



# **ADDENDUM TO THE REMEDIAL ACTION WORK PLAN**

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**Chatsworth Coal and Supply Site  
2101 Palmer Avenue  
Larchmont, New York 10538  
Section 6, Block 602, Lot 453**

**Brownfield Cleanup Program Site # C360132**

**September 22, 2014**

Prepared for:  
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## **CERTIFICATIONS**

I, Richard D. Galli, P.E., am currently a registered professional engineer licensed by the State of New York. I have primary direct responsibility for implementation of the remedial program for the Former Chatsworth and Coal Supply Site (NYSDEC BCP Site No. C360132).

I certify that the Site description presented in this RAWP is identical to the Site descriptions presented in the Brownfield Cleanup Agreement for the Chatsworth Coal and Supply Site and related amendments.

If Track 1 is not achieved, I certify that this plan includes proposed use restrictions, Institutional Controls, Engineering Controls, and plans for all operation and maintenance requirements applicable to the Site and provision for development of an Environmental Easement to be created and recorded pursuant to ECL 71-3605. This RAWP requires that all affected local governments, as defined in ECL 71-3603, will be notified that such Easement has been recorded. This RAWP requires that a Site Management Plan must be submitted by the Applicant for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site, including the proper maintenance of all remaining monitoring wells, for approval by the Department.

I certify that this RAWP has a plan for transport and disposal of all soil, fill, fluids and other material removed from the property under this Plan, and that all transport and disposal will be performed in accordance with all local, State and Federal laws and requirements. All exported material will be taken to facilities licensed to accept this material in full compliance with all Federal, State and local laws.

I certify that this RAWP has a plan for import of all soils and other material from off-Site and that all activities of this type will be in accordance with all local, State and Federal laws and requirements.

I certify that that this RAWP has a plan for nuisance control during the remediation and all invasive development work, including a dust, odor and vector suppression plan and that such plan is sufficient to control dust, odors and vectors and will prevent nuisances from occurring.

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

NYS PE # 59461

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

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.

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## Appendix

- Letter to William Balter, MTA Parcel – Surface Soil Sampling; Proposed Pinebrook Condominiums, Larchmont, NY, dated October 11, 2013 prepared by Galli Engineering, P.C.

Includes:

- Data Tables
  - Site photos
  - Sample Location Plan
- Subsurface Investigation and Remedial Action Workplan; Metro North Railroad Easement Parcel, Larchmont, NY, dated April 4, 2013, with letter to Todd Ghiosay, NYSDEC, prepared by HydroEnvironmental Solutions, Inc. (HES)

Includes:

- PID Field Screening Results
- Data Tables
- Sample Location Plan
- HES – Proposed Remediation

- **BCP Application Supplemental Investigation, dated July 3, 2014, prepared by Galli Engineering, P.C.**

**Includes:**

- **Sample Location Plan**
- **Laboratory Analysis**
- **Updated Remedial Action Construction Schedule**



## **Executive Summary**

### **Site Description/ Physical Setting/ Site History**

This submittal serves as an addendum to the Remedial Action Work Plan (RAWP) for the Former Chatsworth Coal and Supply Site dated April 11, 2014, revised June 24, 2014, and which was approved by the NYSDEC and NYSDOH on August 21, 2014. A third additional tax parcel 6-602-453, which is a 0.46 acre property adjacent to the main site discussed in the accepted RAWP, was accepted as an additional expansion to the BCP Site Number C360132, and will be developed simultaneously with the original BCP site, as an access road to Pinebrook Condominium.

BCP Site Number C360132 was accepted into the NYSDEC BCP as the Chatsworth Coal and Supply Site on October 24, 2013. The BCP site, (herein referred to as the "main site,") is located at North Avenue and 2101 Palmer Avenue in the Village of Larchmont within Westchester County, New York, and consists of two tax parcels (6-602-494.2, 6-601-486.1) totaling approximately 1.519 acres in size, and is in a residential and commercial setting. The main site lies north of Palmer Avenue and southeast of the New England Thruway (Interstate 95) and the New York/New Haven Metro North Railroad Line. The main site was approved for the construction of Pinebrook Condominium, an affordable housing complex consisting of fifty-one condominium units and an on-grade parking area.

The third parcel 6-602-453, (herein referred to as the "expansion area") has most recently been used as an emergency access right-of-way for the properties located along North Avenue. There are remains of concrete and asphalt pavement, but no buildings are located on the expansion area, which is also unoccupied. Historical usage of the expansion area is similar to the main site discussed in the April 11, 2014 RAWP. The expansion area was previously used for commercial coal supply and rail freight storage. Figure 1, the Site Location Map, shows the location of both the main site and expansion area.

The main site has open NYSDEC Spill Number: 1006787 from a release of petroleum constituents to soil and groundwater originating from an adjacent site. The history of this Spill file is detailed in the approved RAWP.

The expansion area also has one open NYSDEC Spill, west of 20 North Street, filed as Spill Number 1202766. The expansion area has been assigned a petroleum spill number as a result

of free phase petroleum discovered on the Site in June, 2012, which is also believed to have originated from an adjacent site. Quantitative laboratory results are presented in the April 2013 HES Subsurface Investigation and Remedial Action Work Plan, the October 2013 Galli Surface Soil Sampling Letter and the July 2014 Galli BCP Supplemental Investigation.

This addendum will only supplement sections of the RAWP that require modification to include the addition of the expansion area. All other sections of the RAWP shall apply to the expansion area, as they do to the main site.

### **Summary of Remedial Investigations**

The expansion area has been subject to several environmental investigations. The following is a summary of the investigations that have been conducted on the expansion area:

- Subsurface Investigation and Remedial Action Work Plan ("SIRRAWP") dated April 4, 2013 prepared by HydroEnvironmental Solutions, Inc. for both the 2101 and 2103 Palmer Avenue/North Avenue (i.e. BCP Chatsworth Coal & Supply Company Site) and MTA Easement Parcel Sites (i.e. expansion area).
- Surface Soil Sampling Letter prepared by Galli Engineering, P.C. dated October 11, 2013, for the MTA parcel (i.e. expansion area).
- BCP Application Supplemental Investigation dated July 3, 2014 prepared by Galli Engineering, P.C.

#### **April 4, 2013 HES Subsurface Investigation and Remedial Action Work Plan ("SIRRAWP")**

HES completed a subsurface investigation of the expansion area and the adjacent main site in June 2012, which was summarized in an April 2013 Subsurface Investigation and Remedial Action Work Plan. HES installed borings on the main BCP site as well as on the expansion area described at that time as the MTA parcel. HES suggested NYSDEC may require soil removal along the fence lines between the MTA parcel and the main site, as well as between the adjacent Carpenito spill source parcel and the main site. Part of HES's suggested remedial activities included the installation of an impermeable barrier at the excavation boundary between the main BCP site and the MTA parcel. This boundary is located within what HES defined as the "impacted area" where free-phase product was found during their investigation. Field PID readings indicated that VOC vapors were highest on the MTA parcel, immediately downgradient of 20 North Avenue. These readings were taken from soil borings GB-5, GB-7 and GB-8. Free-phase product was also detected in temporary monitoring wells installed on the

MTA parcel: GB-1 and B-2, also downgradient of 20 North Avenue. The monitoring well located at B-2 was on the property line between the main site and the MTA parcel.

The total concentration of VOCs was highest in GB-7.

SVOCs were reported as "ND" or "Not Detected" in samples GB-5, GB-7 and GB-8.

The HES report is included in the appendix of this RAWP Addendum.

#### Galli Surface Soil Sampling Letter, October 11, 2013

The surface soil sampling described in the letter dated October 11, 2013, was performed on September 26, 2013 by a geologist from Galli Engineering, P.C. Three surface soil samples were taken along the north side of the MTA parcel. Each sample was a composite sample over an area of one foot in diameter and two inches in depth. Samples were submitted to Phoenix Environmental Laboratories, a NYS certified ELAP Laboratory, for the analysis of VOCs, SVOCs, TAL metals, PCBs, Pesticides, and Herbicides.

No VOCs, PCBs, or herbicides were detected above the laboratory reporting limit.

SVOCs were detected above Track 2 Residential Use in Sample SC-3. SVOCs detected above Track 2 are: benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and chrysene. No other SVOCs were detected above SCOS in the other two samples.

Metals were detected above Track 1 Unrestricted Use SCOs in all three samples. Metals detected above Track 1 are: chromium, and copper and lead, in sample SC-1. Metals were detected above Track 2 SCOs in samples SC-2 and SC-3. Metals above Track 2 are copper and lead for samples SC-2 and SC-3.

Pesticides were detected above Track 1 Unrestricted Use SCOs in all three soil samples. Pesticide dieldrin was detected above Track 2 in Sample SC-2.

The letter report is included in the appendix of this RAWP Addendum.

#### BCP Application Supplemental Investigation, Galli Engineering, P.C. June 9, 2014

Galli Engineering, P.C. performed a subsurface sampling event on June 9, 2014 to better assess the nature and extent of contamination present on the expansion area. Five soil borings were advanced and one well was installed. Borings were advanced to 15 feet below land surface (bls) or until they hit refusal. Borings WC-1 through WC-3 were successfully advanced to 15 feet bls. WC-4 was advanced to 8 feet bls and WC-5 to 10 feet bls. Composite samples were taken across the borings.

Metals chromium, copper, and nickel were detected in WC-2 through WC-5. Samples WC-3 through WC-5 exceeded the Track 1 Unrestricted Use SCOs. Acetone was detected in two samples, WC-2 and WC-4 at concentrations above Track 1 Unrestricted Use SCOs. Full TCLP and RIC analysis was performed and no hazardous waste levels detected.

One groundwater sample was analyzed. Volatiles and metals were detected at concentrations above the TOGS 1.1.1 guidance values.

#### **Summary of the Remedy**

The remedy for the main site was selected in the approved RAWP. This remedy was selected based on soil, groundwater, and vapor sampling at the main site. With regards to the expansion area, Galli Engineering recommends the implementation of the following preferred remedial action:

1. Performance of a Track 2 cleanup which requires excavation of the entire site to one to two feet below grade, and approximately six feet in the area defined as a hot spot. The hot spot is defined as the area where product was observed in the groundwater in previous investigations. The depth of excavation in the hot spot will be determined according to on-site PID readings, taken as material is disturbed. The readings will give an indication of the depth of contamination. The depth of six feet is based on the excavation outlined in the approved RAWP for the area adjacent to the hot spot. Excavation must be performed in accordance with Metro North safety measures for rail stability.
2. Appropriate off-site disposal of all material removed from the site in accordance with all Federal, State and local rules and regulations for handling, transport, and disposal;
3. Confirmation that Track 2 SCOs have been achieved through post-excavation end point sampling;

4. Importation of materials to be used for backfill and cover in compliance with: 1) chemical limits and other specifications included in Tables 12 and 13 of the approved RAWP; 2) all Federal, State and local rules and regulations for handling and transport of material;
5. All responsibilities associated with the Remedial Action, including permitting requirements and pretreatment requirements, will be addressed in accordance with all applicable Federal, State and local rules and regulations; and
6. The Remedial Action will be performed at the expansion area in accordance with this NYSDEC-approved RAWP and DER-10. All deviations from the RAWP and DER-10 will be promptly reported to NYSDEC for approval and fully explained in the FER.

## REMEDIAL ACTION WORKPLAN

### Introduction

WB Pinebrook Associates, LLC entered into a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) on October 24, 2013, to investigate and remediate two parcels 6-602-494.2 and 6-601-486.1 (defined as the main site). The Remedial Action Work Plan (RAWP) for the main site was approved on August 21, 2014 by NYSDEC and NYSDOH.

This submittal is an Addendum to the August 21, 2014 approved RAWP for the expansion area. This submittal will summarize the nature and extent of contamination as determined from data gathered during all prior investigations of the expansion area, which have been summarized in the BCP Application Supplemental Investigation (SI). This Addendum will describe the preferred Track 2 remedial alternative and costs associated with this preferred remedy and compare this remedy to a Track 1 remedy and no action remedy. The remedial alternatives described in this document are consistent with remedies defined in DER-10 to achieve applicable standards, criteria and guidance. The remedial alternatives described in this document also comply with all applicable Federal, State and local laws, regulations and requirements.

A summary of the final remedial work performed, and the end point data obtained, subsequent to the implementation of the RAWP on the expansion area and on the main site will be submitted in a Final Engineering Report ("FER").

### 1.1 Site Location and Description

The 0.46 acre expansion area, which is the subject of this addendum, consists of one tax parcel (6-602-453) situated adjacent to the main site. This tax parcel was formerly owned by MTA and is situated between the main site and the New York/New Haven Metro North Railroad Line.

### 1.2 Contemplated Redevelopment Plan

The Remedial Action to be performed under the RAWP is intended to make the expansion area protective of human health and the environment consistent with the contemplated residential project end use. The proposed redevelopment plan and end use is described here to provide the basis for the preferred remedy and the qualitative exposure assessment.

The main site has been approved for the construction of two affordable housing buildings consisting of fifty-one condominium units and an on-grade parking area. The development will be named Pinebrook Condominium. The expansion area that is the subject of this addendum will be developed as an access road for Pinebrook Condominium.

### **1.3 Description of Surrounding Property**

The New England Thruway (Interstate 95) and the New York/New Haven Metro North Railroad Line are to the west and north. Commercial businesses adjacent to Palmer Avenue are to the east. To the south are retail stores and a gasoline station.

### **1.4 Geological Conditions**

Geological conditions are described in the approved RAWP.

Groundwater was encountered in soil borings at depths ranging from approximately 5 feet below land surface (bls) to 8 feet bls. From previous investigations, the groundwater generally flows toward the west-southwest.

### **1.5 Previous Environmental Conditions**

Environmental investigations performed on the main site are detailed in the RAWP approved on August 21, 2014. The following is a list of investigations that relate directly to the parcel:

- Subsurface Investigation and Remedial Action Work Plan ("SIRRAWP") dated April 4, 2013 prepared by HydroEnvironmental Solutions, Inc. for both the 2101 and 2103 Palmer Avenue/North Avenue (i.e. BCP Chatsworth Coal & Supply Company Site) and MTA Easement Parcel (i.e. the expansion area).
- Surface Soil Letter, October 2013, prepared by Galli Engineering, P.C.
- BCP Application Supplemental Investigation (SI) dated July 3, 2014, prepared by Galli Engineering, P.C.

#### **April 4, 2013 HES Subsurface Investigation and Remedial Action Work Plan ("SIRRAWP")**

HES completed a subsurface investigation of the expansion area and the main site in June 2012, which was summarized in an April 2013 Subsurface Investigation and Remedial Action Work Plan. HES installed 22 test borings, designated GB-1 through GB-22. GB-1 through GB-16 were installed on this site and GB-17 through GB-22 were installed on the adjacent Chatsworth Coal

BCP main site. Soil samples were taken from nine borings (GB-1, 5, 7, 8, 10, 16, 18, 19, and 22). Six of these soil samples were taken from borings on this site. Groundwater wells were also installed at six of the boring locations (GB-1, 4, 5, 6, 8, and 9) on this site. The results of PID field screening and soil sampling completed during soil boring installation activities indicate the presence of a petroleum hydrocarbons (PHCs) source up-gradient of all three parcels that make up the expansion area and the main site, with the highest levels of VOC vapors detected immediately down-gradient at the adjacent 20 North Avenue site.

Laboratory results indicate that the presence of VOCs in the expansion area. VOCs were detected in GB-5, GB-7, GB-8, and GB-16. VOCs were highest in concentration in sample GB-7, taken at 0-4 feet below grade. VOCs detected in GB-7 were n-Butyl benzene, n-propylbenzene, isopropylbenzene, sec-butylbenzene, tert-butylbenzene, and 1,2,4-trimethylbenzene. SVOCs were only detected in one sample on the site, GB-10, taken at 4-8 feet below grade. SVOCs detected in GB-10 were anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene. VOCs and SVOCs detected did not exceed the NYSDEC Soil Cleanup Levels CP-51.

HES recommended that the following actions in the remedial action work plan section of the report to be implemented in the vicinity of the spill area identified on both the main site and in the expansion area called the MTA Site in this report: 1) Obtain NYSDEC RAW approval, 2) dewater the Sites using a dewatering well point system around the perimeter of the contamination plume connected to a pump system, 3) remove impacted soils on both sites based on soil screening results and field observation, 4) remediate the MTA Site and main site at the same time, 5) backfill excavated areas with approved backfill material, 6) install a protective barrier along the northern boundary of both the MTA and the BCP Sites to prevent recontamination, 7) monitor the groundwater after clean-up, and 8) complete comprehensive Remedial Action Reports for submittal to NYSDEC. Based on the results of this investigation on the MTA Site, a NYSDEC Spill No. was assigned to the MTA Site (Spill No. 1202766).

The HES report is included in the appendix of this RAWP Addendum.

#### Galli Surface Soil Sampling Letter, October 11, 2013

The surface soil sampling described in the letter dated October 11, 2013, was performed on September 26, 2013 by a geologist from Galli Engineering, P.C. Three surface soil samples were taken along the north side of the MTA parcel. Each sample was a composite sample over an



area of one foot in diameter and two inches in depth. Samples were submitted to Phoenix Environmental Laboratories, a NYS certified ELAP Laboratory, for the analysis of VOCs, SVOCs, TAL metals, PCBs, Pesticides, and Herbicides.

No VOCs, PCBs, or herbicides were detected above the laboratory reporting limit.

SVOCs were detected above Track 2 Residential Use in Sample SC-3. SVOCs detected above Track 2 are: benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and chrysene. No other SVOCs were detected above SCOS in the other two samples.

Metals were detected above Track 1 Unrestricted Use SCOs in all three samples. Metals detected above Track 1 are: chromium, and copper and lead, in sample SC-1. Metals were detected above Track 2 SCOs in samples SC-2 and SC-3. Metals above Track 2 are copper and lead for samples SC-2 and SC-3.

Pesticides were detected above Track 1 Unrestricted Use SCOs in all three soil samples. Pesticide dieldrin was detected above Track 2 in Sample SC-2.

The letter report is included in the appendix of this RAWP Addendum.

BCP Application Supplemental Investigation, July 3, 2014, Galli Engineering, P.C.

Galli Engineering prepared a Supplemental Investigation on June 9, 2014, following the approval from NYSDEC for a workplan submitted May 22, 2014. This investigation analyzed soil samples labeled WC-1 through WC-5 and one water sample, MW-1. Samples were analyzed by a Phoenix Environmental Laboratories, a NYS ELAP certified laboratory, for total metals, hexavalent chromium, PCBs, pesticides, herbicides, VOCs, SVOCs, full TCLP and RIC.

A Geoprobe model 6712DT was used to advance five soil borings to 10' below grade. Samples were not screened with a PID due to heavy precipitation. Composite samples were taken from the boring intervals based on visual inspection. Samples WC-3 and WC-4 were located in areas suspect of the most volatile contamination, and were therefore submitted for TCLP and RIC analysis. Samples WC-1, WC-2 and WC-5 were submitted for the analysis of total metals, hexavalent chromium, PCBs, pesticides, herbicides, VOCs, and SVOCs. Laboratory results show that chromium, copper, nickel, and acetone were detected above Soil Cleanup Objectives. The full TCLP and RIC analysis indicated that the material to be removed from the site is not considered hazardous waste.

The Geoprobe was also used to install one ten-foot, one-inch schedule-40 PVC monitoring well at the location of WC-3. This well set for seven days and purged prior to sampling. The groundwater sample was analyzed for total metals, hexavalent chromium, PCBs, pesticides, herbicides, VOCs, and SVOCs. Laboratory analysis showed five metals in excess of Water Quality Standards and Guidance Values (Aluminum (dissolved and undissolved), Chromium, Iron (dissolved and undissolved), Lead, and Manganese (dissolved and undissolved)); and six SVOCs above Water Quality Standards and Guidance Values (Benz(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoroanthene, Chrysene, and Indeno(1,2,3-cd)pyrene).

The report is attached in the Appendix of this RAWP Addendum.

## **1.6 Contamination Conditions**

The following section summarizes the general Areas of Concern (AOC) based on past uses in the expansion area, which resulted in the contamination identified during the remedial investigations.

### **1.6.1 Description of Areas of Concern (AOC)**

The following Areas of Concern (AOC) exist at the expansion area:

- A) a free product spill area identified as Spill No. 1202766;
- B) an adjacent off-site spill on the property now or formerly owned by Robert V. George (aka Carpenito);
- C) a spill on the main site, and which is also adjacent to the property now or formerly owned by Robert V. George (aka Carpenito) and;
- D) Site-wide contaminated historic fill soils.

This Addendum addresses the remediation of the on-site AOCs such that Track 2 Restricted Use SCOs can be achieved on the main site and in the expansion area, which now collectively make up the BCP Site.

## **2.0 Description of Supplemental Investigation Findings**

The supplemental investigation was performed in accordance with the scope of work presented in the Sampling Workplan submitted to NYSDEC on May 22, 2014. The workplan was approved on May 27, 2014 and the investigation field work was conducted on June 9, 2014.

The BCP Application Supplemental Investigation (SI) was comprised of the following tasks:

1. Mark out of all utilities;
2. Mark out the sampling grid according to the workplan;
3. Installation of five soil borings;
4. Collection of one soil sample from each of the five soil borings;
5. Installation of one monitoring well;
6. Development of the well in accordance with NYSDEC protocols;
7. Collection of unfiltered groundwater sample from the monitoring well;
8. Collection of all appropriate QA/QC samples for soil and groundwater;
9. Performance of laboratory analysis of soil samples from each boring for volatile organic compounds (VOCs) according to United States Environmental Protection Agency (US EPA) Method 8260; semi-volatile organic compounds (SVOCs) according to US EPA Method 8270 Acid and Base/Neutral extractable; pesticides and herbicides according to EPA Method 8081; TAL Metals according to EPA Method 6010; mercury according to EPA Method 7470/7471; hexavalent chromium according to EPA Method 3060/7196; and PCBs according to EPA Method 8082;
10. Performance of laboratory analysis of groundwater sample for VOCs according to EPA Method 8260; SVOCs according to EPA Method 8270; TAL Metals (except mercury) according to Method 6010; mercury according to EPA Method 7470/7471; pesticides and herbicides according to EPA Method 8081; and PCBs according to EPA Method 8082;
11. Evaluation of laboratory data; and
12. Preparation of a Supplemental Investigation Report.

### **2.1 Installation of Monitoring Wells**

One monitoring well was installed at the subject property. Groundwater at the site was encountered at approximately 8 feet below ground surface (bgs), and the monitoring wells were advanced with 10 feet of PVC pipe and 5 feet of screen. The monitoring well was installed with 1" Schedule 40 PVC. After installation, the well was developed by bailing out the

sediment. An experienced field representative from Galli Engineering, P.C., (Galli) was present to monitor all field activities and collect samples.

## 2.2 Sampling Results

Below is a summary of SI findings.

### 2.2.1 Sub-surface Soil Sample Finding

Five soil borings were performed at the site. One sample was taken from each boring. Laboratory results show that chromium, copper, nickel, and acetone were detected above Soil Cleanup Objectives.

- Chromium exceeded the Track 1 Unrestricted Use SCO in samples WC-3, WC-4 and WC-5.
- Copper exceeded the Track 1 Unrestricted Use SCO in sample WC-4.
- Nickel exceeded the Track 1 Unrestricted Use SCO in sample WC-4.
- Acetone exceeded the Track 1 Unrestricted Use SCO in sample WC-2.

The soil analytical data presented in the SI delineates the nature and extent of contamination in the expansion area and confirms that the area has been impacted by contaminants that are consistent with the past industrial uses at the site and the historical environmental information provided in Section 1.5. These results are summarized in the table below.

Contaminant	Unrestricted Use SCOs	WC-2	WC-3	WC-4	WC-5
Chromium	30	18.3	<b>40.0</b>	<b>84.2</b>	<b>57.2</b>
Copper	50	21.2	39.8	<b>51.3</b>	43.1
Nickel	30	16.2	24.1	<b>45.5</b>	27.1
Acetone	50	<b>110</b>	-	<b>140</b>	-

Samples compared to *NYSDEC Part 375 Table 375-6.8(b) Unrestricted Use Soil Cleanup Objectives*. Values in bold exceed the Part 375 Values for Unrestricted Use.

The full TCLP and RIC analysis indicated that the material to be removed is not considered hazardous waste.

### 2.2.2 Groundwater Analytical Results

One monitoring well was installed at the site. Samples from this well were submitted to an ELAP certified laboratory. Laboratory results were compared to *NYSDEC Part 703: Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations* and the *Technical & Operational Guidance Series (TOGS) 1.1.1. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*.

- Five metals were detected above Water Quality Standards and Guidance Values in MW-1. Metals detected are: Aluminum (dissolved and undissolved); Chromium; Iron (dissolved and undissolved); Lead; and Maganese (dissolved and undissolved).
- Six SVOCs were detected above Water Quality Standards and Guidance Values in MW-1. SVOCs detected are: Benz(a)anthracene); Benzo(a)pyrene; Benzo(b)fluoranthene; Benzo(k)fluroanthene; Chrysene; and Indeno(1,2,3-cd)pyrene.

The following tables summarize the findings from the groundwater analysis.

Metals	TOGS (mg/l)	MW-1 (mg/l)
Aluminum	0.1	<b>26.5</b>
Aluminum (dissolved)	0.1	<b>0.22</b>
Chromium	0.05	<b>0.058</b>
Iron	0.3	<b>56.2</b>
Iron (Dissolved)	0.3	<b>0.589</b>
Lead	0.025	<b>0.036</b>
Manganese	0.3	<b>1.06</b>
Manganese (Dissolved)	0.3	<b>0.678</b>

Samples compared to Water Quality Standards and Guidance Values. Values in bold exceed the Standards and Guidance Values for metallic contaminants.

SVOCs	TOGS (µg/L)	MW-1 (µg/L)
Benz(a)anthracene	0.002	<b>0.09</b>
Benzo(a)pyrene	0.002	<b>0.05</b>
Benzo(b)fluoranthene	0.002	<b>0.11</b>
Benzo(k)fluoranthene	0.002	<b>0.03</b>
Chrysene	0.002	<b>0.07</b>
Indeno(1,2,3-cd)pyrene	0.002	<b>0.04</b>

Samples compared to Water Quality Standards and Guidance Values. Values in bold exceed the Standards and Guidance Values for SVOCs.

The presence of heavy metals is consistent with the past use of the expansion area as a coal yard where coal was likely placed on the direct surface of the ground. The area is also adjacent to an active Metro North passenger rail line, further explaining the high concentration of metals. The SVOCs may have originated from the rail line or the open spills on or adjacent to the expansion area.

## 2.3 Significant Threat

The NYSDEC and NYSDOH will review the Supplemental Investigation (SI) for this project, in order to make a Significant Threat Determination before this Addendum to the Remedial Action Work Plan (RAWP) is approved. This determination will be based upon the data presented in the SI Report. The determination will be presented in the next public Fact Sheet on the project.

### 2.3.1 Identification of Standards, Criteria and Guidance

The standards, criteria and applicable guidance (SCGs) applied in this project are described in Appendix D of the August 21, 2014 approved RAWP. These applicable SCGs have been used to govern procedures to investigate the expansion area and will continue to be used to remediate the expansion area as part of the BCP Site, in order to protect the environmental and public health, and to assess the effectiveness of the remedial efforts.

## 2.4 Qualitative Human Health Exposure Assessment

A Qualitative Exposure Assessment was included in the RIR Section 4.0 for the main site, however, the results of this Assessment are applicable to the expansion area and will be

summarized below to evaluate how the QEA impacted the remedy selection to mitigate against human health exposure.

#### **2.4.1 VOCs and SVOCs**

VOCs and SVOCs were detected in soil and groundwater samples during the supplemental investigation. These compounds included: acetone, benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, indeno(1,2,3-cd)pyrene. The potential routes of migration for VOC and SVOC contaminants may include the following:

- Volatilization directly from the ground surface into the air;
- Migration vertically from subsurface soils to overburden groundwater; and
- Migration horizontally and vertically through the overburden soil.

#### **2.4.2 Heavy Metals**

Heavy metals were detected in soil and groundwater samples at the site. These metals included: aluminum, chromium, copper, iron, lead, manganese, and nickel. The potential routes of migration for heavy metals may include the following:

- Migration horizontally and vertically through the overburden soil; and,
- Migration vertically from subsurface soils to overburden groundwater.

The proposed remedial alternatives analyzed were based on the goal of removing the major source of the soil contamination that may cause this potential leaching into the groundwater to mitigate the potential exposure pathway, which also causes vapor intrusion.

#### **Potentially Exposed Current Receptors**

The expansion area is almost fully covered by asphalt pavement, and, therefore does not pose a significant current potential for exposure to site-related COCs via ingestion of, or dermal contact with, on-site soil/fill, inhalation of particles and/or inhalation of soil vapors. Therefore, there is no current on-site risk of exposure to on-site visitors/trespassers.

### **Potential Construction Related Receptors**

During remediation, workers may be exposed to contaminants of concern. However, workers will be protected from direct contact, dust and vapor exposures. Protection of workers is detailed in this section of the RAWP Addendum and in the Health and Safety Plan (HASP) found in the appendix of the approved RAWP.

### **Future Potential Exposure**

After remediation of the expansion area has been completed, the future intended use will be an access road to the affordable housing residential development to be constructed on the main site. Provided that the remedial actions described in the approved RAWP are implemented, there will be no exposure pathways to on-site or off-site receptors since the exposure pathways will be eliminated or mitigated through the planned remediation.

The approved RAWP details the potential exposure pathways for every remedy discussed (Track 1, Track 2, and Track 4). The approved RAWP discusses the use of a Site Management Plan (SMP) and Environmental Easement to eliminate future potential exposure pathways.

## **2.5 Remedial Action Objectives**

Remedial Action Objectives for this site are consistent with those described in the approved RAWP.

### **2.5.1 Soil Remedial Objectives**

#### RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of, or exposure to, contaminants volatilizing from contaminated soil.

#### RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota due to ingestion/direct contact with contaminated soil that would cause toxicity or bioaccumulation through the terrestrial food chain.



## 2.5.2 Groundwater Remedial Objectives

### RAOs for Public Health Protection

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

### RAOs for Environmental Protection

- Restore groundwater aquifer, to the extent practicable, to applicable groundwater standards in an urban environment.
- Prevent the discharge of contaminants to surface water.
- Remove the source of ground or surface water contamination.

### RAOs for Environmental Protection

- Restore soil conditions, to the extent practicable, to applicable residential standards.
- Prevent the discharge of contaminants to surface.

## 3.0 Description of Remedial Action Plan Addendum

This submittal is an addendum to an approved RAWP to describe the remedy for the expansion area, which will be the same remedy selected for the main site. In the approved RAWP, a Track 2 Restricted Use remedy was selected and the same objectives will be attempted to be achieved in the expansion area.

### 3.1 Evaluation of Remedial Alternatives

For information on the proposed remedial alternatives, see the approved RAWP.

### 3.2 Remedy Evaluation

For information on how each remedy was evaluated, see the approved RAWP.

### 3.3 Short Term Effectiveness and Impacts

For information on how the short term effectiveness and impacts were evaluated, see the approved RAWP.

### **3.4 Selection of the Preferred Remedy**

The preferred Remedial Action alternative is Alternative 2 (Track 2 Remedy). This remedy was chosen in the approved RAWP. It is the preferred method because it provides an effective level of protection of public health and the environment for the intended restricted residential use of the proposed condominiums while also being technically and economically feasible. Contaminated soils will be removed and the entire BCP Site, including the expansion area, will be capped. This is a cost-effective method that will reduce the mobility, toxicity, and volume of contaminants both on- and off-site.

#### **3.4.1 Citizen Participation**

A Fact Sheet will be issued in relation to this RAWP Addendum. For information on the citizen involvement process, see the approved RAWP.

#### **3.4.2 Environmental Justice**

Environmental Justice (EJ) refers to the fair treatment and meaningful involvement of all people regardless of race, color, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies. It is the general policy of the DEC, (see DEC Policy # CP-29) to promote environmental justice and incorporate measures for achieving environmental justice into its programs, policies, regulations, legislative proposals and activities.

The Enhanced Public Participation Plan (EPPP), in accordance with NYSDEC Policy CP-29 (Environmental Justice and Permitting), is a program of activities required by the NYSDEC that provides opportunities for citizens to be informed about and involved in the review of a proposed action. To ensure meaningful and effective public participation, this policy requires applicants for permits covered by this policy to actively seek public participation throughout the permit review process. Applicants are encouraged to consider implementing the public participation plan components prior to application submission.

The proposed project is an affordable housing project. Therefore, this project should enhance opportunities for affordable living in Larchmont adjacent to public transportation, which will mitigate any environmental justice impacts. Moreover, the project does not adversely impact the surrounding area within a 400 foot radius of the BCP site, which is located in the rear of the adjoining parcels. For further information, see the approved RAWP.

### **3.4.3 Fish and Wildlife Assessment**

For the fish and wildlife assessment analysis, which concluded no impacts to fish and wildlife resulting from the planned remediation and the project, see the approved RAWP.

### **3.4.4 Off-site Groundwater Impacts**

Contamination from off-site sources has impacted the expanded BCP site but the property boundary investigation has not revealed that groundwater contamination from the BCP site is impacting off-site properties. Dewatering will occur on the main site for excavation purposes. Dewatering is not expected to occur in the expansion area that is the subject of this addendum. The planned remedy does not include groundwater remediation because removal of the source down to 6 feet in the spill area will mitigate the future impact to groundwater. If groundwater is encountered during excavation, it will be observed and assessed with a photoionization detector (PID) to determine to what extent PAHs are present, if at all. If they are detected, dewatering will be necessary.

For information about groundwater flow in the expansion area and on the main site, see the approved RAWP.

### **3.4.5 Proximity to Floodplains**

The expansion area is not located within a Federal Emergency Management Agency (FEMA) floodplain. The expansion area is located approximately 1000 feet from a Zone A Flood Hazard Area. Flood Hazard Areas are subject to inundation by the 1% annual chance flood (100-year flood).

## **4.0 Remedial Action Program**

### **4.1 Governing Document**

The following documents will be considered a part of the RAWP. See the approved RAWP for discussions on all the following documents.

#### **4.1.1 Site Specific Construction Health and Safety Plan (HASP)**

#### **4.1.2 Quality Assurance Project Plan (QAPP)**

#### **4.1.3 Soil/Materials Management Plan (SoMP)**

#### **4.1.4 Stormwater Pollution Prevention Plan (SWPPP)**

#### **4.1.5 Community Air Monitoring Plan (CAMP)**

#### **4.1.6 Contractors Site Operations Plan (SOP)**

#### **4.1.7 Citizen Participation Plan (CPP)**

## **4.2 General Remedial Construction Information**

### **4.2.1 Project Organization**

This Remedial Action project will be managed through a cooperative effort between the Owner/Developer, Architect, Construction Manager, Environmental Engineer, Contractors, and regulatory agencies. A project organization chart is included as Figure 9. Resumes of key personnel involved in the Remedial Action are included in Appendix H.

### **4.2.2 Remedial Engineer**

The Remedial Engineer of Record for this project will be Richard D. Galli. The Remedial Engineer is a registered professional engineer licensed by the State of New York. The Remedial Engineer will have primary direct responsibility for implementation of the remedial program for the Former Chatsworth Coal and Supply Site (NYSDEC BCP Site No. C360132). The Remedial Engineer will certify in the Final Engineering Report that the remedial activities were observed by qualified environmental professionals under his supervision and that the remediation requirements set forth in the Remedial Action Work Plan and any other relevant provisions of ECL 27-1419 have been achieved in full conformance with that Plan. Other Remedial Engineer certification requirements are listed later in this RAWP.

The Remedial Engineer will coordinate the work of other contractors and subcontractors involved in all aspects of remedial construction, including soil excavation, stockpiling, characterization, removal and disposal, air monitoring, emergency spill response services, import of back fill material, and management of waste transport and disposal. The Remedial Engineer will be responsible for all appropriate communication with NYSDEC and NYSDOH.

The Remedial Engineer will review all pre-remedial plans submitted by contractors for compliance with this Remedial Action Work Plan and will certify compliance in the Final Remediation Report.

The Remedial Engineer will provide the certifications listed in Section 10.1 in the Final Engineering Report.

#### **4.2.3 Remedial Action Construction Schedule**

An updated schedule for performance of the remedial work, broken down into Remedial Action elements is attached as Appendix I to the approved RAWP.

#### **4.2.4 Work Hours**

The hours for operation of remedial construction will conform to the construction code requirements of the Village of Larchmont Buildings Department and Town Laws and Regulations or according to specific variances issued by the town agency. DEC will be notified by the Applicant of any variances issued by the Village of Larchmont. NYSDEC reserves the right to deny alternate remedial construction hours.

#### **4.2.5 Site Security**

The main site is completely enclosed by a continuous fence. The expansion area will be enclosed by a fence once remediation work begins.

#### **4.2.6 Traffic Control**

Only NYSDOT authorized truck routes will be used to access the Site. Contractors scheduling trips to and from the Site will be advised of these routes. An attendant will be posted at designated access points, and he will also advise on traffic patterns.

#### **4.2.7 Worker Training and Monitoring**

Worker training for remedial activities is specified in the approved HASP.

#### **4.2.8 Agency Approvals**

All permits or government approvals required for remedial construction have been or will be obtained prior to the start of remedial construction.

The planned end use for the Site is in conformance with the current zoning for the Site as determined by the Village of Larchmont Department of Buildings.

A list of the permits, certificates or other approvals or authorizations required to perform the remedial work will be provided prior to commencement of the remedial work outlined in this plan. The list will include a citation of the law, statute or code to be complied with, the originating agency, and a contact name and phone number in that agency. This list will be updated in the Final Remediation Report.

#### **4.2.9 NYSDEC BCP Signage**

Signs of a specific design and content will be prominently displayed at the entrance to the BCP site at all times during the remediation and development of the BCP site.

A project sign has been erected at the main entrance to the BCP site. The sign indicates that the project is being performed under the New York State Brownfield Cleanup Program. The sign meets the detailed specifications provided by the NYSDEC Project Manager.

#### **4.2.10 Pre-construction Meeting with NYSDEC**

A Pre-Construction meeting has taken place prior to the start of major construction activities to discuss arrangements, safety concerns, schedules, and coordination of site activities for the main site. A second pre-construction meeting may be required for work along the Metro North passenger line.

#### **Emergency Contact Information**

An emergency contact sheet with names and phone numbers is included in Table 12 of the approved RAWP. This Table identifies the specific project contacts for use by NYSDEC and NYSDOH in the case of a day or night emergency.

#### **Remedial Action Costs**

The total estimated cost of the Remedial Action is To Be Determined. This remedial estimate will be revised based on actual costs and submitted as an Appendix to the Final Remediation Report.

#### **4.3 Site Preparation**

See the approved RAWP for details on site preparation. The site preparation work described in the approved RAWP for the main site will also be implemented in the expansion area.

## **5.0 Remedial Action: Material Removal from Site**

All soil to be removed to remediate the expansion area to achieve the preferred Track 2 restricted residential use standards will be removed in accordance with the Soil and Materials Management Plan (SoMP) described below in Section 5.4. Any structures or obstacles encountered during excavation will be disposed of in a suitable manner.

### **5.1 Soil Cleanup Objectives**

The preferred remedy is to meet Track 2 Restricted Residential Use SCOs.

Soil sampling data obtained during the SI report is shown in Figure 2 of this addendum.

### **5.2 Remedial Performance Evaluation (End-Point Sampling)**

Confirmatory end-point samples will be taken when the final depth of excavation is reached, across the entire site, to characterize the nature of the soils remaining after excavation in order to determine if a Track 2 restricted residential use remedy has been achieved.

#### **5.2.1 End-Point Sampling Frequency**

The confirmatory soil samples will be collected directly from the base of the excavated area, in accordance with DER-10. One sample from the bottom of each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area will be tested, or a reduced frequency will be tested, if approved by NYSDEC. The samples will be analyzed for VOCs, SVOCs, PCBs and priority pollutant metals according to applicable methodologies.

The samples will be compared to the Track 2 SCOs.

#### **5.2.2 Methodology**

Methods are described in this section of the approved RAWP.

#### **5.2.3 Reporting of Results**

Data management, including chain-of-custody review and correction, data review, reduction and transfer to data management systems, quality control charts, quality control procedures, and sample receipt, storage and disposal, will be in accordance with applicable SOPs and accepted industry practices.

Details on reporting can be found in this section of the approved RAWP.

#### **5.2.4 QA/QC**

Data will be analyzed in accordance with provisions in the QAPP. Laboratory analytical data generated through the implementation of the investigation will be submitted for independent analysis in accordance with NYSDEC guidance for completion of a Data Usability Summary

Report (DUSR) presented in Appendix 2B of DER-10, "Guidance for the Development of Data Usability Summary Reports".

#### **5.2.5 Data Usability Summary Report (DUSR)**

Guidelines by which data validation will be performed by a qualified independent contractor for the New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocol (ASP) SW-846 inorganics, volatile organics (VOCs), semi-volatile organics (SVOCs), polychlorinated biphenyls (PCBs), herbicides, and pesticides are listed in this section of the approved RAWP.

The data usability summary report (DUSR) will provide a discussion of QA/QC deviations from established criteria presented in the guidance documents specified above, a summary of data qualified for QA/QC deviations, a discussion regarding the usability of the data, and a discussion of the Precision, Accuracy, Representativeness, Comparability, and Completeness (PARCC) of the qualified data.

#### **5.2.6 Reporting of End-Point Data in FER**

Upon completion of the soil/fill removal and dewatering work at the site, a Final Engineering Report (FER) will be prepared summarizing the results of the work. The FER will include a summary of the work performed and provide a tabular and map summary of all end-point sample results in comparison to the SCOs.

### **5.3 Estimated Material Removal Quantities**

Material will be excavated to achieve the Track 2 restricted residential use remedy. The planned excavation is for the removal of the first 1-2 feet of material across the entire site, or approximately 1,500 cy. In the spill area, a deeper excavation will be required to an estimated depth of approximately 6 feet below grade surface (approximately 160 cy). The actual excavation depth will be determined based on on-site PID readings that will be performed during remedial activities. The expansion area will then be capped post-remedial excavation with an asphalt cover system, which will also serve as the end use road for the project on the main site.

Natural rock from the rock outcropping will be reused on site if backfill is required. To the extent that more soil needs to be imported to the expansion area for backfill and/or cover soil such soils will be the Track 2 restricted residential standards for backfill below the two foot cover system and Track 1 standards for the top two feet of cover material.



## **5.4 Soil/Materials Management Plan (SoMP)**

The detailed plan for managing all soils/materials that will be disturbed during excavation, handling, storage, transport, disposal, and importation was described in the approved RAWP, which will also be applied in the expansion area. The SoMP specifies all of the controls that will be applied to these efforts to assure effective, nuisance-free performance in compliance with all applicable Federal, State and local laws and regulations and the applicable SCGs.

### **5.4.1 Soil Screening Methods**

The screening methods to be used are discussed in the approved RAWP.

### **5.4.2 Stockpile Methods**

Stockpiling methods to be used are discussed in the approved RAWP.

### **5.4.3 Materials Excavation and Load Out**

The methods to be followed for materials loading and on-site management are discussed in the approved RAWP.

### **5.4.4 Materials Transport Off-Site**

The methods to be followed for materials being transported off-site are discussed in the approved RAWP.

### **5.4.5 Materials Disposal Off-Site**

Disposal locations will be selected based on their authorization to accept the material being generated and the cost of disposal. The methods to be followed for documenting the disposal of materials off-site and the procedures necessary to carry out off-site disposal are discussed in the approved RAWP.

### **5.4.6 Materials Reuse On-Site**

'Reuse on-Site' means reuse on-site of material that is originally derived from the site and which does not leave the site during the remedy. The methods to be followed for material reuse are detailed in the approved RAWP.

### **5.4.7 Fluids Management**

The methods by which liquids are to be removed from the site are detailed in the approved RAWP. This includes dewatering fluids.

### **5.4.8 Demarcation**

After the completion of soil removal and any other invasive remedial activities and prior to backfilling, a land survey will be performed by a New York State licensed surveyor. The survey will define the top elevation of residual contaminated soils. Details on what is required from the survey are given in the approved RAWP.

#### **5.4.9 Backfill from Off-Site Sources**

The methods to be followed for the importation and usage of backfill material from off-site sources are detailed in the approved RAWP.

#### **5.4.10 Stormwater Pollution Prevention**

The requirements of the Stormwater Pollution Prevention Plan (SWPPP) are detailed in the approved RAWP.

#### **5.4.11 Contingency Plan**

If underground tanks, or other previously unidentified contaminant sources, are found during on-site remedial excavation or development related construction, sampling will be performed on product, sediment and surrounding soils, etc. Chemical analytical work will be performed for full scan parameters (TAL metals; VOCs, SVOCs, pesticides herbicides and PCBs). These analyses will not otherwise be limited without NYSDEC approval.

Identification of unknown or unexpected contaminated media identified by screening during invasive Site work will be promptly communicated by phone to NYSDEC's Project Manager. These findings will be also included in daily and periodic electronic progress reports.

#### **5.4.12 Community Air Monitoring Plan (CAMP)**

The CAMP is described in the approved RAWP and is also attached in Appendix G of the approved RAWP. Exceedances observed in the CAMP must be reported to NYSDEC and NYSDOH Project Managers.

#### **5.4.13 Odor, Dust and Nuisance Control Plan**

The Final Engineering Report will include the following certification by the Remedial Engineer: "I certify that all invasive work during the remediation and all invasive development work were conducted in accordance with dust and odor suppression methodology defined in the Remedial Action Work Plan."

The following plans and sections in the approved RAWP will also apply in the expansion area.

##### ***5.4.13.1 Odor Control Plan***

##### ***5.4.13.2 Dust Control Plan***

##### ***5.4.13.3 Other Nuisances***

## **6.0 Management of Residual Contamination If Any Remains On-Site**

Based upon the results from the Supplemental Investigation (SI), residual contaminated soil above the Track 2 restricted residential standards will remain beneath after this remedy is complete. Engineering and Institutional Controls (ECs and ICs) will be required to protect human health and the environment against residual contamination to the extent it remains present. The ECs and ICs will be documented in a site specific Site Management Plan (SMP), which will be developed and included in the FER, and will be required to be implemented pursuant to an Environmental Easement, which shall run with the land until such time as Track 1 standards are achieved.

ECs will be implemented to protect public health and the environment by appropriately managing residual contamination. The expansion area will have one primary EC system consisting of the cover system. This is a cover/cap system, which consists of an asphalt and soil cover, which must be maintained. In addition to this cover system, an impermeable barrier will be installed along a portion of the property boundary, beginning near the hot spot of the expansion area. The barrier will be extended north along the expansion area, along the property boundaries of the adjacent sites. The actual length of the barrier will be determined during remedial work. This will be in addition to the ECs on the main site, which include a cover/cap system and a vapor barrier which will be installed under portions of the building foundation and up to grade to prevent any contaminated soil vapor from entering the building. A vapor study will be performed subsequent to the foundation construction to determine if a vapor intrusion sub-slab depressurization system is needed in each building, particularly to address the off-site vapors that may be entering the site from an off-site drycleaner source

The FER will report any residual contamination remaining on the site, as determined by end point soil sampling, in tabular and map form.

## **7.0 Engineering Controls**

Based upon the results of the Supplemental Investigation (SI), upon completion of this work plan, soil and groundwater treatment systems should not be required at the site. However, a Cover/Cap System engineering control system will be required. A summary of the Engineering Control System is provided below.

### **7.1 Engineering Control Systems**

#### Engineered Cover/Cap System

A composite, engineered Cover/Cap system, which is part of the remedy, but will also serve as a long term Engineering Control (EC) for the expansion area, consists of: an asphalt covered road, concrete covered sidewalks and 2 foot landscaped soil areas. This Cover/Cap system, would be installed, inspected, certified and maintained as required in the SMP and Environmental Easement.

#### Soil Management in SMP

A Soil Management Plan will also be included in the SMP, which describes how soil and fill materials will be managed, screened, characterized, transported, disposed of and/or reused on-Site in the event of future site excavation or other forms of soil disturbance. The Soil Management Plan would also describe procedures for documenting where such material came from on the Site, and whether it will be reused on-Site or disposed of off-Site.

## **8.0 Institutional Controls**

A site-specific Environmental Easement will be recorded with Westchester County to provide an enforceable means of ensuring the continual and proper management of residual contamination and protection of public health and the environment until Track 1 standards are met or until released in writing by NYSDEC. It requires that the grantor of the Environmental Easement and the grantor's successors and assigns adhere to all ECs/ICs placed on this site by this NYSDEC-approved remedy. ICs provide restrictions on Site usage and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. In addition, the SMP will be created to describe the appropriate methods and procedures to ensure compliance with all ECs and ICs that are required by the Environmental Easement. Once the SMP has been approved by the NYSDEC, compliance with the SMP is required by the grantor of the Environmental Easement and grantor's successors and assigns.

The site-specific ICs, in addition to the Environmental Easement itself, are described below in the next section.

### **8.1 Environmental Easement**

An Environmental Easement, as defined in Article 71 Title 36 of the Environmental Conservation Law, is required when residual contamination is left on-site after the Remedial Action is complete where contaminant concentrations are above the Track 1 standards, or above the Track 2 Restricted Use standards if the residual contaminants are still contributing to groundwater contamination. The Environmental Easement renders the site a Controlled Property. A series of Institutional Controls may be required to prevent future exposure to residual contamination by controlling disturbances of the subsurface soil and restricting the use of the site to Restricted Use only. These ICs are requirements or restrictions placed on the site that are listed in, and required by, the Environmental Easement. Institutional Controls can, generally, be subdivided between controls that support the ECs, and those that place general land use restrictions on site usage or other requirements, such as prohibition on the use of groundwater. ICs in both of these groups are closely integrated with and described in the SMP, which provides all of the methods and procedures to be followed to comply with this remedy.

ICs that support ECs are listed in the approved RAWP. ICs that are land use controls are listed in the approved RAWP.

## **8.2 Site Management Plan (SMP)**

Site Management is the last phase of remediation and begins with the approval of the FER and issuance of the Certificate of Completion (COC) for the Remedial Action in cases where Track 1 criteria are not met. A SMP is not required if Track 1 or Track 2 Restricted Use SCOs are attained such that the residual contaminants cannot impact groundwater. For a Track 2 Restricted Use remedy, where there may still be impacts to groundwater, a SMP is submitted as part of the FER but shall be written in a manner that allows its removal and use as a complete and independent document if Track 1 standards are achieved and groundwater is no longer impacted. Site Management continues in perpetuity or until released in writing by NYSDEC. The current property owner is responsible to ensure that all Site Management responsibilities defined in the Environmental Easement and the SMP are performed.

A detailed description of what must be addressed in an SMP can be found in the approved RAWP.

## **9.0 Final Engineering Report (FER)**

A FER and Certificate of Completion (COC) will be submitted to NYSDEC following implementation of the Remedial Action defined in this RAWP. The FER provides the documentation that the remedial work required under this RAWP has been completed and has been performed in compliance with this plan. The FER will provide a comprehensive account of the locations and characteristics of all material removed from the site including the surveyed map(s) of all sources. The FER will include as-built drawings for all constructed elements, certifications, manifests, bills of lading as well as the complete SMP if required. The FER will provide a description of the changes in the Remedial Action from the elements provided in the RAWP and associated design documents. The FER will provide a tabular summary of all performance evaluation sampling results and all material characterization results and other sampling and chemical analysis performed as part of the Remedial Action. The FER will provide test results demonstrating that all mitigation and remedial systems are functioning properly. The FER will be prepared in conformance with DER-10.

Details on what will be included in the FER are in the approved RAWP.

### **9.1 Certifications**

The certification will be signed by the Remedial Engineer (Richard Galli) who is a Professional Engineer registered in New York State. This certification will be appropriately signed and stamped and will appear in front of the Executive Summary of the Final Engineering Report.

Statements that will appear in the certification section are in this section of the approved RAWP.

## **10.0 Schedule**

A schedule of Remedial Actions is mandatory. It must subdivide work elements and provide estimated dates for performance of work and deliverables. An updated estimated remedial action schedule is provided in the appendix.