

## TABLES

Table 1  
Remedial Action Work Plan  
Track 1 and Track 4 Soil Cleanup Objectives

City DPW Yard  
224 East Main Street  
New Rochelle, New York  
BCP Site No.: C360101  
Langan Project No.: 170331702

Compound	Unrestricted Use Soil Cleanup Objectives	Restricted Use - Restricted-Residential Soil Cleanup Objectives
Volatile Organic Compounds (mg/kg)		
1,1,1-Trichloroethane	0.68	100
1,1-Dichloroethane	0.27	26
1,1-Dichloroethene	0.33	100
1,2-Dichlorobenzene	1.1	100
1,2-Dichloroethane	0.02	3.1
cis-1,2-Dichloroethene	0.25	100
trans-1,2-Dichloroethene	0.19	100
1,3-Dichlorobenzene	2.4	49
1,4-Dichlorobenzene	1.8	13
1,4-Dioxane	0.1	13
Acetone	0.05	100
Benzene	0.06	4.8
Butylbenzene	12	100
Carbon tetrachloride	0.76	2.4
Chlorobenzene	1.1	100
Chloroform	0.37	49
Ethylbenzene	1	41
Hexachlorobenzene	0.33	1.2
Methyl ethyl ketone	0.12	100
Methyl tert-butyl ether	0.93	100
Methylene chloride	0.05	100
n-Propylbenzene	3.9	100
sec-Butylbenzene	11	100
tert-Butylbenzene	5.9	100
Tetrachloroethene	1.3	19
Toluene	0.7	100
Trichloroethene	0.47	21
1,2,4-Trimethylbenzene	3.6	52
1,3,5-Trimethylbenzene	8.4	52
Vinyl chloride	0.02	0.9
Xylenes, Total	0.26	100
Semivolatile Organic Compounds (mg/kg)		
Acenaphthene	20	100
Acenaphthylene	100	100
Anthracene	100	100
Benzo(a)anthracene	1	1
Benzo(a)pyrene	1	1
Benzo(b)fluoranthene	1	1
Benzo(g,h,i)perylene	100	100
Benzo(k)fluoranthene	0.8	3.9
Chrysene	1	3.9
Dibenzo(a,h)anthracene	0.33	0.33
Fluoranthene	100	100
Fluorene	30	100
Indeno(1,2,3-cd)pyrene	0.5	0.5
m-Cresol	0.33	100
Naphthalene	12	100
o-Cresol	0.33	100
p-Cresol	0.33	100
Pentachlorophenol	0.8	6.7
Phenanthrene	100	100
Phenol	0.33	100
Pyrene	100	100
Pesticides (mg/kg)		
2,4,5-TP Acid (Silvex)	3.8	100
4,4'-DDE	0.0033	8.9
4,4'-DDT	0.0033	7.9
4,4'-DDD	0.0033	13
Aldrin	0.005	0.097
alpha-BHC	0.02	0.48
beta-BHC	0.036	0.36
Chlordane (alpha)	0.094	4.2
delta-BHC	0.04	100
Dibenzofuran	7	59
Dieldrin	0.005	0.2
Endosulfan I	2.4	24
Endosulfan II	2.4	24
Endosulfan sulfate	2.4	24
Endrin	0.014	11
Heptachlor	0.042	2.1
Lindane	0.1	1.3
Polychlorinated biphenyls	0.1	1
Inorganics (mg/kg)		
Arsenic	13	16
Barium	350	400
Beryllium	7.2	72
Cadmium	2.5	4.3
Chromium, hexavalent	1	110
Chromium, trivalent	30	180
Copper	50	270
Total Cyanide	27	27
Lead	63	400
Manganese	1,600	2,000
Mercury	0.18	0.81
Nickel	30	310
Selenium	3.9	180
Silver	2	180
Zinc	109	10,000
PFAS (ppb)		
PFOA	0.66	33
PFOS	0.88	44

Notes:

1. The Site-Specific Soil Cleanup Objectives (SCO) for a split Track 1/Track 4 Cleanup are the Title 6 of the Official Compilation of New York Codes, Rules, and Regulations (6 NYCRR) Part 375 Unrestricted Use and Restricted Use Restricted-Residential SCOs for VOCs, SVOCs, PCBs, pesticides, herbicides, and metals and the guidance values for anticipated site use for perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS) as specified in Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs (June 2021).
2. VOC = volatile organic compound
3. SVOC = semivolatile organic compound
4. PCB = polychlorinated biphenyl
5. mg/kg = milligram per kilogram
6. ppb = parts per billion

Table 2  
Remedial Action Work Plan  
Alternative I: Track 1 Remedial Cost Estimate

City DPW Yard  
224 East Main Street  
New Rochelle, New York  
BCP Site No.: C360101  
Langan Project No.: 170331702

Item No.	Description of Environmental Item	Quantity		Unit Cost		Total Cost
REMEDIAL ACTION CONTRACTOR FEES						
1	Remediation Facilities, Equipment, Mobilization, Demobilization, Permits, and Site Maintenance - Remediation and decontamination facilities include trailer, truck cleaning facilities, etc.	Allowance				\$1,232,000
2	Asbestos Abatement and Demolition - Includes abatement of asbestos containing materials (ACM) and hazardous materials (HAZMAT), demolition of existing structures, and removal of building demolition debris.	Allowance				\$1,292,000
3	Perimeter Support of Excavation (SOE) (soldier piles, lagging, and tiebacks) - Includes installation of soldier piles, lagging, and tiebacks between Block B and Block C.	1,000	SF	\$110	per SF	\$110,000
4	Perimeter SOE (Sheetpiles and tiebacks) - Assumes installation of sheet pile walls and tiebacks along the eastern and southern boundaries of Block B and the northern, eastern and southern boundaries of Block C.	22,000	SF	\$200	per SF	\$4,400,000
5	Management and Handling of Excavated Soil (Contaminated and Hazardous) - Excavation of soil to meet Track 1 Unrestricted Use Soil Cleanup Objectives.	127,000	CY	\$40	per CY	\$5,080,000
6	Dust, Odor, and Vapor Control - Includes odor, dust, and organic vapor control during remediation of the site. Assumes control measures will include, but not be limited to, application of odor suppressant, foam, or water.	12	Months	\$20,000	per Month	\$240,000
7	Off-Site Transport and Disposal of Non-hazardous Soil - Includes transport vehicles and disposal of nonhazardous soil/fill at a permitted facility.	123,600	Tons	\$60	per Ton	\$7,416,000
8	Off-Site Transport and Disposal of Petroleum-Impacted Soil - Includes transport vehicles and disposal of petroleum-impacted soil at a permitted facility.	61,900	Tons	\$70	per Ton	\$4,333,000
9	Off-Site Transport and Disposal of Hazardous Soil - Includes transport vehicles and disposal of hazardous soil at a permitted facility.	4,800	Tons	\$210	per Ton	\$1,008,000
10	Underground Storage Tank (UST) Removal - Registration, cleaning, removal and disposal of any encountered USTs.	10	Tanks	\$10,000	per Tank	\$100,000
11	Dewatering and Groundwater Treatment Design, Permitting, Installation, and Operation	Allowance				\$1,595,000
12	In-Situ Groundwater Treatment Contingency - Assumes application of ORC or Petrofix and installation of up to 5 groundwater performance monitoring wells	Allowance				\$400,000
13	Backfill - Import and placement of clean fill to bring site area to development grade. An additional 30% of fill is included to account for compaction.	99,400	CY	\$35	per CY	\$3,479,000
14	General Contractor Fees and Insurance	Allowance				\$10,130,000
						\$40,815,000
ENGINEERING AND PROFESSIONAL SERVICES FEES						
15	Waste Characterization - Sampling and reporting to obtain disposal facility approval for excavated soil.	Allowance				\$532,000
16	Construction Phase Engineering Services - Includes construction oversight, environmental monitoring, office support, and Air Monitoring equipment rental.	12	Months	\$55,000	per Month	\$660,000
17	Confirmation Sampling - Includes sampling to verify attainment of the Track 1 Unrestricted Use Soil Cleanup Objectives.	201	Samples	\$1,500	per Sample	\$302,000
18	Contingent Post-Remediation Groundwater Performance Monitoring - Includes sampling of up to 5 performance monitoring wells for up to 8 quarters following in-situ remediation measures.	8	Events	\$15,000	per Event	\$120,000
19	BCP Engineering Services - Construction Documents/Bid Support, Construction Meetings and Construction Administration, Regulatory Agency Reporting, data management and validation, and the FER.	Lump Sum				\$198,000
20	BCP Environmental Legal Services (provided by others)	Lump Sum				\$182,000
ENGINEERING FEES SUBTOTAL						\$1,994,000
Remediation Contingency (15% of Engineering and Contractor Fee Subtotal)						\$6,422,000
Total Estimated Cost						\$49,231,000
ESTIMATED REMEDIATION COST - ALTERNATIVE II						\$49.2 MM
CONTRACTOR FEES FOR PREPARING SITE FOR BUILDING CONSTRUCTION						
21	Excavation and Off-site Disposal of Bedrock - Assumes that rock excavation will be performed beneath the Block B and C buildings to accommodate installation of the building cellars.	49,000	CY	\$200	per CY	\$9,800,000
22	General Contractor Fees and Insurance - Estimates about 33% for contractor fees and contingencies.	Allowance				\$3,192,000
CONTRACTOR DEVELOPMENT FEES TOTAL						\$12,992,000

General Assumptions and Conditions:

- Based on the Remedial Investigation (RI) and the Limited Site Investigation (LSI), source removal excavation depths range between 5 and 25 feet below grade surface (bgs). Groundwater was encountered from about 6 to 11 feet bgs.
- Implementation of remediation is estimated to take about 12 months.
- Total costs are rounded up to the nearest thousand.
- Costs provided are estimates and are based on Langan's past experience and the November 18, 2020 Concept Estimate Rev 9, prepared by Hunter Roberts Construction Group in units of 2020 dollars. A 10% increase in costs was applied to the 2020 costs presented in the Hunter Roberts estimate, and unit costs for off-site disposal were rounded up to convert the costs into 2022 unit dollars.
- This cost estimate is not a stand-alone document and should be reviewed in concert with the Remedial Action Work Plan (RAWP).
- The conversion factor from cubic yards (CY) to tons is 1.5 tons per cubic yard.
- This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. Langan is not licensed to provide financial or legal consulting services; as such, this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.
- VOC = Volatile organic compound
- SVOC = Semivolatile organic compound
- PFAS = Per-and Polyfluoroalkyl Substances
- PCB = Polychlorinated biphenyl
- CAMP = Community Air Monitoring Plan
- FER = Final Engineering Report
- BCP = Brownfield Cleanup Program

Item No. Contractor Cost Notes and Assumptions:

- This allowance includes items to support earthwork, i.e. temporary site fencing, installation of gates, temporary electricity, security, trailers/facilities, mobilization, monitoring.
- This allowance includes assessment, abatement, handling, management, and monitoring of asbestos-containing and potentially hazardous materials.
- Remedial excavations along site boundaries cannot be sloped and thus require excavation support. Perimeter support assumes that a sheet pile wall will be necessary along a portion of the Block B subcellar parking area and all of the Block C subcellar parking area, and soldier piles and lagging will be required between Blocks B and C. The estimate assumes an average sheetpile depth of 15 feet for Block B and an average depth of 20 feet for Block C. Costs assume one row of tiebacks will be required within the Block B sheetpile wall, and two rows of tiebacks will be required within the Block C sheetpile wall.
- Management and handling of contaminated and potentially hazardous soil/fill assumes a 25 percent increase in labor costs for Occupational Safety and Health Administration (OSHA)-trained labor. Soil handling includes excavation for off-site disposal.
- Dust, odor, and vapor control will be required during soil excavation. Equipment and material necessary to monitor and mitigate vapor/odor emission. Cost estimate includes application of vapor/odor suppressing foam and/or water.
- The estimated volumes for the differing types of soil are based on the sampling results of the RI and the SRI completed by Langan. Soil volumes were calculated by averaging the approximate excavation depth required in each excavation zone as presented in Figure 9 of the RAWP. The following assumptions were made based on the contaminant concentrations identified within each excavation zone:  
Zone 1 (elevation [el.] ±0 to +28) will consist of 20% petroleum-impacted soil/fill and 80% non-hazardous soil/fill; Zone 2 (el. -5 to +3) will consist of 50% petroleum-impacted soil/fill and 50% non-hazardous soil/fill; Zone 3 (el. -10 to -1) will consist of 50% petroleum-impacted soil/fill, 5% hazardous lead-impacted soil/fill, and 45% non-hazardous soil/fill; Zone 4 (el. -20 to -13 will consist of 25% petroleum-impacted soil/fill, 5% hazardous lead-impacted soil/fill, and 70% non-hazardous soil/fill.
- This estimates include the closure of one known UST and up to nine potential USTs, including decommissioning and cleaning costs, and off-site disposal of the USTs as scrap metal.
- This estimate assumes dewatering with pre-treatment will be necessary to achieve the development depth. Pre-treatment can include the following: (1) settling tank for the removal of large solids and free product, (2) granular activated carbon (GAC) filters for removal of dissolved organic compounds, (3) oil-water separator tank if free product is encountered, (4) ion exchange chambers, and (5) flocculation tanks.
- Contingent application of Oxygen Release Compound (ORC), PetroFix, or approved alternative. The estimate includes installation of up to 5 groundwater performance monitoring wells; locations would be determined at a future date and will be described in a Remedial Design Document.
- This estimate assumes backfilling the site to development grade following remedial excavation. The quantity of backfill has been increased by 30% to account for compaction.
- Costs include new building construction, insurance, and general contractor (GC) costs including: construction contingency, sub default insurance, general conditions, Contractor-Controlled Insurance Program (CCIP), and fee, for a total of about 33% of brownfield-eligible contractor fees.

Item No. Engineering Cost Assumptions:

- This estimate includes the completion of a waste characterization investigation to classify soil to be excavated for off-site disposal and associated reporting. Samples will be required at a frequency of about 1 per 800 cubic yards of soil.
- Estimate includes, but is not limited to, implementation of a CAMP as required by the New York State Department of Environmental Conservation (NYSDEC), the presence of an on-site environmental monitor throughout remediation, health and safety including purchase and maintenance of appropriate personal protective equipment (PPE), and periodic reporting to the regulatory agency.
- This estimate assumes confirmation endpoint samples, including quality assurance/quality control (QA/QC) samples, collected at a frequency of 1 sample per 900 square feet to verify attainment of the Track 1 Unrestricted Use Soil Cleanup Objectives. Confirmation endpoint samples will be analyzed for the NYSDEC Part 375 VOCs, SVOCs, PCBs, pesticides, metals (including hexavalent and trivalent chromium), PFAS, and 1,4-dioxane. Sidewall samples are not anticipated due to the presence of bedrock and SOE along sidewalls.
- To evaluate the efficacy of the contingent in-situ groundwater remedy, post-remediation groundwater monitoring would be performed. Post-remediation groundwater samples would be analyzed for Part 375 and Target Compound List (TCL)-listed VOCs and SVOCs. Groundwater monitoring would be performed until analytical results indicate there has been a bulk reduction of residual VOCs and SVOCs in groundwater to asymptotic levels. This cost estimate assumes eight rounds of groundwater monitoring.
- Costs are based on Langan's experience with regulatory programs and include the preparation of monthly reports during site remediation, data management and validation, and engineering fees associated with the FER required through the Brownfield Cleanup Program.
- A contingency fee is included for legal fees associated with participation in the BCP, is assumed to be equal to 10% of the engineering fees, and is based on Langan's experience.
- Costs include rock excavation beneath buildings in Blocks B and C.

Table 3  
Remedial Action Work Plan  
Alternative II: Split Track 1 / Track 4 Remedial Cost Estimate

City DPW Yard  
224 East Main Street  
New Rochelle, New York  
BCP Site No.: C360101  
Langan Project No.: 170331702

Item No.	Description of Environmental Item	Quantity		Unit Cost		Total Cost
REMEDIAL ACTION CONTRACTOR FEES						
1	<u>Remediation Facilities, Equipment, Mobilization, Demobilization, Permits, and Site Maintenance</u> - Remediation and decontamination facilities include trailer, truck cleaning facilities, etc.	Allowance				\$1,232,000
2	<u>Asbestos Abatement and Demolition</u> - Includes abatement of asbestos containing materials (ACM) and hazardous materials (HAZMAT), demolition of existing structures, and removal of building demolition debris.	Allowance				\$1,292,000
3	<u>Perimeter Support of Excavation (SOE) (soldier piles, lagging, and tiebacks)</u> - Includes installation of soldier piles, lagging, and tiebacks between Block B and Block C.	1,000	SF	\$110	per SF	\$110,000
4	<u>Perimeter SOE (Sheetpiles and tiebacks)</u> - Assumes installation of sheet pile walls and tiebacks along the eastern and southern boundaries of Block B and the northern, eastern and southern boundaries of Block C.	22,000	SF	\$200	per SF	\$4,400,000
5	<u>Management and Handling of Excavated Soil (Contaminated and Hazardous)</u> - Excavation of soil to meet Track 1 Unrestricted Use Soil Cleanup Objectives in Track 1 Area and 2 feet of soil in Track 4 Area.	70,000	CY	\$40	per CY	\$2,800,000
6	<u>Contingent Over-Excavation within Track 4 Area</u> - Management and handling for over-excavation of source material from within the Track 4 Area, if encountered.	1,500	CY	\$40	per CY	\$60,000
7	<u>Dust, Odor, and Vapor Control</u> - Includes odor, dust, and organic vapor control during remediation of the site. Assumes control measures will include, but not be limited to application of odor suppressant, foam or water.	10	Months	\$20,000	per Month	\$200,000
8	<u>Off-Site Transport and Disposal of Non-hazardous Soil</u> - Includes transport vehicles and disposal of nonhazardous soil/fill at a permitted facility	68,700	Tons	\$60	per Ton	\$4,122,000
9	<u>Off-Site Transport and Disposal of Petroleum-Impacted Soil</u> - Includes transport vehicles and disposal of petroleum-impacted soil at a permitted facility	33,100	Tons	\$70	per Ton	\$2,317,000
10	<u>Contingent Off-Site Transport and Disposal of Petroleum-Impacted Soil from Track 4 Area</u> - Includes transport vehicles and disposal of petroleum-impacted soil at a permitted facility, if over-excavation is required in the Track 4 area.	2,250	Tons	\$210	per Ton	\$473,000
11	<u>Off-Site Transport and Disposal of Hazardous Soil</u> - Includes transport vehicles and disposal of hazardous soil at a permitted facility.	3,200	Tons	\$210	per Ton	\$672,000
12	<u>Underground Storage Tank (UST) Removal</u> - Registration, cleaning, removal and disposal of any encountered USTs.	10	Tanks	\$10,000	per Tank	\$100,000
13	<u>Dewatering and Groundwater Treatment Design, Permitting, Installation, and Operation</u>	Allowance				\$1,595,000
14	<u>Track 1 Area Backfill</u> - Import and placement of clean fill to bring the Track 1 area to development grade. An additional 30% is included to account for compaction.	7,200	CY	\$35	per CY	\$252,000
15	<u>Track 4 Area Composite Cover System Backfill</u> - Import and placement of clean fill to bring the Track 4 area to development grade. An additional 30% of fill is included to account for compaction.	10,700	CY	\$35	per CY	\$375,000
16	<u>Waterproofing/Vapor Barrier</u> - The waterproofing/vapor barrier will be a minimum of 20 mils thick and will be installed as a continuous sub-slab membrane beneath all new building slabs. An extra 20% is included to account for overlap.	232,600	SF	\$20	per SF	\$4,652,000
17	<u>General Contractor Fees and Insurance</u>	Allowance				\$8,140,000
						\$32,792,000
ENGINEERING AND PROFESSIONAL SERVICES FEES						
18	<u>Waste Characterization</u> - Sampling and reporting to obtain disposal facility approval for excavated soil.	Allowance				\$294,000
19	<u>Construction Phase Engineering Services</u> - Includes construction administration and environmental monitoring.	10	Months	\$55,000	per Month	\$550,000
20	<u>Confirmation Sampling</u> - Includes sampling to confirm attainment of the Track 1 Unrestricted Use Soil Cleanup Objectives within the Track 1 area.	36	Samples	\$1,500	per Sample	\$54,000
21	<u>Documentation Sampling</u> - Includes sampling to document remaining site conditions following soil/fill removal within the Track 4 area.	83	Samples	\$1,500	per Sample	\$125,000
22	<u>BCP Engineering Services</u> - Construction Documents/Bid Support, Construction Meetings and Construction Administration, Regulatory Agency Reporting, Environmental Easement Survey, data management and validation, SMP, and the FER	Lump Sum				\$248,000
23	<u>BCP Environmental Legal Services (provided by others)</u>	Lump Sum				\$128,000
ENGINEERING FEES SUBTOTAL						\$1,399,000
Remediation Contingency (15% of Engineering and Contractor Fee Subtotal)						\$5,129,000
Total Estimated Cost						\$39,320,000
ESTIMATED REMEDIATION COST - ALTERNATIVE II						\$39.3 MM
CONTRACTOR FEES FOR PREPARING SITE FOR BUILDING CONSTRUCTION						
24	<u>Excavation and Off-site Disposal of Bedrock</u> - Assumes that rock excavation will be performed beneath the Block B and C buildings to accommodate installation of the building cellars.	49,000	CY	\$200	per CY	\$9,800,000
25	<u>General Contractor Fees and Insurance</u> - Estimates about 33% for contractor fees and contingencies.	Allowance				\$3,192,000
CONTRACTOR DEVELOPMENT FEES TOTAL						\$12,992,000

General Assumptions and Conditions:

- Based on the Remedial Investigation (RI) and the Limited Site Investigation (LSI), remedial excavation depths range between 2 and 25 feet below grade surface (bgs). Groundwater was encountered at depths from about 6 to 11 feet bgs.
- Implementation of remediation is estimated to take about 10 months.
- Total costs are rounded up to the nearest thousand.
- Costs provided are estimates and are based on Langan's past experience and the November 18, 2020 Concept Estimate Rev 9, prepared by Hunter Roberts Construction Group in units of 2020 dollars. A 10% increase in costs was applied to the 2020 costs presented in the Hunter Roberts estimate, and unit costs for off-site disposal were rounded up to convert the costs into 2022 unit dollars.
- This cost estimate is not a stand-alone document and should be reviewed in concert with the Remedial Action Work Plan (RAWP).
- The conversion factor from cubic yards (CY) to tons is 1.5 tons per cubic yard.
- This estimate has been prepared for the purposes of comparing potential remedial alternatives. The information in this cost estimate is based on the available information regarding the site investigation and the anticipated scope of the remedial alternative. This cost estimate is expected to be within -30% to +50% of the actual cost. Utilization of this cost estimate information beyond the stated purpose is not recommended. Langan is not licensed to provide financial or legal consulting services; as such, this cost estimate information is not intended to be utilized for complying with financial reporting requirements associated with liability services.
- VOC = Volatile organic compound
- SVOC = Semivolatile organic compound
- PFAS = Per- and Polyfluoroalkyl Substances
- PCB = Polychlorinated biphenyl
- CAMP = Community Air Monitoring Plan
- FER = Final Engineering Report
- SMP = Site Management Plan
- BCP = Brownfield Cleanup Program

Item No. Contractor Cost Notes and Assumptions:

- This allowance includes items to support earthwork, i.e. temporary site fencing, installation of gates, temporary electricity, security, trailers/facilities, mobilization, and monitoring.
- This allowance includes assessment, abatement, handling, management, and monitoring of asbestos-containing and potentially hazardous materials. Remedial excavations along site boundaries cannot be sloped and thus require excavation support. Perimeter support assumes that a sheet pile wall will be necessary along a portion of the Block B subcellar parking area and all of the Block C subcellar parking area, and soldier piles and lagging will be required between Blocks B and C. The estimate assumes an average sheetpile depth of 15 feet for Block B and an average depth of 20 feet for Block C. Costs assume one row of tiebacks will be required within the Block B sheetpile wall, and two rows of tiebacks will be required within the Block C sheetpile wall.
- Management and handling of contaminated and potentially hazardous soil/fill assumes 25 percent increase in labor costs for Occupational Safety and Health Administration (OSHA) trained labor.
- Soil handling includes excavation for off-site disposal. A contingency is included should over-excavation be required within the Track 4 area to remove unknown source material
- Dust, odor, and vapor control will be required during soil excavation. Equipment and material necessary to monitor and mitigate vapor/odor emission. Cost estimate includes application of vapor/odor suppressing foam and/or water.
- The estimated volumes for the differing types of soil are based on the sampling results of the RI and the LSI completed by Langan. Soil volumes were calculated by averaging the approximate excavation depth required in each excavation zone as presented in Figure 10 of the RAWP. The following assumptions were made based on the contaminant concentrations identified within each excavation zone: Zone 1 (elevation [el.] ±0 to +28) will consist of 15% petroleum-impacted soil/fill and 85% non-hazardous soil/fill; Zone 2 (el. -5 to +3) will consist of 25% petroleum-impacted soil/fill and 75% non-hazardous soil/fill; Zone 3 (el. -10 to -1) will consist of 50% petroleum-impacted soil, 5% hazardous lead-impacted soil/fill, and 45% non-hazardous soil/fill; Zone 4 (el. -20 to -13) will consist of 25% petroleum-impacted soil/fill, 5% hazardous lead-impacted soil/fill, and 70% non-hazardous soil/fill; and Zone 5 (el. +3 to el. +31) will consist of 25% petroleum-impacted soil/fill, and 75% non-hazardous soil/fill.
- This estimates includes the closure of one known UST and up to nine potential USTs, including decommissioning and cleaning costs, and off-site disposal of the USTs as scrap metal.
- This estimate assumes dewatering with pre-treatment will be necessary to achieve the remediation depth for the Track 4 area. Pre-treatment can include the following: (1) settling tank for the removal of large solids and free product, (2) granular activated carbon (GAC) filters for removal of dissolved organic compounds, (3) oil-water separator tank if free product is encountered, (4) ion exchange chambers, and (5) flocculation tanks.
- This estimate assumes backfilling the site to development grade following remedial excavation. The quantity of backfill has been increased by 30% to account for compaction.
- This estimate assumes that a 2-foot-thick soil cover will be placed across the Track 4 area. The quantity of soil has been increased by 30% to account for compaction.
- Assumes a waterproofing/vapor barrier membrane will be installed under the lowest level of all new buildings and along foundation sidewalls.
- Costs include new building construction, insurance, and general contractor (GC) costs including: construction contingency, sub default insurance, general conditions, Contractor-Controlled Insurance Program (CCIP), and fee, for a total of about 33% of brownfield-eligible contractor fees.

Item No. Engineering Cost Assumptions:

- This estimate includes the completion of a waste characterization investigation to classify soil to be excavated for off-site disposal and associated reporting. Samples will be required at a frequency of about 1 per 800 cubic yards of soil.
- Estimate includes, but is not limited to, implementation of a CAMP as required by the New York State Department of Environmental Conservation (NYSDEC), the presence of an on-site environmental monitor throughout remediation, health and safety including purchase and maintenance of appropriate personal protective equipment (PPE), and periodic reporting to the regulatory
- This estimate assumes confirmation endpoint samples, including quality assurance/quality control (QA/QC) samples, collected at a reduced frequency of 1 sample per 1,500 square feet to verify attainment of the Track 1 Unrestricted Use Soil Cleanup Objectives within the Track 1 area. Confirmation endpoint samples will be analyzed for the NYSDEC Part 375 VOCs, SVOCs, PCBs, pesticides, metals (including hexavalent and trivalent chromium), PFAS, and 1,4-dioxane. Sidewall samples are not anticipated due to the presence of bedrock and SOE along sidewalls.
- This estimate assumes the collection of documentation endpoint samples and QA/QC samples, collected at a reduced frequency of 1 sample per 1,500 square feet to document soil quality left in-place after remedial excavations and under the final composite cover system. Documentation endpoint samples will be analyzed for the NYSDEC Part 375 list of VOCs, SVOCs, PCBs, pesticides, metals (including hexavalent and trivalent chromium), PFAS, and 1,4-dioxane.
- Costs are based on Langan's experience with regulatory programs and include the preparation of monthly reports during site remediation, data management and validation, and engineering fees associated with the SMP and the FER required through the Brownfield Cleanup Program.
- A contingency fee is included for legal fees associated with participation in the BCP, is assumed to be equal to 10% of the engineering fees, and is based on Langan's experience.
- Costs include rock excavation beneath buildings in Blocks B and C.