
REMEDIAL ACTION WORK PLAN

for

CITY DPW YARD
224 East Main Street
New Rochelle, New York
NYSDEC BCP Site No. C360101

Prepared for:

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CERTIFICATION

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

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

DRAFT

NYS Professional Engineer #092433

Date

Signature

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

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LIST OF ACRONYMS

Acronym	Definition
Alpha	Alpha Analytical, Inc.
AOC	Area of concern
AST	Aboveground storage tank
BCA	Brownfield Cleanup Agreement
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	Contaminant of concern
CP	Commissioner Policy
CQAP	Construction Quality Assurance Plan
CSM	Conceptual site model
CVOC	Chlorinated volatile organic compound
DER	Division of Environmental Remediation
DER-10	Technical Guidance for Site Investigation and Remediation
DMM	Division of Materials Management
DPW	Department of Public Works
DUSR	Data usability summary report
EC	Engineering control
ECL	Environmental Conservation Law
EE	Environmental easement
el	Elevation
ELAP	Environmental Laboratory Approval Program
ELM	Environmental Liability Management of New York, LLC
ESA	Environmental Site Assessment
eV	Electron volt
FER	Final Engineering Report
FWRIA	Fish and Wildlife Resources Impact Analysis
HASP	Health and Safety Plan
IC	Institutional control
Langan	Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.
LNAPL	Light non-aqueous phase liquid
mg/kg	Milligram per kilogram
mg/L	Milligram per liter

Acronym	Definition
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
PCE	Tetrachloroethene
PE	Professional Engineer
PFAS	Per- and polyfluoroalkyl substances
PGW	Protection of Groundwater
PID	Photoionization detector
PM10	Particulates less than 10 microns in diameter
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
RCRA	Resource Conservation and Recovery Act
RE	Remedial Engineer
REC	Recognized environmental condition
RI	Remedial Investigation
RIR	Remedial Investigation Report
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
SPDES	State Pollutant Discharge Elimination System
SRI	Supplemental Remedial Investigation
STARS	Spills Technology and Remediation Series
SVOC	Semivolatile organic compound
SWPPP	Stormwater Pollution Prevention Plan
TAL	Target Analyte List
TCE	Trichloroethene
TCL	Target Compound List

Acronym	Definition
TOC	Total organic carbon
TOGS	Technical and Operational Guidance Series
TPH	Total petroleum hydrocarbon
USEPA	United States Environmental Protection Agency
UST	Underground storage tank
UU	Unrestricted Use
VOC	Volatile organic compound
WCDOH	Westchester County Department of Health
6 NYCRR	Title 6 of the New York Codes, Rules, and Regulations
µg/L	Microgram per liter
µg/m ³	Microgram per cubic meter

EXECUTIVE SUMMARY

Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. (Langan) prepared this Remedial Action Work Plan (RAWP) on behalf of Pratt Landing Partners LLC (the Volunteer) for the City Department of Public Works (DPW) Yard Site at 224 East Main Street in New Rochelle, New York (the site). The site is also identified on the Westchester County Tax Map as part of Section 1, Block 84, Lot 5. The Volunteer entered into the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) to investigate and remediate the site in accordance with a Brownfield Cleanup Agreement (BCA), which was executed on August 21, 2015 and amended on March 22, 2023. The site was assigned BCP Site No. C360101. As part of the March 22, 2023 BCA Amendment, a 16,215-square-foot area was transferred from the western part of the City DPW Yard site (C360101) to the southwest-adjointing AMN BCP site (C360201). This area is referred to as the “BCP Swap Area” and is depicted on Figure 1. Upon completion of the remedial action described herein and the subsequent construction, the site will be improved with multi-story mixed-use residential and commercial buildings with ground-level retail spaces, residential units, and sub-grade parking. Landscaped areas, including parkland and a waterfront promenade, and roadways will comprise the remainder of the site.

This RAWP identifies and evaluates remedial action alternatives and recommends a split Track 1 / Track 4 remedy to address petroleum impacts in soil, groundwater, and soil vapor; semivolatile organic compounds (SVOC), polychlorinated biphenyls (PCB), pesticides and metals in historic fill and underlying soil; and chlorinated volatile organic compounds (CVOC) in soil vapor at the site. The proposed remedy was developed based on data gathered during Langan’s August to September 2019 Remedial Investigation (RI) and the November to December 2021 supplemental remedial investigation (SRI).

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. The RI Report (RIR) and Addendum to the RIR were approved by the NYSDEC and New York State Department of Health (NYSDOH) on October 27, 2022.

Site Description/Physical Setting/Site History

The site is at 224 East Main Street in New Rochelle, New York and is identified as part of Section 1, Block 84, and Lot 5 on the Westchester County Tax Map. The mostly asphalt-paved site is 273,209 square feet (\pm 6.27 acres) in area. The site is currently occupied by the City of New Rochelle’s DPW. The DPW uses or has historically used the property for: 1) the office/administrative base for its routine operations; 2) a transfer station for recyclables collected from city residents; 3) road salt storage; 4) municipal vehicle and truck storage and repair; and 5) washing street-sweeping vehicles. The DPW’s facilities include several interconnected and vacant one-story brick and concrete structures in the northern part of the site, one one-story brick structure in the western part of the site, and one one-story corrugated metal structure in

the southern part of the site. The interconnected structure was previously used for offices and is now vacant, the one-story brick structure is used for vehicle storage, and the one-story corrugated metal structure is used for the maintenance and repair of city-owned vehicles. A vehicle fueling island is located in the southern part of the site, outside of the one-story metal building. Municipal sewer and water easements, about 15 to 20 feet in width, are located along the northeastern boundary of the site and extend to the eastern property boundary, as shown on Figure 1.

The site is in an urban setting that is characterized by residential, commercial, and light industrial buildings. The site is bound by East Main Street to the northwest; a vacant one-story building to the northeast (214 East Main Street); the surface waters of Echo Bay to the east and southeast, and another BCP site (No. C360201) referred to as the “AMN Site” (260 Main Street) to the west and southwest.

Summary of the Remedial Investigation

The RI was implemented between August 21 and September 13, 2019 to investigate areas of concern (AOC) and to determine the nature and extent of contamination in soil, groundwater, and soil vapor to design a remedy that will be protective of human health and the environment. Findings and conclusions are as follows:

1. **Stratigraphy:** Historic fill consisting predominantly of greyish brown, fine- to medium-grained sand with varying amounts of silt, clay, gravel, brick, coal ash, concrete, asphalt, and wood was encountered across the site beneath the surface cover to depths from about 1 to 20 feet below grade surface (bgs), and in some areas extends to shallow bedrock. Soil encountered below historic fill predominantly consists of fine- to medium-grained sand with varying amounts of fine gravel, peat, silt, and clay. According to the July 2012 Preliminary Geotechnical Assessment Report prepared by Haley & Aldrich of New York (Haley & Aldrich), test borings revealed fill and alluvial and till deposits overlying bedrock across the site; depth to bedrock ranges from 1 to 38.5 feet bgs. The bedrock consists of decomposed to intact granulate/gneiss and schist. During Langan’s 2019 RI, refusal due to presumed bedrock was encountered from about 1.5 to 12 feet bgs in borings in the northwestern and southwestern parts of the site. Borings on the eastern half of the site did not encounter refusal above the boring termination depth, and likely terminated above bedrock, based on the findings from the Haley & Aldrich geotechnical investigation. The bedrock surface slopes down from west to east (towards Echo Bay).
2. **Hydrogeology:** Synoptic groundwater measurements were collected on September 11, 2019 from all groundwater monitoring wells installed during the 2019 RI. Groundwater depths ranged from about 6 to 11 feet bgs, corresponding to elevation (el) 1.18 to 4.83. Groundwater generally flows to the east towards Echo Bay. Underground utilities, stratigraphy, and other subsurface structures may locally influence the direction of groundwater flow.
3. **Petroleum Impacts in Soil, Groundwater, and Soil Vapor:** Petroleum-related contamination was identified in the southeastern part of the site from below surface cover to about 20 feet bgs and

in the vicinity of EB05/EB06 (10 to 15 feet bgs) and EB25 (0 to 3 feet bgs), where localized impacts were identified. The localized petroleum-impacted hotspot around EB25 is about 1,000 square feet, the petroleum-impacted hotspot around EB05 and EB06 is about 9,000 square feet, and the petroleum-impacted hotspot around Roux Associates, Inc. (Roux) boring SB-5 is about 1,500 square feet. Photoionization detector (PID) headspace readings of up to 1,147 parts per million (ppm), petroleum-like odors, and petroleum-related volatile organic compounds (VOC) and/or SVOCs above the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values (SGV) for Class GA Water (collectively referred to as SGVs) were identified at monitoring wells EW03, EW04, EW10, EW14, EW15, and EW19 through EW22. Naphthalene was also identified in EW14, EW19, EW21 and EW22 at concentrations above the SGV.

Petroleum-related VOCs were detected in soil vapor across the site.

Petroleum-related contamination in soil, groundwater, and soil vapor is related to historical and current petroleum bulk storage (PBS) and site uses (including use of an oil/water separator and vehicle fueling and maintenance).

4. Historic Fill: SVOCs were detected in historic fill across the site at concentrations exceeding the Title 6 of the New York Codes, Rules, and Regulations (6 NYCRR) Part 375 Unrestricted Use (UU) or Restricted Use Restricted-Residential (RURR) Soil Cleanup Objectives (SCO) to depths up to 20 feet bgs. Metals, including barium, cadmium, trivalent chromium, copper, lead, mercury, nickel, silver, and zinc, were detected above UU and/or RURR SCOs in historic fill samples collected throughout the site. Three pesticides, 4,4'-DDD, 4,4'-DDE and 4,4'-DDT' were detected above the UU SCOs. PCBs were detected at concentrations above the Part 375 UU SCO in EB07, EB24, EB25, and EB_S10. SVOCs, PCBs, pesticides, and metals in soil are likely related to the nature of the historic fill. Pesticides may also be attributed to potential historical application of pesticides at the site and SVOCs may also be attributed to petroleum impacts, particularly in borings that correlate with observations of odors, staining and/or PID readings or VOC impacts. SVOCs and total metals (lead) were detected in groundwater at concentrations above the SGVs. With the exception of naphthalene, the SVOCs in groundwater are likely attributed to suspended particulates (historic fill) in the groundwater column.
5. CVOCs in Soil: One CVOC (methylene chloride) was detected above the UU SCO in soil adjacent to the office building in the northwestern part of the site and in the eastern and southeastern parts of the site, hydraulically downgradient of the vehicle repair garage and street sweeper wash down area.
6. Native Soil: Five metals (barium, cadmium, trivalent chromium, mercury, and nickel) were detected above the Part 375 UU SCOs in soil samples collected from EB20_9-10 and EB20_18-19. PCBs were also detected in a soil sample (EB20_9-10) at concentrations above the UU SCO. These detections may be a result of infiltration of historic fill into the boreholes during sample collection.

7. Soil Vapor: Petroleum-related VOCs were detected in soil vapor. The chlorinated solvents tetrachloroethene (PCE), trichloroethene (TCE), 1,1,1-TCE, carbon tetrachloride and methylene chloride were detected in soil vapor and/or indoor air samples at concentrations with recommended actions ranging from no further action to mitigate per the soil vapor guidance. PCE and carbon tetrachloride were detected in all air samples. TCE was detected in SSV02 and SSV05 and methylene chloride was detected in indoor air sample IA01 and sub-slab vapor sample SSV06. CVOCs in soil vapor may be indicative of a chemical release of unknown origin or use of cleaning solvents on-site in the vehicle repair garage or vehicle storage garage. However, during the indoor air quality survey and chemical inventory, no sources of sub-slab soil vapor, soil vapor, and/or indoor air contaminants were identified.
8. Fish and Wildlife Resources Impact Analysis (FWRIA): An FWRIA was completed as part of the RI and is included as Appendix K of the RIR. The FWRIA identified Echo Bay as a sensitive natural resource in the area surrounding the site. Any potential soil impacts at the site are not expected to impact Echo Bay due to current site conditions (impervious surfaces across a majority of the site). Based on a review of groundwater data collected during the Supplemental RI, groundwater impacts are not migrating to Echo Bay.

Qualitative Human Health Exposure Assessment

Based on the conceptual site model (CSM) developed based on the findings of the RI and the review of environmental data, complete on-site exposure pathways appear to be present in current conditions. Complete on-site exposure pathways would only exist in construction-phase and future conditions in the absence of engineering controls (EC) and institutional controls (IC). The complete exposure pathways indicate there is a risk of exposure to humans from site contaminants via exposure to soil, groundwater, and soil vapor if mitigation measures and controls are not implemented.

Current Conditions

Contaminant sources include historic fill with varying concentrations of SVOCs, PCBs, pesticides, and metals; petroleum-impacted soil and groundwater containing varying concentrations of VOCs and/or SVOCs; and soil vapor with CVOCs and petroleum-related VOCs.

Contaminant release and transport mechanisms include potential release and transport during penetration of the site cover for soil, groundwater, and soil vapor sampling and potential exposure through soil vapor intrusion into existing buildings. The potential receptor population is the on-site sampling personnel, City DPW employees, and the nearby community. Under current conditions, the likelihood of exposure to humans is limited due to the following:

- The site footprint is mostly covered by continuous concrete building slabs and asphalt pavement, which prevent direct contact with soil, groundwater, and soil vapor. Exposed soil exists in the southern and northwestern parts of the site in areas that are used for sanitary truck parking and

recyclable storage, respectively; exposure to surficial soils through direct contact and inhalation may occur in these areas.

- The site is fenced off and the office building along Main Street is vacant and locked, preventing access to the community and limiting exposure via inhalation of impacted vapor by site workers in the office building. Sampling activities are completed in accordance with the site-specific Construction Health and Safety Plan (CHASP) and Community Air Monitoring Plan (CAMP) that is designed to monitor and prevent exposure to soil, groundwater, and soil vapor contaminants.
- Groundwater at the site is not a potable water source.

Construction/Remediation Activities

During the excavation and foundation construction stage of redevelopment, which will include remediation, points of exposure include disturbed and exposed soil during excavation, dust and potential organic vapors generated during excavation, and contaminated groundwater encountered during excavation and/or dewatering operations. Routes of exposure include ingestion and dermal absorption of contaminated soil and groundwater, inhalation of potential organic vapors arising from contaminated soil vapor and groundwater, and inhalation of dust originating from contaminated soil. The receptor population includes remediation and construction workers, and the nearby community.

All five elements exist; therefore, the potential for completed exposure pathways is present. The risk can be avoided by applying health and safety measures, such as monitoring the air for organic vapors and dust, using vapor and dust suppression measures, maintaining site security, and wearing personal protective equipment (PPE). In accordance with the Health and Safety Plan (HASP)/CHASP, a RAWP, and a CAMP, measures such as conducting an air monitoring program, donning PPE, and applying vapor and dust suppression measures to prevent off-site migration of contaminants during construction will be implemented. Such measures will prevent completion of these potential migration pathways.

Proposed Future Conditions

Under the proposed future conditions, some contaminants may remain on-site, depending on the remedy, and will, to a lesser extent, include those listed under current conditions. If remaining impacts exist and ECs and ICs are not implemented, points of exposure would potentially include cracks in the foundation of the proposed development, exposure during any future ground-intrusive work, or inhalation of vapors entering the building. The receptor population would include residential- and commercial-use occupants, employees, and the nearby community. The possible routes of exposure can be avoided or mitigated by maintenance of a site capping system (e.g., concrete building slabs, asphalt roadways and at least 2 feet of clean soil in landscaped areas); installation of a waterproofing/vapor barrier and/or active vapor mitigation controls in new buildings, if required; implementation of a Site Management Plan (SMP); and placement of an environmental easement (EE) at the site, if necessary depending on the remedy.

Human Health Exposure Assessment Conclusions

1. In the absence of mitigation and controls, there is potential for exposure during remediation/construction activities. The primary exposure pathways are:
 - a. Dermal contact, ingestion, and inhalation of contaminated soil, groundwater, and/or soil vapor by construction workers

Dermal contact, ingestion, and inhalation of soil (dust) and inhalation of soil vapor by the community in the vicinity of the site. These can be avoided or minimized by implementing CAMP and by following the appropriate HASP, vapor and dust suppression, soil erosion and sediment control, site security measures, and following a NYSDEC-approved RAWP.
2. The existence of a complete exposure pathway for site contaminants to human receptors during proposed future conditions is unlikely. The site will be remediated and ICs and ECs will be in-place to mitigate any exposure risk related to remaining contamination. Further, regional groundwater is not used as a potable source in New Rochelle.
3. It is possible that a complete exposure pathway exists for the migration of site contaminants to off-site human receptors during current, construction-phase, and future conditions, primarily through exposure to surficial soil through direct contact and/or inhalation. Such exposure can be prevented or mitigated by implementation of monitoring and control measures. Under future conditions, remediation and ECs and ICs would prevent completion of this exposure pathway.

Summary of the Remedy

It is anticipated that the site will be remediated to meet Track 1 UU and Track 4 RURR standards. The recommended Alternative II split Track 1 / Track 4 remedy will include the following:

- Development and implementation of a CHASP and CAMP for the protection of on-site workers and the community during remediation
- Abatement of hazardous building materials within existing structures prior to demolition and site-wide remediation
- As a pre-requisite to site remediation, removal of the surficial asphalt cover and subsurface obstructions (e.g., remnant foundation elements) by the contractor and management of removed asphalt as construction and demolition (C&D) debris in accordance with Part 360 and 361 regulations. Review and certification of C&D transport and disposal methodologies will be the responsibility of 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.
- Excavation and off-site disposal of contaminated soil exceeding the Part 375 UU SCOs within the about 157,400-square-foot Track 1 area

- Excavation of an about 115,400-square-foot area up to 2 feet bgs to install a composite cover system within the Track 4 area
- Screening of excavated soil for indications of contamination by visual, olfactory, and instrumental methods
- Decommissioning and removal of any encountered underground storage tanks (UST) and aboveground storage tanks (AST) in accordance with 6 NYCRR Part 613 and NYSDEC DER-10 Section 5.5
- Handling, transport, and off-site disposal of excavated soil in accordance with federal, state, and local rules and regulations for handling, transport, and disposal
- Installation of support of excavation (SOE) components as needed to facilitate the remedial excavations
- Dewatering as needed to allow for excavation below the groundwater table, and treatment and discharge of dewatering fluids in accordance with applicable regulations
- Collection and analysis of confirmation endpoint soil samples, including quality assurance/quality control (QA/QC) samples, to verify that Track 1 UU SCOs are met at the base of the Track 1 excavation area
- Collection and analysis of documentation soil samples, including QA/QC samples, at the base of the remedial excavation within the Track 4 area to document remaining contamination
- Demarcation of remaining contaminated soil and fill within the Track 4 area by survey and a high-visibility demarcation barrier for visual reference
- Import and placement of fill (e.g., virgin crushed stone or soil) meeting the Part 375 UU SCOs to backfill remedial excavations within the Track 1 area, as needed. Requests for import of fill are subject to NYSDEC review and approval, and will include a Request to Import/Reuse Soil Form.
- Import and placement of fill (e.g., virgin crushed stone, recycled concrete aggregate [RCA], soil) meeting the lower of Part 375 RURR and Protection of Groundwater (PGW) SCOs to backfill remedial excavations within the Track 4 area and facilitate EC installation. Requests for import of fill are subject to NYSDEC review and approval, and will include a Request to Import/Reuse Soil Form.
- Stabilization of the Echo Bay shoreline using a combination of rip rap, living shoreline, and bulkheads, which will prevent erosion of remaining contaminated soil to Echo Bay.
- Installation of a continuous waterproofing/vapor barrier membrane beneath all new concrete building slabs

- Installation of a composite cover system within the Track 4 area, consisting of exterior hardscapes (i.e., asphalt roadways, concrete sidewalks, pavers), landscaped areas with at least 2 feet of fill meeting the lower of Part 375 RURR and PGW SCOs, and a stabilized shoreline along Echo Bay to prevent future exposure to remaining contaminated soil.
- Establishment of use restrictions (i.e., ICs) including prohibitions on the use of groundwater from the site and prohibitions on sensitive site uses, such as farming or vegetable gardening in remaining site soil, to prevent future exposure to remaining contamination within the Track 4 area
- Recording of an EE referencing ECs and ICs to prevent future exposure to remaining contamination within the Track 4 area
- Publication of an SMP for long-term management of remaining contamination as required by the EE within the Track 4 area, including plans for: 1) IC/EC implementation, 2) monitoring, 3) operation and maintenance, and 4) reporting

Remediation will be performed in accordance with this NYSDEC-approved RAWP.

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 Pratt Landing Partners LLC (the Volunteer) for the City Department of Public Works (DPW) Yard Site at 224 East Main Street in New Rochelle, New York (the site). The site is also identified on the Westchester County Tax Map as Section 1, Block 84, Lot 5.

The Volunteer entered into the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) to investigate and remediate the site in accordance with a Brownfield Cleanup Agreement (BCA) which was executed on August 21, 2015 and amended on March 22, 2023. As part of the March 22, 2023 BCA Amendment, a 16,215-square-foot area was transferred from the western part of the City DPW Yard site (C360101) to the southwest-adjointing AMN BCP site (C360201). This area is referred to as the “BCP Swap Area” and is depicted on Figure 1. The site was assigned BCP Site No. C360101. Upon completion of the remedial action described herein and the subsequent construction, the site will be improved with multi-story mixed-use residential and commercial buildings with ground-level retail spaces, residential units, and sub-grade parking. Landscaped areas and roadways will comprise the remainder of the site.

This RAWP identifies and evaluates remedial action alternatives and recommends a split Track 1 / Track 4 remedy to address petroleum impacts in soil, groundwater, and soil vapor; semivolatile organic compound (SVOC), polychlorinated biphenyls (PCB), pesticides and metals in historic fill and underlying soil; and chlorinated volatile organic compounds (CVOC) in soil vapor at the site. The proposed remedy was developed based on data gathered during Langan’s August to September 2019 Remedial Investigation (RI) and the November to December 2021 supplemental remedial investigation (SRI).

The recommended remedy described in this document is consistent with the procedures defined in the NYSDEC Division of Environmental Remediation (DER) Program Policy DER-10: 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. The RI Report (RIR) and Addendum to the RIR were approved by the NYSDEC and New York State Department of Health (NYSDOH) on October 27, 2022.

1.1 Site Location and Description

The site is at 224 East Main Street in New Rochelle, New York and is identified as Section 1, Block 84, and Lot 5 on the Westchester County Tax Map. The mostly asphalt-paved site is 273,209 square feet (\pm 6.27 acres) in area. The site is currently occupied by the City of New Rochelle’s DPW. The DPW uses or has historically used the property for: 1) the office/administrative base for its routine operations; 2) a transfer station for recyclables collected from city residents; 3) road salt storage; 4) municipal vehicle and truck storage and repair; and 5) washing street-sweeping vehicles. The DPW’s facilities include several

interconnected and vacant one-story brick and concrete structures in the northern part of the site, one one-story brick structure in the western part of the site, and one one-story corrugated metal structure in the southern part of the site. The interconnected structure was previously used for offices and is now vacant, the one-story brick structure is used for vehicle storage, and the one-story corrugated metal structure is used for the maintenance and repair of city-owned vehicles. A vehicle fueling island is located in the southern part of the site, outside of the one-story metal building. Municipal sewer and water easements, about 15 to 20 feet in width, are located along the northeastern boundary of the site and extend to the eastern property boundary, as shown on Figure 1.

The site is in an urban setting that is characterized by residential, commercial, and light industrial buildings. The site is bound by East Main Street to the northwest; a vacant one-story building to the northeast (214 East Main Street); the surface waters of Echo Bay to the east and southeast, and another BCP site (No. C360201) referred to as the “AMN Site” (260 Main Street) to the west and southwest. A site plan and location map are provided as Figure 1. A site survey also showing the west and southwest-adjointing AMN BCP Site (Site No. C360201) is provided in Appendix A.

In 2015, the City of New Rochelle restructured the existing zoning districts and created six form-based overlay zones called Downtown Overlay Zones. The site is within the DO-7 Waterfront Overlay District, which was adopted as the seventh overlay zone on December 14, 2021. DO-7 is defined as a waterfront district and allows for a range of mixed residential, commercial, industrial, and water-dependent uses.

1.2 Redevelopment Plan

The proposed remedial action is intended to render the site protective of human health and the environment consistent with the contemplated end use. The proposed redevelopment plan and end use are described here to provide the basis for this assessment; however, the contemplated remedy may be implemented independent of the proposed redevelopment plan.

The proposed redevelopment project is still in the early planning stages and is subject to change. Current redevelopment plans include abatement and demolition of the existing buildings and construction of mixed-use residential and commercial buildings with retail space. The development is anticipated to consist of multiple multi-story mixed-use residential and commercial buildings with ground-level retail. The proposed Buildings B1, B2, and B3 in the northern part of the site will share two below-grade cellar levels that encompass the entire Block B footprint and will be designated for subgrade parking, mechanical space, storage, and elevator pits. Proposed Buildings B1, B2, and B3 will consist of multi-story mixed-use commercial and residential buildings. The proposed Buildings C1, C2, and C3 will share two below-grade cellar levels that encompass the entire Block C footprint and will be designated for subgrade parking, mechanical space, storage, and elevator pits. Proposed Building C1 will consist of multi-story mixed-use commercial and residential buildings; proposed Building C2 will have at-grade retail and mechanical space and residential units throughout the remainder of the building; and, proposed Building C3 will consist of multi-family residential buildings. The redevelopment project also includes the

construction of public parkland space and a waterfront promenade in the eastern part of the site along Echo Bay. The proposed building footprints and block designations are presented in Figure 2.

1.3 Description of Surrounding Property

The site is located in an urban setting that is characterized by residential, commercial, and light industrial buildings. Because of the urban nature of the area, major infrastructure (e.g., storm drains, sewers, and underground utility lines) exist in the vicinity of the site. The closest ecological receptor is Echo Bay, which adjoins the site to the east and southeast. The following table includes a summary of surrounding properties and uses:

Direction	Adjoining Properties				Surrounding Properties
	Section No.	Block No.	Lot No.	Description	
Northeast	1	84	1	AAMCO Transmission & Total Car Care (vacant) (214 Main Street)	Commercial and institutional buildings New Rochelle Waste Water Treatment Plant
West and Southwest		84	5	City of New Rochelle Armory (vacant) (260 Main Street)	Industrial/manufacturing, residential, and commercial buildings
		84	22		
Northwest		258	32	Masterpieces Tile & Marble Corp (255 Main Street)	Industrial/manufacturing, residential, and commercial buildings
		264 (across Main Street)	1	Red Lotus Thai Restaurant (227 Main Street)	
				Joey's Delicatessen (225 Main Street)	
			2	Squiggy's Dugout (237A Main Street)	
				Fratelli Ristorante & Wine Bar (237 East Main Street)	
				Bagel Zone (243 Main Street)	
				Carvel (233 East Main Street)	
	B & A Barber Shop (229 Main Street)				
8	Knotz Hair Studio (241 Main Street)				
East and Southeast		Echo Bay			Surface waters of Echo Bay

No schools or daycare facilities are on or adjacent to the site. Sensitive receptors, as defined in DER-10, located within a half-mile of the site are listed in the following table:

Number	Name (Approximate distance from site)	Address
1	Salesian High School (approximately 0.19 miles northeast of the site)	148 East Main Street New Rochelle, NY 10801
2	Holy Name of Jesus (Elementary school – approximately 0.27 miles north of the site)	70 Petersville Road New Rochelle, NY 10801
3	Japanese Weekend School of NY (approximately 0.40 miles west of the site)	56 Harrison Street New Rochelle, NY 10801
4	The Learning Experience (Daycare – approximately 0.44 miles west of the site)	1 Bally Place New Rochelle, NY 10801
5	Creative Learning Center	17 Anderson Street

Number	Name (Approximate distance from site)	Address
	(Daycare – approximately 0.47 miles southwest of the site)	New Rochelle, NY 10801
6	Growing Minds of New York, Inc. (Daycare – approximately 0.48 miles southwest of the site)	466 Main Street New Rochelle, NY 10801

1.4 Site History

1.4.1 Historical Site Use

The site is in an urban setting that is characterized by residential, commercial, and light industrial buildings. The site was historically used as a boatyard (1911) and as a vehicle maintenance and repair site for the City of New Rochelle's DPW (1917 to 2022) with an on-site sewage disposal plant and multiple outdoor transformers (1926 to 1955).

1.4.2 Previous Reports and Investigations

Previous environmental reports were reviewed as part of the RIR and the RAWP and are summarized in chronological order below.

- June 20, 2007 Phase I Environmental Site Assessment (ESA), prepared by Environmental Liability Management of New York, LLC (ELM), prepared for the site and the western- and southwestern- adjoining AMN site (former Lot 0022 and Lot 0110).
- July 26, 2012 Preliminary Geotechnical Assessment Report, prepared by Haley & Aldrich of New York (Haley & Aldrich)
- August 28, 2012 Phase I ESA Report, prepared by Roux Associates, Inc. (Roux)
- May 21, 2013 Phase II ESA Report, prepared by Roux
- September 2020 Geotechnical Engineering Report, prepared by Langan, prepared for the site and the western- and southwestern- adjoining AMN site

The following previous environmental reports are included as Appendix A of the RIR, which is included in Appendix B to this RAWP.

June 20, 2007 Phase I ESA, prepared by ELM

The Phase I ESA was prepared for the site and the western- and southwestern- adjoining former Lot 0022, and former Lot 0110. Recognized environmental conditions (REC) associated with the site, as reported in this Phase I ESA, are listed below.

- Historical use of the site as a boat yard circa 1911 - Typical activities associated with boat yards include boat fueling, maintenance, and repair.

- Historical use of the site for vehicle maintenance and repair for the City of New Rochelle's DPW since about 1917 - Typical operations associated with vehicle maintenance and repair include the use of petroleum products, paints, and solvents.
- Aboveground Storage Tanks (AST) - During site reconnaissance and through interviews with site personnel, ELM identified 15 ASTs ranging in size from 275 to 5,000 gallons and containing gasoline, diesel fuel, fuel oil, antifreeze, engine oil, transmission oil, hydraulic fluid, and waste oil. In addition, several hydraulic oil ASTs associated with former hydraulic lifts were identified.
- Underground Storage Tanks (UST) - According to interviews with site personnel, up to nine USTs, ranging in size from 550 to 5,000 gallons and containing gasoline, diesel fuel, fuel oil, waste oil, and kerosene, were removed from the site between 1990 and 2003.
- Nine reported NYSDEC spill cases; three of which were listed as active
- Chemical storage, including multiple 55-gallon drums, observed during the site reconnaissance
- History of unauthorized dumping at the site from unknown sources and temporary storage of construction and demolition (C&D) debris
- An on-site oil-water separator to remove oil from water used in vehicle maintenance before effluent is discharged to the municipal sewer system
- Historical on-site transformers that may contain PCBs
- The site is listed in the Resource Conservation and Recovery Act (RCRA) Generator database for having generated 12,135 gallons of solid waste exhibiting characteristics of ignitability in 1983. No violations were associated with this listing.
- Prior to 2004, contaminated soil was identified and removed from the area between the one-story brick structure and one-story metal structure in the southern and western parts of the site, respectively. Following soil removal, six groundwater monitoring wells were installed and sampled; however, these investigation results were not provided for ELM's review. According to DPW personnel, three or four additional monitoring wells were installed in 2004 as part of an air sparging monitoring system for the remediation of contaminated groundwater.
- Additional contaminated soil was identified during installation of new underground piping connecting the gasoline and diesel ASTs to the fuel dispensing station in the southern part of the site.

July 26, 2012 Preliminary Geotechnical Assessment Report, prepared by Haley & Aldrich

Haley & Aldrich completed a preliminary geotechnical assessment for a previously-proposed Echo Bay waterfront redevelopment project. The assessment included the advancement of seven test borings and

an evaluation of information from five previous geotechnical test borings completed in 2007¹. Relevant findings from Haley & Aldrich's geotechnical assessment are summarized below:

- The test borings revealed fill and alluvial and till deposits overlying bedrock across the site. The thickness of fill and alluvial and till deposits varied across the site. Fill and bedrock were encountered in all borings, while alluvial and till deposits were not. In general, fill ranged from 1 to 15 feet thick, alluvial deposits ranged from 3 to 23.5 feet thick, and till deposits ranged from 2 to 5 feet thick.
- Depth to bedrock ranged from 1 to 38.5 feet across the site. The bedrock surface sloped downwards from the west to east across the site. The bedrock consisted of decomposed to intact granulite/gneiss and schist. The weathered bedrock ranged from about 1 to 12 feet thick.
- Depth to groundwater ranged from about 10 to 13 feet below grade surface (bgs).

August 28, 2012 Phase I ESA, prepared by Roux

The Phase I ESA report was prepared in general accordance with ASTM E 1527-05. Through a review of public records and a site reconnaissance, Roux identified RECs associated with historical and current uses, USTs, and open spill cases recorded with the NYSDEC. RECs identified in Roux's Phase I ESA report are summarized below:

- Five closed spill cases associated with the removal of nine former USTs containing motor oil, waste oil, fuel oil, gasoline, and diesel fuel
- Three open spill cases (NYSDEC Spill Nos. 10-11242, 01-01307, and 98-00763) concerning gasoline and fuel oil spills in the area between the vehicle storage building and vehicle repair building
- Suspect release of petroleum and hazardous substances to the subsurface in areas with observed staining and spalled concrete
- Current use of the site as the New Rochelle's DPW facility and transfer station - The facility includes vehicle storage and repair garages, oil-water separators from garage drainage systems, and in-ground hydraulic lifts containing hydraulic oil reservoirs. In addition, a gasoline and diesel fuel dispensing station was observed with little information on the conditions of the pumps and associated underground piping.

¹ The 2007 geotechnical investigation was mentioned in this report; however, a copy of the report was not included in the Haley & Aldrich report.

- Historical site uses - The site was historically used as a boatyard, a sewage disposal plant serviced by transformers, and as a vehicle maintenance and repair site for the City of New Rochelle's DPW.
- Two former fuel-oil USTs were reported to have been removed with limited information on the integrity of the tanks and associated piping.
- Several off-site monitoring wells were identified up-gradient of the site, indicating off-site contamination may have migrated on to the site.

May 21, 2013 Phase II ESA, prepared by Roux

The Phase II ESA was conducted in 2013 to investigate potential impacts from RECs identified in Roux's Phase I ESA and included:

- Advancement of 15 soil borings to depths up to 25 feet bgs;
- Collection of 21 soil samples for laboratory analysis;
- Installation of two permanent groundwater monitoring wells and one temporary monitoring well; and
- Collection of 11 groundwater samples from eight existing wells, two new permanent wells, and one temporary well.

The Phase II ESA yielded the following conclusions:

Soil

The site stratigraphy consists of a surficial layer of historic fill from 1 to 15 feet bgs. The historic fill is composed of varying amounts of sand, gravel, brick fragments, and other anthropogenic materials. Visual, olfactory, and/or photoionization detector (PID) evidence of petroleum impacts was observed in seven soil borings (SB5, SB7, SB10, SB11, SB12, SB13, and SB14). Separate-phase petroleum product or light non-aqueous phase liquid (LNAPL) was observed in soil borings SB12 and SB13. Boring locations from the Phase II ESA are presented on Figure 3.

The following constituents were detected in soil at concentrations (in milligrams per kilogram [mg/kg]) that exceed their respective Title 6 of the New York Codes, Rules, and Regulations (6 NYCRR) Part 375-6.8(a) Unrestricted Use (UU) and/or Part 375-6.8(b) Restricted Use Restricted-Residential (RURR) Soil Cleanup Objectives (SCO):

Volatile Organic Compounds (VOC): Six VOCs, including 1,4-dichlorobenzene, acetone, benzene, chlorobenzene, ethylbenzene, and total xylenes were detected above their UU SCOs. Benzene was detected above its RURR SCO.

SVOCs: Eight SVOCs, including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene and naphthalene were detected above the UU SCOs. With the exception of naphthalene, SVOCs also exceeded the RURR SCOs.

PCBs: Total PCBs were not detected above the UU SCO in any of the soil samples.

Pesticides: One or more pesticides, including 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT, were detected at concentrations exceeding the UU SCOs. None of the detections exceeded the RURR SCOs.

Metals: Six metals, including total chromium, copper, lead, mercury, nickel and zinc were detected above the UU SCOs. Only lead also exceeded its RURR SCO.

Groundwater

Depth to groundwater at the site ranged from about 5 to 10 feet bgs. The direction of groundwater flow was evaluated to be to the east-southeast towards Echo Bay. LNAPL was observed in three wells, MW1 (0.57 feet thick), OB1A (0.07 feet thick), and MW2 (0.04 feet thick). In addition, a petroleum sheen was observed at monitoring well RX2.

The following constituents were detected in groundwater at concentrations exceeding their respective NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values (SGV) for Class GA drinking water (ranges are provided):

VOCs: Up to seven VOCs, including benzene, ethylbenzene, isopropylbenzene, m&p xylenes, o-xylene, toluene, and xylenes were detected at concentrations above the SGVs in MW1 and MW2.

SVOCs: Up to seven SVOCs, including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, chrysene, and naphthalene, were detected at concentrations above the SGVs in MW1 and MW2.

Total Metals: Up to five metals, including cadmium, iron, lead, manganese, and sodium were detected at concentrations above the SGVs in MW1, MW2, MW4, MW5, MW7, MW8, OB1, RX1, RX2, SP2, and SB3.

Dissolved Metals: The sample collected from SB3 was filtered for dissolved metals. Iron, manganese, and sodium were detected at concentrations above the SGVs.

PCBs: PCBs were not detected in groundwater.

Pesticides: Pesticides were not detected in groundwater at concentrations above the SGVs.

The following previous report is included in Appendix B.

September 2020 Geotechnical Report, prepared by Langan

Langan completed a geotechnical investigation for the site and the western- and southwestern-adjointing AMN site (BCP No. C360201) to evaluate subsurface conditions within and around the proposed Pratt Landing development area. The assessment included the advancement of 13 geotechnical borings and completion of nine test pits. Relevant findings from the geotechnical investigation are summarized below:

- The borings and test pits indicate site stratigraphy consists of a fill layer beneath the surficial concrete and asphalt covered surfaces to depths of about 2.5 to 12 feet bgs. The fill generally consisted of dark brown to black sand with varying amounts of gravel, brick, concrete, wood, and

metal debris. Alluvial deposits consisting of dark brown and black to dark gray silt with varying amounts of clay and sand were observed below the fill layer. Bedrock was encountered across the City DPW Yard at depths of about 2.5 to 20 feet bgs.

DRAFT

2.0 DESCRIPTION OF REMEDIAL INVESTIGATION FINDINGS

The RI was implemented between August 21 and September 13, 2019 to investigate areas of concern (AOC) and to determine the nature and extent of contamination in soil, groundwater, and soil vapor, to the extent necessary to design a remedy that will be protective of human health and the environment. Langan conducted the RI in accordance with the NYSDEC-approved January 12, 2016 Remedial Investigation Work Plan, 6 NYCRR Part 375, DER-10 (May 2010), and the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (October 2006 and subsequent updates) (NYSDOH Soil Vapor Guidance). An SRI was conducted between November 22 and December 1, 2021 to evaluate groundwater quality within a strip of previously state-owned land along the Echo Bay shoreline and to confirm that on-site groundwater contamination is not migrating into Echo Bay. The findings of the SRI are incorporated herein and presented in the November 9, 2022 Addendum to the RIR. The November 11, 2022 RIR and the November 9, 2022 Addendum to the RIR are included in Appendix B.

2.1 Summary of the Remedial Investigation

The RI consisted of the following:

Geophysical Survey

- Conducted a geophysical survey to identify anomalies indicative of USTs and associated piping and clear boring locations from physical and/or subsurface utilities and structures

Soil Borings and Sampling

- Advanced 32 soil borings
- Field screened soil borings for environmental impacts using visual and olfactory methods and with a PID equipped with a 10.6 electron volt (eV) bulb
- Collected 51 grab soil samples (including three duplicate samples)

Monitoring Well Installation and Sampling

- Installed 12 permanent groundwater monitoring wells, one temporary groundwater monitoring well, and collected 15 groundwater samples from all newly installed wells (including two duplicate samples)
- Surveyed newly installed groundwater monitoring wells and performed synoptic gauging of groundwater depths to evaluate local groundwater flow direction

Soil Vapor, Sub-slab Vapor, Indoor Air, and Ambient Air Sampling

- Installed five soil vapor points and six temporary sub-slab vapor points and collected five soil vapor samples, six sub-slab vapor samples, four indoor air samples, and two ambient air samples

2.1.1 Geophysical Survey

On August 20, 2019, prior to intrusive field activities, Nova Geophysical Services (Nova) conducted a geophysical survey using ground-penetrating radar and electromagnetic detection equipment to document potential subsurface utilities, USTs, and subsurface anomalies at proposed investigation locations. Access for the geophysical survey was limited by equipment storage throughout the site.

2.1.2 Soil Investigation

AARCO Environmental Services Corp. of Lindenhurst, New York advanced 32 soil borings (EB01 through EB25 and seven delineation borings around EB25) across the site footprint. Boring locations were selected to investigate the potential AOCs. Boring termination depths ranged from about 3 to 20 feet bgs. Soil was screened for visual, olfactory, and instrumental evidence of a chemical or petroleum release, and was visually classified for soil type, grain size, texture, and moisture content. Instrument screening for the presence of organic vapors was performed using a PID equipped with a 10.6 eV lamp.

Fifty-one soil samples, including three duplicate samples, were collected for laboratory analysis. Up to four grab soil samples were collected for laboratory analysis from each boring location, depending on the depth of the boring and field screening observations, to further investigate AOCs and to provide vertical and horizontal delineation of identified impacts. Delineation borings EB25_W5, EB25_S5, EB25_W15, and EB25_S15 were advanced to visually delineate LNAPL and therefore, no samples were collected from these locations. Samples from the borings were collected as follows:

- For petroleum-related AOCs, soil samples were collected from the interval with the greatest observable impact (staining, odor, PID readings above background) and from the interval immediately beneath impacted soil that did not exhibit signs of contamination and/or native soil.
- For borings around transformer pads, soil samples were collected from the upper two feet of soil, immediately beneath the surface cover, at 6-inch intervals.
- To investigate historic fill, soil samples were collected from an interval within the historic fill layer and at the top of observed native soil. Sampling was biased toward intervals where visual, olfactory, or instrumental evidence of a chemical or petroleum release were apparent.

Soil samples were analyzed for Part 375/Target Compound List (TCL) VOCs; SVOCs; PCBs; pesticides; herbicides; Target Analyte List (TAL) metals, including hexavalent and trivalent chromium; and total cyanide. Forty-five samples were also analyzed for emerging contaminants (per- and polyfluoroalkyl substances [PFAS] and 1,4-dioxane). In addition, two samples collected from EB04 and EB21 were analyzed for nitrate, total carbon, and total organic carbon (TOC) to provide treatability design parameters to support future remedial design.

Samples submitted for VOC analysis were collected directly from undisturbed soil retained in the acetate liner into laboratory-supplied TerraCore soil samplers. The remaining sample volume was homogenized and placed in laboratory-supplied containers for additional analyses. The sample containers were labeled, placed in a laboratory-supplied cooler, and packed on ice in an attempt to maintain a temperature of about 4°C. The samples were picked up and delivered via courier service to Alpha Analytical Inc. (Alpha) under standard chain-of-custody protocol for analysis using the latest United States Environmental Protection Agency (USEPA) methods. Alpha is an NYSDOH Environmental Laboratory Approval Program (ELAP)-certified laboratory located in Westborough, Massachusetts.

2.1.3 Groundwater Investigation

Twelve soil borings were converted into permanent groundwater monitoring wells. Soil borings EB03 through EB05, EB07, EB10, EB12, EB14, EB15, and EB19 through EB22 were converted into permanent groundwater monitoring wells EW03 through EW05, EW07, EW10, EW12, EW14, EW15, and EW19 through EW22, respectively. The permanent monitoring wells were installed by inserting 7 to 10 feet of 2-inch-diameter, schedule 40, 0.02-inch-slotted polyvinyl chloride (PVC) screen at the base of the well, and attaching PVC riser to grade.

Groundwater samples were collected up to two weeks following well development on September 9, 10, and 13, 2019. Due to the presence of LNAPL in monitoring wells EW04 and EW25, groundwater samples were not collected. Instead, samples of LNAPL were collected for fingerprint analysis from these locations. One groundwater sample was collected from all remaining monitoring wells to characterize groundwater conditions and to investigate potential groundwater impacts associated with the AOCs. Two duplicate groundwater samples were collected from monitoring wells EW03 and EW05.

Samples were collected in accordance with the USEPA low-flow groundwater sampling procedure ("Low Stress [low-flow] Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells," dated July 30, 1996 and revised September 19, 2017) to allow for collection of representative samples. Prior to sample collection, groundwater was purged from each well while monitoring physical and chemical groundwater parameters (i.e., pH, conductivity, turbidity, dissolved oxygen, temperature, and oxidation-reduction potential). Groundwater was purged until physical and chemical groundwater parameters stabilized or after the well was purged for one hour, whichever was sooner. Groundwater samples were collected with a peristaltic pump with dedicated polyethylene tubing.

Groundwater samples were collected directly from the pump discharge line into laboratory-supplied containers that were sealed, labeled, and placed in a cooler containing ice for delivery to Alpha. The samples were picked up and delivered via courier service to Alpha under standard chain-of-custody protocol for analysis using the latest USEPA methods.

Groundwater samples were analyzed as follows:

- All groundwater samples were analyzed for Part 375/TCL VOCs, Part 375/TCL SVOCs, TAL metals

(total and dissolved), and hexavalent and trivalent chromium;

- Samples from EW07 and EW22 were analyzed for Part 375/TCL pesticides, herbicides, and PCBs;
- The sample from EW15 was analyzed for Part 375/TCL PCBs;
- The samples from EW05, EW07 and EW20 were analyzed for the emerging contaminants 1,4-dioxane and PFAS; and
- The samples from EW10, EW19, and EW21 were analyzed for chloride, alkalinity, nitrogen, sulfate, total dissolved solids and TOC to determine treatability parameters to support future remedial design.

2.1.4 Soil Vapor Investigation

Five soil vapor points (SV01 through SV05), six sub-slab vapor probes (SSV01 through SSV06) were installed throughout the site. Sub-slab vapor probes were installed using an electric hammer drill to approximately 2 inches below the base of the existing concrete slabs. Soil vapor points were installed using a Geoprobe 8140LC drill rig to about 6 feet bgs (about 2 feet above the water table). Four indoor air samples (IA01 and IA04) were collected concurrently with the sub-slab, soil vapor, and indoor air samples. NYSDOH indoor air quality questionnaires and building inventories were completed prior to indoor air sample collection.

For quality assurance/quality control (QA/QC) purposes, two ambient air samples were collected: one during soil vapor sampling on August 29, 2019 and one during sub-slab and indoor air sampling on August 30, 2019. Soil vapor sampling was conducted in accordance with the NYSDOH Soil Vapor Guidance.

Soil vapor, ambient air, and indoor air samples were analyzed for VOCs by USEPA Method TO-15.

As a QA/QC measure, an inert tracer gas (helium) was introduced into an above-grade sampling chamber to ensure that the sampling points were properly sealed above the target sampling depth, thereby preventing subsurface infiltration of ambient air. Each soil vapor probe was purged using a MultiRAE multi-gas meter at a rate of 0.2 liters per minute to evacuate a minimum of three sample volumes prior to sample collection. The multi-gas meter was used to screen the soil vapor for the presence of VOCs. Following purging, each soil vapor point was sampled using laboratory-provided, 6-liter air canisters equipped with 8-hour sample interval flow controllers. Soil vapor, ambient air, and indoor air samples were analyzed by Alpha for VOCs by USEPA Method TO-15.

2.2 Summary of the Supplemental Remedial Investigation

The SRI consisted of the following:

Soil Boring Advancement

- Advanced 4 soil borings

- Field screened soil borings for environmental impacts using visual and olfactory methods and with a PID equipped with a 10.6 eV bulb

Monitoring Well Installation and Sampling

- Installed 4 permanent groundwater monitoring wells and collected 5 groundwater samples from all newly installed wells (including one duplicate sample)

2.2.1 Groundwater Investigation

Lakewood Environmental Services Corp. of Smithtown, New York advanced 4 soil borings (EB26 through EB29) proximate to four monitoring wells that were previously installed by other consultants (MW-4, MW-5, MW-10, and RX-2) but were inaccessible or damaged, and therefore unable to be sampled as part of the BCP RI. The four soil borings, EB26 through EB29, were converted into permanent groundwater monitoring wells EW26 through EW29. The permanent monitoring wells were installed by inserting 10 feet of 2-inch-diameter, schedule 40, 0.02-inch-slotted PVC screen at the base of the well, and attaching PVC riser extending between 2 and 3 feet above grade surface.

Groundwater samples were collected one week following well development on December 1, 2021. One duplicate groundwater sample was collected from monitoring well EW29. Samples were collected in accordance with the USEPA low-flow groundwater sampling procedure ("Low Stress [low-flow] Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells," dated July 30, 1996 and revised September 19, 2017) to allow for collection of representative samples. Prior to sample collection, groundwater was purged from each well while monitoring physical and chemical groundwater parameters (i.e., pH, conductivity, turbidity, dissolved oxygen, temperature, and oxidation-reduction potential). Groundwater was purged until physical and chemical groundwater parameters stabilized or after the well was purged for one hour, whichever was sooner. Groundwater samples were collected with a peristaltic pump with dedicated Teflon-lined polyethylene tubing.

Groundwater samples were collected directly from the pump discharge line into laboratory supplied containers that were sealed, labeled, and placed in a cooler containing ice for delivery to Alpha. The samples were picked up and delivered via courier service to Alpha under standard chain-of-custody protocol for analysis using the latest USEPA methods. All groundwater samples were analyzed for Part 375/TCL VOCs and Part 375/TCL SVOCs.

2.3 Significant Threat

A determination of whether the site poses a significant threat to human health and the environment will be made by NYSDEC and NYSDOH. A copy of the significant threat determination will be provided as Appendix C in the final RAWP.

2.4 Geological Conditions

2.4.1 Regional and Site Geology

Based on the findings of previous investigations, the site is underlain by historic fill predominantly consisting of grayish brown, fine- to medium-grained sand with varying amounts of silt, clay, gravel, brick, coal ash, concrete, asphalt, and wood that extends to about 1 to 20 feet bgs. In some areas, the historic fill layer extends to shallow bedrock. Native soil encountered below historic fill predominantly consists of fine- to medium-grained sand with varying amounts of fine gravel, peat, and silt, and clay.

According to Langan's September 2020 Geotechnical Report for the Pratt Landing Development, bedrock consisting of light to dark grey gneiss with varying amounts of quartz and biotite inclusions was encountered across the site between 2.5 and 20 feet bgs (elevation [el] 15 to -10) and generally slopes to the east and southeast towards Echo Bay.

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 flow toward areas of topographic lows, such as rivers, stream valleys, ponds, and wetlands. A broader, interconnected hydrogeological 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, and coverage by impervious surfaces. Other factors influencing groundwater include depth to bedrock, the presence of artificial fill, and variability in local geology and groundwater sources or sinks.

Synoptic groundwater measurements were obtained during the RI. Groundwater depths ranged from about 6 to 11 feet bgs, corresponding to el 1.18 to 4.83. Groundwater flow was evaluated and determined to generally flow to the east towards Echo Bay. Additionally, a submersible pressure transducer with data logger was installed within monitoring well EW19 to allow for continuous groundwater monitoring to evaluate the potential influence of tidal fluctuations on the groundwater table. The groundwater level in EW19 varied from about el 2.4 (8.6 feet below top of the well casing [bTOC]) to about el 4.5 (6.5 feet bTOC). The measured groundwater levels in monitoring well EW19 suggest that the groundwater table is tidally influenced. The groundwater level may vary from these measurements seasonally, with changes in precipitation, and depending on site location. Underground utilities, stratigraphy, and other subsurface structures may locally influence the direction of groundwater flow. Groundwater in the City of New Rochelle is not used as a potable water source.

2.4.3 Wetlands

Wetlands on or near the site were evaluated by reviewing the National Wetlands Inventory and NYSDEC regulated wetlands map. Southern parts of the site are located within an E1UBL wetland area. According to the NYSDEC Wetlands Mapping database, the southern-adjointing Echo Bay has been mapped as an E1UBL estuarine and marine deepwater wetland with adjacent tidal wetlands. The NYSDEC has

jurisdiction over a tidal wetland adjacent area, the extent of which will be defined in connection with a pending tidal wetland permit application for reconstruction and stabilization of the shoreline along the site boundary with Echo Bay.

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 RI and previous reports to produce a simplified framework for understanding the distribution of impacted media, potential migration pathways, and potentially complete exposure pathways, as discussed below.

2.5.1.1 Potential Sources of Contamination

Potential sources of contamination include historical and current petroleum bulk storage (PBS), historic fill, current and historical site operations (including use of an oil-water separator, fuel dispenser station, and vehicle maintenance).

Historic fill encountered beneath surface cover to about 1 to 20 feet bgs originated from unidentified source areas and was placed as backfill at an unknown date. In some areas, historic fill extends to shallow bedrock. Historic fill contains SVOCs, PCBs, pesticides, and metals at concentrations above the UU and/or RURR SCOs. The presence of SVOCs may also be related to petroleum impacts (where their presence is co-located with VOC detections and/or observations of staining, odors and/or PID readings in soil). The presence of pesticides may also be related to historical application of pesticides for rodent or other pest control purposes.

PCB detections do not correlate with the location of current and former transformers at the site; therefore, their presence is likely related to historic fill, as noted above. PCBs were detected in a native soil sample (EB20_9-10) at concentrations above the UU SCO; however, this detection may be a result of infiltration of historic fill into the borehole during sample collection.

Evidence of petroleum-related contamination in soil, groundwater and soil vapor in the southeastern part of the site and in the vicinity of EB06 and EB25 are likely related to historical releases from historical and current PBS and current and historical site operations (including use of an oil/water separator and vehicle fueling and maintenance).

The CVOCs in soil and soil vapor may be related to on-site chemical releases associated with historical or current use of the site.

2.5.1.2 Exposure Media

The impacted media include soil, groundwater, and soil vapor. Petroleum-related VOCs and SVOCs in soil and groundwater, petroleum-related VOCs in soil vapor and LNAPL were detected primarily in the southeastern part of the site. Historic fill (with detections of SVOCs, pesticides, PCBs and metals) was detected in surficial soil to depths of 20 feet bgs across the site. CVOCs (1,1,1-TCA, carbon tetrachloride,

methylene chloride, tetrachloroethene (PCE) and trichloroethene [TCE]) were detected in soil, soil vapor, sub-slab vapor, and/or indoor air samples collected across the site footprint.

2.5.1.3 Receptor Populations

Current receptor populations include on-site workers and the community surrounding the site. During site development, human receptors will be limited to remediation and construction workers, authorized guests visiting the site, and 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, including children.

2.5.2 Description of Areas of Concern

The following AOCs have been identified based on the results of the RI. Following implementation of the RI, AOC 3: Former Transformer Pads was determined to no longer be an AOC since PCB-related contamination was not observed in soil or groundwater in the areas of the former transformers. As a result, the remaining AOCs investigated during the RI were renumbered as outlined in the below sections. AOC locations are shown on Figure 3.

2.5.2.1 AOC 1: Petroleum Bulk Storage and Related Impacts

Petroleum contamination, as evidenced by odors, staining, PID readings above background conditions and sheen, LNAPL, and/or petroleum-related VOCs detected above regulatory criteria, was observed in soil and groundwater in current and former PBS areas. Petroleum-related VOCs were detected in soil vapor, sub-slab vapor, and indoor air across the site and may be associated with AOC 1 or other AOCs. The petroleum-related contamination may be attributable to inadvertent historical on-site releases.

2.5.2.2 AOC 2: Vehicle Repair Garage

Observations of petroleum contamination were apparent in soil in the welding bay (EB15/EW15) and in soil downgradient of the hydraulic lifts (EB18). VOCs were not detected above the UU or RURR SCOs in soil samples from EB15 or EB18. The groundwater sample collected from the monitoring well within the vehicle repair garage (EW15) contained evidence of petroleum contamination, including petroleum-like odors and concentrations of petroleum-related VOCs above the SGVs. Petroleum-related VOCs were detected in sub-slab vapor samples and indoor air and may be associated with the hydraulic lifts and ASTs in the building or other AOCs.

2.5.2.3 AOC 3: Historic Fill

Historical topographic maps indicated increasing grade elevations over time; as such, land reclamation likely occurred to create the site as it exists today. Historic fill is ubiquitous across the entire site and generally found immediately below surface cover to depths between about 1 and 20 feet bgs, and in some areas extends to shallow bedrock.

SVOCs detected in soil samples are attributed to historic fill quality or on-site petroleum impacts (AOC 1). Pesticides, PCBs, and metals in soil are attributed to historic fill quality. Iron, magnesium, manganese, and sodium detected in groundwater samples above the SGVs are indicative of regional, naturally-occurring groundwater conditions. SVOCs detected in groundwater may be the result of entrained historic fill sediment and/or on-site petroleum impacts (AOC 1).

2.5.2.4 AOC 4: CVOCs in Soil and Soil Vapor

CVOCs including 1,1,1-TCA, carbon tetrachloride, methylene chloride, PCE, and TCE were detected in soil vapor, sub-slab vapor, indoor air, and/or ambient air throughout the site at concentrations that yield recommendations from “no further action” to “mitigate” when evaluated using the NYSDOH Soil Vapor Guidance matrices. Methylene chloride was detected in soil above the UU SCOs adjacent to the office building in the northwestern part of the site and in the northeastern and southern parts of the site, hydraulically downgradient of the vehicle repair garage and street sweeper wash down area (Figure 1). CVOc concentrations may be the result of the use of cleaning agents, paint strippers, and degreasers in the vehicle repair garage, street sweeper cleaning station, vehicle storage garage, and office building, 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.

2.5.3.1 Soil Contamination

Soil contamination, characterized by field observations and concentrations of contaminants exceeding the NYSDEC Part 375 UU and/or RURR SCOs, is attributed to 1) historical and current PBS, 2) the presence of historic fill, and 3) historical site operations. Soil sample results are shown on Figure 4.

2.5.3.1.1 SVOC-, PCB-, Metal-, and Pesticide-Contaminated Soil

Historic fill is present throughout the site and varies in thickness between about 1 and 20 feet. On-site historic fill is generally characterized as grayish brown, fine- to medium-grained sand with varying amounts of silt, clay, gravel, brick, concrete, asphalt, and wood. Contaminants of concern (COC) associated with historic fill include SVOCs, PCBs, metals, and pesticides.

2.5.3.1.2 Petroleum-Related Contamination

Field indications of petroleum impacts including odors, staining, and/or PID readings above background were identified in soil samples collected throughout the site. Four petroleum-impacted areas were identified across the site as shown on Figure 3.

Petroleum-related contamination in the southeastern part of the site was generally identified from below surface cover to about 20 feet bgs, with the exception of EB05/EB06 and EB25, where localized impacts were identified. Field evidence of petroleum impacts were observed from 0.5 feet bgs (EB25) to 20 feet bgs (EB07). Field evidence of petroleum impacts include odors, staining and/or elevated PID readings.

Analytical evidence of petroleum impacts includes detections of petroleum-related VOCs and SVOCs above UU and/or RURR SCOs. The depth of petroleum impacts was delineated vertically (as evidenced by the absence of visual/olfactory observations, PID readings above background, and/or analytical data indicating petroleum-related VOCs above UU SCOs). In borings EB03, EB05, EB06, EB15, EB19, EB20, and EB22, the depth of soil petroleum impacts was between 11 and 18 feet bgs. The petroleum impacts in the remaining borings (EB04, EB07, EB10, EB14, EB18, EB21, EB23, and EB25) extended to the base of the boring at refusal, where presumed bedrock was encountered.

The horizontal extents of the petroleum impacts in the southeastern part of the site were delineated to the northwest by the absence of petroleum impacts in EB08, EB09, and EB12, to the southeast by the absence of petroleum impacts in SRI borings EB26 through EB29, and to the southwest by shallow presumed bedrock in borings EB16 and EB17.

The following three additional petroleum-impacted hotspots were identified:

1. Northeastern part of the site associated with borings EB05 and EB06 – The hotspot was delineated to the north by shallow presumed bedrock in EB01, and by the absence of petroleum impacts to the south in EB08. This hotspot was not delineated to the east or west.
2. Northwestern part of the site associated with boring EB25 – The hotspot is characterized by LNAPL in boring EB25 and delineation boring EB25_S5, and PID readings above background and petroleum-like odors in EB25_W5. It was delineated by the absence of petroleum impacts to the north by boring EB25_N5, south by borings EB25_S10 and EB25_S15, and west by borings EB25_W10 and EB25_W15. The existing office building precluded delineation of the localized petroleum impacts to the east.
3. Central part of the site associated with Roux boring SB-5 – The final hotspot was delineated by the absence of petroleum impacts to the south by EB12, to the southeast by EB09, and to the west by EB11. This hotspot was not delineated to the north.

The petroleum-impacted area in the southeastern part of the site is roughly 3 acres in area and comprises about 45% of the site. Petroleum-related contamination in soil is related to historical and current PBS and site uses (including use of an oil/water separator and vehicle fueling and maintenance).

2.5.3.1.3 CVOC Contamination

The CVOC methylene chloride was detected in soil adjacent to the office building in the northwestern part of the site (EB25, EB25_S10) and in the eastern and southern parts of the site (EB06, EB08, EB19, and EB22), hydraulically downgradient of the vehicle repair garage and street sweeper wash down area. The horizontal extents of the CVOC impacts to soil in the northwestern part of the site were delineated to the north by EB25_N5, to the east by EB05, to the south by EB11, and to the west by EB25_W10. The impacts were vertically delineated by the presence of shallow presumed bedrock. The horizontal extents of the CVOC impacts to soil in the eastern and southern parts of the site were delineated to the north by EB01,

EB05, EB09, EB10, EB18, and EB23, to the east by EB07, EB20, and the eastern property boundary, to the south by the southern property boundary, and to the west by EB05, EB09, and EB14. The impacts were not fully vertically delineated.

2.5.3.2 Groundwater Contamination

Groundwater contamination, characterized by concentrations of contaminants exceeding the NYSDEC SGVs, is attributed to 1) historical and current PBS, 2) the presence of historic fill, and 3) historical site operations. Groundwater sample results are shown on Figure 5.

PID headspace readings of up to 1,147 parts per million (ppm), petroleum-like odors, and petroleum-related VOCs and/or SVOCs (naphthalene) above SGVs were observed in the southern part of the site at monitoring wells EW03, EW04, EW10, EW14, EW15, and EW19 through EW22. An about 1-inch-thick layer of LNAPL was detected in monitoring well EW04 and temporary monitoring well EW25. Analytical results from the fingerprint analysis identified the LNAPL in EW04 as potential No. 2 fuel oil/diesel fuel. A total petroleum hydrocarbon (TPH) concentration of 2,160 milligrams per liter (mg/L) was detected in the LNAPL sample collected from EW04. Analytical results from the fingerprint analysis identified the LNAPL in EW25 as a combination of potential degraded No. 2 fuel oil/diesel fuel and material similar to hydraulic, lubricating, motor, or waste oil. TPH was detected at a concentration of 5.86 mg/L in the LNAPL sample collected from EW25.

Petroleum impacts to groundwater were delineated horizontally to the north by the absence of visual/olfactory observations, PID headspace readings above background, and/or petroleum-related VOCs above SGVs in monitoring wells EW05, EW07, and EW12. Petroleum impacts in groundwater were delineated to the east and south by the absence of petroleum-related VOCs above SGVs in SRI monitoring wells EW26 through EW29.

Petroleum-related contamination in groundwater is attributed to historical and current PBS and site uses (including use of an oil/water separator and vehicle fueling and maintenance).

Because SVOCs are not readily dissolvable in groundwater, their detection at concentrations above the SGVs in groundwater samples across the site is likely related to entrained sediments from historic fill.

Dissolved metals (including antimony, iron, magnesium, manganese, and sodium) were detected at concentrations above the SGVs in groundwater samples across the site. Antimony, iron, magnesium, manganese, and sodium are attributable to regional groundwater conditions and are not indicative of a release.

2.5.3.3 Soil Vapor Contamination

Thirty-one VOCs, including CVOCs, were detected in soil vapor samples throughout the site. Total VOC concentrations ranged from 1,230 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) in SV04_083019 to 3,200,000 $\mu\text{g}/\text{m}^3$ in SV03_083019. PCE was detected in soil vapor samples across the site at concentrations between

8.68 $\mu\text{g}/\text{m}^3$ and 220 $\mu\text{g}/\text{m}^3$. Methylene chloride was detected in one sub-slab soil vapor sample in the southern part of the site at a concentration of 3.35 $\mu\text{g}/\text{m}^3$.

The petroleum-related VOCs detected in soil vapor are likely related to the historical and current USTs and/or oil-water separators on the site. The CVOCs in soil vapor may be indicative of a chemical release of unknown origin or use of cleaning solvents on-site in the vehicle repair garage or vehicle storage garage. Soil vapor sample results are shown on Figure 6.

2.6 Environmental and Public Health Assessments

2.6.1 Qualitative Human Health Exposure Assessment

Based on the CSM developed based on the findings of the RI and the review of environmental data, complete on-site exposure pathways appear to be present in current conditions. Complete on-site exposure pathways would only exist in construction-phase and future conditions in the absence of engineering controls (EC) and institutional controls (IC). The complete exposure pathways indicate that there is a risk of exposure to humans from site contaminants via exposure to soil, groundwater, and soil vapor if mitigation measures are not implemented.

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 historic fill with varying concentrations of SVOCs, PCBs, pesticides, and metals; petroleum-impacted soil and groundwater containing varying concentrations of VOCs and/or SVOCs; and soil vapor with CVOCs and petroleum-related VOCs.

Contaminant release and transport mechanisms include potential release and transport during penetration of the site cover for soil, groundwater, and soil vapor sampling and potential exposure through soil vapor intrusion into existing buildings. The potential receptor population is the on-site sampling personnel, City DPW employees, and the nearby community. Under current conditions, the likelihood of exposure to humans is limited due to the following:

- The site footprint is mostly covered by continuous concrete building slabs and asphalt pavement, which prevent direct contact with soil, groundwater, and soil vapor. Exposed soil exists in the southern and northwestern parts of the site in areas that are used for sanitary truck parking and recyclable storage, respectively; exposure to surficial soils through direct contact and inhalation may occur in these areas.
- The site is fenced off and the office building on Main Street is vacant and locked, preventing access to the community and limiting exposure via inhalation of impacted vapor by site workers in the

office building. Sampling activities are completed in accordance with a site-specific Construction Health and Safety Plan (CHASP) and Community Air Monitoring Plan (CAMP) that is designed to monitor and prevent exposure to soil, groundwater, and soil vapor contaminants.

- Groundwater at the site is not a potable water source.

2.6.1.2 Construction/Remediation Activities

During the excavation and foundation construction stage of redevelopment, which will include remediation, points of exposure include disturbed and exposed soil during excavation, dust and potential organic vapors generated during excavation, and contaminated groundwater encountered during excavation and/or dewatering operations. Routes of exposure include ingestion and dermal absorption of contaminated soil and groundwater, inhalation of potential organic vapors arising from contaminated soil vapor and groundwater, and inhalation of dust originating from contaminated soil. The receptor population includes construction and remediation workers, and the nearby community.

All five elements exist; therefore, the potential for completed exposure pathways is present. The risk can be avoided by applying health and safety measures, such as monitoring the air for organic vapors and dust, using vapor and dust suppression measures, maintaining site security, and wearing personal protective equipment (PPE). In accordance with a Health and Safety Plan (HASP)/CHASP, a RAWP, and a CAMP, measures such as conducting an air monitoring program, donning PPE, and applying vapor and dust suppression measures to prevent off-site migration of contaminants during construction will be implemented. Such measures will prevent completion of these potential migration pathways.

2.6.1.3 Proposed Future Conditions

Under the proposed future conditions, some contaminants may remain on-site in the Track 4 area, depending on the remedy, and will, to a lesser extent, include those listed under current conditions. If remaining impacts exist and ECs and ICs are not implemented, points of exposure would potentially include cracks in the foundation of the proposed development, exposure during any future ground-intrusive work, or inhalation of vapors entering the building. The receptor population would include residential- and commercial-use occupants, employees, and the nearby community. The possible routes of exposure can be avoided or mitigated by maintenance of a site capping system (e.g., concrete building slabs, asphalt roadways and at least 2 feet of clean soil in landscaped areas); installation of a waterproofing/vapor barrier and/or active vapor mitigation controls in new buildings, if required; implementation of a Site Management Plan (SMP); and placement of an EE at the site, if necessary depending on the remedy.

2.6.1.4 Human Health Exposure Assessment Conclusions

1. In the absence of mitigation measures and controls, there is potential for exposure during remediation/construction activities. The primary exposure pathways are:

- a. Dermal contact, ingestion, and inhalation of contaminated soil, groundwater, and/or soil vapor by construction workers

Dermal contact, ingestion, and inhalation of soil (dust) and inhalation of soil vapor by the community in the vicinity of the site. These can be avoided or minimized by implementing CAMP and by following the appropriate HASP, vapor and dust suppression, soil erosion and sediment control, site security measures, and following a NYSDEC-approved RAWP.

2. The existence of a complete exposure pathway for site contaminants to human receptors during proposed future conditions is unlikely. The site will be remediated and ICs and ECs will be in-place to mitigate any exposure risk related to remaining contamination. Further, regional groundwater is not used as a potable source in New Rochelle.
3. It is possible that a complete exposure pathway exists for the migration of site contaminants to off-site human receptors during current, construction-phase, and future conditions, primarily through exposure to surficial soil through direct contact and/or inhalation. Such exposure can be prevented or mitigated by implementation of monitoring and control measures. Under future conditions, remediation and ECs and ICs would prevent completion of this exposure pathway.

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 Fish and Wildlife Resources Impact Analysis (FWRIA) if certain criteria are met. According to the requirements stipulated in Section 3.10 and Appendix 3C of DER-10, an FWRIA was completed for the site and is included in Appendix K of the RIR, included in Appendix B of this RAWP. As outlined in the FWRIA, any potential soil impacts at the site are not expected to impact Echo Bay due to the proposed remediation and site redevelopment. The constructed areas that will not be improved with an impervious surface will have an at least 2-foot-thick clean soil cap, and the shoreline will be stabilized using a combination of rip rap, living shoreline, and bulkheads, which will prevent erosion of impacted soil to Echo Bay. Based on a review of groundwater data- collected during the SRI, groundwater impacts related to historical site operations are not migrating to Echo Bay.

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 / Track 4 remedy for Alternative II. The proposed SCOs will be the UU SCOs for Alternative I (Track 1) and the UU SCOs for the Track 1 area of Alternative II and the RURR SCOs for the Track 4 area of Alternative II.

The recommended remedial alternative, based on an evaluation of the alternatives, is a split Track 1 UU and Track 4 RURR cleanup. The Track 4 part of the remedy will require an EE and an SMP to address remaining contamination.

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/UU remedy
 - Alternative II, a Track 1/UU and Track 4/RURR remedy
- Section 3.4 evaluates the remedial alternatives based on the BCP Remedy Selection Evaluation Criteria
- Section 3.5 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 COCs 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. Where identifiable sources of contamination are found on the site, the sources will be removed or treated to the extent feasible.

Also, in accordance with DER-10, the remedial action objectives (RAO) 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 360 – General Provisions;
- 6 NYCRR Part 364 – Waste Transporter Permits;
- 6 NYCRR Part 370 – Hazardous Waste Management System;

- 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 700-706 – Surface Water and Groundwater Classification Standards;
- 6 NYCRR Part 750 – State Pollutant Discharge Elimination System (SPDES) Regulations;
- 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;
- NYSDEC – Permanent Closure of Petroleum Storage Tanks (July 1988);
- NYSDEC – Sampling, Analysis, and Assessment of PFAS Under NYSDEC’s Part 375 Remedial Programs (June 2021);
- 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-10 – Technical Guidance for Site Investigation and Remediation (2010);
- NYSDEC DER-23 – Citizen Participation Handbook for Remedial Programs (March 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 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; and
- 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.

Based on the results of previous subsurface investigations and the RI and SRI, the following RAOs have been identified:

RAOs	RAOs for Public Health Protection	RAOs for Environmental Protection
Soil	<ul style="list-style-type: none"> Prevent ingestion/direct contact with contaminated soil Prevent inhalation exposure to contaminants volatilizing from soil 	<ul style="list-style-type: none"> Prevent migration of contaminants that would result in groundwater contamination
Groundwater	<ul style="list-style-type: none"> Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards Prevent contact with, or inhalation of, volatiles emanating from contaminated groundwater 	<ul style="list-style-type: none"> Restore groundwater aquifer to pre-disposal/pre-release conditions, to the extent practicable Remove the source of groundwater contamination Prevent the discharge of contaminants to surface water and sediment
Soil Vapor	<ul style="list-style-type: none"> Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at the site 	

3.2 Alternative I – Technical Description

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

- Development and implementation of a CHASP and CAMP for the protection of on-site workers and the community during remediation
- Abatement of hazardous building materials within existing structures prior to demolition and remediation
- As a pre-requisite to site remediation, removal of the surficial asphalt cover and subsurface obstructions (e.g., remnant foundation elements) by the contractor and management of removed asphalt as C&D debris in accordance with Part 360 and 361 regulations. Review and certification of C&D transport and disposal methodologies will be the responsibility of contractors performing off-site transportation and disposal of C&D debris. The Remediation Engineer (RE) is responsible for documenting that C&D debris is not commingled with contaminated site soil and fill.
- Excavation and off-site disposal of contaminated soil exceeding Part 375 UU SCOs
- Installation of support of excavation (SOE) components as needed to facilitate the remedial excavation
- Screening of excavated soil for indications of contamination by visual, olfactory, and instrumental methods during intrusive site work
- Decommissioning and removal of any encountered USTs and ASTs in accordance with 6 NYCRR Part 613 and NYSDEC DER-10 Section 5.5

- Handling, transport, and off-site disposal of excavated soil in accordance with federal, state, and local rules and regulations for handling, transport, and disposal
- Dewatering as needed to allow for excavation below the groundwater table, and treatment and discharge of dewatering fluids in accordance with applicable regulations
- Collection and analysis of confirmation endpoint soil samples to verify that Track 1 UU SCOs are met
- Import and placement of fill (e.g., virgin crushed stone, recycled concrete aggregate [RCA], soil) meeting Part 375 UU SCOs to backfill remedial excavations

The Alternative I remediation extent is shown on Figure 9 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 has been developed and will be implemented during excavation and foundation construction to protect on-site Langan workers from accidents and acute/chronic exposures to the identified contaminated media. Each contractor performing RAWP operations on the site will 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 in Appendix D. Public health will be protected by implementing and enforcing dust, odor, and organic vapor control and monitoring procedures included in the CAMP. The CAMP will 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 will monitor perimeters for visible dust and odors. The environment will be protected by implementing and enforcing soil erosion prevention measures.

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

3.2.2 Excavation, SOE, and Contaminated Soil and Fill Removal

Historic fill was identified from surface grade to depths of up to 20 feet bgs across the site, and contains SVOCs, PCBs, pesticides, and metals at concentrations exceeding the UU SCOs. To achieve a Track 1 remedy, soil exceeding the UU SCOs, as defined by 6 NYCRR Part 375-6.8, will be excavated and disposed of off-site. An extensive SOE system would be necessary to facilitate the Track 1 remedial excavation.

The estimated remedial excavation would extend to between about 5 and 25 feet bgs. The estimated volume of soil that would require off-site disposal is about 127,000 cubic yards. The estimate is based on the removal of soil/fill across the site to depths yielding soil samples without any concentrations of compounds above the UU SCOs, the surface of apparent bedrock, or two feet below the deepest previous sample collected from native soil. These depths were established based on RI and SRI sample concentrations that exceeded the UU SCOs or deeper native intervals.

C&D debris generated during the remedial excavation will 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 and C&D debris transport and disposal methodologies will 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 UST and AST Removal

At least one UST and 15 ASTs were identified during the 2019 RI; approximate locations of historical and current PBS are summarized and presented on Figure 1. Additionally, an oil-water separator is present near the northern corner of the vehicle repair garage. Any USTs, ASTs, and associated appurtenances will be decommissioned, disposed of off-site, and registered with the Westchester County Department of Health (WCDOH) and the NYSDEC PBS unit in accordance with 6 NYCRR Part 613.9, NYSDEC CP-51, and other applicable NYSDEC tank closure requirements including DER-10 Section 5.5. If encountered, petroleum-impacted soil will be excavated. Petroleum impacts at the groundwater table will be addressed through excavation and dewatering. Excavated petroleum-impacted soil will be stockpiled separately from non-petroleum-impacted soil, characterized, and disposed of off-site at a permitted disposal facility in accordance with applicable regulations. Given that the site-wide remedial excavation will extend beyond expected UST depths, and in some areas to the surface of bedrock, confirmation endpoint samples are not anticipated to be collected from UST excavations.

3.2.4 Excavation Dewatering and Treatment

Construction dewatering will be required to accommodate excavation of soil exceeding the UU SCOs and will also act as a method of groundwater remediation (pump and treat) in conjunction with source removal and in-situ groundwater treatment (if needed). Prior to dewatering, the contractor will obtain a SPDES permit from the NYSDEC.

The dewatering system will include pretreatment (e.g., bag filters, carbon filtration, etc.) to reduce contaminant concentrations below surface water effluent limitations prior to discharge to Echo Bay. The dewatering and treatment system would be designed, operated, and maintained by the Contractor's NYS-licensed Professional Engineer. Discharge of water generated during remedial construction to surface waters (e.g., Echo Bay) is prohibited without a SPDES permit.

3.2.5 In-Situ Groundwater Treatment (Contingency Measure)

We anticipate that the dewatering operation detailed above will likely address the site groundwater impacts. Samples will be collected from the influent connection of the dewatering system (prior to treatment) to evaluate on-site groundwater quality prior to decommissioning of the dewatering system. Samples will be analyzed for Part 375 VOCs and SVOCs by a NYSDOH ELAP-certified laboratory to evaluate on-site groundwater quality. In the event that remedial excavation and the construction dewatering (pump and treat) system do not successfully decrease contaminant levels in groundwater, additional

groundwater treatment measures would be considered. If additional groundwater treatment measures are required, a Remedial Design Document would be prepared and submitted to the NYSDEC and NYSDOH for review and approval. Depending on the concentrations remaining in site groundwater, additional treatment measures may include application of a groundwater treatment compound (i.e., oxygen release compound [ORC[®]], activated carbon [PetroFix[™]], or similar) in-situ to either degrade or adsorb petroleum-related compounds. The Remedial Design Document will detail the in-situ groundwater treatment program including any pre-treatment investigations, the treatment plan, and performance monitoring. This contingency assumes that a maximum of five performance monitoring wells will be installed, and up to eight quarterly groundwater monitoring events will be performed to evaluate performance of the remedy.

3.2.6 Confirmation Endpoint Soil Sampling

Confirmation soil samples will be collected from the remedial excavation base at a frequency of one per 900 square feet and from excavation sidewalls at a frequency of one per 30 linear feet per NYSDEC DER-10. Sidewall samples will be collected from within the building footprint unless SOE measures (e.g., sheeting, lagging, or secant piles) preclude access to soil sidewalls. Approximately 201 confirmation endpoint soil samples, including QA/QC samples, will be collected to confirm remedial performance and will be analyzed for the Part 375 list of VOCs, SVOCs, PCBs, pesticides, metals (including hexavalent and trivalent chromium), PFAS, and 1,4-dioxane. Confirmation endpoint samples will not be collected where precluded by bedrock. Over-excavation may be required as necessary to remove soil found to contain contamination exceeding UU SCOs. If over-excavation is completed, additional confirmation samples will be required.

Considering that groundwater is shallower than the remedial excavation depth in most places, samples may be collected in-situ prior to excavation during a remedial design investigation. A reduced-frequency endpoint sampling plan may be proposed, with supporting rationale, in accordance with DER-10 Section 1.6.

3.2.7 Excavation Backfill

In areas that are excavated deeper than development grade for remedial purposes, the excavation areas will be backfilled to raise the site to development grade. Backfill will consist of soil/fill meeting the UU SCOs or other acceptable soil/fill such as virgin quarry stone or RCA from a NYSDEC-registered facility. All imported soil/fill must be sourced from appropriately licensed facilities with no history of environmental contamination. If sampling of the proposed soil/fill is required, qualified environmental personnel will collect representative samples at a frequency consistent with DER-10. The samples will be analyzed for 6 NYCRR Part 375 VOCs, SVOCs, pesticides/herbicides, PCBs, metals, and emerging contaminants, including PFAS, and 1,4-dioxane, by a NYSDOH ELAP-certified laboratory. No sampling of virgin quarry stone or RCA is anticipated unless the quarry stone or RCA is a blended product or contains fines in excess of 10% by weight passing through a No. 80 sieve. Documentation of the source of backfill must be provided to the NYSDEC for approval before it is imported and used on site. Upon meeting these criteria, the certified

clean fill will be transported to the site and segregated from impacted soil/fill, as necessary, on plastic sheeting until used as backfill. If imported, RCA may only be placed above the groundwater table.

An estimated 97,600 cubic yards (volume of excavation plus 30% extra to account for compaction) of backfill will be required to raise the site to development grade upon completion of the Track 1 remediation. Backfill will comply with 6 NYCRR Part 375-6.7(d) and NYSDEC DER-10 Section 5.4(e), Table 5.4(e), and Appendix 5.

3.3 Alternative II – Technical Description

Alternative II, a split Track 1 / Track 4 remedy, would include implementation of the following remedial elements:

- Development and implementation of a CHASP and CAMP for the protection of on-site workers and the community during remediation
- Abatement of hazardous building materials within existing structures prior to demolition and site-wide remediation
- As a pre-requisite to site remediation, removal of the surficial asphalt cover and subsurface obstructions (e.g., remnant foundation elements) by the contractor and management of removed asphalt as C&D debris in accordance with Part 360 and 361 regulations. Review and certification of C&D transport and disposal methodologies will be the responsibility of 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.
- Excavation and off-site disposal of contaminated soil exceeding the Part 375 UU SCOs within the about 157,400-square-foot Track 1 area
- Excavation of an about 115,400 square foot area up to 2 feet bgs to install a composite cover system within the Track 4 area
- Screening of excavated soil for indications of contamination by visual, olfactory, and instrumental methods
- Decommissioning and removal of any encountered USTs and ASTs in accordance with 6 NYCRR Part 613 and NYSDEC DER-10 Section 5.5
- Handling, transport, and off-site disposal of excavated soil in accordance with federal, state, and local rules and regulations for handling, transport, and disposal
- Installation of SOE components as needed to facilitate the remedial excavation
- Dewatering as needed to allow for excavation below the groundwater table, and treatment and discharge of dewatering fluids in accordance with applicable regulations

- Collection and analysis of confirmation endpoint soil samples, including QA/QC samples, to verify that Track 1 UU SCOs are met at the base of the Track 1 excavation area
- Collection and analysis of documentation soil samples, including QA/QC samples, at the base of the remedial excavation within the Track 4 area to document remaining contamination
- Demarcation of remaining contaminated soil and fill within the Track 4 area by survey and a high-visibility demarcation barrier for visual reference
- Import and placement of fill (e.g., virgin crushed stone or soil) meeting the Part 375 UU SCOs to backfill remedial excavations within the Track 1 area, as needed. Requests for import of fill are subject to NYSDEC review and approval, and will include a Request to Import/Reuse Soil Form.
- Import and placement of fill (e.g., virgin crushed stone, RCA, soil) meeting the lower of Part 375 RURR and Protection of Groundwater (PGW) SCOs to backfill remedial excavations within the Track 4 area and facilitate EC installation. Requests for import of fill are subject to NYSDEC review and approval, and will include a Request to Import/Reuse Soil Form.
- Stabilization of the Echo Bay shoreline using a combination of rip rap, living shoreline, and bulkheads, which will prevent erosion of remaining contaminated soil to Echo Bay.
- Installation of a continuous waterproofing/vapor barrier membrane beneath all new concrete building slabs
- Installation of a composite cover system within the Track 4 area, consisting of exterior hardscapes (i.e., asphalt roadways, concrete sidewalks, pavers), landscaped areas with at least 2 feet of fill meeting the lower of Part 375 RURR and PGW SCOs, and a stabilized shoreline along Echo Bay to prevent future exposure to remaining contaminated soil.
- Establishment of use restrictions (i.e., ICs) including prohibitions on the use of groundwater from the site and prohibitions on sensitive site uses, such as farming or vegetable gardening in remaining site soil, to prevent future exposure to remaining contamination within the Track 4 area
- Recording of an EE referencing ECs and ICs to prevent future exposure to remaining contamination within the Track 4 area
- Publication of an SMP for long-term management of remaining contamination as required by the EE within the Track 4 area, including plans for: 1) IC/EC implementation, 2) monitoring, 3) operation and maintenance, and 4) reporting

Track 1 and Track 4 SCOs are presented in Table 1. The Alternative II remediation extent is shown on Figure 10 and the requirements for each of the Alternative II tasks are described below. A survey and associated metes and bounds descriptions for the Track 1 and Track 4 areas is included in Appendix A.

3.3.1 On-Site Worker, Public Health and Environmental Protection

A site-specific CHASP has been developed and will be implemented during excavation and foundation construction to protect on-site Langan workers from accidents and acute/chronic exposures to the identified contaminated media. Each contractor performing RAWP operations on the site will be required to develop and enforce their own HASP that is consistent with OSHA requirements and, at a minimum, meets the requirements of the CHASP in Appendix D. Public health will be protected by implementing and enforcing dust, odor, and organic vapor control and monitoring procedures included in the CAMP. The CAMP will 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 will monitor perimeters for visible dust and odors. The environment will be protected by implementing and enforcing soil erosion prevention measures.

The CHASP is included in Appendix D. A generic guidance for CAMP implementation is included in Appendix E.

3.3.2 Excavation, SOE, and Contaminated Soil and Fill Removal

To achieve a Track 1 remedy in the Track 1 area, soil exceeding the UU SCOs, as defined by 6 NYCRR Part 375-6.8, will be excavated and disposed of off-site. An extensive SOE system will be necessary to facilitate the Track 1 remedial excavation below the groundwater table. To achieve a Track 4 remedy in the Track 4 area, contaminated soil will be excavated and disposed of off-site to remove source soil/fill and install ECs. Remedial excavation areas are presented in Figure 10 and summarized as follows:

- Track 1 Excavation: Excavation of an about 157,400-square-foot area to depths required to remove soil with concentrations above the UU SCOs, to the surface of apparent bedrock, or at least two feet below the deepest previous sample collected from native soil. The excavation will extend to between about 5 and 25 feet bgs, and the estimated volume of soil proposed for off-site disposal from the Track 1 area is about 61,700 cubic yards.
- Track 4 Excavation: Excavation of an about 115,400-square-foot area in the northwestern part of the site (along the proposed Pratt Street) and the eastern part of the site along the Echo Bay Shoreline will extend up to 2 feet bgs, as needed, to facilitate the construction of the composite cover system (see Section 3.3.10) and remove contaminant source material. The estimated volume of soil proposed for off-site disposal from the Track 4 areas is about 8,600 cubic yards.
 - If grossly contaminated soil is identified as defined by Part 375.1-2(u), remedial over-excavation will be performed and source soil/fill removed, as practicable. Remedial over-excavations will extend, at a maximum, to the groundwater table.

The estimated volume of historic fill and soil requiring removal and off-site disposal for the split Track 1 / Track 4 remedy is about 70,300 cubic yards. The extents of the anticipated split Track 1 / Track 4 remedial excavation are shown on Figure 10 and in a survey provided in Appendix A.

3.3.3 UST and AST Removal

At least one UST and 15 ASTs were identified during the 2019 RI; approximate locations of historical and current PBS are summarized and presented on Figure 1. Additionally, an oil-water separator is present near the northern corner of the vehicle repair garage. Any USTs, ASTs, and associated appurtenances will be decommissioned, disposed of off-site, and registered with the WCDOH and the NYSDEC PBS unit in accordance with 6 NYCRR Part 613.9, NYSDEC CP-51, and other applicable NYSDEC tank closure requirements including DER-10 Section 5.5. If encountered, petroleum-impacted soil will be excavated. Petroleum impacts at the groundwater table will be addressed through excavation and dewatering. Excavated petroleum-impacted soil will be stockpiled separately from non-petroleum-impacted soil, characterized, and disposed of off-site at a permitted disposal facility in accordance with applicable regulations. Given that the site-wide remedial excavation will extend beyond expected UST depths, and in some areas to the surface of bedrock, confirmation endpoint samples are not anticipated to be collected from UST excavations.

3.3.4 Excavation Dewatering and Treatment

Construction dewatering will be required to accommodate excavation of soil exceeding the UU SCOs within the Track 1 area. Construction dewatering will also act as a method of groundwater remediation (pump and treat) in conjunction with source removal and in-situ groundwater treatment (if needed). Prior to dewatering, the contractor will obtain a SPDES permit from the NYSDEC.

The dewatering system will include pretreatment (e.g., bag filters, carbon filtration, etc.) to reduce contaminant concentrations below surface water effluent limitations prior to discharge to Echo Bay. The dewatering and treatment system would be designed, operated, and maintained by the Contractor's NYS-licensed Professional Engineer. Discharge of water generated during remedial construction to surface waters (e.g., Echo Bay) is prohibited without a SPDES permit.

3.3.5 In-Situ Groundwater Treatment (Contingency Measure)

In the event that the Track 1 remedial excavation and the construction dewatering (pump and treat) system do not successfully decrease contaminant levels in groundwater or contaminated groundwater is encountered within the Track 4 area during excavation, additional groundwater treatment measures would be considered. If additional groundwater treatment measures are required, a Remedial Design Document would be prepared and submitted to the NYSDEC and NYSDOH for review and approval. Depending on the concentrations remaining in site groundwater, additional treatment measures may include application or injection of a groundwater treatment compound (i.e., ORC®, activated carbon [PetroFix™], or similar) in-situ to either degrade or adsorb petroleum-related compounds. The Remedial

Design Document will detail the in-situ groundwater treatment program including any pre-treatment investigations, the treatment plan, and performance monitoring.

3.3.6 Confirmation Endpoint Soil Sampling – Track 1 Area

Confirmation soil samples will be collected from the Track 1 area remedial excavation base at a reduced frequency in accordance with NYSDEC DER-10 5.4 (b)(5)(iii), because parts of the Track 1 remedial excavation will extend to between 2 and 25 feet bgs within clean native soil or, in the northern part of the site, bedrock. Endpoint samples will be collected from the base of the excavation at a frequency of one per 1,500 square feet. Sidewall samples will be collected at a frequency of one per 30 linear feet unless SOE measures (e.g., sheeting, lagging, or secant piles) preclude access to soil sidewalls or if sidewalls are outside of the site boundary. Approximately 36 confirmation endpoint soil samples, including QA/QC samples, will be collected to confirm remedial performance and will be analyzed for the Part 375 list of VOCs, SVOCs, PCBs, pesticides, metals (including hexavalent and trivalent chromium), PFAS, and 1,4-dioxane. Confirmation endpoint samples will not be collected where precluded by bedrock. Over-excavation may be required to remove soil found to contain contamination exceeding UU SCOs. If over-excavation is completed, additional confirmation samples will be required at the same frequency and proposed locations.

3.3.7 Documentation Soil Sampling – Track 4 Area

Post-excavation documentation endpoint samples will be collected from the Track 4 area at a reduced frequency in accordance with NYSDEC DER-10 5.4 (b)(5)(iii). Endpoint samples will be collected from the base of the excavation at a frequency of one sample per 1,500 square feet. Samples will not be collected from the areas where excavation extends into bedrock or where excavation sidewalls extend off-site. Sidewall samples are anticipated to be precluded by SOE measures, shoreline stabilization measures, or the property boundary and will not be collected. It is anticipated that 83 post-excavation documentation endpoint soil samples, including QA/QC samples, will be collected to document the Track 4 remedial performance. This amount may be reduced depending on the area at which bedrock is encountered in development-related excavations. Documentation endpoint samples will be analyzed for the Part 375 list of VOCs, SVOCs, PCBs, pesticides, metals (including hexavalent and trivalent chromium), PFAS, and 1,4-dioxane.

3.3.8 Excavation Backfill

In Track 1 areas that are excavated deeper than development grade for remedial purposes, the excavation areas will be backfilled to raise the site to development grade. An estimated 7,400 cubic yards (volume of excavation plus 30% extra to account for compaction) of backfill will be required to raise the Track 1 area to development grade upon completion of the Track 1 remedial excavation. Backfill for the Track 1 area will consist of soil/fill meeting the UU SCOs or other acceptable soil/fill such as virgin quarry stone from a permitted mine or quarry or RCA from a NYSDEC-registered facility. If imported, RCA may only be placed above the groundwater table and will not be used as part of the cover system.

Import of fill will be required to backfill remedial excavations within the Track 4 area. An estimated 11,200 cubic yards (volume of excavation plus 30% extra to account for compaction) of backfill will be required to raise the northwestern part of the site and the site area along Echo Bay to development grade upon completion of the Track 4 remedial excavation. Backfill for the Track 4 area will consist of imported soil/fill meeting the lower of RURR and PGW SCOs, or consist of RCA, and/or virgin crushed stone. The fill will be segregated at a source/facility that is free of environmental contaminants. Backfill will comply with 6 NYCRR Part 375-6.7(d) and NYSDEC DER-10 Section 5.4(e), Table 5.4(e), and Appendix 5. Requests for import of fill are subject to NYSDEC review and approval, and will include a Request to Import/Reuse Soil Form.

If sampling of the proposed fill for the Track 1 and Track 4 areas is required, qualified environmental personnel will collect representative samples at a frequency consistent with DER-10. The samples will be analyzed for 6 NYCRR Part 375 VOCs, SVOCs, pesticides, herbicides, PCBs, metals, and PFAS by a NYSDOH ELAP-certified laboratory. Upon meeting these criteria, the fill will be transported to the site and segregated from impacted soil/fill, as necessary, on plastic sheeting until used as backfill. RCA imported to the site must be derived from recognizable and uncontaminated concrete and can only be used as backfill above the groundwater table. RCA is not acceptable for and will not be used as cover or drainage material. RCA must originate from a NYSDEC-permitted or registered C&D debris facility and contain less than 10% by weight passing a No. 10 sieve to be excluded from NYSDEC DER-10 sampling requirements. Virgin stone must originate from a permitted mine or quarry and contain less than 10% by weight passing a No. 10 sieve to be excluded from NYSDEC DER-10 sampling requirements.

3.3.9 Demarcation – Track 4 Area

After excavation and soil/fill removal are completed in the Track 4 area and before backfilling with clean imported soil/fill and installing the composite cover systems, the top elevation of remaining contaminated soil will be surveyed by a New York State-licensed surveyor. Beneath landscaped areas and hardscapes (e.g., asphalt roadways, concrete sidewalks, pavers), a physical demarcation layer consisting of orange snow fencing, or equivalent, will be placed on the surface of remaining contaminated soil as a visual reference layer. The survey and physical demarcation layer will constitute the written and physical record of the top of the subsurface zone that requires adherence to special conditions for disturbance of remaining contaminated soil defined in the SMP. The base of remedial excavation survey will be included in the Final Engineering Report (FER) and the SMP.

3.3.10 Composite Cover System – Track 4 Area

A composite cover system consisting of landscaped areas with at least 2 feet of approved fill, hardscapes (i.e., asphalt roadways, concrete sidewalks, pavers), and a stabilized shoreline (e.g., rip-rap, timber bulkhead) along Echo Bay will be installed in the Track 4 area. A site cover is required to allow for restricted-residential use of the site in areas where the upper 2 feet of exposed surface soil exceeds the applicable SCOs. Any proposed soil cover will consist of a minimum of 2 feet of fill (e.g., soil, stone, etc.)

placed over a high-visibility demarcation layer. Soil covers will meet the lower of the RURR and PGW SCOs as set forth in Part 375-6.7(d). Additional requirements are described in section 5.4.9.

A composite cover system plan is shown on Figure 11.

3.3.11 Waterproofing/Vapor Barrier Membrane

Achieving the split Track 1/ Track 4 remedy will remove and treat sources of contamination. Potential exposure pathways for contaminated soil vapor that may migrate onto the site from off-site sources will be eliminated through the building construction, which includes constructing building foundations below the groundwater table and installing continuous waterproofing/vapor barrier membranes beneath all new concrete building slabs. The continuous waterproofing/vapor barrier membrane would extend across the lowest level concrete building slab and up foundation walls to surface grade. The waterproofing/vapor barrier membranes will be compatible with creosote- and petroleum-related VOCs and CVOCs, have a minimum thickness of 20 mils, and will be installed as a continuous sub-slab membrane.

3.3.12 Engineering and Institutional Controls –Track 4 Area

An EE will be recorded referencing ICs and ECs that are part of the selected Track 4 remedy, which will be binding upon all subsequent owners and occupants of the site. The ICs will restrict the site's use to restricted-residential, commercial, and industrial uses and require implementation of an SMP within the Track 4 area. The only EC will consist of the composite cover system. The SMP will identify all use restrictions, long-term monitoring, maintenance, and certification requirements.

3.4 Evaluation of Remedial Alternatives

The following is an evaluation of the proposed remedy based on the NYSDEC BCP remedy evaluation criteria listed below. The first two criteria are considered “threshold” criteria and must be satisfied for an alternative to qualify as a selection. The remaining criteria are considered “balancing” criteria, which are used to compare the advantages and disadvantages of each alternative. A remedial alternative must satisfy the threshold criteria before qualifying for further evaluation under the balancing criteria.

- A. Protection of human health and the environment
- B. Compliance with SCGs
- C. Short-term effectiveness and impacts
- D. Long-term effectiveness and permanence
- E. Reduction of toxicity, mobility, or volume of contaminated soil/fill
- F. Implementability
- G. Cost effectiveness

H. Community Acceptance

I. Land use

3.4.1 *Protection of Public Health and the Environment*

Alternative I – The Track 1 remedy will mitigate exposure pathways from on-site contaminated media by removing soil that exceeds the Track 1 UU SCOs. Groundwater contamination will be remediated through dewatering and contingent treatment of remaining impacts after the remedial excavation is complete. Soil vapor will be remediated through the removal of contaminated soil and groundwater sources. This remedy will effectively achieve the RAOs for public health and environmental protection by eliminating the possibility for ingestion, inhalation, or dermal contact.

Alternative II – The split Track 1 / Track 4 remedy will mitigate the potential for complete exposure pathways through the complete removal of soil/fill exceeding the Track 1 UU SCOs within the Track 1 area (to a maximum depth of about 25 feet bgs) and will mitigate future exposure within the Track 4 area by the establishment of an EE, governed by an SMP. Remediating the site to the split Track 1 / Track 4 standards will result in the removal of soil/fill exceeding the Track 1 UU SCOs within the Track 1 area and preventing contact with soil/fill that exceeds the RURR SCOs within the Track 4 area. Exposure to contaminated soil left in place in the Track 4 area will be prevented by a composite cover system consisting of landscaped areas with at least 2 feet of approved fill, hardscape areas (i.e., asphalt roadways, concrete sidewalks, pavers), and a stabilized shoreline along Echo Bay within the Track 4 area. Groundwater contamination will be remediated through dewatering and contingent treatment of remaining impacts after the remedial excavation is complete. An IC restricting groundwater use would prevent ingestion of groundwater in the Track 4 area.

Soil vapor will be remediated through the removal of contaminated soil and groundwater source areas. As an added protective measure from potential off-site contaminated soil vapor sources, all new concrete building slabs will be underlain by a continuous waterproofing/vapor barrier membrane. Soil vapor intrusion in the Track 4 area is not a concern because there are no buildings proposed within the Track 4 area. This remedy will effectively achieve the RAOs for public health and environmental protection by eliminating the possibility for ingestion, inhalation, or dermal contact.

Public health will be protected during remediation under all remedial alternatives by implementing the CAMP during site work and enforcing dust, odor, and organic vapor control. The environment will be protected by implementing and enforcing soil erosion and sediment controls as needed.

3.4.2 *Compliance with Standards, Criteria, and Guidance*

Alternative I – The Track 1 remedy will comply with applicable SCGs due to the removal of soil that exceeds Part 375 UU SCOs, and dewatering and treatment of contaminated groundwater.

Alternative II – The split Track 1 / Track 4 remedy will comply with applicable SCGs as follows. The Track 1 area remedy will comply with applicable SCGs through to the removal of soil that exceeds Part 375 UU

SCOs, and dewatering and treatment of contaminated groundwater. Additionally, a continuous waterproofing/vapor barrier membrane will be installed beneath all new concrete building slabs.

The Track 4 area remedy will comply with applicable SCGs by installing ECs to prevent contact with remaining soil contamination exceeding the RURR SCOs and removing source soil/fill with the potential to impact groundwater and soil vapor.

Remedial alternatives will also comply with SCGs that involve protection of public health and the environment during the remedial action by implementing and enforcing a site-specific CHASP and CAMP. OSHA requirements for on-site construction safety will be followed by the site contractors.

3.4.3 Short-Term Effectiveness and Impacts

The most significant short-term adverse impacts and risks to the community will be through the migration of contaminants carried in soil, vapor, and dust generated during construction. Additional short-term adverse impacts and risks to the community include the potential complications and risk involved with designing and constructing SOE for the buildings and structures adjoining the site, and potential impositions on roadway and pedestrian traffic associated with construction.

The estimated volume of soil/fill requiring removal and off-site disposal is about 127,000 cubic yards for Alternative I, about 2 times more than Alternative II (about 70,300 cubic yards). Truck traffic will be significantly less under Alternative II, due to the significant decrease in export and import of soil/fill. The potential for short-term adverse impacts related to migration of contaminants carried in soil is higher under the Alternative I scenario.

Truck traffic will be routed on the most direct course using major thoroughfares where possible, and flaggers will be used to protect pedestrians at site entrances and exits. The effects of these potential adverse impacts to the community, workers, and the environment will be greater for Alternative I and can be avoided under Alternatives I and II by implementing control plans (including the CHASP; CAMP; and dust, odor, and vapor control measures).

3.4.4 Long-Term Effectiveness and Impacts

Alternative I – The Track 1 remedy will remove all soil/fill that exceeds the UU SCOs from the site. Because an Environmental Easement and SMP are not required as part of the Track 1 remedy, Article 141 of the NYSDOH 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; therefore, the long-term effectiveness of this remedy would eliminate known environmental risks and satisfy the objectives of this criterion.

Alternative II – The split Track 1 / Track 4 remedy will eliminate the potential exposure pathways to contaminated soil completely within the Track 1 area and through the installation of a composite cover system within the Track 4 area. The Track 1 remedy will remove all soil/fill that exceeds the UU SCOs from the Track 1 area. Potential exposure pathways for off-site soil-vapor contamination will be mitigated

through the installation of a continuous waterproofing/vapor barrier membrane beneath all new concrete building slabs. Because an Environmental Easement and SMP are not required for the Track 1 area, Article 141 of the NYSDOH code would be relied upon to prevent ingestion of groundwater, which prohibits potable use of groundwater without prior approval. Future site use within the Track 1 area would be unrestricted; therefore, the long-term effectiveness of this remedy would eliminate known environmental risks and satisfy the objectives of this criterion.

The Track 4 remedy will remove contaminated fill/soil that exceeds the RURR SCOs and treat impacted groundwater within the Track 4 area. A composite cover system consisting of exterior hardscapes (i.e., asphalt roadways, concrete sidewalks, pavers), landscaped areas with at least 2 feet of fill meeting the lower of the Part 375 RURR and PGW SCOs, and a stabilized shoreline along Echo Bay will be installed within the Track 4 area to prevent future exposure to contaminated soil remaining in-place. Soil vapor intrusion in the Track 4 area is not a concern because there are no buildings proposed within the Track 4 area. An SMP and EE will restrict the use of groundwater in the Track 4 area.

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

Alternative I – The Track 1 remedy will permanently and entirely reduce the toxicity, mobility, and volume of contamination through excavation and off-site disposal of soil exceeding the Track 1 UU SCOs. Groundwater contamination will be treated via the on-site dewatering and treatment system.

Alternative II – The split Track 1 / Track 4 remedy will permanently and entirely reduce the toxicity, mobility, and volume of contamination. The Track 1 remedy will permanently and entirely reduce the toxicity, mobility, and volume of contamination through excavation and off-site disposal of soil exceeding the Track 1 UU SCOs within the Track 1 area. Installation of concrete building slabs below the groundwater table and a continuous waterproofing/vapor barrier membrane beneath all new concrete building slabs will address concerns related to the toxicity and mobility of potential unknown off-site sources.

The Track 4 remedy will remove on-site sources of groundwater contamination and remove contaminated soil within the Track 4 area. Exposure to remaining contamination will be prevented by ECs, including a composite cover system. The Track 4 remedy will reduce the toxicity, mobility, and volume of soil and groundwater contamination to a lesser extent than the Track 1 remedy, because soil exceeding the UU SCOs will be left in-place.

3.4.6 Implementability

Alternative I – Implementing the Track 1 remedy will be technically challenging and is infeasible due to the large excavation volume and backfill required for the remedial excavation. Significant dewatering and SOE measures would be necessary to reach the excavation depths required to meet Track 1 standards along the Echo Bay shoreline. Additionally, excavating to meet Track 1 standards beneath the existing municipal water and sewer easements in the eastern part of the site would be technically infeasible without decommissioning, removal, and replacement of the existing water and sewer lines. Implementing

a Track 1 remediation would require significantly higher remediation costs and longer duration of remedial activity, making this remedy more difficult to implement than Alternative II.

Alternative II – Implementing the split Track 1 / Track 4 remedy is feasible and easily implementable with conventional construction and earthmoving methods and equipment, including the use of standard bucket excavators and SOE. The amount of dewatering under Alternative II is less than Alternative I, since dewatering will only be required within the proposed development footprints, and will not extend to the Echo Bay shoreline. Implementing a split Track 1 / Track 4 remediation would be significantly less expensive and time consuming than the Track 1 remedy, thereby making this remedy easier to implement.

3.4.7 *Cost Effectiveness*

The estimated remediation cost of each remedy track is:

- Alternative I – Track 1 remedy: approximately \$49.8 million
- Alternative II – Split Track 1 / Track 4 remedy: approximately \$40 million plus ongoing operation and maintenance costs

Tables 2 and 3 detail the costs of the individual components needed to achieve Alternatives I and II.

Alternative I – There will be no long-term operation, maintenance, or monitoring costs associated with a Track 1 remedy. Capital/upfront costs associated with the Track 1 remedy are substantially higher while not yielding any significant environmental benefit as compared to the split Track 1/ Track 4 remedy.

Alternative II – The split Track 1 / Track 4 remedy has a lower cost than Track 1 because it requires less excavation, off-site disposal, backfill, and SOE. ECs and ICs will be implemented to monitor contamination remaining within the Track 4 area, which requires an SMP, an EE, and long-term costs associated with operation and maintenance of ECs. Alternative II is the most cost-effective alternative for achieving RAOs.

3.4.8 *Community Acceptance*

The Track 1 remedy may be less acceptable to the community because of the increased traffic, time, and effort associated with remedial excavation. However, the potential exposure pathways to on-site contamination will be eliminated upon completion. The split Track 1 / Track 4 remedy will be acceptable to the community, because potential exposure pathways to on-site contamination will be eliminated within the Track 1 area upon completion and the RAOs for the Track 4 area will be met through removing contaminated soil/fill and implementing ECs and ICs to prevent exposure to remaining contamination. Any selected remedy will be subject to a 45-day public comment period, and any substantive public comments will be addressed before the remedy is approved by NYSDEC.

3.4.9 *Land Use*

The current, intended, and reasonably anticipated future land use of the site and its surroundings are compatible with the alternatives. The future proposed development includes mixed-use residential,

commercial, and light industrial buildings. Review of previous environmental and public documents led to the following conclusions:

1. The current and proposed use of the site and its surroundings will be compatible with the selected remedy.
2. The proposed site use conforms to applicable zoning requirements.
3. The proposed site use conforms to historical and/or recent development patterns in the area.
4. The site does not fall within the boundaries of an existing Brownfield Opportunity Area.
5. The site is located in an urban setting that is characterized by residential, commercial, and light industrial buildings. There are no areas zoned for agricultural use in the proximity of the site.
6. There are no federal or state land designations.
7. The population growth patterns and projections support the proposed land use.
8. The site is accessible to existing infrastructure.
9. The site is not in close proximity to important cultural resources, including federal or state historic or heritage sites or Native American religious sites.
10. The nearest ecological receptor is Echo Bay, which adjoins the site to the east and southeast.
11. Groundwater is not used as a potable water source in New Rochelle; therefore, groundwater from the site will not affect municipal water supply wells or recharge areas. Potable water provided to the City of New Rochelle is derived from surface impoundments in the Catskill and Delaware watersheds.
12. According to the Federal Emergency Management Agency September 28, 2007 Flood Insurance Rate Map Number 36119C0342F), the northern and western parts of the site fall partially within Zone X, which is designated for areas of 0.2 percent annual chance flood. The remainder of the site falls within Zone AE, an area located within the 1% annual chance flood area (commonly referred to as the 100-year flood), with the base flood elevation of 12 feet.
13. The site geology is described in Section 2.4.1.
14. There are no known ICs currently in effect at the site.

3.5 Summary of the Selected Remedy

Based on the evaluation of the remedial alternatives described above, both alternatives would be protective of human health and the environment and meet the RAOs and SCGs. Implementation of Alternative I provides for a Track 1 remedy by removal of all impacted, on-site soil and non-native soil exceeding the UU SCOs (more than under Alternative II); however, given the extensive excavation depths required to remove all soil exceeding the UU SCOs, this alternative is not considered practical or cost-

effective, and carries increased risk. The additional excavation required to achieve UU SCO endpoints would extend into the groundwater table and would substantially complicate design of SOE and dewatering systems, increase truck traffic, and prolong potential community and construction worker exposure to noise and contaminated dust, groundwater, and vapors associated with additional excavation.

The split Track 1 / Track 4 (Alternative II) remedy is the selected remedy. Implementation of Alternative II provides a Track 1 remedy through removal of all impacted, on-site soil exceeding the UU SCOs within the Track 1 area and achieves the RAOs established for the project within the Track 4 area. Alternative II will eliminate potential pathways for contaminated soil vapor that may migrate onto the site from off-site sources through the building construction, which includes constructing building foundations below the groundwater table and installing continuous waterproofing/vapor barrier membranes beneath all new concrete building slabs. Alternative II achieves the RAOs established for the project within the Track 4 area, is protective of human health and the environment, and is effective in the short- and long-term. The selected remedy effectively reduces the mobility, toxicity, and volume of contaminants. Potential exposure pathways for soil, groundwater, and soil vapor contaminants will be mitigated via construction of a composite cover system.

Unlike Alternative I, Alternative II can be practically implemented in a cost-effective manner while providing similar overall protection to human health and the environment. Therefore, Alternative II is the recommended remedial alternative for this site. Figures 10 and 11 depict the Alternative II (Track 1 / Track 4) remedy.

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 Standards, Criteria and Guidance

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

- NYSDEC Title 6 of the New York Codes, Rules and Regulations
- NYSDEC CP-51 / Soil Cleanup Guidance (2010)
- EPA Title 40, Code of Federal Regulations
- NYSDEC Sampling, Analysis and Assessment of PFAS Substances under NYSDEC's Part 375 Remedial Programs, dated June 2021

4.1.1.1 Standards and Criteria Typically Applicable to UST Closures

- 6 NYCRR Part 613 - Petroleum Bulk Storage
- 6 NYCRR Part 371 - Identification and Listing of Hazardous Wastes
- 6 NYCRR Subpart 374-2 - Standards for the Management of Used Oil
- 6 NYCRR Parts 700-706 - Water Quality Standards
- 40 CFR Part 280 - Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks

4.1.1.2 Guidance typically applicable to UST closures

- 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)
- Spill Response Guidance Manual (1995)
- Permanent Closure of Petroleum Storage Tanks (2003)
- 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)
- DAR-1 (formerly Air Guide 1) (1997) - Guidelines for the Control of Toxic Ambient Air Contaminants
- NYSDOH Environmental Health Manual CSFP-530 - “Individual Water Supplies - Activated Carbon Treatment Systems”

4.1.1.3 Standards and Criteria Typically Applicable to Remedial Actions

- 29 CFR Part 1910.120 - Hazardous Waste Operations and Emergency Response
- 10 NYCRR Part 67 - Lead Poisoning Prevention and Control
- 12 NYCRR Part 56 - Industrial Code Rule 56 (Asbestos)
- 6 NYCRR Part 175 - Special Licenses and Permits--Definitions and Uniform Procedures
- 6 NYCRR Part 360 - Solid Waste Management Facilities General Requirements
- 6 NYCRR Part 361 - Material Recovery Facilities
- 6 NYCRR Part 364 - Waste Transporters
- 6 NYCRR Part 372 - Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities
- 6 NYCRR Subpart 373-4 - Facility Standards for the Collection of Household Hazardous Waste and Hazardous Waste from Conditionally Exempt Small Quantity Generators
- 6 NYCRR Subpart 374-1 - Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
- 6 NYCRR Subpart 374-3 - Standards for Universal Waste
- 6 NYCRR Part 376 - Land Disposal Restrictions
- 19 NYCRR Part 600-603 - Waterfront Revitalization of Coastal Areas and Inland Waterways
- 6 NYCRR Part 608 - Use and Protection of Waters
- 6 NYCRR Part 661 - Tidal Wetlands - Land Use Regulations
- 6 NYCRR Part 663 - Freshwater Wetlands - Permit Requirements
- 6 NYCRR Part 750 - SPDES Permits
- Screening and Assessment of Contaminated Sediment (Division of Fish, Wildlife and Marine Resources, June 2014)

4.1.1.4 Guidance Typically Applicable to Remedial Actions

- DER-2 - Making Changes To Selected Remedies (Revised April, 2008)
- DER-10 - Technical Guidance for Site Investigation and Remediation (May 3, 2010)
- DER-23 - Citizen Participation Handbook for Remedial Programs (March, 2010)
- TOGS 1.3.8 - New Discharges to Publicly Owned Treatment Works
- TOGS 2.1.2 - Underground Injection/Recirculation at Groundwater Remediation Sites
- NYSDOS State Coastal Management Program
- U.S. EPA OSWER Directive 9200.4-17 - Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites (December 1997)
- CP-43 - Commissioner Policy on Groundwater Monitoring Well Decommissioning (December 2009)

4.1.2 Green Remediation Principles

Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy per DER-10. The major green remediation components to be considered are as follows:

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials that would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic, and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

4.1.3 Site-Specific Construction Health and Safety Plan (CHASP)

The RE oversaw the preparation of a site-specific CHASP, which is provided as Appendix D. 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
- Safety data sheets (SDS)

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 their own HASP that, at a minimum, meets the requirements of the CHASP in Appendix D.

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. The Langan Site Safety Coordinator will be William Bohrer. If required, confined space entry will comply with all OSHA requirements to address the potential risk posed by combustible and toxic gasses. Langan personnel will not enter confined spaces.

4.1.4 Quality Assurance Project Plan (QAPP)

The RE oversaw 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 F 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 a 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 concurrent with redevelopment, the contractor and construction manager will have the primary responsibility to provide construction quality. A list of engineering personnel involved in implementation of the CQAP and procedures that will be carried out by the remedial engineering team are identified below.

RE:	Gerald Nicholls, PE, CHMM
Project Manager:	Elizabeth Adkins, PE
Langan Health & Safety Officer:	Tony Moffa Jr., CHMM
Site Safety Coordinator:	William Bohrer, PG
Quality Assurance Officer:	Mimi Raygorodetsky
Field Team Leader:	Laura Grose

Project personnel résumés are provided in Appendix G.

A Qualified Environmental Professional (QEP) or the RE will directly supervise field personnel that 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 that will meet with the Construction Superintendent on a daily basis 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 that 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 documentation 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 recorded 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 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 as Section 5.4.

4.1.7 Stormwater Pollution Prevention Plan (SWPPP) and SPDES Construction Permit

Erosion and sediment controls for the site will be designed and documented in a SWPPP in conformance with requirements presented in the New York State Standards and Specifications for Erosion and Sediment Control. Best Management Practices (BMP) will be employed to mitigate erosion and prevent the migration of sediment off-site throughout construction. Dewatering is required during construction of the sub-basements, and will be permitted under a SPDES permit. Discharge of water generated during remedial construction to surface waters (e.g., Echo Bay) is prohibited without a SPDES permit. Components of the SWPPP are further described in Section 5.4.10.

4.1.8 Community Air Monitoring Plan

A site-specific CAMP was developed in accordance with the NYSDOH Generic CAMP included as Appendix E. 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 in compliance 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 the NYSDEC. No other information, such as brochures and flyers, will be included with the Fact Sheet mailing.

Document repositories have been established at the following locations, as proposed in the BCP Application, and will contain all applicable project documents:

New Rochelle Public Library
1 Library Plaza
New Rochelle, NY 10801
(914)632-7878

NYSDEC – Division of Environmental Remediation
Attn: Michael Squire
625 Broadway
Albany, NY 12233
(518) 402-9546

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 Remedial Engineer (RE) for this project will be Gerald Nicholls. The RE is a registered PE licensed by the State of New York. The RE will have primary direct responsibility for implementation of the remedial program for the City DPW Yard site (BCP Site No. C360101). 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 set forth 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, EC installation, 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, or the Project Manager under 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 9.1 of this RAWP.

4.2.3 Remedial Action Construction Schedule

The anticipated remedial action construction schedule is discussed below in Section 10.0 and provided in Appendix H. The NYSDEC will be promptly notified of proposed changes, delays, or deviations to the schedule.

4.2.4 Work Hours

The hours of operation of remedial construction will conform to the City of New Rochelle Department of Buildings construction code requirements or according to specific variances issued by that agency. NYSDEC will be notified by the Volunteer of any variances issued by the City of New Rochelle Department of Buildings. The NYSDEC reserves the right to deny alternate remedial construction hours.

4.2.5 Site Security

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

4.2.6 Traffic Control

Site traffic will be controlled through designated points of access along Main Street. 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. Laboratory analysis will be for full scan parameters (VOCs, SVOCs, PCBs, pesticides, metals, and PFAS). Analyses will not be otherwise limited without NYSDEC approval. If the facility is not permitted to receive the sampled soil/fill, the fill/soil will be disposed of off-site at a permitted facility able to receive the soil/fill

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. Once the tank, its contents, and associated piping are removed, post-excavation soil samples will be collected per the requirements of NYSDEC DER-10 and this RAWP. Where the base of the remedial or development-related excavation extends below the base of the tank, confirmation or documentation endpoint samples will be collected from the base of the excavation. If encountered, petroleum-impacted soil in the unsaturated zone will be excavated as practicable. Petroleum impacts at the groundwater table will be addressed through excavation. 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 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 D.

4.2.9 Agency Approvals

Permits or government approvals required for remedial construction will be obtained before the start of remedial construction. The planned end use for the site as mixed-use commercial and residential buildings and parkland space conforms to the current zoning for the property as determined by the City of New Rochelle. Certificates 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 D. 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 \$40 million, plus ongoing operation and maintenance costs. An itemized and detailed summary of estimated costs for the preferred remedy is attached as Table 3.

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.

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 virgin crushed stone or RCA 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

Based on the size of the site and the planned excavation, common erosion and sedimentation control practices (i.e. perimeter silt fencing, inlet protection, stabilized construction entrances, dust control via

water sprinkling, etc.) will be necessary and will be implemented in accordance with the project-specific SWPPP. BMPs for soil erosion will be selected to minimize erosion and sedimentation off site from the start of the remediation to the completion of development.

4.3.3 Monitoring Well Decommissioning

Existing groundwater monitoring wells to be affected by implementation of this RAWP will be decommissioned in accordance with NYSDEC policy CP-43, unless the full length of the well is to be excavated during remediation and redevelopment. 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 virgin crushed 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 site entrance points.

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 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.

The presence of utilities and easements on the site will be investigated by the RE, Volunteer, and their contractors. Although there are sewer and water easements that traverses the central part of the site, no impediments to the planned work under this RAWP are expected due to known utilities or easements on the site.

4.3.6 Sheet piling 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 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 Decontamination Area

The contractor will construct decontamination pads at each site entrance/exit planned for construction vehicle usage. 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, and sloping and liners to facilitate collection of wastewater. Any collected truck rinsate and decontamination wastewater shall be either discharged in accordance with a SPDES permit, or tested and transported to an off-site disposal facility that is permitted to accept this waste, in accordance with applicable local, state, and federal regulations. 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 to document 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, and 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. The RE responsible for certifying the FER will be an individual licensed to practice engineering in the State of New York; Gerald Nicholls, P.E., of Langan, will have this responsibility. Should Mr. Nicholls become unable to fulfill this responsibility, another suitably qualified New York State PE will take his place. Daily and monthly reports 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.

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 and 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
- 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 structures 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.

Site records for remedial work will be 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.

Item	Description
Implementation Strategy/Mitigation Measures	<p>All complaints will be documented on a complaint register. The register will be maintained as an ongoing record.</p> <p>Each entry will include the following information:</p> <ul style="list-style-type: none"> • Time, date, and nature of complaint; • Type of communication (telephone, letter, email, personal, etc.); • Name, contact address, and contact number; and • Response and investigation undertaken as a result of the complaint and action taken with the signature of the responsible person. <p>Each complaint will be investigated as soon as practicable in relation to the requirements.</p>
Monitoring	<p>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.</p>
Reporting	<p>Upon receipt, the NYSDEC will be notified. Complaints and resolutions will be documented in the daily reports.</p>
Corrective Action	<p>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:</p> <ul style="list-style-type: none"> • Conduct additional training of staff to handle environmental complaints; • Investigate why the environmental complaint was not addressed within the specified time frame; and • 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; and
- Effect of the deviation(s) on the overall remedy.

5.0 REMEDIAL ACTION: SOURCE MATERIAL REMOVAL

5.1 Soil Cleanup Objectives

A split Track 1 / Track 4 remedy is proposed. The SCOs for the Track 1 area of the site will be the NYSDEC UU SCOs listed in 6 NYCRR Part 375-6.8(a).

The SCOs for the Track 4 area of the site will be the NYSDEC RURR SCOs listed in 6 NYCRR Part 375-6.8(b). Any areas containing soil that exceeds these SCOs will be capped with impervious cover or 2 feet of clean fill that meets the lower of the PGW and RURR SCOs.

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 Remedial Performance Evaluation

5.2.1 Confirmation Endpoint Soil Samples – Track 1 Area

Where the Track 1 remedial excavation does not extend to bedrock, confirmation samples will be collected to confirm that the remaining soil does not exceed the UU SCOs. Confirmation soil samples will be collected from the base of the remedial excavation areas as described in Section 3.3.6, in accordance with NYSDEC DER-10. A total of 36 confirmation endpoint soil samples will be collected (including QA/QC samples). Sidewall samples will not be collected where SOE and/or obstructions preclude access to soil sidewalls. Additional confirmation samples may be collected if remedial excavations are larger than anticipated. Confirmation and QA/QC samples will be analyzed for the Part 375 list of VOCs, SVOCs, metals, and emerging contaminants, including PFAS. Analytical results of the soil samples collected during the RI will be used to document soil quality in areas outside of the remedial excavations.

Confirmation endpoint samples will be transported under standard chain-of-custody protocol to an NYSDOH ELAP-approved laboratory. Laboratory analyses will be conducted in accordance with EPA SW-846 methods and NYSDEC Analytical Services Protocol 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, which are pre-cleaned and preserved. Where there are differences in the SW-846 and NYSDEC ASP requirements, the NYSDEC ASP shall take precedence.

A data usability summary report (DUSR) will be included in the FER. Quality control procedures for the sampling are included in the QAPP (Appendix F). Confirmation soil sample results will be provided in NYSDEC electronic data deliverable format for EQulS™. Guidance on sampling frequency is presented in Section 5.4 of DER-10. Prior to completion of validation, preliminary sample results will be appended to the monthly progress reports.

The proposed confirmation soil sample locations are presented in Figure 12. The FER will provide a tabular and map summary of all documentation sample results.

5.2.2 Documentation Soil Samples – Track 4 Area

Documentation soil samples will be collected from the base of the Track 4 remedial excavation as described in Section 3.3.7, in accordance with NYSDEC DER-10. A total of 83 base-of-excavation documentation soil samples will be collected (including QA/QC samples). Sidewall samples are anticipated to be precluded by SOE measures and shoreline stabilization measures and will not be collected. Additional documentation samples may be collected if remedial excavations are larger than anticipated. Documentation endpoint samples will be analyzed for the Part 375 list of VOCs, SVOCs, PCBs, pesticides, metals (including hexavalent and trivalent chromium), PFAS, and 1,4-dioxane. Analytical results of the soil samples collected during the RI will be used to document soil quality in areas outside of the remedial excavations.

Documentation samples will be transported under standard chain-of-custody protocol to an NYSDOH ELAP-approved laboratory. Laboratory analyses will be conducted in accordance with EPA SW-846 methods and NYSDEC Analytical Services Protocol 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, which are pre-cleaned and preserved. Where there are differences in the SW-846 and NYSDEC ASP requirements, the NYSDEC ASP shall take precedence.

A DUSR will be included in the FER. Quality control procedures for the sampling are included in the QAPP (Appendix F). Documentation soil sample results will be provided in NYSDEC electronic data deliverable format for EQUIS™. Guidance on sampling frequency is presented in Section 5.4 of DER-10. Prior to completion of validation, preliminary sample results will be appended to the monthly progress reports.

The proposed documentation soil sample locations are presented in Figure 12. The FER will provide a tabular and map summary of all documentation sample results.

5.3 Estimated Soil/Fill Removal Quantities

The estimated volume of soil/fill requiring removal and off-site disposal is about 70,300 cubic yards. Soil excavation will be performed to remove source soil/fill, as practicable, and to facilitate the construction of the composite cover system. If additional grossly contaminated soil is identified as defined by Part 375.1-2(u), remedial over-excavation will be performed and source soil/fill removed, as practicable.

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/fill during excavation, determining soil/fill suitable for direct load-out versus temporary on-site stockpiling, selection of 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/fill types with the intent to more efficiently manage and characterize the soil/fill and to avoid commingling of impacted soil/fill with non-impacted soil/fill.

5.4.1 Soil Screening Methods

Visual, olfactory, and PID soil screening and assessment will be performed by field personnel under the direction of the RE during all remedial and development excavations into known or potentially contaminated soil/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 development phase, such as excavations for foundations and utility work, prior to issuance of the Certificate of Completion.

Primary contaminant sources (including but not limited to, source soil/fill and former USTs) identified during the RI, waste characterization, and remedial action will be surveyed by a surveyor licensed to practice in the State of New York. This information will be provided on maps in the FER.

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 soil and non-native soil of differing waste types. Stockpile areas will meet the following minimum requirements:

- The excavated soil will be placed onto an impermeable surface or on 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 (e.g., non-native soil on areas where non-native soil is present). The use of multiple layers of thinner liners is permissible.
- Equipment and procedures will be used to place and remove the soil so as to minimize the potential to jeopardize the integrity of the liner.
- Stockpiles will be covered at the designated times (see below) with 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.

5.4.3 Characterization, Excavation and Load Out

Excavated soil 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, analytical results, and QA/QC procedures will be reported in 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 safe execution of invasive work, the structural integrity of excavations, 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 oversee all invasive work and the excavation and loading of excavated soil. 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.

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 or streets of soil or 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 lined, securely covered, manifested, and placarded in accordance with federal, state, and local (Westchester County Department of Transportation) requirements, and all other applicable transportation requirements. 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.

Primary contaminant sources (including but not limited to source soil/fill and former USTs) identified during implementation of the remedy will be surveyed by a surveyor licensed to practice in the State of New York. The survey information will be shown on maps to be reported in the FER.

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 in the neighborhood outside the site. To the extent possible, queuing of trucks will be performed on site in order to minimize off-site disturbance. Off-site queuing will be minimized.

Proposed inbound and outbound truck routes to the site are shown on Figure 13. These routes take into account:

- 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 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 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 fill can be sent to a C&D debris handling and recovery facility only with 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.

Non-hazardous fill and contaminated soil taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6 NYCRR Part 360.2. Fill and contaminated soil from the site are prohibited from being disposed of at Part 360.15 Registration Facilities (also known as Soil Recycling Facilities). Soil that is contaminated but non-hazardous and is being removed from the site is considered by the NYSDEC Division of Materials Management (DMM) to be C&D debris with contamination not typical of virgin soil. This soil may be sent to a permitted Part 360 landfill. The soil may be sent to a permitted C&D debris processing facility without permit modifications only upon prior notification of NYSDEC Region 3 DMM. This soil/fill is prohibited from being sent or redirected to a Part 360.15 Registration Facility. In this case, as dictated by DMM, special procedures will include, at a minimum, a letter to the C&D debris facility that provides a detailed explanation that the soil/fill is derived from a DER remediation site, that the soil/fill is contaminated and that it must not be redirected to on-site or off-site Soil Recycling Facilities. 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.

The following documentation will be obtained and reported by the RE 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 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 is in receipt of 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 and scale tickets) and approvals for receipt by the facilities. This information will also be presented in the FER.

5.4.6 *Reuse On-Site*

Excavated soil may be reused within the Track 4 area under the proposed remedy. Soil may be reused within the Track 4 area beneath the soil cover system, provided that it does not consist of source soil/fill, grossly contaminated soil, or soil exhibiting staining or odors and the requirements in this section and 6 NYCRR Part 360 are met. Excavated soil may be used as backfill, without additional sampling, for the excavation from which the soil was removed, or in areas of similar physical characteristics at 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 5 business days for review. Soil acceptable for reuse must be non-hazardous and meet the lower of the RURR.

Soil removed during the implementation of the remedy or removed for grading or other purposes will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site is prohibited for reuse on-site. Soil deemed unfit for reuse will be transported off-site for disposal.

5.4.7 *Fluids Management*

Remedial and development-related excavation will extend below the groundwater table and dewatering will be required to lower the groundwater table below the required excavation depths. Dewatering will occur prior to mass excavation below the current groundwater table. A temporary dewatering and treatment system will be designed by the Remediation Contractor's 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 City of New Rochelle sanitary sewer system (if any) will be addressed through approval by the City of New Rochelle and the Westchester County Department of Environmental Facilities. Discharge of liquids into Echo Bay will be performed following pre-treatment measures and in accordance with a SPDES permit. For the remedy, dewatering is considered a remedial component as it is necessary to facilitate excavation of contaminated soil/fill.

During remedial excavation, sediment and erosion controls will be implemented to prevent groundwater encountered during excavation in saturated soil from flowing outside of the site. Trucks will be lined to contain free liquids in saturated soil 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 *Demarcation*

After the completion of soil removal and any other invasive remediation and prior to backfilling with reused site fill or imported clean fill, a land survey will be performed by a New York State licensed

surveyor. The survey will define the top elevation of remaining contaminated soil within the Track 4 area. A physical demarcation layer, consisting of orange snow fencing, geotextile membrane, or equivalent material will be placed on the surface of remaining soil within the Track 4 area to provide a visual reference of where the surface is capped with clean soil (e.g., landscaped area). This demarcation layer will constitute the top of the 'Residuals Management Zone', the zone that requires adherence to special conditions for disturbance of contaminated remaining soil defined in the SMP. The survey will measure the grade covered by the demarcation layer before the placement of cover soil, pavement and sub-soil, structures, or other materials. This survey and the demarcation layer placed on this grade surface will constitute the physical and written record of the upper surface of the 'Residuals Management Zone' in the FER and SMP.

5.4.9 Backfill from Off-Site Sources

Backfill proposed for import will be approved by the RE and will be in compliance with provisions in this RAWP prior to receipt at 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, and Appendix 5. Requests for import of fill are subject to NYSDEC review and approval, and will include a Request to Import/Reuse Soil Form. Backfill 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 to the site.

The FER will include the following certification by the RE: "I certify that all import of soil from off-site, including source evaluation, approval, and sampling, has been performed in a manner that is consistent with the methodology defined in the RAWP".

Backfill will consist of clean fill (as described in the following paragraph) or other acceptable fill such as RCA or virgin stone from a quarry. If RCA is imported to the site, it will be from a NYSDEC-registered or permitted facility in compliance with 6 NYCRR Part 360 registration and permitting requirements for the period of acquisition of RCA. Import of RCA will be imported as per a site-specific Beneficial Use Determination, if required by NYSDEC. RCA imported from compliant facilities will not require chemical testing, unless required by the NYSDEC under the terms for operation of the facility. RCA imported to the site must be derived from recognizable and uncontaminated concrete. RCA is not acceptable for and will not be used as cover or drainage material. RCA must originate from a NYSDEC-permitted or registered C&D debris facility and contain less than 10% by weight passing a No. 10 sieve to be excluded from NYSDEC DER-10 sampling requirements. Virgin stone must originate from a mine or quarry and contain less than 10% by weight passing a No. 10 sieve to be excluded from NYSDEC DER-10 sampling requirements. Sampling may be required by NYSDEC under the terms for operation of the facility.

For use within the Track 1 area, imported soil (i.e., clean fill) will meet UU SCOs. For use within the Track 4 area, imported soil (i.e., clean fill) will meet the lower of RURR and 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. The samples will be analyzed for Part 375 VOCs (USEPA Method 8260),

SVOCs (USEPA Method 8270), pesticides/PCBs (USEPA Method 8082/8081), metals (USEPA Method 6010), and PFAS (USEPA Method 537 or 537.1, or, if after November 1, 2022, Method 1633) by a NYSDOH ELAP-certified laboratory. Upon meeting these criteria, the clean fill will be transported to the site and segregated from impacted soil/fill, as necessary, on plastic sheeting until used as backfill.

Import facilities will be identified in the FER. A PE or QEP will review the 6 NYCRR Part 360 registrations and/or permits for the facilities for the period of acquisition of RCA. Imported RCA and virgin gravel, rock, or stone from mines or quarries must have no more than 10% by weight passing through a No. 10 sieve and will not require additional testing unless required by NYSDEC under its terms for operation of the facility. Additional exemptions from testing requirements may be approved by the NYSDEC Project Manager based on their review of requests by the PE/QEP. Prior to soil/fill import, the RE will review documentation from each import facility, including the facility name, address, permit/registration, and site history, if necessary, in accordance with DER-10. Proposed import soil/fill will be approved by both the RE and the NYSDEC. Upon arrival, import soil/fill will be screened for visual, olfactory, and instrumental evidence of contamination.

5.4.10 SWPPP

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

5.4.11 Contingency Plan

Contingency plans, as described below, were developed to effectively deal with unexpected discoveries of additional contaminated media.

5.4.11.1 Discovery of Additional Contaminated Soil and Source Areas

During remediation and construction, the soil will be continuously monitored by the RE's field representatives using a PID as well as visual and olfactory field screening techniques to identify previously unknown contamination and soil that may not be suitable for the selected disposal facility(ies). This soil/fill will be segregated and sampled for lab analysis in accordance with disposal facility requirements. If the facility is not permitted to receive the suspect soil/fill, the soil/fill will be disposed of off-site at a permitted facility able to receive the soil/fill based on the characterization data. Identification of unknown or unexpected contaminated media by screening during ground-intrusive 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.

5.4.11.2 Discovery of LNAPL

LNAPL was detected during the RI and the 2013 Phase II conducted by Roux. Based on previous investigations, it is anticipated that LNAPL will be encountered during remediation. If encountered, LNAPL will be delineated and recovered either manually (e.g. bailed, absorbed) or via vacuum extraction, and transported off-site for disposal at a permitted facility.

5.4.11.3 Post-Remediation Groundwater Sampling

In the event that additional petroleum-contaminated source areas are encountered in the Track 4 area that require groundwater treatment, groundwater monitoring wells will be installed in the vicinity of the source area(s) following the completion of remedial excavations and in-situ groundwater treatment, if warranted. Up to eight rounds of post-remediation groundwater sampling will be conducted to evaluate potential remaining impacts to groundwater quality and assess the effectiveness of the remedy. Groundwater samples will be analyzed for Part 375 VOCs and SVOCs by a NYSDOH ELAP-certified laboratory. Depending on the groundwater monitoring results, additional applications or injections may be warranted. Based on groundwater sample results showing that RAOs have been achieved, a request may be made to the NYSDEC to discontinue sampling and consider the groundwater remedy complete.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated to NYSDEC's Project Manager. These findings will also be detailed in daily and subsequent monthly BCP progress reports.

5.4.12 Community Air Monitoring Plan

Community air monitoring will be conducted in compliance with the NYSDOH Generic CAMP outlined below and included in Appendix E.

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 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.

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

- If the downwind particulate level is $100 \mu\text{g}/\text{m}^3$ greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work 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 $150 \mu\text{g}/\text{m}^3$ 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 $150 \mu\text{g}/\text{m}^3$ 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 $150 \mu\text{g}/\text{m}^3$ 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.

5.4.13 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 dust and odor suppression methodology defined in the RAWP.

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

5.4.13.2 *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 through the use of 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, un-vegetated 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.

5.4.13.3 *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 will be developed and employed by the contractor for all remedial work and will conform, at a minimum, to City of New Rochelle noise control standards.

6.0 REMAINING CONTAMINATION

In the Trace 4 area, ECs and ICs will be required to protect human health and the environment because remaining contaminated soil, groundwater, and soil vapor will exist after the remedy is complete. These ECs and ICs are described hereafter. Long-term management of EC/ICs and of remaining contamination will be executed under a site-specific SMP that will be developed and included in the FER.

ECs will be implemented to protect public health and the environment by appropriately managing remaining contamination within the Track 4 area. The site will have one primary EC consisting of a composite cover system within the Track 4 area.

The SMP and FER will provide tables and figures documenting remaining contamination at the site. This will include presentation of concentrations exceeding both UU and RURR SCOs.

7.0 ENGINEERING AND INSTITUTIONAL CONTROLS

Following completion of the remedy, it is anticipated that the site will achieve a split Track 1 UU and Track 4 RURR remedy and contamination above the site-specific SCOs may remain in place within the Track 4 area; therefore, ECs and ICs will be required as part of the remedial action. The ECs include a composite cover system consisting of landscaped areas with at least 2 feet of approved fill, hardscape areas (i.e., asphalt roadways, concrete sidewalks, pavers), and a stabilized shoreline along Echo Bay within the Track 4 area. The proposed ECs and ICs are detailed in the following sections.

7.1 Engineering Controls

7.1.1 Composite Cover System – Track 4 Area

A composite cover system consisting of landscaped areas with at least 2 feet of approved fill, hardscapes (e.g., asphalt roadways, concrete sidewalks, pavers), and a stabilized shoreline along Echo Bay will be installed within the Track 4 area and will be required in perpetuity at the site. A site cover is required to allow for restricted-residential use of the site in areas where the upper 2 feet of exposed surface soil exceeds the applicable SCOs. Any proposed soil cover will consist of a minimum of 2 feet of fill (e.g., soil, stone) placed over a high-visibility demarcation layer. Soil covers will meet the lower of the RURR and PGW SCOs as set forth in Part 375-6.7(d).

A composite cover system plan is shown on Figure 11.

An Excavation Work Plan will be included in the SMP and will outline the procedures to be followed in the event that the composite cover system and underlying remaining contamination are disturbed after the remedial action is complete. Maintenance of this composite cover system will be described in the SMP.

7.2 Institutional Controls

After the remedy is complete, the site will have remaining contamination within the Track 4 area. ECs have been incorporated into the remedy to render the overall site remedy protective of public health and the environment. An SMP will be prepared and a site-specific EE will be recorded with the Westchester County Clerk to provide an enforceable means for continual and proper management of remaining contamination and protection of public health and the environment in perpetuity or until released in writing by the NYSDEC. The easement will require that the grantor and the grantor's successors and assigns adhere to all ECs and ICs placed on this site. ICs provide restrictions on site usage and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. The SMP will describe appropriate methods and procedures to maintain and protect ECs and ICs that are required by the environmental easement. Once the SMP is approved by the NYSDEC, compliance with the SMP will be required by the grantor of the environmental easement and grantor's successors and assigns.

7.2.1 *Environmental Easement*

An environmental easement, as defined in Article 71 Title 36 of the Environmental Conservation Law, is required when remaining contamination is left on-site after the remedy is complete. A Track 4 remedy requires that an EE approved by the NYSDEC be recorded with the Westchester County Clerk before the Certificate of Completion can be issued by the NYSDEC. The 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 within the Track 4 area, including controlling disturbances of the subsurface remaining contamination and restricting the use of the site to restricted-residential, commercial, and 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 of these groups are closely integrated with the SMP, which provides the methods and procedures to be followed to comply with this remedy.

The ICs that support ECs are:

- Compliance with the environmental easement by the grantor and the grantor's successors and adherence of all elements of the SMP is required;
- ECs must be operated and maintained as specified 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; and
- ECs may not be discontinued without an amendment or extinguishment of the environmental easement.

Adherence to these ICs for the site is mandated by the environmental easement and will be implemented under the SMP (discussed in the next section). The use restrictions that apply to the site are:

- Vegetable gardens and farming in remaining site soil are prohibited;
- Use of groundwater underlying the site is prohibited without treatment rendering it safe for the intended purpose;
- All future activities on the site that will disturb remaining contaminated soil and non-native soil are prohibited unless they are conducted in accordance with the soil management provisions in the SMP;
- The site may be used for restricted-residential, commercial, and industrial uses use only, provided the long-term ECs and ICs included in the SMP are employed; and

- The site may not be used for a higher level of use without an amendment or extinguishment of the environmental easement.

Grantor agrees to submit to the NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the site 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. This certification shall be submitted annually, or at a specified frequency allowed by the NYSDEC. The NYSDEC retains the right to access the site at any time in order to evaluate the continued maintenance of any and all controls.

7.2.2 Site Management Plan

The Track 4 area will require an SMP. Site management is the last phase of remediation and begins with the approval of the FER and issuance of the Certificate of Completion for the remedy. The finalized SMP is included as part of the FER, but will be written in a manner that allows its removal and use as a complete and independent document. Site management continues in perpetuity or until released in writing by the NYSDEC. The property owner is responsible for all site management responsibilities defined in the EE and performance of the SMP.

The SMP is intended to provide a detailed description of the procedures required to manage remaining contamination left in place at the site following completion of the remedy in accordance with the NYSDEC BCA. 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, recovery or other mechanical systems (including, where appropriate, preparation of an Operation and Maintenance Manual); (4) submittal of Site Management Reports, performance of inspections and certification of results, and demonstration of proper communication of site information to the NYSDEC; and (5) defining criteria for termination of treatment or other mechanical system operation.

To address these needs, this SMP will include three plans: (1) an EC and IC Plan for implementation and management of EC/ICs; (2) a Monitoring Plan for implementation of Site Monitoring; and (3) 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 DER-10 and the guidelines provided by the NYSDEC.

Site management activities, reporting, and EC/IC certification will be scheduled on a periodic basis, and will be submitted in a Periodic Review Report. The certification period will be determined by NYSDEC and the initial submittal will be 15 months after issuance of the Certificate of Completion.

No exclusions for handling of remaining contaminated soil will be provided in the SMP. All handling of remaining contaminated soil and non-native soil will be subject to provisions

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 documents that the remedial work required under this RAWP has been completed and performed in compliance with this plan. The FER will provide a comprehensive account of the locations and characteristics of all soil/fill removed from the site including the surveyed map(s) of all sources. The FER will include the following documentation:

1. Written and photographic documentation (via daily field reports) of the completed remedy
2. A description of any deviations from the RAWP
3. An account of soil/fill 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
4. An account of backfill imported to the site
5. A tabular summary of documentation soil samples results and other sampling and laboratory analysis completed as part of the remedial action
6. Record drawings for ECs and commissioning test results (as necessary)

Before approval of an FER and issuance of a Certificate of Completion, all project reports must be submitted in digital form on electronic media (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 implementation of the remedial program for the City DPW Yard site (NYSDEC BCP Site No. C360101).

I certify that the site description presented in this FER is identical to the site descriptions presented in the SMP, and the BCA for the City DPW Yard and related amendments.

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

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

It is a violation of Article 130 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 130, New York State Education Law.

9.0 SCHEDULE

Implementation of the remedy is anticipated to begin in January 2025 and be completed during the second quarter of 2026. After completion of remediation, an SMP and FER will be submitted to the NYSDEC as detailed in Section 8.0. A remedial action construction schedule is included in Appendix H.

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