative I. It would also consume 20% more water and 73% more electricity than Alternative I (assuming the SMDS is active for at least 5 years post remediation).

Overall, Alternative II would produce less emissions and would only consume more water and electricity due to the SMDS that would remain active at the site post-remediation. Environmental footprint summaries for each alternative are provided in Appendix F GSR measures would be implemented per DER-31 under both alternatives.

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3.5.10 Land Use

The current, intended, and reasonably anticipated future land uses of the site and its surroundings are compatible with the alternatives. The future proposed development includes residential use (affordable housing) and a community center. The proposed development is consistent with zoning and land use in the area.

3.6 Summary of the Proposed Remedy

The split Track 1/Track 4 (Alternative II) remedy achieves the RAOs established for the project and is effective in the short- and long-term. The selected remedy effectively reduces the mobility, toxicity, and volume of contaminant with fewer construction-phase impacts on the surrounding community. The remedy is considered feasible and cost-effective because the excavation depths do not present significant technical challenges (e.g., depth of excavation, support, and dewatering), and can be achieved through conventional construction measures.

Alternative I would not be practical, considering excavation within the portion of the building proposed for renovation would require additional demolition or underpinning to remove contaminated soil below the slab. Alternative II can be feasibly and practically implemented, while protecting human health and the environment, and should be acceptable to the community because it eliminates complete exposure pathways. Alternative II is the recommended remedial alternative for this site.

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4.0 REMEDIAL ACTION PROGRAM

4.1 Governing Documents

The primary documents governing the remedial action are summarized in this section. As referenced, copies of the full plans are provided in the appendices.

4.1.1 Green Remediation Principles and Best Management Practices

The NYSDEC DER-31 Green Remediation Policy requires that green remediation concepts and techniques be considered during all stages of the remedial program, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology.

Green remediation principles and techniques will be implemented to the extent feasible in the remediation phase of the remedy per DER-31. The green remediation components that will be evaluated are as follows:

- Waste Generation
- Energy Usage
- Emissions
- Water Usage
- Land and/or Ecosystems

The remedy will include the implementation of several BMPs related to these green remediation components. The BMPs are outlined below.

Waste Generation

Waste generation considers the management of waste associated with remedial activities and any waste reduction projects, including, but not limited to, material reuse and recycling. Several waste streams will be generated during implementation of the remedy (e.g., dewatering fluids, soil, polyethylene sheets used for stockpile coverage and separating types of contamination, nitrile gloves for endpoint sampling, disposable sample ware, acetate liners from drilling operations, , decontamination materials). When possible, an effort will be made to minimize the consumption/generation of such materials. If possible, decontamination and reuse of applicable materials will be considered. Electronic methods of data collection (e.g., tablets) will also be used to reduce paper consumption when possible.

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Electrical Energy Use

Energy usage considers the electricity needed for remediation activities. Energy will be required for charging equipment (e.g., PIDs, air monitoring equipment, groundwater sampling equipment). Battery-powered equipment will be turned off when not in use to limit charging activities.

Emissions

Emissions tracking considers fuel usage for transportation of personnel to and from the site, trucks used for export of contaminated material or import of backfill material, equipment, and laboratory sample couriers, and construction equipment.

To reduce fuel usage, trucks and heavy machinery operators will be encouraged to reduce idling time and shut down vehicles or equipment when not in use. Ultra-low sulfur diesel (ULSD) fuel and the best available technology (BAT) for reducing emissions will be used for construction vehicles. The Contractor will also be encouraged to perform routine, on-time maintenance such as oil changes to improve fuel efficiency.

When possible, personnel will be encouraged to take public transport, and equipment/sample deliveries and pickups will be consolidated to reduce transport needs.

Water Usage

Water usage considers sources of water for tasks such as decontamination, irrigation, etc. The public water supply will be used when water is required for decontamination activities or dust suppression. This will be required for the effective implementation of the remedy and the protection of human health. Water will only be consumed when necessary, and consumption will be in accordance with local regulations.

Land and/or Ecosystems

The site is within a heavily urbanized area, and no ecosystems will be disturbed during construction.

Environmental footprint summaries are provided in Appendix F.

4.1.2 Climate Change Impacts

The proposed Alternative II remedy will produce a smaller volume of on-site NO_x and SO_x emissions, on-site and total PM10 emissions, and waste, but would produce greater GHG emissions and consume more water and electricity than Alternative I because of the SMDS that would remain active at the site post-remediation, while effectively protecting public health and the environment long-term.

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4.1.3 Site-Specific Construction Health and Safety Plan

The RE oversaw the preparation of a site-specific CHASP, which is provided as Appendix C. The CHASP requires that all remedial work performed under this plan will be in full compliance with governmental requirements, including site and worker safety requirements mandated by Federal OSHA. The CHASP provides a mechanism for establishing on-site safe working conditions, safety organization, procedures, and PPE. 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 protective clothing requirements
- Decontamination requirements
- Standard operating procedures
- Contingency plan
- CAMP
- Safety data sheets

The Volunteer and associated parties preparing the remedial documents submitted to the State and those performing the construction work are completely responsible for the preparation of an appropriate CHASP and for the appropriate performance of work according to the CHASP and applicable laws. All contractors performing work on the site must prepare and implement their own HASP that, at a minimum, meets the requirements of the CHASP in Appendix C. The RE is not responsible for the health and safety of the contractor's workers.

The CHASP and requirements defined in this RAWP pertain to all remedial and invasive work performed at the site until the issuance of a Certificate of Completion (COC). The Langan Site Safety Coordinator will be William Bohrer. If required, confined space entry will comply with all

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OSHA requirements to address the potential risk posed by combustible and toxic gases. Langan personnel will not enter confined spaces.

4.1.4 Quality Assurance Project Plan (QAPP)

The RE oversaw the preparation of a QAPP that describes the quality assurance and quality control components employed so 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 H 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 reporting requirements for quality assurance activities, including weekly quality assurance review reports, periodic quality assurance and quality control audits, and other report and data submissions.

4.1.5 Construction Quality Assurance Plan (CQAP)

The RE oversaw the preparation of this CQAP that describes the quality control components employed so that the proposed remedy accomplishes the remedial goals and RAOs and is completed in accordance with design specifications. Because the remedy is being accomplished concurrently with redevelopment, the Contractor and construction manager will have the primary responsibility to provide construction quality. A list of engineering personnel involved in the implementation of the CQAP and procedures that will be carried out by the remedial engineering team is identified below.

Role	**Contact**
Remedial Engineer/RE:	Gerald Nicholls, PE, CHMM
Project Manager:	Jennifer Armstrong, CHMM
Langan Health & Safety Officer:	Tony Moffa Jr., CHMM
Site Safety Coordinator:	William Bohrer, PG
Quality Assurance Officer/QEP:	Ryan Manderbach, CHMM
Field Team Leader:	Kristen Wexler, CHMM

Project personnel résumés are provided in Appendix I.

A Qualified Environmental Professional (QEP) or the RE will directly supervise field personnel who will be on-site during the remedial action to monitor particulates and organic vapor in

accordance with the CAMP. Daily reports will be submitted to NYSDEC and NYSDOH and will include reporting of CAMP results that exceed the specified action levels (if any).

A QEP or the RE will directly supervise field personnel who will meet with the Construction Superintendent daily to discuss the plans for that day and schedule upcoming activities. The field personnel will document remedial activities in daily reports.

A QEP or the RE will directly supervise field personnel who will screen the excavation with a PID during intrusive activities. All readings will be noted in the record. Elevated readings will be reported to NYSDEC and NYSDOH in the daily reports. The field personnel will collect confirmation/documentation endpoint soil samples in accordance with this RAWP.

A photo log will be kept to document construction activities by still photos. The photo log may also be used to record activities in the daily report.

The project field notebook will be used to document all sampling activities and how they correspond to the RAWP. All observations and field, and laboratory tests will be recorded in the project field notebook or on separate logs. Recorded field observations may take the form of notes, charts, sketches, or photographs.

The Field Team Leader will maintain the current field book and original field paperwork during the performance of work. The Project Manager will maintain the field paperwork after completion and will maintain submittal document files.

4.1.6 Soil/Materials Management Plan (SMMP)

The RE oversaw the preparation of an SMMP that includes detailed plans for managing contaminated soil, fill, and liquids that are disturbed at the site, including excavation, handling, storage, transport, and disposal. It also includes controls that will be applied to these efforts to facilitate effective, nuisance-free, to the extent practical, performance in compliance with applicable federal, state, and local laws and regulations. The SMMP is provided in Section 5.4.

4.1.7 Stormwater Pollution Prevention Plan (SWPPP)

Because this project involves soil disturbance of more than 20,000 square feet, a SWPPP will be required, under NYC regulations. A SWPPP will be prepared during the project design process and provided to NYSDEC when completed. Erosion and sediment controls for the site will be designed in conformance with requirements presented in the NYS Standards and Specifications for Erosion and Sediment Control. BMPs will be employed to mitigate erosion and prevent the migration of sediment off site throughout construction. Components of the SWPPP are further described in Section 5.4.9

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4.1.8 Community Air Monitoring Plan

A site-specific CAMP was developed in accordance with the NYSDOH Generic CAMP included as Appendix D. Community air monitoring will be conducted as outlined in Section 5.4.12.

4.1.9 Contractors' Site Operations Plan

The RE will review plans and submittals for this remedial project (including those listed above as well as the Contractor and subcontractor document submittals) and document their compliance with this RAWP. The RE is responsible for documenting that the Contractor and subcontractor document submittals are compliant with this RAWP. Remedial documents will be submitted to the NYSDEC and the NYSDOH in a timely manner and before the start of work.

4.1.10 Citizen Participation Plan

A certification of mailing will be sent by the Volunteer to the NYSDEC project manager following the distribution of all Fact Sheets and notices that includes: 1) certification that the Fact Sheets were mailed; 2) the date they were mailed; 3) a copy of the Fact Sheet; 4) a list of recipients (contact list); and 5) a statement that the repository was inspected on (specific date) and that it contained all of the applicable project documents.

No changes will be made to NYSDEC-approved Fact Sheets authorized for release by NYSDEC without written consent from NYSDEC. No other information, such as brochures and flyers, will be included with the Fact Sheet mailing.

A document repository was established at the following locations, as proposed in the BCP Application, and will contain all applicable project documents:

New York Public Library - Harlem Library
9 West 124th Street
New York, New York 10027
Phone: (212) 348-5620
Email: harlem@nypl.org

Manhattan Community Board 11
1664 Park Avenue, Ground Floor
New York, New York 10035
Phone: (212) 831-8929
Email: mn11@cb.nyc.gov

All applicable project documents are also available through the NYSDEC Info Locator website; https://gisservices.dec.ny.gov/gis/dil/ and at: https://extapps.dec.ny.gov/data/DecDocs/C231155/

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4.2 General Remedial Construction Information

4.2.1 Project Organization

This section presents the anticipated project organization and associated roles, including key personnel, descriptions of duties, and lines of authority in the management of the RAWP. Information regarding the organization/personnel and their associated responsibilities is provided below.

4.2.2 Remedial Engineer

The RE for this project will be Gerald Nicholls, P.E. The RE is a registered PE licensed by the State of New York. The RE will have primary direct responsibility for the implementation of the remedial program for the project (BCP Site No. C231155). The RE will certify in the FER that the remedial activities were observed by qualified environmental professionals under his supervision and that the remediation requirements outlined in the RAWP and any other relevant provisions of ECL 27-1419 have been achieved in accordance with this RAWP. Other RE certification requirements are listed later in this RAWP.

The RE and their team will document the work of remediation contractors and subcontractors involved in all aspects of remedial construction, including soil excavation, stockpiling, characterization, removal and disposal, air monitoring, emergency spill response services, import of backfill, and management of waste transport and disposal. Deviations from the procedures identified in the RAWP that are observed by Langan will be brought to the attention of the Contractor, who will remedy the deviation(s). The RE, the QEP, or the Project Manager, under the supervision of the RE, will be responsible for all communication with NYSDEC and NYSDOH.

The RE will review all pre-remedial plans submitted by remediation contractors for compliance with this RAWP and will certify compliance in the FER.

In the FER, the RE will provide the certifications listed in Section 8.1 of this RAWP.

4.2.3 Remedial Action Construction Schedule

The anticipated remedial action construction schedule is discussed in Section 9.0 and provided in Appendix J. The NYSDEC will be promptly notified of proposed changes, delays, or deviations to the schedule.

4.2.4 Work Hours

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

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4.2.5 Site Security

The site perimeter will be secured with gated and signed fencing with restricted points of entry in accordance with 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 as determined by the remediation contractor. 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 adhere to applicable local, state, and federal laws.

4.2.7 Contingency Plan

The contingency plans described below have been developed to address unexpected discoveries of additional contaminated media and/or USTs.

4.2.7.1 Discovery of Additional Contaminated Soil

During remediation and construction, soil will be continuously monitored by the RE's field representative(s) using a PID as well as visual and olfactory field screening to identify previously unknown contamination and soil that may not be suitable for the selected disposal facility(ies). Impacted soil/fill will be segregated and sampled for lab analysis in accordance with disposal facility requirements (typically VOCs, SVOCs, PCBs, pesticides, herbicides, and metals). If the facility is not permitted to receive the sampled soil, the soil will be disposed of off-site at a permitted facility able to receive the soil based on the characterization data. Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to the NYSDEC Project Manager. These findings will be detailed in daily reports and subsequent monthly BCP progress reports. Potential additional remedial measures will be coordinated with NYSDEC.

4.2.7.2 Discovery of Unexpected USTs

Previously unidentified USTs may be encountered during excavation. Unexpected USTs encountered during remediation or construction will be decommissioned in accordance with 6 NYCRR Parts 612.2 and 613.9 and NYSDEC DER-10 Section 5.5. Following the removal of the UST(s), post-excavation soil samples will be collected per the NYSDEC DER-10 requirements, if deemed necessary by the NYSDEC and the RE. Post-excavation soil sampling is not expected where the remedial excavation will extend below the UST. Excavated petroleum-impacted soil/fill will be stockpiled separately from non-petroleum-impacted soil/fill, characterized, and disposed of off-site at a permitted disposal facility in accordance with applicable regulations. UST closure documentation, including contractor affidavits, waste manifests, and tank disposal receipts, will

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be included as appendices to the FER. USTs will be registered and decommissioned with the NYSDEC PBS unit, as necessary.

If USTs are encountered during invasive site work, the findings will be promptly communicated to the NYSDEC Project Manager and detailed in daily reports and subsequent monthly BCP progress reports.

4.2.8 Worker Training and Monitoring

Worker training and monitoring will be conducted in accordance with the CHASP, which is provided in Appendix C.

4.2.9 Agency Approvals

Permits or government approvals required for remedial construction will be obtained before the start of remedial construction. A Certificate of Occupancy will not be issued for the project unless conformance with the zoning designation is demonstrated.

4.2.10 NYSDEC BCP Signage

Signs are optional for BCP sites and should be discussed with the NYSDEC Project Manager. If a sign is to be displayed, it must follow NYSDEC specifications for design and content. The NYSDEC Project Manager can provide details on signage protocol.

4.2.11 Pre-Construction Meeting with NYSDEC

Prior to the onset of construction, a meeting will be held between the NYSDEC, RE, Volunteer, construction manager, and contractor to discuss project roles, responsibilities, and expectations associated with this RAWP. Notice will be provided to the NYSDEC at least seven days prior to site mobilization.

4.2.12 Emergency Contact Information

An emergency contact sheet with names and phone numbers is included in the CHASP, provided as Appendix C. That document will define the specific project contacts for use by NYSDEC and NYSDOH in the case of a day or night emergency.

4.2.13 Remedial Action Costs

The estimated preliminary engineering and contractor cost of the preferred remedy is about $5.7 million.

4.3 Site Preparation

The RE will work with the Volunteer and their contractors so that site development will not interfere with, or otherwise impair or compromise, the remediation proposed in this RAWP.

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4.3.1 Mobilization

Before commencing remedial construction, the Contractor will mobilize to the site and prepare for remediation. Mobilization and site preparation activities may include the following:

- Identifying the location of all aboveground and underground utilities (e.g., power, gas, water, sewer, telephone), equipment, and structures (as necessary to implement the remediation);
- Mobilizing necessary remediation personnel, equipment, and materials to the site;
- Constructing one or more stabilized construction entrances consisting of crushed virgin stone, RCA, or equivalent, at or near the site exit, which takes into consideration the site setting and site perimeter;
- Constructing a decontamination pad for trucks, equipment, and personnel that come into contact with impacted soil/fill during remedial activities;
- Installing erosion and sedimentation control measures, as necessary; and
- Installing temporary fencing or other temporary barriers to limit unauthorized access to areas where remediation will be conducted.

4.3.2 Erosion and Sedimentation Controls

Erosion and sediment controls for the site will be designed and documented in a SWPPP in conformance with requirements presented in the NYS Standards and Specifications for Erosion and Sediment Control. BMPs will be employed to mitigate erosion and prevent the migration of sediment off site throughout construction. Components of the SWPPP are further described in Section 5.4.9.

4.3.3 Monitoring Well Decommissioning

Existing groundwater monitoring wells will be decommissioned in accordance with NYSDEC policy CP-43. The only exception to this is if the full length of the well is to be excavated during remediation and development. In that case, all well materials would be removed in conjunction with the excavation. If required, well decommissioning will be performed by an experienced driller and logged by the driller and Langan personnel. Decommissioning documentation will be provided in the FER.

4.3.4 Stabilized Construction Entrance(s)

Stabilized entrance areas will be constructed to prevent decontaminated trucks from being re-contaminated by site soil before exiting. The areas will be covered with crushed virgin stone or RCA and graded so that runoff water will be directed onto the site. The Contractor will protect and maintain the existing sidewalks and roadway at the site entrance points.

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4.3.5 Utility Marker and Easements Layout

The Volunteer and their contractors are solely responsible for the identification of utilities that might be affected by work under the RAWP and implementation of required health and safety measures during performance of work under this RAWP. The Volunteer and their contractors are solely responsible for the safe execution of all invasive and other work performed under this RAWP. The Volunteer and their contractors must obtain any local, state, or federal permits or approvals pertinent to such work that may be required to perform work under this RAWP. Approval of this RAWP by NYSDEC does not constitute satisfaction of these requirements.

4.3.6 Sheeting and Shoring

Management of structural stability of on-site or off-site structures during on-site activities, including excavation, is the sole responsibility of the Volunteer and their contractors. The Volunteer and their contractors are solely responsible for the safe execution of all invasive and other work performed under this RAWP. The Volunteer and their contractors must obtain any local, state, or federal permits or approvals that may be required to perform work detailed in this RAWP.

4.3.7 Equipment and Material Staging

The contractor will notify the RE and the Volunteer, in writing with receipt confirmed, of pending site work mobilization at least 30 calendar days in advance. During mobilization, construction equipment will be delivered to the site, temporary facilities constructed, and temporary utilities installed as needed. The Contractor will place and maintain temporary toilet facilities within the work areas for usage by all site personnel. The Contractor will provide drinking water for all site personnel.

4.3.8 Truck Inspections/Decontamination Area

The contractor will construct decontamination pads/truck inspection stations at each site entrance/exit planned for construction vehicle usage. Before exiting the site, trucks will be required to stop at a truck inspection station and will be examined for evidence of contaminated soil on the undercarriage, body, and wheels. If observed, soil or debris will be removed. Brooms, shovels, and/or potable water will be utilized for the removal of soil from vehicles and equipment, as necessary. The location of decontamination pads may change periodically to accommodate the contractor's sequencing of work. When required, the pads will be constructed by the Contractor to collect wastewater for off-site disposal or treatment and discharge, if generated during decontamination activities. The design will consider adequate space to decontaminate site equipment and vehicles, sloping, and liners to facilitate the wastewater collection. Collected truck rinsate and decontamination wastewater shall be either discharged in accordance with a municipal permit or tested and transported to an off-site disposal facility that is permitted to

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accept this waste, in accordance with applicable local, state, and federal regulations. The remediation contractor is responsible for collecting soil that is tracked immediately off-site and returning the soil to the site. The RE's on-site representative will document that trucks leaving the site are properly decontaminated. The Contractor will maintain the decontamination pad(s) throughout the duration of site work. Prior to demobilization, the Contractor will deconstruct the pads and dispose of materials as required.

If the Contractor uses high-pressure washing methods, the Contractor shall provide splash protection around the vehicle decontamination facility to prevent splatter and mist migrating off-site during the vehicle decontamination process. Splash protection shall be temporary and stable, and capable of being dismantled in the event of high winds.

4.3.9 Site Fencing

The site perimeter will be secured with gated and signed fencing. The purpose of the fencing is to limit site access to authorized personnel, protect pedestrians from site activities, and maintain site security.

4.3.10 Demobilization

The Contractor will be responsible for demobilizing all labor, equipment, and materials not designated for off-site disposal. The RE will be responsible for documenting that the Contractor performs follow-up coordination and maintenance for the following activities:

- Restoration of areas that may have been disturbed to accommodate support areas (e.g., staging areas, decontamination areas, storage areas, temporary water management areas, access areas);
- Removal of temporary access areas (whether on-site or off-site) and restoration of disturbed access areas to pre-remediation conditions;
- Removal of sediment and erosion control measures and disposal of materials in accordance with acceptable rules and regulations;
- Equipment decontamination; and
- General refuse disposal.

4.4 Reporting

Daily and monthly reports and an FER will be required to document the remedial action and will be included as appendices to the FER. In addition to the periodic reports and the FER, copies of relevant contractor documents will be submitted to the NYSDEC.

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4.4.1 Daily Reports

Daily reports will be submitted to NYSDEC and NYSDOH Project Managers by the end of each day following the reporting period (or at a frequency acceptable to them) and will include:

- An update of progress made during the reporting day;
- Locations of work and quantities of soil/fill imported to and exported from the site;
- References to alpha-numeric map for site activities;
- A summary of any and all complaints with relevant details (names, phone numbers);
- A summary of CAMP findings, including corrective actions for instances where action levels were exceeded;
- An explanation of notable site conditions;
- A description of anticipated site activities; and
- The NYSDEC-assigned project number.

Daily reports are not intended to be the mode of communication for notification to the NYSDEC of emergencies (accident, spill), requests for changes to the RAWP, or other sensitive or time-critical information. However, such conditions must also be included in the daily reports. Emergency conditions and changes to the RAWP will be addressed directly to the NYSDEC Project Manager via personal communication.

Daily reports will include a description of daily activities keyed to an alpha-numeric map for the site that identifies work areas. These reports will include a summary of air sampling results, odor and dust problems, corrective actions, and all complaints received from the public.

4.4.2 Monthly Reports

Monthly reports will be submitted to NYSDEC and NYSDOH Project Managers by the tenth of the month following the reporting period. The monthly reports will include the following information, as well as any additional information required by the BCA:

- Activities relative to the site during the previous reporting period and those anticipated for the next reporting period, including a quantitative presentation of work performed (i.e., tons of soil/fill exported and imported, etc.);
- Description of approved activity modifications, including changes of work scope and/or schedule;
- Sampling results received following internal data review and validation, as applicable; and

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- An update of the remedial schedule, including the percentage of project completion, unresolved delays encountered or anticipated that may affect the future schedule, and efforts made to mitigate such delays.

4.4.3 Other Reporting

Photographs will be taken of all remedial activities and submitted to NYSDEC in digital format. Photographs will illustrate all remedial program elements and will be of acceptable quality. Representative photos of the site before any remedial actions and of each contaminant source, source area, and site structure before, during, and after remediation will be provided. Photographs will be included in the daily reports as needed, and a comprehensive collection of photos will be included in the FER.

Progress with respect to GSR metrics will be tracked during the implementation of the remedial action and reported in the FER. Regular updates to the metrics used (Spreadsheets for Environmental Footprint Analysis [SEFA], SiteWise™, or another Department-approved method) should be included.

Site records for remedial work will be appropriately documented and maintained on-site during the project and will be available for inspection by NYSDEC and NYSDOH staff.

4.4.4 Complaint Management Plan

The management plan for documenting complaints is detailed below.

Item	Description
Approach	Complaints regarding remediation or construction activities/operations will be minimized, and mitigation measures will be implemented to reduce the incidence of complaints.
Objective	To manage environmental complaints from the community regarding construction or remediation.
Implementation Strategy/Mitigation Measures	All complaints will be documented on a complaint register. The register will be maintained as an ongoing record. Each entry will include the following information: • Time, date, and nature of complaint • Type of communication (telephone, letter, personal, etc.) • Name, contact address, and contact number • Response and investigation undertaken as a result of the complaint, and action taken with the signature of the responsible person Each complaint will be investigated as soon as practicable in relation to the requirements.
Monitoring	A representative from the Volunteer or the RE will follow up on the complaint within two weeks of receipt to ensure it has been resolved.

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Item	Description
Reporting	Upon receipt and following the complaint investigation and resolution, the NYSDEC will be notified. Complaints and resolutions will be documented in the daily reports.
Corrective Action	Should an incident or failure to comply occur in relation to the management of environmental complaints, one or more of the following corrective actions will be undertaken as appropriate: • Conduct additional training of staff to handle environmental complaints • Investigate why the environmental complaint was not addressed within the specified time frame • Investigate the complaint and action follow-up according to the investigation results

4.4.5 Deviations from the RAWP

Necessary deviations from the RAWP will be coordinated with the NYSDEC in advance. Notification will be provided to the NYSDEC by telephone/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
- Effect of the deviation(s) on the overall remedy

Any deviations from the RAWP will be reported in the FER.

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5.0 REMEDIAL ACTION: SOURCE MATERIAL REMOVAL

5.1 Soil Cleanup Objectives

A split Track 1/Track 4 remediation is proposed. The SCOs for the Track 1 area will be the NYSDEC Part 375 UU SCOs listed in the 6 NYCRR Part 375-6.8(a) and are listed in Table 1 of this RAWP. Soil exceeding these standards will be removed in accordance with 6 NYCRR Part 375. Track 4 SCOs (for the portion of the building to be renovated) are listed in Table 2 and are RURR SCOs in 6 NYCRR Part 375-6.8(b), except for total SVOCs, for which site-specific SCO of 100 mg/kg is proposed.

Soil management will be conducted in accordance with the SMMP described below (Section 5.4). Closure of any USTs, if encountered, will conform to the criteria defined in 6 NYCRR Part 613.9, NYSDEC CP-51, and other applicable NYSDEC UST closure requirements, including DER-10 Section 5.5.

5.2 Estimated Soil/Fill Removal Quantities

The estimated quantity of soil/fill to be removed from the site for a split Track 1/Track 4 cleanup is about 3,800 cubic yards. The remedial excavation extents for the Track 1/Track 4 cleanup are shown on Figure 9.

5.3 Remedial Performance Evaluation

A total of 34 confirmation endpoint soil samples will be collected from the bottom of the excavation at a frequency of one per 900 square feet per NYSDEC DER-10 5.4(b)(5)(ii) within the Track 1 area. It is anticipated that sidewall samples would not be collected because SOE measures (e.g., sheeting, lagging or sloping) or adjoining foundations would preclude access to soil sidewalls. One documentation sample collected from the Track 4 area will document the level of residual contamination remaining under the renovated building. The proposed endpoint sampling locations are presented on Figure 10.

Confirmation/documentation endpoint samples will be transported under standard chain-of-custody protocol to an NYSDOH ELAP-approved laboratory for 6 NYCRR Part 375 VOCs, SVOCs, PCBs, pesticides, herbicides, metals (including hexavalent and trivalent chromium and total cyanide), PFAS, and 1,4-dioxane. Laboratory analyses will be conducted in accordance with USEPA SW-846 methods and NYSDEC Analytical Services Protocol (ASP) Category B deliverable format. QA/QC procedures required by the NYSDEC ASP and SW-846 methods will be followed, including instrument calibration, standard compound spikes, surrogate compound spikes, and analysis of quality control samples. The laboratory will provide sample bottles that are pre-cleaned and preserved. Where there are differences in the SW-846 and NYSDEC ASP requirements, the NYSDEC ASP shall take precedence.

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5.4 Soil/Materials Management Plan

This section presents the approach to management, disposal, and reuse of soil and fill excavated from the site. This plan is based on the current knowledge of site conditions and will be augmented with the additional data collected during remediation. Field personnel, under the direction of the RE or QEP, will monitor and document the handling and transport of contaminated soil/fill removed from the site for disposal as a regulated solid waste. Field personnel, under the direction of the RE or QEP, will assist the remedial contractor in identifying impacted soil during excavation, determining soil suitable for direct load-out versus temporary on-site stockpiling, selecting samples for waste characterization, and determining the proper off-site disposal facility. Separate stockpile areas will be constructed as needed to stage various excavated soil types with the intent to more efficiently manage and characterize the soil and to avoid commingling of impacted soil with non-impacted soil. All excavated soil will be characterized for off-site disposal in a manner suitable to the receiving facility and conformance with applicable permits.

5.4.1 Soil Screening Methods

Visual, olfactory, and PID screening and assessment will be performed by Langan field personnel under the direction of the RE or QEP during all remedial and development excavations into known or potentially contaminated soil and fill. Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during the remedy and during any development phase, such as excavations for foundations and utility work before issuance of the COC.

Field screening will be performed by field personnel under the direct supervision of the RE or QEP. Résumés will be provided for all personnel responsible for field screening (i.e., those representing the RE) of invasive work for known or unknown contaminant sources during remediation and development work.

5.4.2 Stockpile Methods

Soil stockpile areas, if needed for different soil and fill, will be constructed for staging of site soil, pending loading or waste characterization testing. Separate stockpile areas will be constructed to avoid commingling differing waste types. Stockpile areas will meet the following minimum requirements:

- The excavated soil will be placed onto an impermeable surface or on a minimum thickness of 8-mil low-permeability plastic sheeting or tarps of sufficient strength to prevent puncture during use; separate stockpiles will be created where soil/fill types are different. The use of multiple layers of thinner liners is permissible.
- Equipment and procedures will be used to place and remove the soil to minimize the potential to jeopardize the integrity of the liner.

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- Stockpiles will be covered at the designated times (see below) with a minimum 8-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 that have reached their capacity will be appropriately covered until they are ready for loading for off-site transport. Active stockpiles (e.g., stockpiles that have not reached their capacity) will be covered at the end of each workday.
- Each stockpile area will be encircled with silt fences and hay bales, as needed, to contain and filter particulates from rainwater that has drained off the soil, and to mitigate the potential for surface water run-off off-site.
- Stockpiles will be inspected at a minimum once each day and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by the NYSDEC.
- Water will be available on-site at suitable supply and pressure for use in dust control.

5.4.3 Soil/Fill Characterization, Excavation, and Load Out

Excavated soil and fill will be characterized for off-site disposal in a manner suitable to the receiving facility and in conformance with applicable permits. Sampling and analytical methods, sampling frequency, and analytical results will be appended to the FER. All data available for soil/fill to be disposed of at a given facility must be submitted to the disposal facility for review and approval before shipment and receipt.

The Volunteer and their contractors are solely responsible for the safe execution of invasive work, the structural integrity of excavations and excavation support, structures that may be affected by excavations, and other work performed under this RAWP. Field personnel under the direct supervision of the RE or QEP will observe and document all invasive work and the excavation and loading of excavated soil and fill. Development-related grading cuts and fills will not be performed without NYSDEC approval of the RAWP, and the RE will provide that site development activities will not interfere with, or otherwise impair or compromise, remedial activities proposed in this RAWP.

Field personnel under the direct supervision of the RE will be responsible for monitoring egress points for truck and equipment transport from the site and ensuring that the contractor is notified of their obligation to immediately clean the sidewalks and streets of soil/fill derived from the site during site remediation and development. Non-compliance will be reported to the NYSDEC. Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site sediment tracking. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived soil/fill. Loaded vehicles leaving the site will be appropriately lined, securely covered, manifested, and placarded in accordance with appropriate

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federal, state, and local (NYCDOT) requirements, and all other applicable transportation requirements. Mesh truck covers (typically used on non-remediation sites) are not acceptable. Trucks hauling soil/fill will not be lined unless the soil/fill exhibits free liquids, is grossly-impacted, or is determined to be hazardous. On-site mechanical processing of fill and contaminated soil is prohibited unless otherwise approved by the NYSDEC.

5.4.4 Transport Off-Site

Transport of soil/fill will be performed by licensed haulers in accordance with appropriate local, state, and federal regulations, including 6 NYCRR Part 364. Haulers will be licensed and permitted, and trucks properly placarded. Trucks will enter and exit the site using dedicated ingress/egress points. Trucks loaded with soil/fill will exit the vicinity of the site using only approved truck routes. Trucks will be prohibited from stopping and idling unnecessarily in the neighborhood outside the site. To the extent possible, queuing of trucks will be performed on-site to minimize off-site disturbance. Off-site queuing will be minimized.

Proposed inbound and outbound truck routes to the site are shown on Figure 11. The proposed routes consider:

- Limiting transport through residential areas and past sensitive sites
- Use of city-mapped truck routes
- Minimization of off-site queuing of trucks entering the facility, to the extent possible
- Limiting the total distance to major highways
- Promoting safety in access to highways
- Overall safety in transport

A truck wash/cleaning area will be operated on site. The RE will be responsible for documenting that outbound trucks are washed and cleaned at the truck wash before leaving the site until the remedial construction is complete. Locations where vehicles enter or exit the site will be inspected daily for evidence of off-site sediment tracking.

If loads contain wet soil/fill capable of producing free liquid, truck liners will be used. The RE will be responsible for documenting that egress points for truck and equipment transport from the site are clean of soil or fill derived from the site during remediation and redevelopment. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived soil/fill.

5.4.5 Disposal Off-Site

Excavated soil and fill removed from the site will be handled, transported, and disposed of in accordance with local, state (including 6 NYCRR Parts 360), and federal regulations. If disposal

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of soil/fill is proposed for unregulated disposal (i.e., clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC's Project Manager. Unregulated off-site management of soil/fill from this site is prohibited without formal NYSDEC approval.

Excavated non-hazardous contaminated soil and hazardous waste (if encountered) must be disposed of at a facility licensed to accept the soil/fill. Non-hazardous soil/fill cannot be sent to a C&D debris handling and recovery facility without written approval from the NYSDEC. Hazardous waste is prohibited from being sent to a C&D debris handling and recovery facility (6 NYCRR Part 361-5). Hazardous waste derived from the site will be managed, transported, and disposed of in compliance with applicable local, state, and federal regulations.

The following documentation will be obtained by the RE and provided to NYSDEC for information and included in the FER for each off-site disposal location used in this project to fully demonstrate and document that the disposal of soil/fill derived from the site conforms to applicable laws:

1. A letter from the RE or Volunteer to the receiving facility describing the soil/fill to be disposed of and requesting formal written acceptance of the soil/fill. This letter will state that soil/fill to be disposed of is contaminated soil/fill generated at an environmental remediation site 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 all analytical data for the soil/fill being transported (including site characterization data); and
2. A letter from each receiving facility stating it received the correspondence (above) and is approved to accept the soil/fill. These documents will be included in the FER.

The FER will include an account of the destination of all contaminated soil, fill, and liquids removed from the site during the remedy, including excavated soil/fill, hazardous waste (if any), non-regulated soil, and fluids. Documentation associated with disposal must also include records (i.e., manifests, scale tickets) and approvals for receipt by the facilities. This information will also be presented in the FER.

5.4.6 On-site Reuse

Excavated soil will not be reused on site, unless it is from below the extents of the Track 1 cleanup area, as demonstrated by confirmation soil samples.

5.4.7 Fluids Management

Remedial and development-related excavation will extend below the current groundwater table in parts of the site, and localized dewatering will be required to reach required excavation depths. A temporary dewatering and treatment system will be designed by the Remediation Contractor's

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NYS-licensed Professional Engineer. Liquids to be removed from the site, including dewatering fluids, will be handled, transported, and disposed of in accordance with applicable local, state, and federal regulations. Liquids discharged into the NYC sewer system (if any) will be addressed through approval by NYCDEP.

During remedial excavation, sediment and erosion controls will be implemented to prevent groundwater encountered during excavation in saturated soils from flowing outside of the site. Trucks will be lined to contain free liquids in saturated soils from leaking out of the truck beds.

Dewatering fluids will not be recharged back to the land surface or subsurface. Dewatering fluids will be managed off-site. Discharge of water generated during remedial construction to surface waters (i.e., a local pond, stream, and/or river) is prohibited without a SPDES permit.

5.4.8 Backfill

Materials proposed for import will be approved by the RE and will be in compliance with provisions in this RAWP prior to transporting to the 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, Appendix 5, and "Sampling, Analysis and Assessment of PFAS under NYSDEC's Part 375 Remedial Programs", dated April 2023. 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 will consist of clean fill (as described in the following paragraph) or other acceptable fill such as virgin stone from a quarry.

Crushed virgin stone from a New York State-permitted mine or quarry may also be imported without chemical testing if sieve analysis shows no more than 10% by weight passing through a No. 80 sieve.

Imported soil (e.g., clean fill) will meet the UU SCOs for backfill within the Track 1 area. Backfill, other than SMDS stone, within the Track 4 area is not anticipated; however, any imported soil for backfill within the Track 4 area must meet the lower of Residential and Protection of Groundwater (PGW) SCOs. Non-compliant soil 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 CP-51 and DER-10 5.4(e). The samples will be analyzed for Part 375 VOCs, SVOCs, pesticides/herbicides, PCBs, cyanide, metals (including trivalent and hexavalent chromium), PFAS, and 1,4-dioxane (8270 SIM) 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 it is used as backfill.

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

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NYSDEC. The contents of this RAWP and NYSDEC approval of this RAWP should not be construed as an approval for this purpose.

Prior to import to the site, a Request to Import/Reuse Fill or Soil form, which can be found at http://www.dec.ny.gov/regulations/67386.html will be prepared and submitted to the NYSDEC Project Manager, allowing a minimum of five business days for review. Proposed import material will be approved by both the RE and the NYSDEC. Upon arrival, import material will be screened for visual, olfactory, and instrumental evidence of contamination.

Trucks entering the site with imported soil will be securely covered with tight fitting covers.

5.4.9 SWPPP

A SWPPP will be required for the site. Silt fencing or hay bales will be installed around the perimeter of the remedial construction area, as required. Barriers and hay bales will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the site and available for inspection by NYSDEC. All necessary repairs to silt fencing and/or hay bales shall be made immediately. Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering. Erosion and sediment control measures identified in the RAWP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to the sewer system. Implementation of the SWPPP will mitigate the discharge of erosional sediment to the NYC municipal sewer system.

5.4.10 Contingency Plan

If USTs or other previously unidentified contaminant sources are found during on-site remedial excavation or development-related construction, sampling will be performed on free product, if encountered, and surrounding subsurface materials (e.g., sediment, soil, stone, etc.). Chemical analyses will be for full scan parameters (Part 375 VOCs, SVOCs, PCBs, pesticides, herbicides, 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 daily reports and the subsequent monthly BCP progress reports.

5.4.11 Community Air Monitoring Plan

Community air monitoring will be conducted in compliance with the NYSDOH Generic CAMP outlined below and included in Appendix D. CAMP will be implemented during intrusive work

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within the site soil/fill. CAMP will cease after the removal of the defined remedial excavation unless another source of contamination is identified.

The CAMP includes real-time monitoring for VOCs and particulates at the downwind perimeter of ground-intrusive activities. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, and advancement of trenches and test pits. Periodic monitoring for VOCs is required during non-intrusive activities such as the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of collecting a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well bailing/purging, and collecting a reading before leaving a sample location.

CAMP monitoring for VOC levels will be conducted with PIDs, and monitoring for dust/particulates will be conducted with particulate sensors equipped with filters to detect particulate matter less than 10 microns in diameter (PM10). Monitoring for particulates and odors will be conducted during all ground intrusive activities by the RE's field inspector. The work zone is defined as the general area in which machinery is operating in support of remediation. A portable PID will be used to monitor the work zone and for periodic monitoring of VOCs during activities such as soil and groundwater sampling. The site perimeter will be visually monitored for fugitive dust emissions.

The following actions will be taken based on measured VOC levels:

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

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The following actions will be taken based on measured particulate levels and visual dust observations:

- If the downwind particulate level is 100 µg/m³ greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work zone, then dust suppression must be employed. Work may continue with dust suppression techniques provided that 15-minute average downwind PM10 levels do not exceed 150 µg/m³ above the background level and provided that no visible dust is migrating from the work zone.
- If, after implementation of dust suppression techniques, 15-minute average downwind PM10 levels are greater than 150 µg/m³ above the background level, work must be stopped and a re-evaluation of work initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind 15-minute average PM10 concentration to within 150 µg/m³ of the upwind level and in preventing visible dust migration.

Concentrations above action levels established in the CAMP will be reported to the NYSDEC and NYSDOH Project Managers and included in the daily report. In addition, a map showing the locations of the downwind and upwind CAMP stations will be included in the daily report.

5.4.12 Odor, Dust, and Nuisance Control Plan

Dust, odor, and nuisance control will be accomplished by the contractor as described in this section. Invasive development work will be conducted in accordance with the dust and odor suppression methodology defined in the RAWP.

5.4.12.1 Odor Control Plan

This odor control plan is capable of controlling emissions of nuisance odors off-site. Specific odor control methods to be used on a routine basis will include the application of foam suppressants or tarps over the odorous 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 are abated. The NYSDEC and NYSDOH will be notified of all odor events and of all other complaints about the project. Documentation of odor and vapor controls, including notifying the Contractor and owner of potential halt of work conditions, will be the responsibility of the RE, who is responsible for certifying the FER. The application of odor controls is the responsibility of the Contractor.

All necessary means will be employed to prevent on- and off-site nuisances. If odors develop and cannot be otherwise controlled, means to eliminate nuisance conditions may include: (a) shrouding open excavations with tarps and other covers; (b) use of odor-suppressing foam; (c)

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use of chemical odorants in spray or misting systems; and, (d) use of staff to monitor odors in the surrounding neighborhood.

5.4.12.2 Dust Control Plan

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved using dedicated on-site water spraying for road wetting. The water source will be equipped with a water cannon, as required, capable of spraying water directly onto off-road areas, including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soil vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water spraying.

5.4.12.3 Other Nuisances

A plan for rodent control will be developed and employed by the Contractor prior to and during site clearing and site grubbing, and during all 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.

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6.0 CONTAMINATION TO REMAIN ON-SITE

In the Track 1 area of the site, ECs are not required as all contaminated soil will be removed. If confirmation sampling in the Track 1 area indicates that residual soil exceeds UU SCOs and over-excavation to achieve UU SCOs is not practical, areas containing residual soil exceeding the UU SCOs will achieve a Track 4 remedy, and the composite cover system will serve as a long-term EC.

Because residual contaminated soil will exist beneath the Track 4 area after the remedy is complete, ECs/ICs are required to protect human health and the environment. These ECs/ICs are described hereafter. Long-term management of ECs/ICs and of residual contamination in the Track 4 area will be executed under a site-specific SMP that will be developed and included in the FER. The Track 4 area will have two primary EC systems to protect public health and the environment: 1) a composite cover system consisting of a concrete topping slab and 2) a soil vapor mitigation system consisting of an active SMDS and a waterproofing/vapor barrier membrane between the existing slab and a topping slab.

The FER will provide tables and figures documenting remaining contamination. This will include presentation of concentrations exceeding Track 1 and 4 cleanup standards.

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7.0 ENGINEERING AND INSTITUTIONAL CONTROLS

Following completion of the remedy, it is anticipate that the site will achieve a split Track 1/Track 4 remedy. The site footprint, excluding the portion of the building to be renovated, is anticipated to achieve a Track 1 UU remedy and no contamination above the UU SCOs will remain in place throughout this portion of the site. The portion of the building to be renovated is anticipated to achieve a Track 4 remedy and will require ECs and ICs. The proposed ECs and ICs for the Track 4 area of the site are detailed below.

7.1 Engineering Controls

7.1.1 Composite Cover System

Exposure to remaining contaminated soil in the Track 4 area would be prevented by an engineered composite cover system consisting a newly constructed concrete topping slab within the portion of the building remaining on-site. The composite cover system layout is shown on Figure 12. The topping slab will be placed above the preexisting slab and stone for SMDS (discusses in Section 7.1.2).

The SMP will outline the procedures to be followed in the event that the composite cover system and underlying remaining soil are disturbed after the remedial action is complete. The composite cover system is a permanent control, and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity, and following any significant storm and/or flooding events that have the potential to compromise the system. Maintenance of this composite cover system and the frequency of inspections will be described in the SMP.

7.1.2 Sub-Membrane Depressurization System

An SMDS and a continuous waterproofing/vapor barrier membrane will be installed between the existing slab and a topping slab within the portion of the building to remain (Track 4 area). The SMDS will consist of a network of perforated piping installed within an approximately 3-inch-thick layer of ¾-inch virgin stone. The vapor collection screens will converge into one riser pipe that will be connected to a roof-mounted blower and exhaust pipe. The SMDS will mitigate soil vapor intrusion of contaminated vapors originating from remaining on-site contamination or off-site sources into the renovated building by directing the vapors collected in the subsurface to an exhaust pipe on the roof. The SMDS will be listed as an EC. Soil vapor mitigation design documents will be developed in coordination with the architect and mechanical engineer during the building design process and will be provided for NYSDEC review. Horizontal extents of the proposed SMDS are shown in Figure 12 and design drawings for the system are provided in Appendix E.

Ongoing operation, monitoring and maintenance requirements related to the SMDS will be presented in the SMP, discussed further in Section 7.3. Use of the SMDS will not be discontinued

without written approval by NYSDEC and NYSDOH. A proposal to discontinue the SMDS, which should be based on confirmatory data that justifies discontinuation, may be submitted by the property owner. The SMDS will remain in place and operational until permission to discontinue use is granted in writing by NYSDEC and NYSDOH.

7.2 Institutional Controls

Two elements have been designed to guide continual and proper management of residual contamination in perpetuity: an EE and an SMP. These elements are described in this section.

An EE for the Track 4 area will be recorded with the New York County to provide an enforceable means for the continual and proper management of residual contamination and protection of public health and the environment in perpetuity or until released in writing by NYSDEC. It requires that the grantor of the EE and the grantor's successors and assignees adhere to all ECs and ICs placed on this site by this NYSDEC-approved remedy. ICs provide restrictions for on-site usage and mandate operation, maintenance, monitoring, and reporting measures for all ECs and ICs. The SMP describes appropriate methods and procedures for compliance with all ECs and ICs that are required by the EE. Once the SMP has been approved by the NYSDEC, compliance with the SMP is required by the grantor of the EE and the grantor's successors and assignees.

7.2.1 Environmental Easement

An EE, as defined in Article 71, Title 36 of the ECL, is required when remaining contamination is left on-site after the remedy is complete. A Track 4 cleanup requires that an EE approved by the NYSDEC be filed and recorded with the NYC Office at the City Register before the COC can be issued by the NYSDEC. The recorded EE will be submitted as part of the FER.

The EE renders the site a Controlled Property. The easement will list the ECs and ICs required under this remedy to prevent future exposure to remaining contamination, including controlling disturbances of the subsurface remaining contamination and restricting the use of the site to commercial or industrial uses only. The ICs are generally subdivided between controls that support ECs and those that place general restrictions on site usage or other requirements. ICs in both groups are closely integrated with the SMP, which provides the methods and procedures to be followed to comply with this remedy.

Under the combined Track 1/Track 4 scenario, the EC will be in the form of a long-term cover and SMDS in the Track 4 area. The ICs that support ECs are:

- Compliance with the EE by the grantor and the grantor's successors and adherence to all

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elements of the SMP is required

- ECs must be operated and maintained as specified in the SMP
- All ECs must be inspected, certified, and maintained as required in the SMP
- ECs on the Controlled Property must be inspected and certified at a frequency and in a manner defined in the SMP
- Data and information pertinent to site management must be reported at the frequency and in a manner defined in the SMP
- On-site environmental monitoring and SMDS devices, including but not limited to SMDS blower(s), must be protected and replaced as necessary to ensure proper functioning in the manner specified in the SMP
- ECs may not be discontinued without an amendment or extinguishment of the EE.

Adherence to these ICs is mandated by the EE and will be implemented under the SMP (discussed in the next section).

The Controlled Property (site) will also have a series of ICs in the form of site restrictions and requirements. The site restrictions that apply to the Controlled Property are:

- Vegetable gardens and farming in residual site soil on the Controlled Property are prohibited.
- Use of groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for intended purpose as approved by NYSDOH and NYSDEC.
- All future activities on the Controlled Property that will disturb residual contaminated material, if present, 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, commercial and manufacturing use only (as allowed by zoning), provided the long-term ECs and ICs included in the SMP are employed.
- The Controlled Property may not be used for a higher level of use, such as unrestricted or residential (single family) use without an amendment or extinguishment of this EE.
- Grantor agrees to submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC

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retains the right to access such Controlled Property at any time to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow. This statement must be certified by an expert that the NYSDEC finds acceptable.

7.3 Site Management Plan

Post-remediation Site Management will be required for the Track 4 area. Site Management is the last phase of remediation and begins with the approval of the FER and issuance of the COC for the Remedial Action. The SMP is submitted as part of the FER but will be written in a manner that allows its use as a complete and independent document. Site Management continues in perpetuity or until released in writing by NYSDEC. The property owner is responsible for ensuring that all site management responsibilities defined in the EE and the SMP are performed.

The SMP 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: (1) development, implementation, and management of all ECs and ICs; (2) development and implementation of monitoring systems and a Monitoring Plan; (3) development of a plan to operate and maintain any treatment, collection, containment, or recovery systems (including, where appropriate, preparation of an Operation and Maintenance Manual); (4) submittal of site management reports (i.e., Periodic Review Report), performance of inspections and certification of results, and proper communication of site information to NYSDEC; and (5) defining criteria for termination of treatment system operation, if applicable.

To address these needs, this SMP will include four plans: (1) an Engineering and Institutional Control Plan for implementation and management of IC/ECs; (2) a Monitoring Plan for implementation of site Monitoring; (3) an Operation and Maintenance Plan for implementation of remedial collection, containment, treatment, and recovery systems; and (4) a site Management Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC. The SMP will be prepared in accordance with the requirements in NYSDEC Draft DER 10 Technical Guidance for Site Investigation and Remediation and the guidelines provided by NYSDEC.

Site management activities, reporting, and IC/EC certification will be scheduled on a certification period basis. The certification period will be annual, unless otherwise approved by NYSDEC. The SMP will be based on a calendar year and will be due for submission to NYSDEC three months following the end of the reporting period.

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There will be no exclusions for following the requirements associated with the remaining contaminated soil handling will be provided in the SMP. All handling of remaining contaminated material will be subject to provisions contained in the SMP.

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8.0 FINAL ENGINEERING REPORT

An FER, prepared in accordance with DER-10, will be submitted to NYSDEC after implementation of the remedial action defined in this RAWP. The FER will include the following documentation:

- Documentation that the remedial work required under this RAWP has been completed and performed in compliance with this plan
- A comprehensive account of the locations and characteristics of all soil/fill removed from the site, including the surveyed map(s) of all sources, as necessary
- As-built drawings for constructed elements, certifications, manifests, and bills of lading
- A tabular summary of all performance evaluation sampling results and all material characterization results and other sampling, and chemical analysis performed as part of the remedy
- A written and photographic documentation (via daily field reports) of the completed remedy
- A description of any deviations from the RAWP
- An account of soil/fill material exported from the site, including waste types and volumes, waste characterization documentation, facility-signed manifests and scale tickets, facility approvals, and other waste disposal documentation
- An account of the materials imported to the site
- A tabular summary of post-excavation documentation sampling results and other sampling and laboratory analysis completed as part of the remedial action
- As-built drawings for ECs and commissioning test results (as necessary)

Before approval of an FER and issuance of a COC, all project reports must be submitted in digital form on electronic media (i.e., PDF).

8.1 Certifications

The following certification will appear in front of the Executive Summary of the FER. The certification will be signed by the RE, Gerald Nicholls, who is a Professional Engineer registered in New York State. This certification will be appropriately signed and stamped. The certification will include the following statements:

I, _____, am currently a registered professional engineer licensed by the State of New York. I had primary direct responsibility for the implementation of the remedial program activities, and I certify that the RAWP dated [month day year] was implemented and

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that all construction activities were completed in substantial conformance with the Department-approved RAWP.

I certify that the site description presented in this FER is identical to the site descriptions presented in the EE, the SMP, and the BCA for The Beacon project (C231155) and related amendments.

I certify that the remedial activities were observed by engineers, geologists and scientists under my supervision and that the remediation requirements set forth in the RAWP and any other relevant provisions of ECL 27-1419 have been achieved.

I certify that all use restrictions, ICs, ECs, and all operation and maintenance requirements applicable to the site are contained in an EE 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. An SMP has been submitted by the Volunteer for the continual and proper operation, maintenance, and monitoring of all ECs 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, and liquids from the property was performed in accordance with the RAWP 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 soil from off-site was performed in accordance with the RAWP.

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 RAWP.

I certify that the data submitted to the Department with this FER demonstrates that the remediation requirements set forth in the RAWP and in all applicable statutes and regulations have been or will be achieved in accordance with the time frames, if any, established for the remedy.

I certify that all data generated in support of this report have been submitted in accordance with the Department's electronic data deliverable and have been accepted by the Department.

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. I, [name], of [business address], am certifying as Owner's Designated Site Representative (and if the site consists of multiple properties): [and I have been authorized and designated by all site owners to sign this certification] for the site.

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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.

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9.0 SCHEDULE

Remediation activities are anticipated to take about 7 months. After completion of remediation, an FER will be submitted to NYSDEC as detailed in Section 8.0. The project is anticipated to start in 2026. A remedial action construction schedule is included in Appendix J.

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