Former ALCO Site
Brownfield Cleanup Project

City of Schenectady
Schenectady County, New York

# Remedial Work Plan
# (RWP)

New York State
Brownfield Cleanup Program
Site Nos. C447042, C447043, and C447044

February 2014

Barton & Loguidice

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


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# 1.0 Introduction

Maxon ALCO Holdings, LLC (MAH) entered into Brownfield Cleanup Agreements (BCA) through the New York State Department of Environmental Conservation's (NYSDEC) Brownfield Cleanup Program (BCP) for the property located at 301 Nott Street in Schenectady, New York, identified as the ALCO Site (Property or Site) and historically known as the Nott Street Industrial Park (Park). In 2010, after purchasing the property, the Volunteer (Maxon-ALCO Holdings) divided the Property into three parcels: Parcel A, Parcel B and Parcel C (Site Nos. C447042, C447043, and C447044, see Figure 1) and each Parcel was deemed eligible for the BCP and subject to separate BCAs. In November of 2013, MAH proposed the reconfiguration of Parcels B and C to NYSDEC to more efficiently proceed with potential Interim Remedial Measures and redevelopment planning; the proposed reconfiguration is provided as an appendix to the Alternatives Analysis Report (AAR) which is in Appendix A to this work plan.

The purpose of the BCP is to encourage voluntary remediation of brownfield sites for reuse and development. This includes conducting a complete characterization of the Site by performing a Remedial Investigation (RI). The primary objective of the RI is to identify environmental concerns and to provide the basis for evaluating remedial alternatives, if necessary. The RI was completed in the first half of 2012, and the RI Report (prepared by CHA) was submitted to NYSDEC in August 2012. Though a separate Work Plan was prepared for each Parcel, the Remedial Investigation (RI) Report covered the entire Site since remedial decision making will include activities that involve multiple parcels on the ALCO Site.

Specifically, the objectives of the RI were to:

- Supplement the historic investigations that have been conducted on the Site,
- Further identify source(s) of contamination,
- Define the nature and extent of that contamination,
- Assess the impact of contamination on public health or the environment, and
- Provide information for the development and selection of a remedial work plan across all parcels (A, B, and C) that make up the Alco property.

The RI Report also provided a qualitative human health exposure assessment. An exposure pathway is complete when all five elements of an exposure pathway are documented; a potential exposure pathway exists when any one or more of the five elements comprising an exposure pathway is not documented.

The results of the exposure assessment indicated that there is currently one complete potential exposure pathway.

- Potential exposure of current tenants of Buildings 306 and 330 to VOCs in indoor air through inhalation.

The following potential exposure pathways were identified:

- Exposure of future on-Site workers, residents, site occupants to soil, groundwater, soil vapor or LNAPL that may be contaminated with VOCs, SVOCs, and/or metals during future intrusive activities at the Site. Routes of exposure to future on-Site workers could include inhalation, ingestion, dermal contact, eye contact, and puncture/injection.
- Exposure to groundwater that may be contaminated with VOCs, SVOCs, and/or metals if groundwater wells are installed and used for drinking water, etc.

By letter dated December 14, 2012, NYSDEC provided comments on the RI Report; general comments were provided for site-wide issues, and comments specific to each parcel were also provided. The comment letter indicated that no further investigation was required for a majority of the areas/issues that were addressed by the RI. Finally, the comment letter requested additional data collection activities to follow-up on and/or reserve some specified issues to finalize the RI.

In January 2013 Barton & Loguidice prepared a Supplemental Remedial Investigation Work Plan (SRI-WP) to provide the procedures for conducting the requested follow-up work. In follow-up discussions with the NYSDEC, there was concurrence that the design investigation tasks proposed in the Remedial Work Plan (RWP) should be combined with the requested follow-up RI work, as the tasks were 1) similar in nature, and 2) needed to be performed prior to the Remedial Design (RD). The tasks performed during the Supplemental Remedial Investigation are summarized below:

Tasks Requested in the NYSDEC 12/14/12 Letter and Follow-up Discussion:

- Follow-up investigation on the geophysical investigation in identified areas
- Soil Vapor Intrusion investigation in the identified buildings
- Installation of three monitoring wells between Buildings 306-320
- Inspection of Buildings 308 Trench
- Borings in the MW-36 Area (AOC 1A)

Tasks Proposed in the Remedial Work Plan (RWP):

- Chlorinated Solvent Plume Source Investigation (AOC 2)
- Chlorinated Solvent Plume Delineation (monitoring wells) (AOC 2)
- Monitoring well in the MW-45 Area (AOC 1B)

The SRI activities included the installation of soil borings, monitoring wells, soil vapor monitoring points, and test pits along with the collected of subsurface soil, soil vapor, and groundwater to further characterize the site. The planned scope of SRI activities consisted of the following:

- Installation of three (3) monitoring wells between Buildings 306-320 screening the water table and the collection of groundwater samples for VOCs analysis.
- Installation of three (3) monitoring wells screening the water table near MW-45 to determine the approximate extent of previously documented LNAPL at this location.
- Installation of 12-15 Geoprobe borings around MW-36 to assess the extent of previously documented LNAPL at this location.
- Advancement of approximately 30 membrane interface probe (MIP) borings near SV-C9 and MW-19 to determine the source of the previously documented chlorinated solvent plume.
- Collect subsurface soil samples from the MIP borings for VOCs analysis.
- Installation of four (4) monitoring wells to delineate the chlorinated solvent plume and determine an effective means for mitigation.
- Collection of groundwater samples from the four (4) newly installed chlorinated solvent plume delineation wells along with seven (7) existing plume delineation wells to be analyzed for VOCs.
- Installation of test pits around Ground Penetrating Radar (GPR) area 2, 6, and 8 as a follow-up to the geophysical survey performed during the 2012 Remedial Investigation by CHA.
- Installation of six (6) subsurface soil vapor points in Buildings 300, 306, and 330.
- Inspection and confirmation of filling of the former Building 308 trench system.

The Supplemental RI activities were completed during the period from May through August 2013. Field activities were conducted in general accordance with NYSDEC protocols (including DER-10), the Remedial Action Work Plan (Kleinfelder, Inc., 2010), and the Supplemental Remedial Investigation Work Plan (Barton & Loguidice, P.C., 2013). Deviations from these plans are summarized below.

- Due to the presence of a thick concrete slab in the area surrounding SV-C9 and MW-19 the MIP could not be advanced. Instead, a Geoprobe was utilized to advance the MacroCore and a photoionization detector (PID) and field Gas Chromatograph (GC) were used to screen select samples in the field before submitting to the lab for analysis.
- Monitoring well MW-50 was sampled during the RI and was scheduled for re-sampling, but could not be located and was not sampled.

- The NYSDEC and NYSDOH indicated in a phone call on 5/31/13 that soil vapor samples were not required in Building 300 due to extensive mold in the basement and the building's current unoccupied status. SVI sampling will be required if the building is to be occupied.

Under contemplated future land use, the objective of the selected remedial alternative would be to prevent exposure to contaminated soil, groundwater, and soil vapor.

The Alternatives Analysis Report (AAR) is the next step in the BCP process; the AAR was prepared by Barton & Loguidice, Inc., and is attached to this work plan in Appendix A. As part of the AAR, three areas of concern (AOCs) were identified based on the findings of the RI and the Exposure Assessment:

1. Historic aged Free-phase petroleum on the water table around monitoring well MW-36 and MW-45 (AOCs 1A and 1B) and existing underground storage tanks (USTs) that were not properly closed (AOC 1C) ;
2. A chlorinated solvent plume in a narrow area of the eastern portion of the Site that extends from the vicinity of MW-19 toward the Mohawk River (AOC 2); and
3. Soil impacts from polynuclear aromatic hydrocarbons (PAHs) (AOC 3).

The AAR presents an evaluation of remedial alternatives to eliminate or mitigate potential threats to public health and the environment at the former ALCO site, to support the selection of the preferred remedy.

## 1.1 Purpose of Report

This Remedial Work Plan (RWP) presents the procedures for designing and implementing the remedy identified in the AAR. The alternatives are based upon the findings presented in the August 2012 RI Report. This RWP has been prepared in accordance with DER-10, 6 NYCRR Part 375, and the Brownfield Cleanup Program Guidelines.

### *1.1.1 Report Organization*

This report is organized into four major sections (including this introduction section), with appropriate subsections within each division. Tables, figures and sheets are located following the text, prior to the appendices in the back of the document.

## 1.2 Site Background

### *1.2.1 Site Description*

The Schenectady Locomotive Engine Manufactory initially developed a portion of the existing Park in 1849. In 1851, the company changed its name to Schenectady Locomotive Works (Works) and continued to develop the Site. In 1901, the Works merged with several other companies to form the American Locomotive Company (ALCO). ALCO operated the Site until

1969. Schenectady Industrial Corporation (SIC) purchased the Park in 1971, with General Electric Company (GE) occupying the Park from 1971 to 1985. Small industrial, manufacturing and fabrication companies have occupied various buildings within the Park since 1985, when occupancy of buildings was returned to SIC.

During April 1992, Coyne Textile Services (CTS), with operations on Front Street, adjacent to the ALCO Site, had a fuel oil release that partially leaked into the municipal storm drain sewer system which flows under the Site, discharging to the Mohawk River at the College Creek Outfall. During inspection of this release, the NYSDEC reportedly observed petroleum seeping from riprap along the bank of the Mohawk River adjacent to Buildings 320 and 324. The NYSDEC requested that a subsurface investigation be performed onshore adjacent to the petroleum seep areas. Following this release, Schenectady Industrial Corporation (SIC) entered into an Order on Consent (OC), (Index No. R4-1338-92-05), with the NYSDEC .

In 1992, SIC performed a subsurface investigation that included advancing a series of five hand-excavated test pits, (TP-A1 through TP-E1), along the riverbank. Soil analytical results indicated total petroleum hydrocarbon (TPH) concentrations up to 12,000 parts per million (ppm). Following these results, two deep soil borings and five shallow soil borings were advanced adjacent to the test pits. The five shallow soil borings were completed at groundwater monitoring wells. Free-phase petroleum was found in two wells and the free-phase petroleum in one well was found to contain trace levels of polychlorinated biphenyls (PCBs). Groundwater analytical results indicated TPH concentrations ranging from 4.6 ppm to 32,200 ppm. Volatile organic compound (VOC) concentrations were detected.

Historically there have been many environmental investigations completed at the former ALCO Site since the initial investigation in 1992. These investigations, some of which were conducted in conjunction with NYSDEC oversight, have taken place across the ALCO-Maxon Site, which has been separated into Parcels A, B and C. In addition to the environmental investigations conducted throughout the former ALCO Industrial property, underground storage tank (UST) removals and remedial activities have been completed on the ALCO-Maxon Site parcels. Summaries of the investigations, UST removals and remedial activities are provided in Section 4.0.

Due to the historic industrial impacts identified on the ALCO Site and subsequent to the execution of a BCA, three Remedial Investigation Work Plans (one for each parcel) were prepared by Kleinfelder, Inc. (KLF) and submitted to NYSDEC on May 24, 2010. The Work Plan outlined the procedures and protocols that were to be utilized to conduct a full-scale remedial investigation that would provide the necessary field data to further delineate the nature and extent of contamination at the subject Site. The Work Plan was prepared to conform to the Draft DER-10 *Technical Guidance for Site Investigation and Remediation* issued by the Division of Environmental Remediation (December 2002). The RI Work Plans for Parcels B and C were subsequently approved by the NYSDEC on June 23, 2011. One of the comments received by the NYSDEC was a request for sampling of both the riverbank and Mohawk River sediments

adjacent to the Site. Following the submission of a Work Plan Addendum on January 10, 2012, the RI Work Plan for Parcel A was approved by the NYSDEC on January 23, 2012.

### *1.2.2 Remedial Investigation Findings*

#### *1.2.2.1 Geology/Hydrogeology*

The Site is underlain by a unit of fill that is present across much of the Site, varying from a minimum depth of 2 feet to a maximum depth observed during the RI of 12.4 feet. In general, the fill material consists of reworked soil (e.g., silt, sand, gravel, and clay) with lesser amounts of brick, concrete, ash/cinders, slag, metal, wood/organics, and glass. In locations where the fill unit is generally thinner, a fine to coarse grained sand unit of limited thickness is present beneath the fill. Based on the groundwater contours, as presented in Figure 6, it is apparent that groundwater flow across the majority of the subject Site is to the North towards the Mohawk River. The horizontal hydraulic gradient from south to north across the Site (i.e. from MW-19 to MW-25D) is approximately 0.006 ft/ft.

#### *1.2.2.2 Surface Soil*

The analytical results from this RI indicate that there are no VOC or PCB impacts to surface soil at the Site. These results are generally consistent with results from previous investigations. There are relatively widespread SVOC detections in surface soils at concentrations below Part 375 SCOs, and only limited areas that exceed Part 375 SCOs. The presence of certain VOC and SVOC Tentatively Identified Compounds (TICs) suggest that degradation/breakdown of historic aged petroleum has and/or is occurring across the Site. Lastly, there are limited, isolated areas of arsenic, lead, and/or mercury that slightly exceed Part 375 SCOs; these locations (sample location RB-6 on Parcel A and sample locations SS-A3 and SS-B3 on Parcel B) were identified in the NYSDEC letter of 12/14/12 and will be subject to individual removal actions described in the appended IRM workplan.

#### *1.2.2.3 Subsurface Soil*

Analytical results for samples collected from the upper fill/sand unit suggest that there are no significant VOC impacts and only limited SVOC impacts to unsaturated soils. Within the unsaturated zone, the area of highest SVOC concentrations is present in the area just west of Building 308, the area located just south of Building 320, beneath the slab of Building 320, and the area between Buildings 316 and 332.

Based on the analytical results for soil samples that were collected from test pits as part of the current RI and from previous investigations, there is no evidence of any PCB or metal impacts to subsurface soils across the Site.

#### *1.2.2.4 Groundwater*

The results obtained during this RI confirm the detection of a historic chlorinated solvent plume, which appears to originate upgradient from or in the vicinity of MW-19 and extends over 1,200 feet in length towards the Mohawk River. The plume appears to be relatively narrow and is well-delineated to the east, south and west. The depth of the plume is relatively shallow (~20 feet bgs) in the vicinity of monitoring well MW-19 and temporary monitoring well TMW-19C and deepens to approximately 50 to 70 feet bgs along the length of the plume. The data confirms that natural degradation is occurring based on the presence of PCE and TCE breakdown products.

The only other areas with impacts to groundwater are those with relatively localized SVOC (PAH) detections that are generally associated with former UST areas or free product recovery areas. However, a comparison of analytical results from this and from previous investigations suggests that contaminant concentrations have generally decreased, with few exceptions. The presence of TICs in most wells across the Site, consisting primarily of petroleum-related compounds, suggest that degradation/breakdown of historic, aged petroleum has occurred in groundwater across the Site.

#### *1.2.2.5 Soil Vapor Summary*

The most apparent impacts to subsurface vapor are present at the southern edge of the Site located just north of Erie Boulevard. The subsurface in this area is primarily impacted by chlorinated VOCs that appear to be related to the underlying chlorinated solvent groundwater plume. Chlorinated VOC impacts extend to the north/northeast and generally follow the direction of the groundwater plume. There are also chlorinated VOC impacts to subsurface soil vapor in a limited area between Buildings 346 and 324 and in the southwestern-most portion of the Site between Buildings 306 and 308. There are various but minor impacts to subsurface soil vapor from petroleum-related compounds; however, the detections do not appear to indicate the presence of any significant petroleum source for soil vapor contamination.

#### *1.2.2.6 Riverbank Soil Summary*

The analytical results from this RI indicate that there are no VOC or PCB impacts to soils on the bank of the Mohawk River that runs parallel to the Site, generally consistent with results from previous investigations. Impacts from SVOCs to the riverbank of the Mohawk River associated with the Site are generally limited to areas where historic operations took place, in the immediate vicinity of Buildings 326, 324 and 322.

Based on the results obtained during this RI and the previous remedial measures undertaken, minor detections of inorganics (mainly iron, arsenic, mercury and lead) in riverbank soils appear to also be limited to the western portion of the riverbank that runs parallel to the Site (west of College Creek Outfall). The eastern portion of the riverbank has only limited detections of metals (arsenic and lead) slightly above Part 375 SCOs in the area north of Building 346.

#### *1.2.2.7 River Sediment Summary*

Collectively, the RI noted detectable concentrations of contaminants present in Mohawk River sediments both adjacent to the Site and upstream from the Site. The data indicate that an up-gradient source of chlorinated VOCs impacted up-gradient river sediments, but the impacts are relatively localized. There do not appear to be any VOC impacts to sediment immediately adjacent to the site. SVOC impacts are most evident upstream and adjacent to the western-most portion of the site (i.e. in the Building 320 area to the east) and suggest that, in addition to limited contribution from the Site itself, an up-gradient SVOC source is, or was, also present. There are no PCB impacts to the river sediments. The results also indicate that sediments both adjacent to the Site and upstream from the Site have detectable concentrations of metals. It does not appear that the Site is causing significant adverse inorganic impacts to river sediments.

### *1.2.3 Supplemental Remedial Investigation Findings*

The additional activities implemented as part of the SRI provided further delineation and identification of historic industrial conditions at the former industrial property. The data gathered was consistent with prior site investigation information.

#### *1.2.3.1 Parcel A*

- NAPL was detected in two of the three monitoring wells installed around MW-45; NAPL thicknesses varied from roughly one inch in MW-47 to roughly one foot in MW-48.
- Concentrations of chlorinated VOCs in Parcel A monitoring wells sampled ranged from 136 ug/L to 3082 ug/L.

#### *1.2.3.2 Parcel B*

- Follow-up on the geophysical study Area 2 identified an underground vault.
- Follow-up on the geophysical study Area 6 identified a former concrete building wall with re-bar.
- Concentrations of petroleum-related VOCs were detected in one of the three wells installed between Building 306 and former Building 320; concentrations did not exceed 22 ug/L.
- Concentrations of chlorinated VOCs in Parcel B monitoring wells sampled ranged from ND to 178 ug/L.

#### *1.2.3.3 Parcel C*

- Follow-up on the geophysical study Area 8 identified two underground storage tanks that had been used for petroleum products. The tanks did not appear to have been abandoned or backfilled.

- SVI results in Buildings 306 and 330 detected contaminants both in sub-slab soil vapor and in ambient air above guidance concentrations, but there was not a large degree of correlation between the contaminants detected in sub-slab versus ambient air samples.
- LNAPL was detected in one of the ten boring locations around to MW-36; the one location where LNAPL was detected was roughly five feet from MW-36.

#### *1.2.3.4 Site-Wide Groundwater Quality*

- Monitoring wells installed on Parcels A, B and C provided further delineation of the chlorinated solvent plume, which migrates across the three parcels along the established groundwater flow gradient.
- The source area for the chlorinated solvent plume was identified and delineated in an area of Parcel C around soil vapor point SV-C9.

### *1.2.4 Current and Intended Use*

The City of Schenectady adopted its new Zoning Ordinance (Chapter 264) on March 24, 2008. The ALCO Site is zoned C-3 Waterfront Development District. The purpose of the C-3 district is to provide unique opportunities for the development and maintenance of water-oriented uses within certain areas of the City adjacent to the Mohawk River. The C-3 District permits certain recreational, open space, business, and residential uses which will generally benefit from and enhance the unique aesthetic, recreational, and environmental qualities of the waterfront areas.

The former industrial site is serviced by municipal water and sewer and currently has commercial tenants on a limited portion of the property along Front Street and is otherwise unoccupied with the vacant structures being demolished in 2011. The intended future use of Parcel A is restricted-residential. The intended future use of Parcels B and C is commercial.

# 2.0 Description of Selected Remedy

## 2.1 Remedy Selection

The remedial goal is to evaluate options and select a remedial program to provide for appropriate redevelopment of the Site and to eliminate or mitigate threats to public health and the environment that, upon implementation, will allow the NYSDEC to issue a Certificate of Completion for the 3 BCP parcels and to lead to the redevelopment and reuse of the parcels. This AAR indentified three (3) areas of concern (AOC) based on the findings of the RI Report:

1. Historic Free-phase petroleum product on the water table around monitoring well MW-36 and MW-45 (AOCs 1A and 1B) and existing underground storage tanks (USTs) that were not properly closed (AOC 1C);
2. The chlorinated solvent plume that extends from the vicinity of MW-19 to the Mohawk River (AOC 2); and
3. Soil impacts from polynuclear aromatic hydrocarbons (PAHs) (AOC 3).

As outlined in the Exposure Assessment, the following are complete or potential exposure pathways associated with the recognized AOC:

The results of the exposure assessment indicate that there is currently one complete potential exposure pathway and two future potential exposure pathways:

- Potential exposure of current tenants of Buildings 306 and 330 to VOCs in indoor air through inhalation (AOC 1 and 2).
- Potential exposure of future on-Site workers to soil, groundwater, soil vapor or LNAPL that may be contaminated with VOCs, SVOCs, and/or metals during future intrusive activities at the Site. Routes of exposure to future on-Site workers could include inhalation, ingestion, dermal contact, eye contact, and puncture/injection (AOC 1, 2 and 3).
- Potential exposure to groundwater that may be contaminated with VOCs, SVOCs, and/or metals if groundwater wells are installed and used for drinking water, etc. (AOC 1, 2 and 3).

The final remedial measures for the site must satisfy Remedial Action Objectives (RAOs), which are site-specific statements that convey the goals for minimizing or eliminating substantial risks to public health and the environment.

The following RAOs for the site were identified as a result of the Exposure Assessment in the RI Report:

1. Prevent volatilization of organic constituents from subsurface soils and groundwater (vapor intrusion) in future on-site buildings (AOCs 1 and 2).

2. Prevent ingestion of contaminated groundwater (AOCs 1 and 2).
3. Prevent contact with impacted surficial soils (AOC 3).
4. Develop site management practices to address potential exposure pathways associated with future site work (AOCs 1, 2 and 3).

The AAR recommended Alternative 3 for the final site remedy, which would use a site-wide soil cover to mitigate AOC 3. Alternative 3 also includes measures to remediate groundwater exposure pathways associated with AOCs 1 and 2.

## 2.2 Description of Selected Remedy

### *2.2.1 General Description of Selected Remedy*

Alternative 3 will use up to a two-foot thick soil cover (with a geotextile demarcation layer) to address AOC 3; the use of a soil cover is specifically discussed in DER-10 Section 4.1 (f) to mitigate impacted surficial soils and has been used on other parts of the former ALCO site. Clean soils have been stockpiled on the property and can serve as appropriate cover material with the permission of the NYSDEC. One to two feet of clean soil cover, depending upon the commercial and/or restricted residential use of the property, will be applied. Alternative 3 will also employ Institutional Controls to address the remaining potential exposure pathways. The contemplated ICs would include:

- An Environmental Easement prohibiting all groundwater use at the site without the NYSDEC and NYSDOH approval;
- Development of a Soil Management Plan to guide possible future site developments that may require excavation into the residually-contaminated soils;
- Development of Soil-Vapor Mitigation Plan to guide future building construction;
- Development of a Groundwater Monitoring Plan to document improving groundwater quality in response to remediation activities;
- Development of a Flood Hazard Mitigation Plan to comply with Chapter157 –Flood Hazard Control of the City of Schenectady Code, as the ALCO site lies within FEMA mapped Zones A-16 and B.
- Other environmental easements and/or deed restrictions necessary to meet regulatory requirements and enable the restricted future use of the property.

A Site Management Plan (SMP) will be prepared which will identify the necessary procedures to be utilized if future site work were conducted within each AOC, including soil vapor mitigation measures. The property owner will be required to submit a periodic certification of the institutional and engineering controls.

It should be noted that as part of site preparation the implementation of necessary flood hazard mitigation will require alteration of the current river bank, soil removal and the creation of

lands under water with hydraulic connection to the Mohawk River. That is, areas of the site adjacent to the Mohawk River will need to be excavated to below the water level of the Mohawk River, allowing the Mohawk River water to extend onto and cover certain areas of the site for flood control. Design for the will be presented in the Remedial Design (RD – Section 3), and will be dovetailed with the site-wide remedial program and subject to review and approval by NYSDEC. The establishment of such lands under water is a necessary element of site preparation; review and approval by the NYS Canal Corporation and U.S. Army Corps of Engineers will likely be necessary for these designs. The lands under water will not be subject to the protective soil cover or geotextile. Any lands under water created by site preparation within the existing legal description of the site will remain as part of the site and subject to certain provisions of the site management plan.

In addition to the soil cover and targeted soil removal as part of the IRMs, Alternative 3 would also include measures to remediate groundwater exposure pathways associated with AOCs 1 and 2. LNAPL areas around monitoring wells MW-36 and MW-45 (AOCs 1A and 1B) will be addressed by excavation as IRMs, and the USTs that comprise AOC 1C will be removed (IRM Work Plan is included in Appendix C); isolated areas of impacted soils identified by NYSDEC in their letter of 12/14/12 will also be addressed by excavation. Mitigation of the chlorinated solvent plume and its source area will be accomplished using in-situ remediation ( chemical oxidation) and natural attenuation. Institutional controls restricting the use of groundwater would likely be required

### *2.2.2 Parcel –Specific Remedial Actions*

#### *2.2.2.1 Parcel A*

Remedial actions specific to Parcel A are listed below:

- Two-foot soil cover
- Natural attenuation of the chlorinated solvent plume
- Removal of a isolated areas of surficial soil impacts at sample locations RB-06and SS-A3 (see appended IRM work plan)
- IRM for AOC 1B
- Institutional controls
- Final Engineering Report
- Site Management Plan

#### *2.2.2.2 Parcel B*

Remedial actions specific to Parcel B are listed below:

- Two-foot soil cover
- In-situ treatment and natural attenuation of the chlorinated solvent plume
- Removal of an isolated area of surficial soil impacts at sample locations SS-B3 (see appended IRM work plan)IRM for AOC 1A and 1C
- Backfilling of underground vault identified at location GPR-2
- Mitigation measures for suspected soil vapor intrusion at Building 306
- Institutional controls
- Final Engineering Report
- Site Management Plan

#### *2.2.2.3 Parcel C*

Remedial actions specific to Parcel C are listed below:

- Two-foot soil cover
- In-situ treatment and natural attenuation of the chlorinated solvent plume
- In-situ treatment of the source area of the chlorinated solvent plume
- Institutional controls
- Final Engineering Report
- Site Management Plan

# 3.0 Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

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

## 3.1 Parcel A

### *3.1.1 Site-Wide Soil Cover*

As discussed earlier, a soil cover (with a geotextile demarcation layer) will be designed to address AOC 3; the use of a soil cover is specifically discussed in DER-10 Section 4.1 (f) to mitigate impacted surficial soils, particularly where soil impacts are low level and widespread. A soil cover has been used on other parts of the former ALCO site (former Big N Plaza and former Ramada Inn sites). Clean soils have been stockpiled on the property and can serve as appropriate cover material with the permission of the NYSDEC. One to two feet of clean soil cover, depending upon the commercial and/or restricted residential use of the property, will be applied. The design for the soil cover will incorporate appropriate features for management and control of storm water; the design may also incorporate grading and areas of thicker soil cover to accommodate future site development. A Remedial Design package will be prepared for NYSDEC review; the design package will include a design report and plans, stamped by a Professional Engineer licensed in the State of New York. A Health and Safety Plan (HASP) including a Community Air Monitoring Program (CAMP) for excavation work below the demarcation layer is provided in Appendix B.

### *3.1.2 Chlorinated Solvent Plume*

A source area for the chlorinated solvent plume was identified in the SRI Report. Because of the location and dimensions of the source area (particularly with respect to the City of Schenectady sewers), in-situ remediation ( chemical oxidation) will be employed to destroy the contaminant source area (on Parcel C) and higher concentration areas of the plume itself (on Parcel B), as discussed in the next sections.

The portion of the chlorinated solvent plume located on Parcel A will be addressed through monitored natural attenuation (MNA), which has been recognized by USEPA as an effective means of addressing residual groundwater contamination, particularly after application of remedial measures addressing contaminant source areas (USEPA, 1999). From the standpoint of remediating overall contaminant mass, there are often areas in a contaminant plume where active remedial measures provide minimal or no incremental benefit relative to natural processes, such as biodegradation, sorption, dispersion, volatilization and dilution. It should be recognized that MNA is not a "walk away" or "do nothing" remedy; it entails a careful examination of site data to verify that active remedies been applied to the extent feasible and development/implementation of a monitoring program to verify MNA processes are at work and that the residual contamination is no longer a threat to human health and the environment.

In determining whether MNA is appropriate for a given site, USEPA provides some considerations, which are summarized as follows, with discussion of their applicability to the ALCO site:

- Whether the contaminant plume is stable and likely to remain stable.

  *Historical groundwater sampling results combined with groundwater sampling results from the RI and SRI indicate that the contaminant plume is stable.*

- Whether the contaminants are amenable to MNA processes.

  *The site contaminants are amenable to the physical MNA processes (sorption, dispersion, dilution), and the biodegradation processes (evidenced by the presence of dehalogenation daughter products).*

- Whether the impacted groundwater is currently being used or may be used in the foreseeable future.

  *Groundwater at the site and its general vicinity is not being used, and the area is served by public water. Institutional controls will be an element of the site remedial program; these controls will prohibit the installation of wells at the site and the use of groundwater unless approved by NYSDEC and NYSDOH.*

- Whether other resources are impacted or may be impacted by the residual contamination.

  *The primary resource being impacted by site-related contamination is groundwater.*

- Whether the observed contamination impacts, or will impact, available water supplies.

  *Site-related contaminants only impact groundwater in a very limited area; public water supplies are drawn from hydrologically separate systems.*

- Whether remedial timeframes for MNA are reasonable compared to active approaches.

  *Because the contaminant source will be destroyed, residual groundwater contamination is largely under diffusive-flow conditions, such that active remedial approaches would not likely shorten remedial timeframes.*

- Whether the contaminant source has been controlled.

  *The contaminant source will be destroyed using in-situ techniques.*

- Whether possible degradation products pose a greater risk than the parent compounds.

  *The potential degradation product of the site-related parent compounds which could pose a greater risk is vinyl chloride. Groundwater sampling conducted at the site has detected vinyl chloride only infrequently and at concentrations substantially lower than parent compounds and other compounds, such that vinyl chloride is not regarded as posing an increased risk.*

## 3.2 Parcel B

### *3.2.1 Site-Wide Soil Cover*

As discussed earlier, a soil cover (with a geotextile demarcation layer) will be designed to address AOC 3; the use of a soil cover is specifically discussed in DER-10 Section 4.1 (f) to mitigate impacted surficial soils, particularly where soil impacts are low level and widespread. A soil cover has been used on other parts of the former ALCO site (former Big N Plaza and former Ramada Inn sites). Clean soils have been stockpiled on the property and can serve as appropriate cover material with the permission of the NYSDEC. One to two feet of clean soil cover, depending upon the commercial and/or restricted residential use of the property, will be applied. The design for the soil cover will incorporate appropriate features for management and control of storm water; the design may also incorporate grading and areas of thicker soil cover to accommodate future site development. A Remedial Design package will be prepared for NYSDEC review; the design package will include a design report and plans, stamped by a Professional Engineer licensed in the State of New York. A Health and Safety Plan (HASP) including a Community Air Monitoring Program (CAMP) for excavation work below the demarcation layer is provided in Appendix B.

### *3.2.2 Chlorinated Solvent Plume*

A source area for the chlorinated solvent plume was identified in the SRI Report. Because of the location and dimensions of the source area (particularly with respect to the City of Schenectady sewers), in-situ remediation (chemical oxidation) will be employed the source area located on Parcel C (discussed in the next section).

In-situ chemical oxidation will also be used to destroy the higher concentration contaminant areas of the plume itself existing on Parcel B (an area of roughly 300 ft by 300ft). This process entails the injection of a chemical oxidant solution into the contaminated zone, where the chemical oxidant breaks the contaminant down into its constituent components. For a chlorinated compound, the end products are water, carbon dioxide and chloride ion. The chemical is injected at different depths and locations to ensure that the contaminated zone is fully saturated with the oxidant. The oxidant solution is a mixture of the oxidant, an activator complex and water. The residual compounds left over after the reactions are conventional groundwater constituents: iron, carbonate, carbon dioxide, chloride, etc.

MNA will be used to address the lower concentration portions of the plume that exist on Parcel B. The preceding section provides the basis and rationale for the application of MNA.

### *3.2.3 Building 306*

Based on the results of soil vapor intrusion sampling conducted during the SRI, NYSDEC and NYSDOH have requested mitigation measures for Building 306, due to suspected soil vapor intrusion (SVI). Based on discussions during the meeting of February 6, 2014, the following actions were agreed upon to address the SVI issue in the near term:

- The building landlord will attempt to increase airflow through the first floor
- The building landlord will inspect the floor throughout the first floor of the building to identify cracks and pipe penetrations that could potentially br preferential SVI pathways
- Re-sampling will be conducted within approximately 14 days of the start of the increased airflow, using the same methodology as during the SVI
- A portable photoionization detector (ppbRae or equivalent) will be used to conduct an ambient air survey during the re-sampling
- Based on further discussion with NYSDEC and NYSDOH, sampling locations may be altered from the original SVI locations (which were predominantly in areas of the building which are unventilated and unoccupied, e.g., storage rooms).

Further mitigation, sampling and/or monitoring work will be determined based on the findings of the re-sampling, in discussion with NYSDEC and NYSDOH.

## 3.3 Parcel C

### *3.3.1 Site-Wide Soil Cover*

As discussed earlier, a soil cover (with a geotextile demarcation layer) will be designed to address AOC 3; the use of a soil cover is specifically discussed in DER-10 Section 4.1 (f) to mitigate impacted surficial soils, particularly where soil impacts are low level and widespread. A soil cover has been used on other parts of the former ALCO site (former Big N Plaza and former Ramada Inn sites). Clean soils have been stockpiled on the property and can serve as appropriate cover material with the permission of the NYSDEC. One to two feet of clean soil cover, depending upon the commercial and/or restricted residential use of the property, will be applied. The design for the soil cover will incorporate appropriate features for management and control of storm water; the design may also incorporate grading and areas of thicker soil cover to accommodate future site development. A Remedial Design package will be prepared for NYSDEC review; the design package will include a design report and plans, stamped by a Professional Engineer licensed in the State of New York. A Health and Safety Plan (HASP) including a Community Air Monitoring Program (CAMP) for excavation work below the demarcation layer is provided in Appendix B.

### *3.1.2 Chlorinated Solvent Plume*

A source area for the chlorinated solvent plume was identified in the SRI Report. Because of the location and dimensions of the source area (particularly with respect to the City of Schenectady sewers), in-situ remediation ( chemical oxidation) will be employed to degrade the contaminant source area and higher concentration areas of the plume itself.

In-situ chemical oxidation will also be used to destroy the source area and the higher concentration contaminant areas of the plume itself existing on Parcel C (an area of roughly 150 ft by 150ft. This process entails the injection of a chemical oxidant solution into the subsurface into the contaminated zone, where the chemical oxidant breaks the contaminant down into its constituent components. For a chlorinated compound, the end products are water, carbon dioxide and chloride ion. The chemical is injected at different depths and locations to ensure that the contaminated zone is fully saturated with the oxidant. The oxidant solution is a mixture of the oxidant, an activator complex and water. The residual compounds left over after the reactions are conventional groundwater constituents: iron, carbonate, carbon dioxide, chloride, etc.

MNA will be used to address the lower concentration portions of the plume that exist on Parcel C. The preceding section provides the basis and rationale for the application of MNA.

# 4.0 Remedial Action Implementation

## 4.1 Parcel-Specific Remedial Action Implementation

### *4.1.1 Parcel A*

Remedial actions specific to Parcel A are listed below:

- Two-foot soil cover
- Natural attenuation of the chlorinated solvent plume
- Removal of isolated areas of surficial soil impacts at sample location RB-06 and SS-A3
- IRM for AOC 1B
- Institutional controls
- Final Engineering Report
- Site Management Plan

### *4.1.2 Parcel B*

Remedial actions specific to Parcel B are listed below:

- Two-foot soil cover
- In-situ treatment and natural attenuation of the chlorinated solvent plume
- Removal of an isolated area of surficial soil impacts at sample locations SS-B3
- IRM for AOC 1A and 1C
- Backfilling of underground vault identified at location GPR-2
- Mitigation measures for suspected soil vapor intrusion at Building 306
- Institutional controls
- Final Engineering Report
- Site Management Plan

### *4.1.3 Parcel C*

Remedial actions specific to Parcel C are listed below:

- Two-foot soil cover
- In-situ treatment and natural attenuation of the chlorinated solvent plume
- In-situ treatment of the source area of the chlorinated solvent plume
- Institutional controls

- Final Engineering Report
- Site Management Plan

## 4.2 Stormwater Management

A Stormwater Pollution Prevention Plan (SWPPP) has already been prepared for the site for the stockpiling of clean soils for the soil cover, and is incorporated here by reference. The SWPPP will be updated as needed to address the movement and placement of the stockpiled soils and the creation of the clean soil cover.

## 4.3 Institutional Controls

As defined in DER-10, an institutional control (IC) "means any non-physical means of enforcing a restriction on the use of real property that limits human or environmental exposure, restricts the use of groundwater, provides notice to potential owners, operators, or members of the public, or prevents actions that would interfere with the effectiveness and/or integrity of site management activities at or pertaining to a site". Because of the intended future use of the site, it has been anticipated that ICs will be a part of the remedial program for site soils and for future redevelopment of the properties.
The contemplated ICs for the site are expected to cover the following issues:

- A requirement that a clean soil cover of a minimum thickness of one to two feet, depending upon the actual commercial or restricted-residential use, be maintained on the site
- Notification to be filed with the property deed that residually-impacted soils are present below the clean soil cover
- A requirement that any excavation below the clean soil layer entail 1) 10 day prior notification to NYSDEC and NYSDOH, 2) notification to contractors of the potential hazard (contractor personnel may be subject to 29 CFR 1910.120 – HAZWOPER), and 3) restoration of the clean soil layer (HASP with CAMP for this work is provided in Appendix B)
- Development of a Flood Hazard Mitigation Plan to comply with Chapter157 –Flood Hazard Control of the City of Schenectady Code, as the ALCO site lies within FEMA mapped Zones A-16 and B.
- A prohibition on the use of all groundwater on the property without NYSDEC and NYSDOH approval

## 4.4 Reporting

### *4.4.1 Schedule and Progress Reports*

A Remedial Action Schedule will be prepared and submitted to NYSDEC once the remedial design work has been completed and approved. Per DER-10 Section 5.7, the Remedial Action Schedule will include:

- Dates for submission of deliverables
- Timeframes for contractor procurement
- Timeframes for review of deliverables by NYSDEC
- Timeframes for application/issuance of permits, if needed
- Timelines for developing access agreements or easements
- Timelines for the preparation of the Site Management Plan and the Final Engineering Report

The Remedial Action Schedule will be updated periodically to reflect progress and/or changes in the Remedial Action Implementation Program. Also per DER-10 Section 5.7, a monthly progress report will be prepared and submitted to NYSDEC during the Remedial Action Implementation phase. The progress report will contain the following, at a minimum:

- Project progress and significant activities
- Pending/planned significant activities in the next two months
- Updated project schedule
- Discussion of project problems and/or delays
- Proposed corrective actions, if needed
- Additional pertinent information

### *4.4.2 Final Engineering Report*

Per DER-10 Section 5.8, a Final Engineering Report will be prepared following completion of the Remedial Action activities and will contain:

- Signature page, stamped by a licensed NYS Professional Engineer
- A description of the remedy, as constructed
- A summary of the remedial actions completed
- Listing of the remedial action objectives
- Supporting tables and figures
- Detailed description of remedial action compliance
- As-built drawings
- Identification of institutional controls and environmental easements
- Appropriate supporting figures for groundwater remediation

## 4.5 Site Management Plan

A Site Management Plan will be prepared, which will include the following:

a. An Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: As described in a previous section.

Engineering Controls: The soil cover previously described.

This plan includes, but may not be limited to:

- An Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- Descriptions of the provisions of the environmental easement including any land use, {and/or} groundwater {and/or} surface water use restrictions;
- A provision for evaluation of the potential for soil vapor intrusion for any buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- Provisions for the management and inspection of the identified engineering controls;
- Maintaining site access controls and Department notification; and
- The steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.
- A Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:
- Monitoring of groundwater to assess the performance and effectiveness of the remedy;
- A schedule of monitoring and frequency of submittals to the Department;
- Monitoring for vapor intrusion for any buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

# 5.0 References

Barton & Loguidice 2011. Stormwater Pollution Prevention Plan, Former ALCO Site.

CHA, August 2012. Remedial Investigation Report, ALCO-Maxon Sites, Parcels A,B&C.

Kleinfelder, Inc., September 2010. Remedial Investigation Work Plan, Parcel A of the ALCO-Maxon Site.

Kleinfelder, Inc., September 2010. Remedial Investigation Work Plan, Parcel B of the ALCO-Maxon Site.

Kleinfelder, Inc., September 2010. Remedial Investigation Work Plan, Parcel C of the ALCO-Maxon Site.

New York State Department of Environmental Conservation, May 2010. DER-10 / Technical Guidance for Site Investigation and Remediation. DEC Program Policy, Office of Remediation and Materials Management.

New York State Department of Environmental Conservation, December 2006. 6 NYCRR PART 375, Environmental Remediation Programs, Subparts 375-1 to 375- 4 & 375-6. Division of Environmental Remediation.

New York State Department of Environmental Conservation, May 2004. Draft Brownfield Cleanup Program Guide. Division of Environmental Remediation.

New York State Department of Environmental Conservation, 1997. Environmental Restoration Projects, Program ID No. DER-97-4058. Division of Environmental Remediation, Bureau of Program Management.

New York State Department of Environmental Conservation, 1998. "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations', Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1. Reissued June 1998.

New York State Department of Health, 2006. "Guidance for Evaluating Soil Vapor Intrusion in the State of New York."

United States Environmental Protection Agency, 1994. "Radon Prevention in the Design and Construction of Schools and Other Large Buildings."

United States Environmental Protection Agency, April 1999. "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites", OSWER Directive 9200.4-17P.

Wiedemeir, et al, 1999. "Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water". USEPA-NRML. EPA/600/R-98/128.

# Figure 1

# Site Location Map Showing Areas of Concern

CHLORINTED SOLVENT PLUME (AOC 2)

MW-45 AREA (AOC-1B)

SITE-WIDE SOIL (AOC 3)

GPR AREA 2

MW-36 AREA BORINGS (AOC-1A)

GPR AREA 8 (AOC-1C)

PARCEL A

PARCEL B

PARCEL C

CHLORINATED SOLVENT PLUME
SOURCE AREA (AOC 2)

FORMER BUILDING LOCATIONS 312 & 314

FORMER BUILDING LOCATION

FLOOD PLAIN EL.V. 229

OUTFALL A43

COLLEGE CREEK OUTFALL

OUTFALL D42

39.49-2-1.311

39.41-1-1.1

39.41-1-2

39.41-1-3

39.49-2-7

39.49-2-6

39.49-2-8

39.49-2-1.2

346

344

324

316

308

306

304

300

BUILDING 346

BUILDING 324

BUILDING 326

BUILDING 332

BUILDING 316

BUILDING 308

BUILDING 306

BUILDING 304

BUILDING 300

BUILDING 338

TRAILER

ADDITION

MW-54 MW-55 MW-56 MW-57 MW-58 MW-59 MW-60 MW-61 MW-62 MW-63

P11 P12 P13 P14 P15 P16 P17 P18 P19 P20

INSTALL NEW SIZE AND VALVE

**LEGEND**

- PROPERTY BOUNDARY
- GPR SITE BOUNDARY
- MANHOLE WITH DRAINAGE STRUCTURE NUMBER
- CATCH BASIN WITH DRAINAGE STRUCTURE NUMBER
- LIFT STATION WITH DRAINAGE STRUCTURE NUMBER
- MANHOLE (S.N.)
- CATCH BASIN (C.B.)
- MONITORING WELL (SRI)
- TEMPORARY MONITORING WELL (TMW)
- RECOVERY WELL
- PIEZOMETER
- GEOPROBE BORING
- SURFACE SOIL SAMPLE LOCATION (SS)
- SOIL BORING LOCATION

**AREA DEFINITIONS**

- BUILDING/STRUCTURES
- FORMER BUILDINGS (PREVIOUSLY DEMOLISHED)
- "SW" PARCEL
- "NFP" PARCEL
- OTHER PROPERTIES (OR PART OF)
- REMEDIATION AREA
- FORMER UST/AST LOCATIONS

MW-63 MONITORING WELL (SRI INVESTIGATION 2013)

MAP REFERENCE:

1) "SURVEY OF LANDS, ALCO LOCOMOTIVE, INC., CITY OF SCHENECTADY, COUNTY OF SCHENECTADY". DATED MARCH 1970, AS PREPARED BY C.T. MALE ASSOCIATES.

2) "A SUBDIVISION OF A PORTION OF LANDS OF SCHENECTADY INDUSTRIAL CORPORATION". DATED JUNE 30, 1999, AS PREPARED BY THE ENVIRONMENTAL DESIGN PARTNERS-NP.

3) "SITE PLAN, PROPOSED C & D RECYCLING FACILITY, NOTT STREET INDUSTRIAL PARK". DATED FEBRUARY 1999, AS PREPARED BY INGALLS SMART ASSOCIATES.

SOURCE:

1) ABD ENGINEERS AND SURVEYORS FEBRUARY 1999, REVISED NOVEMBER 1999

2) HISTORIC BUILDING (HB) LOCATIONS BASED ON A "FUEL OIL PIPING" PLAN, PREPARED FOR AMERICAN LOCOMOTIVE CO., REVISED AUGUST 22, 1975.

Barton & Loguidice, D.P.C.

MAXON ALCO HOLDINGS, LLC
REMEDIAL WORK PLAN
SITE PLAN
CITY OF SCHENECTADY, NEW YORK

Figure 1
Project No. 1368.001.001
Date 1/9/2014

Z:\BL-Vault\JDD\18217\AD2-1C71-4823-8927-99D5C4054147\D531000-531999\531972\LU\L1368001 SRI Remedial Work Plan 2014-02-20.dwg, 2/21/2014 8:17:44 AM

# Appendix A

# Alternatives Analysis Report

Former ALCO Site
Brownfield Cleanup Project

City of Schenectady
Schenectady County, New York

# Alternatives Analysis Report (AAR)

New York State
Brownfield Cleanup Program
Site Nos. C447042, C447043, and C447044

February 2014

Barton & Loguidice

Former ALCO Site
Brownfield Cleanup Project

City of Schenectady

# Alternatives Analysis Report
Site Nos. C447042, C447043, and C447044

February 2014

Prepared For:

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Appendices

# 1.0 Introduction

Maxon ALCO Holdings, LLC (MAH) has entered into Brownfield Cleanup Agreements (BCA) through the New York State Department of Environmental Conservation's (NYSDEC) Brownfield Cleanup Program (BCP) for the property located at 301 Nott Street in Schenectady, New York, identified as the ALCO Site (Property or Site) and historically known as the Nott Street Industrial Park (Park). In 2010, after purchasing the property, the Volunteer (Maxon-ALCO Holdings) divided the Property into three parcels: Parcel A, Parcel B and Parcel C (Site Nos. C447042, C447043, and C447044, see Figure 1) and each Parcel was deemed eligible for the BCP. In November of 2013, MAH proposed the reconfiguration of Parcels B and C to NYSDEC to more efficiently proceed with potential Interim Remedial Measures and redevelopment planning; the proposed reconfiguration is provided in Appendix A.

The purpose of the BCP is to encourage voluntary remediation of brownfield sites for reuse and development. This includes conducting a complete characterization of the Site, including potential off-Site impacts, by performing a Remedial Investigation (RI). The primary objective of the RI is to identify environmental concerns and to provide the basis for evaluating remedial alternatives, if necessary. The RI was completed in the first half of 2012, and the RI Report was submitted to NYSDEC in August 2012. Though a separate Work Plan was prepared for each Parcel, the Remedial Investigation (RI) Report covered the entire Site since remedial decision making will include activities that involve multiple parcels on the ALCO Site.

Specifically, the objectives of the RI were to:

- Supplement the historic investigations that have been conducted on the Site,
- Further identify source(s) of contamination,
- Define the nature and extent of that contamination,
- Assess the impact of contamination on public health or the environment, and
- Provide information for the development and selection of a remedial work plan across all parcels (A, B, and C) that make up the Alco property.

A summary of the findings of the RI is presented in this section. The RI Report also provided a qualitative human health exposure assessment. An exposure pathway is complete when all five elements of an exposure pathway are documented; a potential exposure pathway exists when any one or more of the five elements comprising an exposure pathway is not documented.

The results of the exposure assessment indicated that there is currently one complete potential exposure pathway.

- Potential exposure of current tenants of Buildings 306 and 330 to VOCs in indoor air through inhalation.

The following potential exposure pathways were also identified:

- Exposure of future on-Site workers to soil, groundwater, soil vapor or LNAPL that may be contaminated with VOCs, SVOCs, and/or metals during future intrusive activities at the Site. Routes of exposure to future on-Site workers could include inhalation, ingestion, dermal contact, eye contact, and puncture/injection.
- Exposure to groundwater that may be contaminated with VOCs, SVOCs, and/or metals if groundwater wells are installed and used for drinking water, etc.

By letter dated December 14, 2012, NYSDEC provided comments on the RI Report; general comments were provided for site-wide issues, and comments specific to each parcel were also provided. The comment letter indicated that no further investigation was required for a majority of the areas/issues that were addressed by the RI. Finally, the comment letter requested additional data collection activities to follow-up on and/or reserve some specified issues to finalize the RI.

In January 2013 Barton & Loguidice prepared a Supplemental Remedial Investigation Work Plan (SRI-WP) to provide the procedures for conducting the requested follow-up work. In follow-up discussions with the NYSDEC, there was concurrence that the design investigation tasks proposed in the Remedial Work Plan (RWP) should be combined with the requested follow-up RI work, as the tasks were 1) similar in nature, and 2) needed to be performed prior to the Remedial Design (RD). The tasks performed during the Supplemental Remedial Investigation are summarized below:

Tasks Requested in the NYSDEC 12/14/12 Letter and Follow-up Discussion:

- Follow-up investigation on the geophysical investigation in identified areas
- Soil Vapor Intrusion investigation in the identified buildings
- Installation of three monitoring wells between Buildings 306-320
- Inspection of Buildings 308 Trench
- Borings in the MW-36 Area (AOC 1A)

Tasks Proposed in the Remedial Work Plan (RWP):

- Chlorinated Solvent Plume Source Investigation (AOC 2)
- Chlorinated Solvent Plume Delineation (monitoring wells) (AOC 2)
- Monitoring well in the MW-45 Area (AOC 1B)

The SRI activities included the installation of soil borings, monitoring wells, soil vapor monitoring points, and test pits along with the collected of subsurface soil, soil vapor, and groundwater to further characterize the site. The planned scope of SRI activities consisted of the following:

- Installation of three (3) monitoring wells between Buildings 306-320 screening the water table and the collection of groundwater samples for VOCs analysis.
- Installation of three (3) monitoring wells screening the water table near MW-45 to determine the approximate extent of previously documented LNAPL at this location.
- Installation of 12-15 Geoprobe borings around MW-36 to assess the extent of previously documented LNAPL at this location.
- Advancement of approximately 30 membrane interface probe (MIP) borings near SV-C9 and MW-19 to determine the source of the previously documented chlorinated solvent plume.
- Collect subsurface soil samples from the MIP borings for VOCs analysis.
- Installation of four (4) monitoring wells to delineate the chlorinated solvent plume and determine an effective means for mitigation.
- Collection of groundwater samples from the four (4) newly installed chlorinated solvent plume delineation wells along with seven (7) existing plume delineation wells to be analyzed for VOCs.
- Installation of test pits around Ground Penetrating Radar (GPR) area 2, 6, and 8 as a follow-up to the geophysical survey performed during the 2012 Remedial Investigation by CHA.
- Installation of six (6) subsurface soil vapor points in Buildings 300, 306, and 330.
- Inspection and confirmation of filling of the former Building 308 trench system.

The Supplemental RI activities were completed during the period from May through August 2013. Field activities were conducted in general accordance with NYSDEC protocols (including DER-10), the Remedial Action Work Plan (Kleinfelder, Inc., 2010), and the Supplemental Remedial Investigation Work Plan (Barton & Loguidice, P.C., 2013). Modifications to these plans are summarized below.

- Due to the presence of a thick concrete slab in the area surrounding SV-C9 and MW-19 the MIP could not be advanced. Instead, a Geoprobe was utilized to advance the MacroCore and a photoionization detector (PID) and field Gas Chromatograph (GC) were used to screen select samples in the field before submitting to the lab for analysis.
- Monitoring well MW-50 was sampled during the RI and was scheduled for re-sampling, but could not be located and was not sampled.

- The NYSDEC and NYSDOH indicated in a phone call on 5/31/13 that soil vapor samples were not required in Building 300 due to extensive mold in the basement and the building's current unoccupied status. SVI sampling will be required if the building is to be occupied.

Under contemplated future land use, the objective of the selected remedial alternative would be to prevent exposure to contaminated soil, groundwater, and soil vapor.

This Alternatives Analysis Report (AAR) is the next step in the BCP process. As part of this AAR, three areas of concern (AOCs) were identified based on the findings of the RI, the Exposure Assessment, and the SRI:

1. Historic Free-phase petroleum product on the water table around monitoring well MW-36 and MW-45 (AOCs 1A and 1B), and existing underground storage tanks (USTs) that were not properly closed (AOC 1C) ;
2. A chlorinated solvent plume that extends from the vicinity of MW-19 toward the Mohawk River (AOC 2); and
3. Site-wide soil impacts from polynuclear aromatic hydrocarbons (PAHs) (AOC 3).

Subsequent sections of this report present an evaluation of remedial alternatives to eliminate or mitigate potential threats to public health and the environment at the former ALCO site, to support the selection of a preferred remedy.

## 1.1 Purpose of Report

This Alternatives Analysis Report (AAR) presents an evaluation of the remedial alternatives to eliminate or mitigate potential threats to public health and the environment in order to support the selection of a preferred remedy. The alternatives are based upon the findings presented in the August 2012 RI Report and the 2013 SRI Report. This AAR has been prepared in accordance with DER-10, 6 NYCRR Part 375, and the Brownfield Cleanup Program Guidelines.

### *1.1.1 Report Organization*

This report is organized into four major sections (including this introduction section), with appropriate subsections within each division. Tables, figures and sheets are located following the text, prior to the appendices in the back of the document.

Section 2.0 presents the remedial alternatives evaluation. Within this section, information is presented regarding remedial alternatives as compared to the DER-10 and BCP evaluation criteria. Section 3.0 provides a comparison of the alternatives and presents the recommended remedy. References cited are presented in Section 4.0.

## 1.2 Site Background

### *1.2.1 Site Description*

The Schenectady Locomotive Engine Manufactory initially developed a portion of the existing Park in 1849. In 1851, the company changed its name to Schenectady Locomotive Works (Works) and continued to develop the Site. In 1901, the Works merged with several other companies to form the American Locomotive Company (ALCO). ALCO operated the Site until 1969. Schenectady Industrial Corporation (SIC) purchased the Park in 1971, with General Electric Company (GE) occupying the Park from 1971 to 1985. Small industrial, manufacturing and fabrication companies have occupied various buildings within the Park since 1985, when occupancy of buildings was returned to SIC.

During April 1992, Coyne Textile Services (CTS), with operations on Front Street, adjacent to the ALCO Site, had a fuel oil release that partially escaped into the municipal storm drain sewer system which flows under the Site, discharging to the Mohawk River at the College Creek Outfall. During inspection of this release, the NYSDEC reportedly observed petroleum seeping from riprap along the bank of the Mohawk River adjacent to Buildings 320 and 324. The NYSDEC requested that a subsurface investigation be performed onshore adjacent to the petroleum seep areas. Following this release, Schenectady Industrial Corporation (SIC) entered into an Order on Consent (OC), (Index No. R4-1338-92-05), with the NYSDEC .

In 1992, SIC performed a subsurface investigation that included advancing a series of five hand-excavated test pits, (TP-A1 through TP-E1), along the riverbank. Soil analytical results indicated total petroleum hydrocarbon (TPH) concentrations up to 12,000 parts per million (ppm). Following these results, two deep soil borings and five shallow soil borings were advanced adjacent to the test pits. The five shallow soil borings were completed as groundwater monitoring wells. Free-phase petroleum was found in two wells and the free-phase petroleum in one well was found to contain low levels of polychlorinated biphenyls (PCBs). Groundwater analytical results indicated TPH concentrations ranging from 4.6 ppm to 32,200 ppm. Volatile organic compound (VOC) concentrations were detected.

Historically there have been many environmental investigations completed at the former ALCO Site since the initial investigation in 1992. These investigations, some of which were conducted in conjunction with NYSDEC oversight, have taken place across the ALCO-Maxon Site, which has been separated into Parcels A, B and C. In addition to the environmental investigations conducted throughout the former ALCO Industrial property, underground storage tank (UST) removals and remedial activities have been completed on the ALCO-Maxon Site parcels. Summaries of the investigations, UST removals and remedial activities are provided in Section 4.0.

Due to the historic industrial impacts identified on the ALCO Site and subsequent to the execution of a BCA, three Remedial Investigation Work Plans (one for each parcel) were prepared by Kleinfelder, Inc. (KLF) and submitted to NYSDEC on May 24, 2010. The Work Plans outlined the procedures and protocols that were to be utilized to conduct a full-scale

remedial investigation that would provide the necessary field data to further delineate the nature and extent of contamination at the subject Site. The Work Plans were prepared to conform to the Draft DER-10 *Technical Guidance for Site Investigation and Remediation* issued by the Division of Environmental Remediation (December 2002). The RI Work Plans for Parcels B and C were subsequently approved by the NYSDEC on June 23, 2011. One of the comments received by the NYSDEC was a request for sampling of both the riverbank and Mohawk River sediments adjacent to the Site. Following the submission of a Work Plan Addendum on January 10, 2012, the RI Work Plan for Parcel A was approved by the NYSDEC on January 23, 2012.

### *1.2.2 Remedial Investigation Findings*

#### *1.2.2.1 Geology/Hydrogeology*

The Site is underlain by a unit of fill that is present across much of the Site, varying from a minimum depth of 2 feet to a maximum depth observed during the RI of 12.4 feet. In general, the fill material consists of reworked soil (e.g., silt, sand, gravel, and clay) with lesser amounts of brick, concrete, ash/cinders, slag, metal, wood/organics, and glass. In locations where the fill unit is generally thinner, a fine to coarse grained sand unit of limited thickness is present beneath the fill. Based on the groundwater contours, as presented in Figure 6, it is apparent that groundwater flow across the majority of the subject Site is to the North towards the Mohawk River. The horizontal hydraulic gradient from south to north across the Site (i.e. from MW-19 to MW-25D) is approximately 0.006 ft/ft.

#### *1.2.2.2 Surface Soil*

The analytical results from this RI indicate that there are no VOC or PCB impacts to surface soil at the Site. These results are generally consistent with results from previous investigations. There are relatively widespread SVOC detections in surface soils at concentrations below Part 375 SCOs, and only limited areas that exceed Part 375 SCOs. The presence of certain VOC and SVOC Tentatively Identified Compounds (TICs) suggest that degradation/breakdown of historic aged petroleum has and/or is occurring across the Site. Lastly, there appear to be only limited, isolated areas of arsenic, lead, and/or mercury that slightly exceed Part 375 SCOs.

#### *1.2.2.3 Subsurface Soil*

Analytical results for samples collected from the upper fill/sand unit suggest that there are no significant VOC impacts and only limited SVOC impacts to unsaturated soils. Within the unsaturated zone, the area of highest SVOC concentrations is present in the area just west of Building 308, the area located just south of Building 320, beneath the slab of Building 320, and the area between Buildings 316 and 332.

Based on the analytical results for soil samples that were collected from test pits as part of the current RI and from previous investigations, there is no evidence of any PCB or metal impacts to subsurface soils across the Site.

#### *1.2.2.4 Groundwater*

The results obtained during this RI confirm the detection of a chlorinated solvent plume, which appears to originate upgradient from or in the vicinity of MW-19 and extends over 1,200 feet in length towards the Mohawk River. The plume appears to be relatively narrow and is well-delineated to the east, south and west. The depth of the plume is relatively shallow (~20 feet bgs) in the vicinity of monitoring well MW-19 and temporary monitoring well TMW-19C and deepens to approximately 50 to 70 feet bgs along the length of the plume. The data supports a finding that natural degradation is occurring based on the presence of PCE and TCE breakdown products.

The only other areas with impacts to groundwater are those with relatively localized SVOC (PAH) contamination that is generally associated with former UST areas or free product recovery areas. However, a comparison of analytical results from this and from previous investigations suggests that contaminant concentrations have generally decreased, with few exceptions. The presence of relatively high level detections of TICs in most wells across the Site, consisting primarily of petroleum-related compounds, suggest that degradation/breakdown of historic, aged petroleum has occurred in groundwater across the Site.

#### *1.2.2.5 Soil Vapor Summary*

The most significant impacts to subsurface vapor are present at the southern edge of the Site located just north of Erie Boulevard. The subsurface in this area is primarily impacted by chlorinated VOCs that appear to be related to the underlying chlorinated solvent groundwater plume. Chlorinated VOC impacts extend to the north/northeast and generally follow the direction of the groundwater plume. There are also chlorinated VOC impacts to subsurface soil vapor in a limited area between Buildings 346 and 324 and in the southwestern-most portion of the Site between Buildings 306 and 308. There are widespread but minor impacts to subsurface soil vapor from petroleum-related compounds; however, the detections do not appear to indicate the presence of any significant source for soil vapor contamination.

#### *1.2.2.6 Riverbank Soil Summary*

The analytical results from this RI indicate that there are no VOC or PCB impacts to soils on the bank of the Mohawk River that runs parallel to the Site, generally consistent with results from previous investigations. Impacts from SVOCs to the riverbank of the Mohawk River associated with the Site are generally limited to areas where historic operations took place, in the immediate vicinity of Buildings 326, 324 and 322.

Based on the results obtained during this RI and the previous remedial measures undertaken, minor detections of inorganics (mainly iron, arsenic, mercury and lead) in riverbank soils appear to also be limited to the western portion of the riverbank that runs parallel to the Site (west of College Creek Outfall). The eastern portion of the riverbank has only limited detections of metals (arsenic and lead) slightly above Part 375 SCOs in the area north of Building 346.

#### *1.2.2.7 River Sediment Summary*

Collectively, the RI results suggest that there are detectable concentrations of contaminants present in Mohawk River sediments both adjacent to the Site and upstream from the Site. The data indicate that an up-gradient source of chlorinated VOCs impacted up-gradient river sediments, but the impacts are relatively localized. There do not appear to be any VOC impacts to sediment immediately adjacent to the site. SVOC impacts are most evident upstream and adjacent to the western-most portion of the site (i.e. in the Building 320 area to the east) and suggest that, in addition to limited contribution from the Site itself, an up-gradient SVOC source is also present. There are no PCB impacts to the river sediments. The results also indicate that sediments both adjacent to the Site and upstream from the Site have detectable concentrations of metals. It does not appear that the Site is causing significant adverse inorganic impacts to river sediments.

### *1.2.3 Supplemental Remedial Investigation Findings*

The additional activities implemented as part of the SRI provided further delineation and identification of historic industrial conditions at the former industrial property. The data gathered was consistent with prior site investigation information.

#### *1.2.3.1 Parcel A*

- NAPL was detected in two of the three monitoring wells installed around MW-45; NAPL thicknesses varied from roughly one inch in MW-47 to roughly one foot in MW-48.
- Concentrations of chlorinated VOCs in Parcel A monitoring wells sampled ranged from 136 ug/L to 3082 ug/L.

#### *1.2.3.2 Parcel B*

- Follow-up on the geophysical study Area 2 identified an underground vault.
- Follow-up on the geophysical study Area 6 identified a former concrete building wall with re-bar.
- Concentrations of petroleum-related VOCs were detected in one of the three wells installed between Building 306 and former Building 320; concentrations did not exceed 22 ug/L.
- Concentrations of chlorinated VOCs in Parcel B monitoring wells sampled ranged from ND to 178 ug/L.

#### *1.2.3.3 Parcel C*

- Follow-up on the geophysical study Area 8 identified two underground storage tanks that had been used for petroleum products. The tanks did not appear to have been abandoned or backfilled.

- SVI results in Buildings 306 and 330 detected contaminants both in sub-slab soil vapor and in ambient air above guidance concentrations, but there was not a large degree of correlation between the contaminants detected in sub-slab versus ambient air samples.
- LNAPL was detected in one of the ten boring locations around to MW-36; the one location where LNAPL was detected was roughly five feet from MW-36.

#### *1.2.3.4 Site-Wide Groundwater Quality*

- Monitoring wells installed on Parcels A, B and C provided further delineation of the chlorinated solvent plume, which is detected across the three parcels along the established groundwater flow gradient.
- The source area for the chlorinated solvent plume was identified and delineated in an area of Parcel C around soil vapor point SV-C9.

### *1.2.4 Current and Intended Use*

The City of Schenectady adopted its new Zoning Ordinance (Chapter 264) on March 24, 2008. The ALCO Site is zoned C-3 Waterfront Development District. The purpose of the C-3 district is to provide unique opportunities for the development and maintenance of water-oriented uses within certain areas of the City adjacent to the Mohawk River. The C-3 District permits certain recreational, open space, business, and residential uses which will generally benefit from and enhance the unique aesthetic, recreational, and environmental qualities of the waterfront areas.

The site currently has commercial tenants on a limited portion of the property along Front Street and is otherwise unoccupied with the vacant structures being demolished in 2011. The intended future use of Parcel A is restricted-residential. The intended future use of Parcels B and C is commercial.

# 2.0 Remedial Alternatives Evaluation

## 2.1 Remedial Goals

The remedial goal is to evaluate options and select a remedial program to eliminate or mitigate threats to public health and the environment that, upon implementation, will allow the NYSDEC to issue a Certificate of Completion for the 3 BCP parcels and allow for the redevelopment and reuse of the parcels. This evaluation must take into account the potential exposure pathways under current and potential future conditions. The NYSDEC has identified a hierarchy of remedial goals in 6 NYCRR Part 375-1.8 (c) (1) as follows ranked from most preferable to least preferable:

1. Removal and/or treatment. All sources, concentrated solid or semi-solid hazardous substances, dense non-aqueous phase liquid, light non-aqueous phase liquid and/or grossly contaminated media shall be removed and/or treated; provided however, if the removal and/or treatment of all such contamination is not feasible, such contamination shall be removed or treated to the greatest extent feasible.
2. Containment. Any source remaining following removal and/or treatment shall be contained; provided however, if full containment is not feasible, such source shall be contained to the greatest extent feasible.
3. Elimination of exposure. Exposure to any source remaining following removal, treatment and/or containment shall be eliminated through additional measures, including but not limited to, as applicable, the timely and sustained provision of alternative water supplies and the elimination of volatilization into buildings; provided however, if such elimination is not feasible such exposure shall be eliminated to the greatest extent feasible.
4. Treatment of source at the point of exposure. Treatment of the exposure resulting from a source of environmental contamination at the point of exposure, as applicable, including but not limited to, wellhead treatment or the management of volatile contamination within buildings, shall be considered as a measure of last resort.

This AA Report indentified three (3) areas of concern (AOC) based on the findings of the RI and SRI Reports:

1. Historic Free-phase petroleum product on the water table around monitoring well MW-36 and MW-45 (AOCs 1A and 1B) and existing underground storage tanks (USTs) that were not properly closed (AOC 1C);
2. The chlorinated solvent plume (and associated source area) that extends from the vicinity of MW-19 to the Mohawk River (AOC 2); and
3. Site-wide soil impacts from polynuclear aromatic hydrocarbons (PAHs) (AOC 3).

As outlined in the Exposure Assessment in the RI Report, the following are complete or potential exposure pathways associated with the recognized AOC:

The results of the exposure assessment indicate that there is currently one complete potential exposure pathway and two future potential exposure pathways:

- Potential exposure of current tenants of Buildings 306 and 330 to VOCs in indoor air through inhalation (AOC 1 and 2).
- Potential exposure of future on-Site workers, residents, site occupants to soil, groundwater, soil vapor or LNAPL that may be contaminated with VOCs, SVOCs, and/or metals during future intrusive activities at the Site. Routes of exposure to future on-Site workers could include inhalation, ingestion, dermal contact, eye contact, and puncture/injection (AOC 1, 2 and 3).
- Potential exposure to groundwater that may be contaminated with VOCs, SVOCs, and/or metals if site groundwater is used (AOC 1, 2 and 3).

## 2.2 Remedial Action Objectives

The final remedial measures for the site must satisfy Remedial Action Objectives (RAOs), which are site-specific statements that convey the goals for minimizing or eliminating substantial risks to public health and the environment.

The following RAOs for the site were identified as a result of the Exposure Assessment in the RI Report:

1. Prevent volatilization of organic constituents from subsurface soils and groundwater (vapor intrusion) in future on-site buildings (AOCs 1 and 2).
2. Prevent ingestion of contaminated groundwater (AOCs 1 and 2).
3. Prevent contact with impacted surficial soils (AOC 3).
4. Develop site management practices to address potential exposure pathways associated with future site work (AOCs 1, 2 and 3).

With an understanding of the NYSDEC's hierarchy of remedial goals as outlined in Section 2.1 above, the RAO's for each AOC will be evaluated against the following criteria:

1. Overall Protection of Public Health and the Environment - This criterion is an evaluation of the remedy's ability to protect public health and the environment, assessing how risks posed through each existing or potential pathway of exposure are eliminated, reduced, or controlled through removal, treatment, engineering controls, or institutional controls.
2. Compliance with Standards, Criteria, and Guidance (SCGs) - Compliance with SCGs addresses whether a remedy will meet applicable environmental laws, regulations, standards, and guidance. The standards utilized for comparison of alternatives are the

NYSDEC's Part 375 Unrestricted and Protection of Groundwater Soil Cleanup Objectives (SCOs).

3. Long-Term Effectiveness and Permanence - This criterion evaluates the long-term effectiveness of the remedy after implementation. It is anticipated that residual contamination will remain on-site after the selected remedy has been implemented. This evaluation, therefore, will assess the impact of the remaining contamination on human exposures, ecological receptors and impacts to the environment. The use of institutional and/or engineering controls will be considered as part of this evaluation.

4. Reduction of Toxicity, Mobility or Volume - This criterion is an evaluation of the ability of an alternative or remedy to reduce the toxicity, mobility and volume of site contamination.

5. Short-term impact and effectiveness - This criterion is an evaluation of the potential short-term adverse environmental impacts and human exposures during the construction and/or implementation of an alternative or remedy. Considerations include the potential for human exposures, adverse environmental impacts and nuisance conditions at the site resulting from the implementation of the remedy or alternative. Short term impacts include potential exposures resulting from increased traffic, detours or loss of the use of access to property; odors; vapors; dust; habitat disturbance; run off from the site and noise. The length of the short-term impacts will be identified for each alternative.

6. Implementability. This criterion is an evaluation of the technical and administrative feasibility of implementing an alternative or remedy. Technical feasibility includes the difficulties associated with construction and the ability to monitor the effectiveness of an alternative or remedy. Administrative feasibility includes the availability of the necessary personnel and material; potential difficulties in obtaining specific operating approvals; access for construction and other concerns.

7. Cost effectiveness - This criterion is an evaluation of the overall cost effectiveness of an alternative or remedy. A remedy is cost effective if its costs are proportional to its overall effectiveness. To evaluate cost effectiveness:

    a. the overall effectiveness of an alternative or remedy is determined;
    b. a comparison of the overall effectiveness is then made to the cost of the alternative or remedy; and
    c. an assessment is made as to whether the cost is proportional to the overall effectiveness, to determine whether it is cost effective.

8. Land use - This criterion is an evaluation of the current, intended and reasonably anticipated future use of the site and its surroundings, as it relates to an alternative or remedy, when unrestricted levels would not be achieved.

9. Community acceptance - This criterion is evaluated after the public review of the remedy selection process as part of the final NYSDEC selection/approval of a remedy for

a site. Any public comment relative to these criteria will be considered by NYSDEC after the close of the public comment period.

In addition to the evaluation of alternatives to remediate to the likely contemplated restricted-residential and commercial end use of the Site, NYSDEC regulation and policy require an evaluation of an unrestricted use scenario. Evaluation of a "no-action" alternative is also required to provide a baseline for comparison against other alternatives.

## 2.3 General Response Actions

The following section discusses the general response actions that may be utilized within each media of interest in order to achieve the remedial objectives described above.

### *2.3.1 Remaining Surface Soil Impacts*

A summary of the SVOCs detected in surface soil samples at concentrations in exceedance of a Part 375 Residential or Commercial SCO is provided below for each parcel:

| Parcel A | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Part 375 Residential** | **Part 375 Restricted Residential** | **Part 375 Commercial** | **SS-A1** | | **SS-A2** | | **SS-A3** | | **SS-A5** | | **SS-A6** | | **SS-A8** | | **SS-A9** | |
| 2-Methylnaphthalene | *410* | *NS* | *NS* | 57 | J | **410** | **J** | 130 | J | **700** | **J** | 3,500 | U | **890** | **J** | **11,000** | **J** |
| Benzo(a)Anthracene | *1,000* | *1,000* | *5,600* | **1,300** | | **6,000** | | **5,500** | | **4,500** | | **1,800** | **J** | **24,000** | | **160,000** | |
| Benzo(a)Pyrene | *1,000* | *1,000* | *1,000* | **1,700** | | **6,700** | | **6,800** | | **4,200** | | **2,100** | **J** | **21,000** | | **140,000** | |
| Benzo(b)Fluoranthene | *1,000* | *1,000* | *5,600* | **3,100** | | **12,000** | | **14,000** | | **6,700** | | **4,400** | | **25,000** | | **170,000** | |
| Benzo(G,H,I)Perylene | *100,000* | *100,000* | *500,000* | 600 | J | 2,300 | | 3,100 | | 1,300 | | 1,500 | J | 14,000 | | **98,000** | |
| Benzo(k)Fluoranthene | *1,000* | *3,900* | *56,000* | **1,400** | | **4,000** | | **5,100** | | **3,000** | | **2,100** | **J** | **11,000** | | **71,000** | |
| Chrysene | *1,000* | *3,900* | *56,000* | **1,700** | | **6,600** | | **6,700** | | **4,400** | | **2,600** | **J** | **23,000** | | **150,000** | |
| Dibenzo(A,H)Anthracene | *330* | *330* | *560* | 210 | J | **820** | **J** | **880** | **J** | **370** | **J** | 3,500 | U | 4,900 | U | 9,800 | U |
| Dibenzofuran | *14,000* | *59,000* | *350,000* | 31 | J | 710 | J | 260 | J | 1,100 | | 3,500 | U | 2,300 | J | **22,000** | |
| Fluoranthene | *100,000* | *100,000* | *500,000* | 1,800 | | 11,000 | | 8,700 | | 9,900 | | 2,700 | J | 44,000 | | **330,000** | |
| Indeno(1,2,3-Cd)Pyrene | *500* | *500* | *5,600* | **570** | **J** | **2,200** | | **2,800** | | **1,200** | | **1,400** | **J** | **11,000** | | **84,000** | |
| Phenanthrene | *100,000* | *100,000* | *500,000* | 600 | J | 9,100 | | 4,600 | | 9,300 | | 1,300 | J | 35,000 | | **290,000** | |
| Pyrene | *100,000* | *100,000* | *500,000* | 1,700 | | 8,800 | | 7,100 | | 7,400 | | 2,200 | J | 40,000 | | **310,000** | |

All units are in μg/Kg
Values shown in BOLD exceed the 6 NYCRR Part 375 Residential Soil Cleanup Objective
Values that are highlighted exceeds the 6 NYCRR Part 375 Commercial Soil Cleanup Objective
U = The compound was not detected at the indicated concentration.
J = Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL.

| Parcel B | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Part 375 Residential** | **Part 375 Restricted Residential** | **Part 375 Commercial** | **SS-B3** | **SS-B4** | **SS-B5** | **SS-B6** | **SS-B8** |
| 2-Methylnaphthalene | *410* | *NS* | *NS* | 18,000 U | **620 J** | 27 J | 12 J | 3,900 U |
| Benzo(a)Anthracene | *1,000* | *1,000* | *5,600* | **960 J** | **13,000** | 850 | **1,400** | **2,900 J** |
| Benzo(a)Pyrene | *1,000* | *1,000* | *1,000* | **1,000 J** | **15,000** | **1,100** | **1,500** | **4,100** |
| Benzo(b)Fluoranthene | *1,000* | *1,000* | *5,600* | 18,000 U | **20,000** | **1,300** | **3,900** | **5,000** |
| Benzo(k)Fluoranthene | *1,000* | *1,000* | *56,000* | 18,000 U | **6,800** | 480 | **1,500** | **2,800 J** |
| Chrysene | *1,000* | *1,000* | *56,000* | **1,000 J** | **13,000** | 890 | **2,100** | **3,300 J** |
| Indeno(1,2,3-Cd)Pyrene | *500* | *500* | *5,600* | 18,000 U | **7,700** | **550** | **1,600** | **2,100 J** |

All units are in µg/Kg
Values shown in BOLD exceed the 6 NYCRR Part 375 Residential Soil Cleanup Objective
Values that are highlighted exceeds the 6 NYCRR Part 375 Commercial Soil Cleanup Objective
U = The compound was not detected at the indicated concentration.
J = Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL.

| Parcel C | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Part 375 Residential** | **Part 375 Restricted Residential** | **Part 375 Commercial** | **SS-C1** | | **SS-C2** | | **SS-C4** | | **SS-C6** | | **SS-C9** | |
| 2-Methylnaphthalene | *410* | *NS* | *NS* | 6,900 | U | 7,000 | U | **440** | **J** | 65 | J | 2,000 | U |
| Benzo(a)Anthracene | *1,000* | *1,000* | *5,600* | **1,500** | **J** | **4,600** | **J** | **49,000** | | **3,900** | | **1,500** | **J** |
| Benzo(a)Pyrene | *1,000* | *1,000* | *1,000* | **1,700** | **J** | **6,400** | **J** | **43,000** | | **3,700** | | **1,600** | **J** |
| Benzo(b)Fluoranthene | *1,000* | *1,000* | *5,600* | **2,000** | **J** | **9,600** | **J** | **50,000** | | **4,500** | | **2,000** | |
| Benzo(k)Fluoranthene | *1,000* | *1,000* | *56,000* | **2,100** | **J** | **3,500** | **J** | **29,000** | | **1,700** | **J** | **1,100** | **J** |
| Chrysene | *1,000* | *1,000* | *56,000* | **1,500** | **J** | **4,900** | **J** | **46,000** | | **3,900** | | **1,600** | **J** |
| Dibenzo(A,H)Anthracene | *330* | *330* | *560* | 6,900 | U | 7,000 | U | 9,500 | U | **680** | **J** | 2,000 | U |
| Indeno(1,2,3-Cd)Pyrene | *500* | *500* | *5,600* | **880** | **J** | **3,600** | **J** | **22,000** | | **2,100** | | **800** | **J** |

All units are in µg/Kg
Values shown in BOLD exceed the 6 NYCRR Part 375 Residential Soil Cleanup Objective
Values that are highlighted exceeds the 6 NYCRR Part 375 Commercial Soil Cleanup Objective
U = The compound was not detected at the indicated concentration.
J = Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL.

The parameters arsenic, copper, and lead were detected at concentrations in exceedance of the associated Part 375 Residential SCO or Commercial SCO in several soil samples. A summary of metal concentrations that were in exceedance of a Part 375 SCO are summarized below:

| | **Arsenic** | **Copper** | **Lead** |
|---|---|---|---|
| ***Part 375 Residential*** | *16* | *270* | *400* |
| ***Part 375 Restricted Residential*** | *16* | *270* | *400* |
| ***Part 375 Commercial*** | *16* | *270* | *1,000* |
| **Sample Location** | | | |
| **SS-A2** | **18.8** | **723 J** | **1530** |
| **SS-A3 / DUP-03** | **32.1 / 19.6 J** | 92.3 J/ 317 J | **897** / 298 |
| **SS-A9** | **15.6 J** | 67.3 | 95 |
| **SS-B3** | **79.7 J** | 15.7 | 16.4 |
| **SS-C7** | **24.5** | 37.9 | 8.8 |

J = Indicates an estimated value detected below the reporting limit.
Values shown in BOLD exceed the 6 NYCRR Part 375 Residential Soil Cleanup Objective
Values that are highlighted exceeds the 6 NYCRR Part 375 Commercial Soil Cleanup Objective
All units are in mg/Kg

### *2.3.2 Remaining Subsurface Soil Results – Test Pits*

Four of the seven (7) test pits installed as part of the RI exhibited field evidence of historical industrial impacts. There were no test pit soil samples that contained any SVOCs at a concentration in exceedance of Part 375 Residential or Commercial SCOs with two exceptions. The parameter 2-methylnaphthalene was detected in soil samples collected from test pit locations TP-A2 and TP-B1 at a concentration in exceedance of Part 375 Residential SCO. It is noted that both detections were at concentrations below the reporting limit.

### *2.3.3 Remaining Subsurface Soil Results – Soil Borings*

A summary of the SVOCs detected in subsurface soil boring samples at concentrations in exceedance of a Part 375 Residential or Commercial SCO is provided below for each parcel:

| Parcel A | | | | | | |
|---|---|---|---|---|---|---|
| | *Part 375 Residential* | *Part 375 Restricted Residential* | *Part 375 Commercial* | SB-A1 | SB-A2 / DUP-03 | SB-A3 |
| 2-Methylnaphthalene | *410* | *NS* | *NS* | **3,200 J** | 48 J / 36 J | 150 J |
| Benzo(a)Anthracene | *1,000* | *1,000* | *5,600* | **14,000** | **2,000 J / 1,300 J** | **1,800** |
| Benzo(a)Pyrene | *1,000* | *1,000* | *1,000* | **14,000** | **1,900 J / 1,300 J** | **1,600** |
| Benzo(b)Fluoranthene | *1,000* | *1,000* | *5,600* | **17,000** | **2,500 J / 1,400 J** | **1,800** |
| Chrysene | *1,000* | *1,000* | *56,000* | **15,000** | **2,000 J / 1,300 J** | **1,700** |
| Dibenzo(A,H)Anthracene | *330* | *330* | *560* | **2,800 J** | **370 J /** 220 | 280 |
| Indeno(1,2,3-Cd)Pyrene | *500* | *500* | *5,600* | **8,400** | **1,100 J / 650 J** | **850** |

All units are in μg/Kg .
Values shown in BOLD exceed the 6 NYCRR Part 375 Residential Soil Cleanup Objective
Values that are highlighted exceeds the 6 NYCRR Part 375 Commercial Soil Cleanup Objective
J = Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL.

| Parcel B | | | | | |
|---|---|---|---|---|---|
| | *Part 375 Residential* | *Part 375 Restricted Residential* | *Part 375 Commercial* | **SB-B2 / DUP-02-SB** | **SB-B3** |
| 2-Methylnaphthalene | *410* | *NS* | *NS* | **860 J / 890 J** | 55 J |
| Benzo(a)Anthracene | *1,000* | *1,000* | *5,600* | **13,000 / 13,000** | **3,800** |
| Benzo(a)Pyrene | *1,000* | *1,000* | *1,000* | **13,000 / 13,000** | **3,900** |
| Benzo(b)Fluoranthene | *1,000* | *1,000* | *5,600* | **14,000 / 15,000** | **5,600** |
| Chrysene | *1,000* | *1,000* | *56,000* | **12,000 / 13,000** | **5,000** |
| Dibenzo(A,H)Anthracene | *330* | *330* | *560* | **2,400 / 2,200** | 400 U |
| Indeno(1,2,3-Cd)Pyrene | *500* | *500* | *5,600* | **7,000 / 6,400** | **2,700** |

All units are in μg/Kg .
Values shown in BOLD exceed the 6 NYCRR Part 375 Residential Soil Cleanup Objective
Values that are highlighted exceeds the 6 NYCRR Part 375 Commercial Soil Cleanup Objective
U = The compound was not detected at the indicated concentration.
J = Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL.

| Parcel C | | | | |
|---|---|---|---|---|
| | *Part 375 Residential* | *Part 375 Restricted Residential* | *Part 375 Commercial* | **SB-C3** |
| Benzo(a)Anthracene | *1,000* | *1,000* | *5,600* | **1,200 J** |
| Benzo(a)Pyrene | *1,000* | *1,000* | *1,000* | **1,200 J** |
| Benzo(b)Fluoranthene | *1,000* | *1,000* | *5,600* | **1,300 J** |
| Chrysene | *1,000* | *1,000* | *56,000* | **1,200 J** |
| Indeno(1,2,3-Cd)Pyrene | *500* | *500* | *5,600* | **700 J** |

All units are in μg/Kg .
Values shown in BOLD exceed the 6 NYCRR Part 375 Residential Soil Cleanup Objective
Values that are highlighted exceeds the 6 NYCRR Part 375 Commercial Soil Cleanup Objective
J = Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL.

### 2.3.4 *Remaining Groundwater Impacts*

Ten of the 36 monitoring wells samples in the RI contained target list VOCs at concentrations in exceedance of TOGS 1.1.1 standards/guidance values. A summary of the chlorinated VOCs detected at concentrations in exceedance of TOGS 1.1.1 guidance values in the RI is provided in the following table:

| **Parameter** | **PCE** | **TCE** | **1,1,1-TCA** | **1,1-DCA** | **1,1-DCE** | **Chloro-ethane** | **Cis-1,2-DCE** | **Trans-1,2-DCE** | **Vinyl Chloride** |
|---|---|---|---|---|---|---|---|---|---|
| ***TOGS 1.1.1*** | *5* | *5* | *5* | *5* | *5* | *5* | *5* | *5* | *2* |
| **Well ID** | | | | | | | | | |
| MW-12 | 0.84 J | -- | **5.6 J** | **6.1** | 0.96 J | -- | -- | -- | -- |
| MW-19 | **660** | **86** | -- | -- | -- | -- | **120** | -- | 1.3 |
| MW-25D | **34** | **42** | -- | -- | 0.63 | -- | **280** | -- | **7.8** |
| MW-45 | -- | -- | -- | -- | -- | **29** | -- | -- | -- |
| MW-46 | **220** | **94** | -- | -- | 1.9 | -- | **1,700** | **12** | **1.7** |
| MW-47 | -- | **12** | -- | -- | -- | -- | **62** | -- | -- |
| MW-48 | **230** | **400** | | -- | 2.8 | -- | **2,300** | **12** | **230** |
| MW-52 | **43** | **760** | -- | -- | **13 J** | -- | **970** | **30** | **47 J** |
| OSMW-1 | -- | **9.9** | -- | -- | -- | -- | 2.9 | -- | -- |
| OSMW-3 | **10** | **23** | -- | -- | -- | -- | 1.5 | -- | -- |

All units are in μg/L (micrograms per liter)
-- = Parameter not detected above the reporting limit of 1 μg/L.
Values shown in **BOLD** are those detected above the associated TOGS 1.1.1 standard/guidance value.
J = Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL.

In general, the target list SVOCs detected at the Site at concentrations in exceedance of TOGS 1.1.1 standards/guidance values includes the following PAHs:

| | *TOGS 1.1.1* | MW-01 | MW-12 | MW-16 | MW-21 / CHA-3 | MW-36A | MW-36B | MW-36E | MW-45 | MW-47 | MW-53 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | *20* | 4 J | -- | 1.8 | -- / -- | -- | 1.4 J | 7.4 | **3,800** | -- | -- |
| Anthracene | *50* | -- | -- | -- | -- / -- | 0.58 J | 1.2 J | 1 J | -- | -- | **250 J** |
| Benzo(a) Anthracene | *0.002* | **0.46 J** | **0.66 J** | **0.76 J** | **2.8 J* / 4.1 J** | **0.51 J** | **5.8** | -- | -- | -- | **36 J** |
| Benzo(a) Pyrene | *0* | | **0.51 J** | **0.74 J*** | **3.4 J* / 4.9 J*** | -- | **5.9** | -- | -- | -- | -- |
| Benzo(b) Fluoranthene | *0.002* | **0.61 J*** | **0.54 J** | **0.86 J*** | **5.1 J* / 5.9 J*** | **0.62 J** | **8.7** | **0.5 J** | -- | **0.4 J** | -- |
| Benzo(k) Fluoranthene | *0.002* | -- | -- | -- | -- / 3.9 J | -- | **3.4 J** | | -- | -- | -- |
| Chrysene | *0.002* | **0.44 J** | **0.53 J** | **0.69 J** | **3.6 J / 5.7 J** | **0.58 J** | **6.5** | | -- | -- | **33 J** |
| Fluoranthene | *50* | 0.9 J | 0.56 J | 1.2 J | 5.2 J/ 7.5 J | 0.75 J | 12 | 0.93 J | -- | -- | **150 J** |
| Fluorene | *50* | 5.9 | -- | 1.1 J | -- / -- | -- | 1.8 J | 11 | **7,400** | -- | **880** |
| Indeno(1,2,3-Cd) Pyrene | *0.002* | **1.9 J*** | **0.61 J** | **1.9 J*** | **9.7 J* / 2.4 J*** | -- | 4.3 J | -- | -- | -- | -- |
| Phenanthrene | *50* | -- | -- | 0.71 J | 2.2 J / 3 J | 0.46 J | 4.8 | 6 | **13,000** | -- | 2500 |
| Pyrene | *50* | 0.97 J | 0.63 J | 1.5 J | 5 J / 6.7 J | 0.87 J | 10 | 1 J | **440 J** | -- | **380 J** |

All units are in μg/L (micrograms per liter)
-- = Parameter not detected above the reporting limit.
Values shown in **BOLD** are those detected above the associated TOGS 1.1.1 guidance value/standard.
J = Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL.
* = LCS or LCSD exceeds the control limits.

A summary of the chlorinated VOCs detected at concentrations in exceedance of TOGS 1.1.1 guidance values during the SRI is provided in the following table:

| Parameter | PCE | TCE | 1,1,1-TCA | 1,1-DCA | 1,1-DCE | Chloro-ethane | Cis-1,2-DCE | Trans-1,2-DCE | Vinyl Chloride |
|---|---|---|---|---|---|---|---|---|---|
| ***TOGS 1.1.1*** | *5* | *5* | *5* | *5* | *5* | *5* | *5* | *5* | *2* |
| **Well ID** | | | | | | | | | |
| MW-19 | **1150** | **88.2** | -- | -- | -- | -- | **79.4** | 1.11 | -- |
| MW-25D | **17.3** | **14.9** | -- | -- | -- | -- | **109** | -- | -- |
| MW-46 | **15.7** | **13.1** | -- | -- | 0.63 | -- | **821** | 4.65 | 1.43 |
| MW-47 | -- | 1.97 | -- | -- | -- | -- | **21.2** | -- | 1.71 |
| MW-48 | **6.88** | **19.3** | -- | -- | -- | -- | **151** | **--** | 1.29 |
| MW-52 | -- | **17.4** | -- | -- | 1.52 | -- | **111** | -- | **5.94** |
| MW-55 | -- | 1.23 | | -- | -- | -- | -- | -- | -- |
| MW-62 | -- | **18.7** | -- | -- | -- | -- | **2260** | **48.4** | -- |
| MW-63 | **82.7** | **206** | -- | -- | 3.41 | -- | **2720** | **48.5** | **21** |

All units are in μg/L (micrograms per liter)
-- = Parameter not detected above the reporting limit of 1 μg/L.
Values shown in **BOLD** are those detected above the associated TOGS 1.1.1 standard/guidance value.
J = Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL.

### *2.3.5 Remaining Soil Vapor Impacts*

Of the 17 soil vapor samples collected from locations within Parcel A, VOCs were detected in each of the samples collected during the RI. Of the seven compounds which are listed in the NYSDOH decision matrices, one or more compounds were detected in the samples collected from soil vapor point SV-A5, SV-A6 and SV-14. A summary of these detections is provided below:

| | Carbon Tetrachloride | PCE | TCE |
|---|---|---|---|
| **SV-A5** | -- | -- | 66 |
| **SV-A6** | 120 | -- | 1,900 |
| **SV-A14** | -- | 170 | -- |

All units are in μg/m$^3$ (micrograms per cubic meter)
-- = The compound was not detected above the reporting limit.

| Parameter | # of Detections | Concentration Range (µg/m³) |
|---|---|---|
| 2-Butanone | 1 of 17 | 55 |
| Acetone | 17 of 17 | 230 to 4,600 |
| Butane | 5 of 17 | 71 to 510 |
| Chloroform | 1 of 17 | 110 |
| Hexane | 5 of 17 | 36 to 530 |
| Methyl methacrylate | 1 of 17 | 42 |
| N-Heptane | 3 of 17 | 74 to 350 |

VOCs were detected in each of the 12 soil vapor samples collected during the RI from locations within Parcel B. Of the seven compounds which are listed in the NYSDOH decision matrices, one or more compounds were detected in the samples collected from all soil vapor points with the exception of SV-B6, SV-B7, SV-B10 and SV-B11. A summary of these detections is provided below:

| | 1,1,1-TCA | Carbon Tetrachloride | PCE | TCE |
|---|---|---|---|---|
| SV-B1 | -- | -- | -- | 66 |
| SV-B2A | -- | 180 | 1,300 | 61 |
| SV-B3A / CHA-4 | -- | 8.6 / 8.5 | 9.2 / 4.5 | -- |
| SV-B4 | -- | 28 | -- | 1.2 |
| SV-B5 | 9.7 | -- | 120 | 210 |
| SV-B8 | 67 | -- | -- | -- |
| SV-B9 /CHA-2 | -- | -- | -- | 61 / 60 |
| SV-B12 | -- | -- | -- | 42 |

All units are in µg/m³ (micrograms per cubic meter)
-- = The compound was not detected above the reporting limit.

A summary of the remaining petroleum-related compounds detected is provided in the following table:

| Parameter | # of Detections | Concentration Range ($\mu g/m^3$) |
|---|---|---|
| 2-Butanone | 3 of 12 | 1.6 to 4.5 |
| Acetone | 7 of 12 | 22 to 1,000 |
| Benzene, (1-methylethyl)- | 1 of 12 | 210 |
| Benzene, propyl- | 1 of 12 | 180 |
| Butane | 7 of 12 | 1.7 to 650 |
| Chloroform | 4 of 12 | 1.4 to 780 |
| Cyclohexane | 4 of 12 | 1.1 to 79 |
| Hexane | 6 of 12 | 1 to 930 |
| Methyl metacrylate | 2 of 12 | 76 to 240 |
| N-Heptane | 5 of 12 | 1.1 to 480 |
| sec-Butylbenzene | 1 of 12 | 190 |
| tert-Butylbenzene | 1 of 12 | 43 |

VOCs were detected in each of the 11 soil vapor samples collected during the RI from locations within Parcel C. Of the seven compounds which are listed in the NYSDOH decision matrices, one or more compounds were detected in the samples collected from all soil vapor points with the exception of SV-C5 and SV-C7A. A summary of these detections is provided below:

| | 1,1,1-TCA | Carbon Tetrachloride | PCE | TCE |
|---|---|---|---|---|
| SV-C1 | -- | -- | **15** | **11** |
| SV-C2 | **1.1** | -- | -- | -- |
| SV-C3 | **4.7** | **8.7** | **26** | -- |
| SV-C4 | **11** | -- | **570** | **1,200** |
| SV-C6 | -- | **75** | **3,400** | -- |
| SV-C9 | -- | -- | **7,400,000** | **33,000** |
| SV-C10 | -- | -- | **99** | -- |
| SV-C11 | -- | -- | **3.2** | -- |
| SV-C13 | **2.5** | -- | **19** | -- |
| CHA-3 | **2.4** | -- | **13** | -- |

All units are in $\mu g/m^3$ (micrograms per cubic meter)
-- = The compound was not detected above the reporting limit.

In addition, soil vapor samples SV-C1, SV-C2, SV-C3, SV-C5, SV-C11 and SV-C13 contained one or more BTEX compounds (benzene, toluene, ethylbenzene and/or total xylenes) at low concentrations ranging from 0.88 µg/m$^3$ to 8.5 µg/m$^3$. A summary of remaining compounds detected is provided in the following table:

| Parameter | # of Detections | Concentration Range (µg/m$^3$) |
|---|---|---|
| 1,3-Butadiene | 1 of 11 | 0.64 |
| 2,2,4-Trimethylpentane | 1 of 11 | 130 |
| 2-Butanone | 7 of 11 | 1.9 to 35 |
| Acetone | 7 of 11 | 12 to 410 |
| Butane | 2 of 11 | 1.3 to 170 |
| Chloroform | 3 of 11 | 1.8 to 10 |
| Cyclohexane | 1 of 11 | 170 |
| Hexane | 3 of 11 | 1.2 to 240 |
| N-Heptane | 3 of 11 | 0.81 to 160 |
| sec-Butylbenzene | 1 of 11 | 28 |

Sub-slab sampling was conducted in Buildings 306 and 330 during the SRI, in response to NYSDEC comments on the RI Report. The results of the 6 sub-slab vapor analyses were compared to the NYSDOH Air Guideline Values (AGVs) presented in the Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, (October 2006). Indoor ambient air quality results were compared to background levels of VOCs in indoor air presented in Appendix C of the NYSDOH Vapor Intrusion Guidance Document (October, 2006), including: Upper Fence Limit indoor air values from "Table C-1. NYSDOH 2003: Study of Volatile Organic Chemicals in Air of Fuel Oil Heated Homes," 90th Percentile indoor air values from "Table C-2. EPA 2001: Building Assessment and Survey Evaluation (BASE) Database, SUMMA canister method," and the 95th Percentile Indoor Air Values from "Table C-5, HEI 2005: Relationship of Indoor, Outdoor and Personal Air." The sub-slab vapor and ambient air samples collected during the SRI are summarized below:

| Building | SS Point | Occupant | Ambient |
|---|---|---|---|
| 306 (Campito) | SS-01 | Accumetrics | AMB-01 |
| | SS-02 | Automated Dynamics | AMB-02 |
| | SS-03 | Advanced Energy Conversion | AMB-03 |
| | SS-04 | Emtech | AMB-04 |
| 330 (STS) | SS-05 | STS – Paint shop (application room) | AMB-05 |
| | SS-06 | STS – Paint shop (supply room) | N/A |

The sub-slab vapor sampling results indicated the following exceedances of the NYSDOH AGVs: methylene chloride at SS-01, tetrachloroethene at SS-04 (and the blind duplicate collected at this location, designated "DUP-1") and SS-06, and trichloroethene at all sub-slab sample locations (SS-01 through SS-06). The total detected VOCs ranged from 287 μg/m3 at SS-01 to 25,476 μg/m3 at SS-06, which is driven by the elevated concentration of tetrachloroethene (24,400 μg/m3).

The Building 306 ambient air sampling results indicated the following exceedances of one of the above referenced indoor air guidance documents:

- AMB-01: 4-methyl-2-pentanone (MIBK), acetone, carbon tetrachloride, ethanol, ethyl acetate, naphthalene, styrene, tetrachloroethene, trichloroethene
- AMB-02: 2-propanol, acetone, carbon tetrachloride, hexachloro-1,3-butadiene, naphthalene, styrene, trichloroethene
- AMB-03: acetone, carbon tetrachloride, naphthalene, styrene, tetrachloroethene, trichloroethene
- AMB-04: acetone, chlorobenzene, dichlorodifluoromethane, naphthalene, styrene, trichloroethene

The Building 330 ambient air sample (AMB-05) results indicated the following exceedances of one of the above indoor air guidance values: 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 2-butanone (MEK), 4-ethyltoluene, 4-methyl-2-pentanone (MIBK), ethylbenzene, m&p-xylene, methylene chloride, n-hexane, o-xylene, and toluene. Building 330 is a paint shop for STS Steel, and the compounds detected are common constituents of oil-based paints.

### *2.3.6 General Response Actions and Treatment Technologies*

#### *2.3.6.1 Soil*

Soil Cover – The placement of a soil cover above an area of historically impacted soil is an effective engineering control to contain and limit contact with impacted soils. A soil cover typically incorporates clean soil with a permeable synthetic geo-membrane placed directly on top of the impacted soil as a demarcation layer. DER-10 Section 4.1(f) specifically discusses the use of a soil cover for impacted surficial soils, requiring a two-foot soil cover with a demarcation layer for sites seeking Restricted Residential re-use. A soil cover has routinely been used for nearby Brownfields sites that were also formerly part of the ALCO industrial operation (former Big N Plaza/Golub Site and former Ramada Inn/Union College Site). For the project site, a soil cover would be an effective remedial option that can achieve a remedial objective of limiting a contaminant exposure pathway. A soil cover will be considered in conjunction with all other remedial options evaluated for surface and subsurface soil treatment.

Soil Removal – The results of the RI indicate that soil impacts by SVOCs can be detected site-wide (AOC 3); the SVOCs detected are almost entirely Polynuclear Aromatic Hydrocarbons (PAHs), likely related to former coal use at the site. Consequently, soil treatment would

generally not be feasible and application of this response action would entail a site-wide removal of surficial soils. The excavation of contaminated soils is an effective method to quickly and permanently remove areas of concern from a site. Following soil removal, clearance sampling is conducted to verify that all contaminated soil was removed. Typical costs associated with source removal include capital costs for the excavation equipment, transportation and disposal costs for the treatment or disposal of contaminated media, laboratory costs for clearance sampling, costs for replacement backfill, and any costs associated with groundwater control and/or treatment. Soil removal will be considered in conjunction with all other remedial options.

Institutional Controls - As defined in DER-10, an institutional control (IC) "means any non-physical means of enforcing a restriction on the use of real property that limits human or environmental exposure, restricts the use of groundwater, provides notice to potential owners, operators, or members of the public, or prevents actions that would interfere with the effectiveness and/or integrity of site management activities at or pertaining to a site". Because of the intended future use of the site, it is anticipated that ICs will be a part of the remedial program for site soils and for future redevelopment of the properties. Institutional controls will be considered in conjunction with all other remedial options evaluated for surface and subsurface soil treatment.

#### *2.3.6.2 Groundwater*

LNAPL Removal – In response to an NYSDEC directive (May 2005), Schenectady Industrial Corporation (SIC) had Kleinfelder design and install an active LNAPL recovery system. The Ferret Pump system, which removes floating LNAPL from MW-36, MW-36B, and MW-36C, went on line on January 12, 2006. Under Stipulation Agreement #R4-391, monitoring of potential LNAPL accumulations in a selected list of monitoring wells, storm sewer catch basins and recovery wells was also conducted from 2008 through 2011.

The system was shut down in 2010, due to discontinuation of electrical service to the site, in preparation for demolition activities. Hand removal of accumulated LNAPL continued in 2011 and 2012; in mid 2012, a battery-operated belt skimmer was installed in well MW-36C to increase the rate of LNAPL recovery.

Source Removal – The excavation of contaminated soils is an effective method to quickly and permanently remove areas of concern from a site. For AOC 2, a contaminant source was identified in the vicinity of monitoring well MW-19. Following source removal, clearance sampling is conducted to verify that all contaminated soil was removed. Typical costs associated with source removal include capital costs for the excavation equipment, transportation and disposal costs for the treatment or disposal of contaminated media, laboratory costs for clearance sampling, costs for replacement backfill, and any costs associated with groundwater control and/or treatment. . Source removal will be considered in conjunction with all other remedial options.

In-Situ Groundwater Remediation Methods - In-situ groundwater remediation technologies are in widespread use across the State as a finishing technique or a standalone remediation process. Among the more popular technologies are air-sparging, bioaugmentation/bioventing, oxygen or hydrogen releasing compound (ORC/HRC) injection, chemical oxidation and a number of permutations. These technologies will be evaluated during the development of the remedial alternatives.

Monitored Natural Attenuation – Natural processes such as biodegradation, sorption and dispersion affect contaminant fate and transport in groundwater systems. Monitored Natural Attenuation (MNA) refers to the circumstances when it can be demonstrated that natural processes are capable of attaining remedial objectives in reasonable time periods. MNA will be considered both as a standalone method as well as in conjunction with in-situ methods for addressing AOCs 1 and 2 in the analysis.

Institutional Controls – The regulatory definition for ICs was provided in the previous section. Because of the intended future use of the site, it is anticipated that ICs will be a part of the remedial program for site groundwater.

#### *2.3.6.3 Vapor Intrusion*

Several re-development scenarios are under consideration for the site, all of which will entail construction of new buildings. Options for mitigating vapor intrusion include capping of existing site soils, slab/foundation sealing technologies and sub-slab depressurization. The re-development scenarios anticipate the installation of a site-wide soil cover (capping) that can mitigate the potential for vapor intrusion. Additionally, building construction can incorporate the slab/foundation sealing technologies and/or sub-slab depressurization. These alternatives will be considered in conjunction with other alternatives as part of the remedy.

## 2.4 Development of Remedial Alternatives

This section proposes the remedial alternatives for the Site, which are subsequently evaluated against the BCP program criteria and DER-10. Per Section 4.4(d)(2)(ii) of DER-10, two or more remedial alternatives need to be developed, as the former ALCO site is a BCP site and restricted use of the site is anticipated. Three remedial alternatives have been evaluated and include:

1. No Action
2. Soil Excavation with Off-Site Disposal with:
    a. Addressing the LNAPL areas around monitoring wells MW-36 and MW-45, and the remaining USTs by excavation as Interim Remedial Measures (IRMs)
    b. Removal/treatment of the source of the chlorinated solvent plume
    c. Treatment of the chlorinated solvent plume

3. Site-Wide Soil Cover (including a demarcation layer) with:
    a. Addressing the LNAPL areas around monitoring wells MW-36 and MW-45, and the remaining USTs by excavation as IRMs
    b. Removal/treatment of the source of the chlorinated solvent plume
    c. Treatment of the chlorinated solvent plume
    d. Development of Institutional Controls

Each alternative is summarized below and is evaluated in detail against the nine BCP criteria.

Alternative 1 – Alternative 1 would result in No Action. This alternative does not require any additional remedial actions at the site. The existing exposure scenarios, the detection of chlorinated compounds in the groundwater in the vicinity and down-gradient of MW-19, and anticipated future use of the site will likely preclude this option.

Alternative 2 – To achieve unrestricted use of the site relative to soil contamination without the use of institutional/engineering controls (per Section 4.4(d)(2)(ii) of DER-10), Alternative 2 would entail the site-wide removal of surficial soils and the transportation and disposal at an off-site location. Surficial soils would need to be removed from an area of roughly 38 acres (56 total acres less roughly 18 acres covered by buildings or building foundations). Additional sampling would need to be conducted to determine the depth of soil removal; for purposes of this analysis, an estimated range of a minimum uniform depth of 3 feet to a maximum of 15 feet of soil removal site-wide will be used. This alternative would necessitate the removal and disposal of a range of 184,000 cubic yards (yd3) to 920,000 yd3 of soil from the site.

As the ALCO site lies within Federal Emergency Management Agency (FEMA) mapped Zones A-16 and B, any soil removal/replacement activities would have to comply with Chapter157 – Flood Hazard Control of the City of Schenectady Code. A preliminary flood hazard mitigation plan has been developed by Hershberg & Hershberg which proposes the shaving of the bank of the Mohawk River along with construction of an embayment to provide additional flood storage capacity.

In addition to the soil removal, Alternative 2 would also include measures to remediate groundwater exposure pathways associated with AOCs 1 and 2. LNAPL areas around monitoring wells MW-36 and MW-45, and the remaining USTs will be addressed by excavation as IRMs. Some portion of the source area for the chlorinated solvent plume (AOC 2) would be removed during the site-wide soil removal program. Options for mitigating the remaining chlorinated solvent plume include in-situ remediation (bioremediation, chemical oxidation) and natural attenuation.

Alternative 3 - Alternative 3 differs from Alternative 2 in that it would use a site-wide soil cover to mitigate AOC 3. The soil cover would consist of a minimum of 2 feet of imported clean soil that would serve as a barrier to contact with existing site soils. A geotextile demarcation layer would be installed between the existing site soil and the soil cover. ICs would be developed to ensure the long-term integrity of the soil cover. An environmental easement would be put in

place, and a Site Management Plan prepared. This restriction would limit the future uses of the property and prevent exposure to site soils, groundwater, and soil vapors. The Site Management Plan would identify the necessary procedures to be utilized if future site work were conducted within each AOC, including soil vapor mitigation measures. The property owner would be required to submit a periodic certification of the institutional and engineering controls.

As the ALCO site lies within FEMA mapped Zones A-16 and B, any soil removal/replacement activities would have to comply with Chapter157 –Flood Hazard Control of the City of Schenectady Code. A preliminary flood hazard mitigation plan has been developed by Hershberg & Hershberg which proposes the shaving of the bank of the Mohawk River along with construction of an embayment to provide additional flood storage capacity.

As with Alternative 2, Alternative 3 would also include measures to remediate groundwater exposure pathways associated with AOCs 1 and 2. LNAPL areas around monitoring wells MW-36 and MW-45, and the remaining USTs will be addressed by excavation as IRMs. The identified source area for the chlorinated solvent plume (AOC 2) would be addressed by in-situ remediation (bioremediation, chemical oxidation). The remaining chlorinated solvent plume would then be addressed by established remedial measures such as in-situ remediation and natural attenuation.

## 2.5 Detailed Analysis of Remedial Alternatives

This section evaluates the feasibility and cost-effectiveness of the proposed remedial alternatives developed for the Site. A total of three remedial alternatives were evaluated to address both soil and groundwater contamination, along with vapor intrusion. Each alternative is evaluated against the BCP program criteria, including:

- Overall Protection of Public Health and the Environment;
- Compliance with Standards, Criteria, and Guidance (SCGs);
- Long-Term Effectiveness and Permanence;
- Reduction of Toxicity, Mobility or Volume;
- Short-term impact and effectiveness;
- Implementability;
- Cost effectiveness;
- Land use; and
- Community acceptance.

### *2.5.1 Alternative 1 – No Action*

This alternative does not require any additional remedial actions at the site and would include decommissioning of the existing groundwater treatment system. It would not include maintenance of the site cap, continued operation of the groundwater treatment system, or development of Institutional Controls.

This Alternative provides no protection of public health and the environment; will not meet compliance with standards, criteria, and guidance; has no long-term effectiveness and permanence; provides no reduction of toxicity, mobility or volume; has no short-term impact and effectiveness. This option is fully implementable. This option is the most cost effective for the BCP participant. Given the existing exposure scenarios identified as part of the Exposure Assessment, this option will not be further evaluated and it is not recommended.

### *2.5.2 Alternative 2 – Soil Excavation with Off-Site Disposal with LNAPL area IRMs, Removal/treatment of the source of the chlorinated solvent plume and Treatment of the chlorinated solvent plume; Institutional Controls for Groundwater.*

Alternative 2 addresses AOC 3 with the excavation of surface and subsurface soils with residual contaminants above the Part 375 unrestricted and restricted Protection of Groundwater SCOs. For the purposes of this report, the total estimated soil volume for excavation could range from 184,000 yd3 to 920,000 yd3 (roughly 276,000 tons to 1,380,000 tons) of soil. This estimate is based on an area of roughly 38 acres (56 total acres less roughly 18 acres covered by buildings or building foundations) at a minimum uniform depth of 3 feet to a maximum uniform depth of 15 feet of soil. The actual vertical limits of excavation would be defined in the field with instrumentation and field screening techniques. Soils would be excavated, transported and disposed at an off-site location (either landfill or thermal treatment). Confirmatory soil samples would be collected during the soil removal activities to ensure that the affected soils are removed. The intent is that the Alternative would effectively remove all soil contamination from the site above the Part 375 unrestricted and restricted Protection of Groundwater SCOs. Engineering controls would not be needed with regard to soils. However, there are substantial adverse environmental impacts associated with such a large excavation, transportation and disposal alternative.

In addition to the soil removal, Alternative 2 would also include measures to remediate groundwater exposure pathways associated with AOCs 1 and 2. LNAPL areas around monitoring wells MW-36 and MW-45 will be addressed by excavation as IRMs. Some portion of the source area for the chlorinated solvent plume (AOC 2) would be removed during the site-wide soil removal program. Options for mitigating the remaining chlorinated solvent plume include in-situ remediation (bioremediation, chemical oxidation) and natural attenuation. Institutional controls restricting the use of groundwater would likely be required.

#### *2.5.2.1 Overall Protection of Public Health and the Environment*

The Exposure Assessment identified vapor intrusion as an exposure pathway and contact with contaminants present in surface and subsurface soils as a potential exposure pathway. In removing soils impacted above NYSDEC Part 375 Unrestricted and Protection of Groundwater SCOs site-wide, this Alternative effectively mitigates these two exposure pathways. The third potential exposure pathway is through ingestion of contaminated groundwater, should drinking water wells be installed at the site in the future. While there is little likelihood of drinking water wells being installed at the site due to the availability of water from the City of Schenectady, this Alternative also contemplates active remediation of the chlorinated solvent

plume present in groundwater (AOC 2) and the subsurface accumulations of LNAPL. Institutional controls with regard to groundwater use would likely be required.

Alternative 2 provides for the remediation/elimination of AOCs 1, 2 and 3, thereby eliminating the identified exposure pathways. Alternative 2 has significant adverse impacts associated with its implementation, including traffic impacts, air emission impacts and land consumption, although after implementation it would be protective of human health and the environment.

#### *2.5.2.2 Compliance with Standards, Criteria and Guidance (SCG)*

The removal of the contaminated soil will result in accessible site soils meeting Part 375 Unrestricted and Protection of Groundwater SCOs. Clearance sampling of the excavated areas will confirm that the objectives are met. Once the source of the chlorinated solvent plume is identified and removed, the plume will start to diminish under natural conditions. Groundwater monitoring will help determine whether additional remedial action is necessary to enhance the natural processes. In-situ remedial methods will be considered (bioremediation, chemical oxidation) to address areas of higher contaminant concentrations. The primary issue is whether the additional remedial actions will appreciably reduce the timeframe for achievement of drinking water standards.

Since the actions associated with Alternative 2 will cause a reduction in contaminant concentrations in soil and achievement of drinking water standards in groundwater over an extended period of time, this alternative will comply with SCGs regarding soil and groundwater quality.

#### *2.5.2.3 Long-Term Effectiveness and Permanence*

The removal of impacted soils represents a permanent condition for the Site. Following the source removal, groundwater contaminant concentrations at the site will naturally attenuate and additional groundwater remediation can be implemented to speed up achievement of groundwater standards. Since the contaminants are removed from the site, the residual risks are not present with this Alternative, and following completion of the post-closure monitoring period, no further site controls would be required.

#### *2.5.2.4 Reduction of Toxicity, Mobility or Volume*

This Alternative would result in the removal of approximately 184,000 cubic yards of contaminated soils from the Site. Due to the removal of the soils potentially containing chlorinated or petroleum constituents, further mobilization of contaminants into groundwater is not expected. The removal of the contaminants from the Site is permanent. Natural attenuation would continue to reduce dissolved phase contaminants in the groundwater following the removal of contaminated soils and additional groundwater remediation can be implemented to speed up achievement of groundwater standards.

### *2.5.2.5 Short-Term Impact and Effectiveness*

This remedial action utilizes standard construction techniques. Since the Alternative would involve open excavation, the Contractor will employ construction barricades and signage to warn and prevent access by the public. Community Air Monitoring Plan (CAMP) requirements would be in effect, monitoring the ambient air for contaminants of concern. Since this alternative includes the removal of the residual contaminated soil, immediate site improvements are likely. Reductions in groundwater concentrations following a source removal are expected. Site restoration would be required following the completion of the Alternative.

This Alternative would have very significant short-term impacts on the active site tenants and neighboring properties due to the large number of trucks and the possible duration of the removal effort; unavoidable traffic and noise impacts would last over one year. This alternative would contravene the NYSDEC preference for "green" remedial methods, as the impacted soils generally constitute a high volume/low concentration type waste that would entail over 13,000 to 65,000 truckloads to remove. Even if the delivery of clean soils could be coordinated with the impacted soil removal (such that each truck would deliver a load of clean soil and then remove a load of impacted soil), there would still be an additional 6,000 to 30,000 truckloads to the site. Diesel fuel usage would be would be significant and diesel emissions could impact local air quality. The timeframe involved with the soil removal would also severely impact site re-development efforts. Depending upon the disposal method, this Alternative could also utilize valuable landfill space to dispose a high volume/low concentration type waste.

### *2.5.2.6 Implementability*

The techniques described in this remedial alternative are commonly practiced among remediation contractors.

### *2.5.2.7 Cost Effectiveness*

The estimated capital expenditure associated with this alternative ranges from approximately $21 million to over $100 million, depending upon how much soil is removed and replaced. With the inclusion of engineering, laboratory, annual operation and maintenance costs, and a 15 percent contingency, the estimated total cost for this remedial alternative ranges from approximately $26 million to over $125 million.

Table 1 summarizes the estimated capital costs associated with each alternative; Table 2 provides a breakdown of costs by parcel. Costs include soil excavation, transport and disposal; post-excavation monitoring; and site restoration. Since the work involved under this alternative is intended to permanently remediate the area of contamination, there is no post-remediation maintenance and operational costs once the work is complete. Post-closure groundwater monitoring is considered part of the Alternative and not a maintenance item. A detailed breakdown of the estimated costs to implement this alternative is presented in Appendix B**.**

#### *2.5.2.8 Land Use*

In developing and screening remedial alternatives, NYSDEC's Part 375 regulations require that the reasonableness of the anticipated future land be factored into the evaluation, and DER-10 (Section 4.2 i) identifies criteria that must be considered. The City of Schenectady adopted its new Zoning Ordinance (Chapter 264) on March 24, 2008. The ALCO Site is zoned C-3 Waterfront Development District. The purpose of the C-3 district is to provide unique opportunities for the development and maintenance of water-oriented uses within certain areas of the City adjacent to the Mohawk River. The C-3 District permits certain recreational, open space, business, and residential uses which will generally benefit from and enhance the unique aesthetic, recreational, and environmental qualities of the waterfront areas.

The site currently has commercial tenants on a limited portion of the property along Front Street and is otherwise unoccupied with the vacant structures being demolished in 2011. The intended future use of the site is to contain a mixture of residential and commercial uses. Under this scenario the property would likely be rendered vacant for a longer timeframe while soil removal activities are being undertaken. A vacant property would likely be viewed as a detriment to the surrounding community. There would be considerable off-site landfill space used up by the disposal of such large quantities of residually impacted soils.

#### *2.5.2.9 Community Acceptance*

Given that the site is currently occupied by an industrial tenant, community disruption as part of this remedial practice is high. The adjacent industrial, commercial and residential properties would also be inconvenienced during the remedial activities. A dramatic increase in truck traffic for the hauling of impacted soils and clean backfill materials will also have an impact on traffic patterns within the City. Diesel emissions could impact air quality and noise associated with truck activity would create disturbance to those residing in the neighborhood adjacent to the property. The large number of truckloads required to implement this remedy would result in these impacts lasting more than one year. The number of roads also creates a risk of road damage and traffic accidents. Finally, this Alternative would delay site re-development efforts, which would likely be unacceptable to local government officials.

### *2.5.3 Alternative 3 – Soil Cover with LNAPL area IRMs, Removal/treatment of the source of the chlorinated solvent plume, Treatment of the chlorinated solvent plume, and Institutional Controls*

Alternative 3 includes the remedial activities prescribed as part of Alternative 2 to address AOCs 1 and 2. The main difference is that Alternative 3 would use a two-foot thick soil cover (with a demarcation layer) to address AOC 3; the use of a soil cover is specifically discussed in DER-10 Section 4.1 (f) to mitigate impacted surficial soils and has been used on other parts of the former ALCO site. Alternative 3 would employ Institutional Controls to address the remaining potential exposure pathways. Clean soils have been stockpiled on the property for potential future cover material with the permission of the NYSDEC. The contemplated ICs would include:

- An Environmental Easement prohibiting all groundwater use at the site without NYSDEC and NYSDOH approval;
- Development of a Soil Management Plan to guide possible future site developments that may require excavation into the residually-contaminated soils;
- Development of Soil-Vapor Mitigation Plan to guide future building construction;
- Development of a Groundwater Monitoring Plan to document improving groundwater quality in response to remediation activities;
- Development of a Flood Hazard Mitigation Plan to comply with Chapter157 –Flood Hazard Control of the City of Schenectady Code, as the ALCO site lies within FEMA mapped Zones A-16 and B.
- Other environmental easements and/or deed restrictions necessary to meet regulatory requirements and enable the restricted future use of the property.

#### *2.5.3.1 Overall Protection of Public Health and the Environment*

Alternative 3 effectively mitigates the identified exposure pathway and the potential exposure pathways. The active elements of this Alternative address the areas of subsurface soil/groundwater contamination associated with AOCs 1 and 2. The potential exposure scenario associated with AOC 3 is mitigated through the use of the soil cover and the associated ICs.

Alternative 3 provides for the active remediation of AOCs 1 and 2 (mitigating the associated exposure pathways) and mitigates the identified exposure pathway for AOC 3. Alternative 3 is protective of human health and the environment.

#### *2.5.3.2 Compliance with Standards, Criteria and Guidance (SCG)*

This option would not meet Part 375 Unrestricted or Protection of Groundwater SCOs for the surficial soils (AOC3), but it does eliminate contact with the residually contaminated soils (which is the basis for the non-groundwater SCOs). In terms of groundwater, once the source of the chlorinated solvent plume is identified and removed, the plume will diminish under natural conditions. Groundwater monitoring will help determine whether additional remedial action is necessary to enhance the natural processes. In-situ remedial methods will be considered (bioremediation, chemical oxidation) to address areas of higher contaminant concentrations. The primary issue is whether the additional remedial actions will appreciably reduce the timeframe for achievement of drinking water standards.

Since the actions associated with Alternative 3 will eliminate the potential exposure, this alternative will comply with SCGs regarding soil and groundwater quality.

#### *2.5.3.3 Long-Term Effectiveness and Permanence*

This option would allow site contaminants above Part 375 Unrestricted SCOs to remain under an authorized cover system. Although the degradation of contaminants at the site may not reach all SCOs, there are minimal existing human or environmental health concerns. This is due to the fact that the contaminants would be located from at least 2 feet below grade with restrictions on anticipated future use of the site. ICs will be in place to ensure that the restrictions remain in force.

#### *2.5.3.4 Reduction of Toxicity, Mobility or Volume*

The active remedial steps associated with elimination of AOCs 1 and 2 will provide meaningful reduction of contaminant mobility, as these AOCs have associated groundwater migration issues. There will also be meaningful reductions in toxicity and volume as the planned activities provide for removal of contaminant sources and reduction of dissolved-phase groundwater contamination. Contaminants associated with AOC 3 (predominantly PAHs) will remain in place under a cover system, but this class of compounds exhibits much lower subsurface mobility than the VOCs associated with AOCs 1 and 2.

#### *2.5.3.5 Short-Term Impact and Effectiveness*

This remedial action is of short duration, and utilizes standard construction techniques. The mitigation benefits are immediate. Importation of clean soil for the soil cover will have an associated temporary increase in truck traffic, but significant amounts of clean soil have already been stockpiled on the property which will reduce the duration of truck traffic.

#### *2.5.3.6 Implementability*

The techniques described in this remedial alternative are commonly practiced among remediation contractors.

#### *2.5.3.7 Cost Effectiveness*

The estimated capital expenditure associated with this alternative is approximately $4.6 million. With the inclusion of engineering, laboratory, annual operation and maintenance costs, and a 15 percent contingency, the estimated total for this remedial alternative is approximately $5.8 million.

Table 1 summarizes the estimated capital costs associated with each alternative; Table 2 provides estimated costs broken down by parcel. Costs include delivery of clean soil, placement and grading. Since the work involved under this alternative is intended to permanently remediate the area of contamination, there is no post-remediation maintenance and operational costs once the work is complete. Post-closure groundwater monitoring is considered part of the Alternative and not a maintenance item. A detailed breakdown of the estimated costs to implement this alternative is presented in Appendix B**.** There would be engineering time

associated with developing the environmental easement, Site Management Plan, and required O&M monitoring.

*2.5.3.8 Land Use*

In developing and screening remedial alternatives, NYSDEC's Part 375 regulations require that the reasonableness of the anticipated future land be factored into the evaluation, and DER-10 (Section 4.2 i) identifies 16 criteria that must be considered. The City of Schenectady adopted its new Zoning Ordinance (Chapter 264) on March 24, 2008. The ALCO Site is zoned C-3 Waterfront Development District. The purpose of the C-3 district is to provide unique opportunities for the development and maintenance of water-oriented uses within certain areas of the City adjacent to the Mohawk River. The C-3 District permits certain recreational, open space, business, and residential uses which will generally benefit from and enhance the unique aesthetic, recreational, and environmental qualities of the waterfront areas.

The site is currently has commercial tenants on a limited portion of the property along Front Street and is otherwise unoccupied with the vacant structures being demolished in 2011. The intended future use of Parcel A is restricted-residential. The intended future use of Parcels B and C is commercial.

The stockpiling of clean fill on the Site provided and will provide an effective use of a resource obtained from other construction projects and will serve to preserve resources available at local borrow pits.

*2.5.3.9 Community Acceptance*

Community disruption as part of the remedial practice is moderate but of short-term. It is anticipated that this Alternative would be supported by the site tenant and surrounding community. This alternative will also allow for the timely redevelopment and reuse of the property which is likely to receive favorable community support.

# 3.0 Comparison of Alternatives and Remedy Recommendation

## 3.1 Comparison of Alternatives

The capital costs associated with each alternative are summarized below in Table 1. Detailed cost estimates are presented in Appendix B.

Alternative 1, "No Action," is not protective of human health and the environment since it does not address existing and potential future exposure scenarios. Although it has the lowest capital costs, Alternative 1 provides nominal environmental benefit in comparison to Alternatives 2 and 3.

Alternative 2 (Soil Excavation with Off-Site Disposal, Removal/treatment of the source of the chlorinated solvent plume and treatment of the chlorinated solvent plume; Institutional Controls on groundwater use) represents the highest capital expenditures. This alternative is protective of human health and the environment since it addresses existing exposure scenarios but it has significant implementation impacts on the community, would appreciably delay site re-development efforts and is inconsistent with green remediation principles.

Alternative 3 (Soil Cover with Off-Site Disposal, treatment of the source of the chlorinated solvent plume and Treatment of the chlorinated solvent plume; Institutional Controls on groundwater use) has an appreciably lower capital expenditures than Alternative 2 and has an appreciably lower community impact than with Alternative 2. Alternative 3 is fully protective of human health and the environment, as the existing and potential exposure pathways would be eliminated. Institutional controls would ensure the long-term integrity of the remedy.

Alternative 1 would not be acceptable to NYSDEC and would fundamentally undermine or preclude anticipated future uses of the site; therefore Alternative 1 was eliminated from consideration.

The fundamental difference between Alternatives 2 and 3 is in the method of addressing AOC 3, the associated costs and the implementation impacts. The residual contaminants in site soils are PAHs, which are present in coal and likely a remnant of historic coal usage at the site. Alternative 2 would entail a major removal of residually-contaminated soil from the site, while Alternative 3 would employ a soil cover to prevent direct contact with the soil and a series of Institutional Controls to govern future activities. On the basis of the criteria that deal with implementability, effectiveness, and land use, there are not meaningful differences between the two Alternatives. Alternative 2 does provide for more contaminant removal and achievement of SCGs than Alternative 3, but would significantly impact the community, has significant costs unrelated to increased environmental protection, is contrary to green remediation policies and would delay site re-development efforts.

DER-10 Section 4.2(h) discusses the concept of the overall effectiveness of the alternative (which is comprised of three of the evaluation criteria: long-term effectiveness and permanence; reduction of toxicity, mobility or volume; short-term impact and effectiveness) needing to be

proportional to the overall cost. The difference in costs associated with Alternatives 2 and 3 is in excess of $20 million, at a minimum. In terms of proportionality, Alternative 2 does not provide better overall effectiveness, and has a disproportionately far greater cost.

## 3.2 Remedial Alternative Recommendation

Three remedial alternatives, including No Action were evaluated to address the remedial objectives at the site. The No Action Alternative was dropped from consideration because it failed to satisfy site RAOs and would severely limit site re-development. The main difference between Alternatives 2 and 3 is in whether surficial soils are removed (Alternative 2) or covered (Alternative 3). Alternatives 2 and 3 would limit use of site groundwater. Alternative 3 would also require imposition of ICs that would govern some aspects of site redevelopment.

Alternative 3 (Soil Cover with Off-Site Disposal with LNAPL area IRMs; Removal/Treatment of the Source of the Chlorinated Solvent Plume and Treatment of the Chlorinated Solvent Plume) would be protective of human health and the environment. The implementation of this remedial alternative is recommended for the following reasons:

- Alternative 3 effectively mitigates the exposure pathways identified in the exposure assessment.
- Alternative 3 meets SCGs and is protective of human health and the environment.
- In comparing Alternatives 2 and 3, costs associated with Alternative 2 are greatly disproportionate, without providing a meaningful increase in overall effectiveness.
- Alternative 3 is consistent with remedies that have been applied at other nearby parcels of the former ALCO Site that have been in the BCP Program (former Big N Plaza/Golub Site and former Ramada Inn/Union College Site).
- Alternative 2 would impact the site re-development timeframe.
- Alternative 2 would impact current site tenants and surrounding properties for an extended period of time due to truck traffic.
- Alternative 2 would not be considered a "green" remedial approach, in that it would entail significant fuel usage, diesel emissions and noise associated with the transport of a high volume/low concentration type waste.
- The anticipated ICs that would need to accompany Alternative 3 would not materially constrain the contemplated future uses of the property.

**Table 1. Summary of Remedial Alternative Costs**

| Remedial Alternative | Capital Costs | Engineering and Contingency Costs | Annual Operation and Maintenance | Estimated Number of Years of Operation | Total Estimated Costs (Rounded) |
|---|---|---|---|---|---|
| Alternative 1 – "No Action" | $0 | $0 | $82,680 | 10 | $82,680 |
| Alternative 2 – Soil Excavation with Off-Site Disposal with Removal/treatment of the source of the chlorinated solvent plume and Treatment of the chlorinated solvent plume | $20,960,980 to $100,448,980 | $5,240,245 To $25,112,098 | $101,000 | 10 | $26,302,000 to $125,662,000 |
| Alternative 3 – Soil Cover with Off-Site Disposal with treatment of the source of the chlorinated solvent plume and Treatment of the chlorinated solvent plume | $4,611,774 | $1,152,942 | $77,240 | 10 | $5,842,000 |

**Table 2. Summary of Remedial Alternative Costs by Parcel**

| Remedial Alternative | Parcel A | Parcel B | Parcel C | Total Estimated Costs (Rounded) |
|---|---|---|---|---|
| Alternative 1 – "No Action" | $28,111 | $47,128 | $7,441 | $82,680 |
| Alternative 2 – Soil Excavation with Off-Site Disposal with Removal/treatment of the source of the chlorinated solvent plume and Treatment of the chlorinated solvent plume | $8,942,680 to $42,725,080, | $14,992,140 to $71,627,340 | $2,367,180 to $11,309,580 | $26,302,000 to $125,662,000 |
| Alternative 3 – Soil Cover with Off-Site Disposal with treatment of the source of the chlorinated solvent plume and Treatment of the chlorinated solvent plume | $1,986,280 | $3,329,940 | $525,780 | $5,842,000 |

# 4.0 References

CHA, August 2012. Remedial Investigation Report, ALCO-Maxon Sites, Parcels A,B&C.

Kleinfelder, Inc., September 2010. Remedial Investigation Work Plan, Parcel A of the ALCO-Maxon Site.

Kleinfelder, Inc., September 2010. Remedial Investigation Work Plan, Parcel B of the ALCO-Maxon Site.

Kleinfelder, Inc., September 2010. Remedial Investigation Work Plan, Parcel C of the ALCO-Maxon Site.

New York State Department of Environmental Conservation, May 2010. DER-10 / Technical Guidance for Site Investigation and Remediation. DEC Program Policy, Office of Remediation and Materials Management.

New York State Department of Environmental Conservation, December 2006. 6 NYCRR PART 375, Environmental Remediation Programs, Subparts 375-1 to 375- 4 & 375-6. Division of Environmental Remediation.

New York State Department of Environmental Conservation, May 2004. Draft Brownfield Cleanup Program Guide. Division of Environmental Remediation.

New York State Department of Environmental Conservation, 1997. Environmental Restoration Projects, Program ID No. DER-97-4058. Division of Environmental Remediation, Bureau of Program Management.

New York State Department of Environmental Conservation, 1998. "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations', Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1. Reissued June 1998.

New York State Department of Health, 2006. "Guidance for Evaluating Soil Vapor Intrusion in the State of New York."

United States Environmental Protection Agency, 1994. "Radon Prevention in the Design and Construction of Schools and Other Large Buildings."

# Figure 1

## Site Location Map Showing Areas of Concern

CHLORINTED SOLVENT PLUME (AOC 2)

MW-45 AREA (AOC-1B)

SITE-WIDE SOIL (AOC 3)

GPR AREA 2

PARCEL A-2

PARCEL B

PARCEL C

GPR AREA 8 (AOC-1C)

MW-36 AREA BORINGS (AOC-1A)

CHLORINATED SOLVENT PLUME SOURCE AREA (AOC 2)

FORMER BUILDING LOCATIONS 312 & 314

39.49-2-1.311

39.41-1-3

39.49-2-7

39.49-2-6

39.49-2-8

39.49-2-1.2

39.41-1-1.1

39.49-2-4

OUTFALL A43

COLLEGE CREEK OUTFALL

OUTFALL D42

FLOOD PLAIN ELV. 229

BUILDING 346

BUILDING 324

BUILDING 328

BUILDING 316

BUILDING 332

BUILDING 338

BUILDING 308

BUILDING 306

BUILDING 304

BUILDING 300

TRAILER

MW-54 MW-55 MW-56 MW-57 MW-58 MW-59 MW-60 MW-61 MW-62 MW-63

**LEGEND**

- PROPERTY BOUNDARY
- SCP SITE BOUNDARY
- MANHOLE WITH DRAINAGE STRUCTURE NUMBER
- CATCH BASIN WITH DRAINAGE STRUCTURE NUMBER
- LIFT STATION WITH DRAINAGE STRUCTURE NUMBER
- MANHOLE (S.M.)
- CATCH BASIN (C.B.)
- MONITORING WELL (SRI)
- TEMPORARY MONITORING WELL (TMW)
- RECOVERY WELL
- PIEZOMETER
- GEOPROBE BORING
- SURFACE SOIL SAMPLE LOCATION (SS)
- SOIL BORING LOCATION

**AREA DEFINITIONS**

- BUILDING/STRUCTURES
- FORMER BUILDINGS (PREVIOUSLY DEMOLISHED)
- "SVE" PARCEL
- "GPV" PARCEL
- OTHER PROPERTIES (NO PART OF SCP)
- REMEDIATION AREA
- FORMER METHOD LOCATIONS

MW-63 MONITORING WELL (SRI INVESTIGATION 2013)

MAP REFERENCE:

1) "SURVEY OF LANDS, ALCO LOCOMOTIVE, INC., CITY OF SCHENECTADY, COUNTY OF SCHENECTADY", DATED MARCH 1970, AS PREPARED BY C.T. MALE ASSOCIATES.

2) "A SUBDIVISION OF A PORTION OF LANDS OF SCHENECTADY INDUSTRIAL CORPORATION" DATED JUNE 29, 1998, AS PREPARED BY THE ENVIRONMENTAL DESIGN PARTNERSHIP

3) "SITE PLAN, PROPOSED C & D RECYCLING FACILITY, MOTT STREET INDUSTRIAL PARK", DATED FEBRUARY 1995, AS PREPARED BY BIGALLS SMART ASSOCIATES.

SOURCE:

1) ABD ENGINEERS AND SURVEYORS FEBRUARY 1999, REVISED NOVEMBER 1999.

2) HISTORIC BUILDING (HB) LOCATIONS BASED ON A "FUEL OIL PIPING" PLAN, PREPARED FOR AMERICAN LOCOMOTIVE CO., REVISED AUGUST 22, 195.

Barton & Loguidice, D.P.C.

MAXON ALCO HOLDINGS, LLC
ALTERNATIVE ANALYSIS REPORT

SITE PLAN

CITY OF SCHENECTADY, NEW YORK

Figure 1
Project No. 1368.001.001
Date 1/9/2014

Z:\BL-Vault\JCZ\18217A02.1C71-4823-8927-99D5C4054347\0\531000-531999\531972\1\U1368001 SRI Work Plan Alt Analysis Report (ID 531972).dwg, 2/21/2014 8:04:03 AM

# Appendix A

# Proposed Parcel Reconfiguration

December 24, 2013

Mr. Robert W. Schick, P.E., Director
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, New York 12233-7011

RE: Alco-Maxon Site Parcel B
Site ID No. C447043
BCA index No.: C447043-8-1-10

Alco-Maxon Site Parcel C
Site ID No. C447044
BCA Index No.:C447044-8-10

Dear Mr. Schick:

Pursuant to your request, I have enclosed the amendment acceptance letter relative to the captioned Parcels executed on behalf of the owner.

If you require anything additional, please do not hesitate to contact us.

Sincerely,

MAXON ALCO HOLDINGS, LLC

Laurene A. Smith
Corporate Paralegal

**New York State Department of Environmental Conservation**
**Division of Environmental Remediation**
**Office of the Director, 12th Floor**
625 Broadway, Albany, New York 12233-7011
**Phone:** (518) 402-9706 • **Fax:** (518) 402-9020
**Website:** www.dec.ny.gov

Joe Martens
Commissioner



December 23, 2013

Maxon ALCO Holdings, LLC
Attn: David Buicko
695 Rotterdam Industrial Park
Schenectady, NY 12306

Re: Alco-Maxon Site Parcel B
Site ID No.: C447043
BCA Index No.: C447043-8-10
Amendment No. 1

Alco-Maxon Site Parcel C
Site ID No.: C447044
BCA Index No.: C447044-8-10
Amendment No. 1

Dear Mr. Buicko:

This letter is forwarded to your attention in response to a request submitted on November 26, 2013 to amend the above referenced Brownfield Cleanup Agreements ("BCAs" or "Agreements") both signed on August 18, 2010. The request involves changes in the size and tax map/parcel numbers between Parcels B and C of the Alco-Maxon Site. Parcel B would include tax map/parcel numbers 39.49-2-5, 39.49-2-6, 39.49-2-7, 39.49-2-1.2, and 39.49-2-1.311 and be approximately 31.59 acres in size. Parcel C would include tax map/parcel number 39.46-2-1.311 and be approximately 5.21 acres in size.

The application to amend these BCAs is hereby approved. The revised metes and bounds descriptions and the revised site map attached to your November 26, 2013 are attached to these Amendments and incorporated into the Agreements. These Amendments are made in accordance with and subject to all of the requirements of the BCAs and all applicable guidance, regulations and state laws applicable thereto. All other substantive and procedural terms of the Agreements will remain unchanged and in full force and effect regarding the parties to the Agreements.

Please have the authorized representative(s) counter-sign this letter to acknowledge acceptance of the Amendments. Please send one original copy, with signatures, back to my attention at the following address:

New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 12th Floor

Albany, New York 12233-7011

Please keep a copy of the countersigned letter as proof of the Agreement Amendments.

Nothing contained herein constitutes a waiver by DEC or the State of New York of any rights held in accordance with the Agreements or any applicable state and/or federal law or a release for any party from any obligations held under the Agreements or those same laws.

Please contact me if you have any questions in this regard. Thank you for your assistance in this matter.

Sincerely,

Robert W. Schick, P.E.
Director
Division of Environmental Remediation

The following Applicant, in signing this letter, does hereby acknowledge and accept the amendments to the Agreements as set forth above.

Maxon ALCO Holdings, LLC Date

David M. Bullock, Auth Rep.
By: Name (Please Print)

Attachment

ec: Michael Ryan, DEC
Robert Cozzy, DEC
Jim Quinn, DEC
John Strang, DEC
Kelly Lewandowski, DEC
Benjamin Conlon, DEC
Andrew Guglielmi, DEC
Andy Barber, Barton & Loguidice
Steve Porter, Esq. Maxon ALCO Holdings, LLC

November 26, 2013

Mr. John R. Strang, P.E.
Environmental Engineer 2
Region 4
New York State Department of Environmental Conservation
1130 South Westcott Road
Schenectady, New York 12306-2014

Re: ALCO-Maxon Site – Parcel B (C447043) and ALCO-Maxon Site – Parcel C (C447044), Schenectady, NY

ALCO-Maxon Site – Parcel A Brownfield Cleanup Agreement C447042-08-10
ALCO-Maxon Site – Parcel B Brownfield Cleanup Agreement C447043-08-10
ALCO-Maxon Site – Parcel C Brownfield Cleanup Agreement C447044-08-10

Dear Mr. Strang:

Maxon ALCO Holdings, LLC, the Volunteer at the subject Brownfields sites pursuant to Article 27, Title 14 and 6 NYCRR Part 375; and the Applicant under Brownfield Site Cleanup Agreement Index No. C447043-08-10 and C447044-08-10, respectfully requests minor modifications to current property descriptions for ALCO – Maxon Site – Parcel B (C447043) and ALCO-Maxon Site – Parcel C (C447044), to facilitate redevelopment efforts and the implementation of interim remedial measures. This request for modification to property descriptions is made in accordance with DER-32.

The proposed modification makes ALCO-Maxon Site – Parcel B (C447043) slightly larger and ALCO-Maxon-Parcel C (C447044) slightly smaller. The total amount of land in the BCA's for all three ALCO-Maxon Parcels (A+B+C) is not altered. The attached map depicts the proposed modification, which is also provided in the attached legal descriptions of ALCO-Maxon Site – Parcel B (C447043) and ALCO Maxon-Site Parcel C (C447044).

*Address:* *Post Office Box 98, Guilderland Center, New York 12085* *Phone (518) 356 4445*
*Location:* *695 Rotterdam Industrial Park, Schenectady, NY 12306* *Fax (518) 356 5334*

The profile of soil and groundwater contamination associated with ALCO-Maxon Site – Parcel B (C447043) and ALCO Maxon Site – Parcel C (C447044) C remains largely unchanged by the proposed modification. Under the specific circumstances, the Volunteer respectfully suggests that the reconfiguration of the Parcels is minor in nature and does not constitute a major Modification as described in DER-32, requiring submittal of an application.

Please contact Steve Luciano at (518) 356-4445 should you have any questions.

Very truly yours,

MAXON ALCO HOLDINGS, LLC

David M. Buicko
Authorized Representative

Enc.

| | | |
|---|---|---|
| cc: | Steve Porter, Esq. | - Maxon ALCO Holdings LLC |
| | Steve Luciano | - Maxon ALCO Holdings LLC |
| | Paul Fallati | - Maxon ALCO Holdings LLC |
| | Dean Sommer, Esq. | - Young Sommer |
| | Rich Ostrov | - NYSDEC Region 4, OGC |
| | Al DeMarco | -NYSDOH |
| | Andy Barber | -Barton & Loguidice |

**PARCEL B**

**LANDS OF MAXON ALCO HOLDINGS, LLC**

**ALL** that certain tract, piece or parcel of land situate, lying and being in the City of Schenectady, County of Schenectady, State of New York, more particularly bounded and described as follows:

**BEGINNING** at a point in the northerly boundary of the Front Street at its intersection with the easterly line of lands now or formerly of Legere Holdings, LLC as described in a deed filed in the Office of the Clerk of Schenectady County in Liber 1684 of Deeds at Page 306; **THENCE** along said the easterly line of lands now or formerly of Legere Holdings, LLC by the following five (5) courses:

1) N. 19° – 33' – 04" W., 19.11 feet to a point;
2) N. 22° – 40' – 06" W., 201.56 feet to a point;
3) S. 70° – 15' – 10" W., 18.21 feet to a point;
4) N. 20° – 29' – 20" W., 93.46 feet to a point;
5) N. 20° – 54' – 00" W., 79.76 feet to a point;

**THENCE** through the lands of Maxon Alco Holdings LLC by the following ten (10) courses:

1) N. 67° – 51' – 46" E., 751.18 feet to a point
2) N. 21° – 28' – 44" E., 315.76 feet to a point;
3) N. 69° – 00' – 26" E., 407.96 feet to a point;
4) S. 20° – 59' – 34" E., 40.13 feet to a point;
5) N. 68° – 49' – 05" E., 454.67 feet to a point;
6) N. 68° – 53' – 43" E., 133.57 feet to a point;
7) S. 89° – 30' – 41" E., 83.83 feet to a point;
8) N. 69° – 22' – 35" E., 202.92 feet to a point;
9) N. 68° – 31' – 58" E., 365.92 feet to a point;
10) N. 68° – 50' – 10" E., 227.13 feet to a point in the westerly line of Maxon Road (also known as Maxon Road Arterial Highway);

**THENCE** along the westerly line of Maxon Road by the following six (6) courses:

1) S. 25° – 29' – 30" W., 65.07 feet to a point;
2) S. 10° – 55' – 10" W., 86.17 feet to a point;
3) S. 28° – 07' – 50" W., 490.05 feet to a point;
4) S. 29° – 53' – 30" W., 85.07 feet to a point;
5) N. 58° – 21' – 50" W., 10.50 feet to a point;
6) S. 35° – 03' – 10" W., 144.42 feet to a point;

**THENCE** through the lands of Maxon Alco Holdings LLC by the following two (2) courses:

1) N. 88° – 11' – 45" W., 72.98 feet to a point
2) S. 69° – 00' – 50" W., 1023.17 feet to a point the easterly line of lands now or formerly of S & T Operating Ltd. as described Liber 1796 of Deeds at Page 545; **THENCE** along the easterly line, northerly line, westerly line and southerly line of lands now or formerly of S & T Operating Ltd. by the following eleven (11) courses:

1) N. 20° – 54' – 47" W., 79.40 feet to a point;
2) S. 69° – 12' – 17" W., 104.60 feet to a point;
3) S. 20° – 47' – 43" E., 48.25 feet to a point;
4) S. 69° – 12' – 17" W., 374.28 feet to a point;
5) S. 21° –12' – 28" E., 198.28 feet to a point;
6) N. 68° – 30' – 34" E., 7.00 feet to a point;
7) S. 72° – 36' – 43" E., 11.32 feet to a point;
8) S. 21° – 29' – 26" E., 3.48 feet to a point;
9) N. 69° – 17' – 41" E., 369.62 feet to a point;
10) S. 19° – 17' – 06" E., 43.81 feet to a point;
11) N. 69° – 24' – 35" E., 66.67; feet to a point

**THENCE** S. 20° – 54' – 47" E., 81.21 feet to a point to a point in the northerly line of Maxon Road (also known as Maxon Road Arterial Highway);

**THENCE** along the northerly line of Maxon Road by the following three (3) courses:

1) S. 53° – 58' – 40" W., 95.30 feet to a point;
2) S. 66° – 26' – 40" W., 291.44 feet to a point;

3) S. 68° – 55' – 20" W., 81.41 feet to a point in the easterly line of Nott Street;

**THENCE** along the easterly line of Nott Street by the following three (3) courses:

1) N. 29° – 58' – 20" W., 11.92 feet to a point;
2) N. 21° – 44' – 50" W., 114.39 feet to the point of curve of a circular curve having a radius of 51.77 feet;
3) Curving to the left around the arc of said circular curve having a radius of 51.77 feet for an arc distance of 68.09 feet, said arc being subtended by a chord having a bearing of S. 59° – 26' – 25" E. and a chord length of 63.28 feet, to the point of tangency of said curve being a point in the north line of Front Street;

**THENCE** along the northerly line of Front Street by the following three (3) courses:

1) S. 82° – 52' – 00" W., 145.40 feet to a point;
2) S. 89° – 06' – 50" W., 242.51 feet to a point;
3) S. 71° – 28' – 20" W., 189.37 feet to the **POINT AND PLACE OF BEGINNING.**

**SUBJECT** to all easements, rights-of-way or restrictions of record.

**PARCEL B CONTAINS** 31.59 acres of land, more or less.

**PARCEL C**

**LANDS OF MAXON ALCO HOLDINGS, LLC**

**ALL** those certain tracts, pieces or parcels comprising parcels of land known as Parcel C-1 and Parcel C-2 situate, lying and being in the City of Schenectady, County of Schenectady, State of New York, more particularly bounded and described as follows:

**PARCEL C-1**

**BEGINNING** at a point in the northerly boundary of Maxon Road (also known as Maxon Road Arterial Highway) said point being 81.21 feet distant on a bearing of S. 20° – 54' – 47" E., from the southeasterly corner of lands now or formerly of S & T Operating Ltd. as described in Liber 1796 of Deeds at Page 545;

**THENCE** along the northerly line of Maxon Road by the following eight (8) courses:

1) N. 53° – 58' – 40" E., 151.51 feet to a point;
2) N. 59° – 34' – 20" E., 257.58 feet to a point;
3) N. 74° – 21' – 20" E., 50.99 feet to a point;
4) N. 62° – 09' – 10" E., 146.79 feet to a point;
5) N. 58° – 18' – 20" E., 144.42 feet to a point;
6) N. 52° – 18' – 20" E., 96.45 feet to a point;
7) N. 47° – 06' – 20" E., 96.45 feet to a point;
8) N. 41° – 05' – 00" E., 192.58 feet to a point;

**THENCE** through the lands of Maxon Alco Holdings LLC by the following two (2) courses:

1) N. 88° – 11' – 45" W., 72.98 feet to a point

12)S. 69° – 00' – 50" W., 1023.17 feet to a point the easterly line of lands now or formerly of S & T Operating Ltd. as described in Liber 1796 of Deeds at Page 545; **THENCE** along the easterly line of lands now or formerly of S & T Operating Ltd. as described in Liber 1796 of Deeds at Page 545 and the

southerly extension of the said easterly line, S. 20° – 54' – 47" W., 303.37 feet to the **POINT AND PLACE OF BEGINNING.**

**PARCEL C-2**

**BEGINNING** at a point in the southerly boundary of Maxon Road (also known as Maxon Road Arterial Highway) said point being 462.70 feet distant on a bearing of N. 78° – 50' – 00" E., from the intersection of the northerly line of Maxon Road with the easterly line of Nott Street

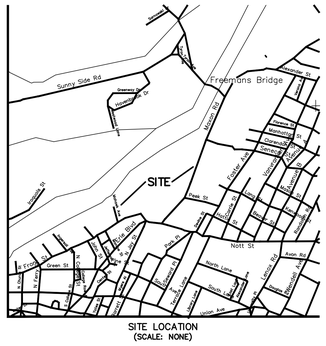
**THENCE** along the southerly line of Maxon Road by the following four (4) courses:

1) N. 54° – 20' – 20" E., 230.88 feet to a point;
2) N. 28° – 36' – 30" E., 14.63 feet to a point;
3) N. 68° – 40' – 10" E., 188.10 feet to a point;

13)N. 61° – 13' – 20" E., 171.29 feet to a point on a circular curve forming a portion of the property line of lands now or formerly of Delaware and Hudson Railway Company; **THENCE** curving to the right around the arc of said circular curve and along the property line of lands now or formerly of Delaware and Hudson Railway Company; having a radius of 2811.00 feet for an arc distance of 600.94 feet, said arc being subtended by a chord having a bearing of S. 59° – 53' – 36" E. and a chord length of 599.80 feet to a point; **THENCE** N. 32° – 59' – 50" W., 2.75 feet to the **POINT AND PLACE OF BEGINNING.**

**SUBJECT** to all easements, rights-of-way or restrictions of record.

**PARCEL C-1 & C-2 CONTAIN** a total of 5.21 acres of land, more or less.




SITE LOCATION
(SCALE: NONE)




PARCEL A=884,770 SF
20.31 ACRES

PARCEL B=1,368,887 SF
31.43 ACRES

PARCEL C=237,370 SF
5.45 ACRES

PROGRESS PRINT

HERSHBERG & HERSHBERG
Consulting Engineers and Land Surveyors
18 Locust Street
Albany, New York 12203



STATE OF NEW YORK
HERSHBERG & HERSHBERG
044226
PROFESSIONAL ENGINEER & LAND SURVEYOR

| REVISIONS | | | | | | |
|---|---|---|---|---|---|---|
| REMARKS | DATE | REMARKS | DATE | REMARKS | DATE | |
| ADDED 25 CONDO BUILDING | 6/14/2013 | | | | | |

PRELIMINARY SITE PLAN FOR
ALCO SITE MAXON ROAD
CITY OF SCHENECTADY COUNTY OF
SCHENECTADY STATE OF NEW YORK

| FILE: 120184-5.dwg | SCALE: 1"=100' | BY: SMcC | CHK: DRH | DATE: 4/11/2013 | 2012-0184-5 |
|---|---|---|---|---|---|

C1

# Appendix B

# Remedial Alternative Cost Estimates

| **Alternative 1 Cost Estimate**<br>***Monitored Natural Attenuation***<br>**Former ALCO Site Brownfield Cleanup Project**<br>**Alternative Analysis Report** | | | | |
|---|---|---|---|---|
| **Item** | **Unit Cost** | **Unit** | **Quantity** | **Cost** |
| **Groundwater Monitoring (10 years)** | | | | |
| Sampling | $2,400.00 | Round | 11 | $ 26,400.00 |
| Laboratory Services | $ 360.00 | Round | 11 | $ 3,960.00 |
| Report | $3,500.00 | Lump Sum | 10 | $ 35,000.00 |
| | | | Subtotal | $ 65,360.00 |
| | | | Engineering (10%) | $ 6,536.00 |
| | | | Contingency (15%) | $ 10,784.40 |
| | | | **Total Estimate Costs** | **$ 82,680.40** |

| **Alternative 1 Cost Estimate by Parcel**<br>**(Costs Allocated by Relative Acreage of Each Parcel)** | |
|---|---|
| **Parcel A** | $28,111 |
| **Parcel B** | $47,128 |
| **Parcel C** | $ 7,441 |
| **Total** | **$82,680** |

| **Alternative 2 Cost Estimate**<br>***Soil Excavation With Off-Site Disposal; LNAPL/Tank Removal IRMs;***<br>***Chlorinated Solvent Source and Plume Treatment***<br>**Former ALCO Site Brownfield Cleanup Project**<br>**Alternative Analysis Report** | | | | |
|---|---|---|---|---|
| **Item** | **Unit Cost** | **Unit** | **Quantity** | **Cost** |
| **Surface Soil Excavation (276,000 tons)** | | | | |
| **Excavation & Disposal** | | | | |
| 2 Hydraulic Excavators (1.5 cy bucket) | $ 7,000.00 | week | 52 | $ 364,000 |
| 3-Man Support Crew | $ 5,000.00 | week | 52 | $ 260,000 |
| Contaminated Soil Excavation, Transport, Disposal | $ 60.00 | ton | 276,000 to 1,380,000 | $16,560,000 to $82,800,000 |
| Sample Analysis | $ 200.00 | sample | 400 | $ 80,000 |
| Replacement Clean Soil | $ 12.00 | ton | 276,000 to 1,380,000 | $ 3,312,000 to $16,560,000 |
| **Final Site Work** | | | | |
| Survey | $ 5,000.00 | lump sum | 1 | $ 5,000 |
| Grading | $ 115.00 | msf | 1652 | $ 189,980 |
| **LNAPL, Tank Removal IRMs** | | | | |
| Labor & Equipment | $ 100,000.00 | lump sum | 1 | $ 100,000 |
| **Chlorinated Solvent Plume Source** | | | | |
| Removal | $ 200.00 | ton | 100 | $ 20,000 |
| **Chlorinated Solvent Plume** | | | | |
| Labor | $10,000.00 | lump sum | 1 | $ 10,000 |
| Geoprobe | $ 3,000.00 | day | 10 | $ 30,000 |
| Chemical Oxidant or Bioremediation Substrate | $ 10.00 | pounds | 5000 | $ 50,000 |
| Subtotal: | | | | $20,960,980 to $100,448,980 |
| **Annual Operations & Maintenance (10 years)** | | | | |
| **Groundwater Monitoring** | | | | |
| Sampling | $ 2,400.00 | round | 11 | $ 26,400 |
| Laboratory Services | $ 3,600.00 | round | 11 | $ 39,600 |
| Annual Report | $ 3,500.00 | lump sum | 10 | $ 35,000 |
| Subtotal: | | | | $ 101,000 |
| | | | Engineering (10% w/o O&M) | $2,096,098 to $10,044,898 |
| | | | Contingency (15% w/o O&M) | $3,144,147 to $15,067,200 |
| | | | **Total Estimated Costs (Rounded)** | **$26,302,000 to $125,662,000** |

| **Alternative 2 Cost Estimate by Parcel**<br>**(Costs Allocated by Relative Acreage of Each Parcel)** | |
|---|---|
| **Parcel A** | $ 8,942,680 to $ 42,725,080 |
| **Parcel B** | $14,992,140 to $ 71,627,340 |
| **Parcel C** | $ 2,367,180 to $ 11,309,580 |
| **Total** | **$26,302,000 to $125,662,200** |

**Alternative 3 Cost Estimate**
***Soil Cover; LNAPL/Tank Removal IRMs;***
***Chlorinated Solvent Source and Plume Treatment***
**Former ALCO Site Brownfield Cleanup Project**
**Alternative Analysis Report**

| Item | Unit Cost | Unit | Quantity | Cost |
|---|---|---|---|---|
| **Soil Cover** | | | | |
| Clean Soil | $ 12.00 | ton | 271,000 | $3,252,000 |
| 16 oz. Geotextile (demarcation layer) | $ 0.50 | sq. foot | 1,304,348 | $ 652,174 |
| Grading | $ 115.00 | msf | 2,240 | $ 257,600 |
| Survey | $ 5,000.00 | lump sum | 1 | $ 5,000 |
| **LNAPL/Tank Removal IRMs** | | | | |
| Labor & Equipment | $ 100,000.00 | lump sum | 1 | $ 100,000 |
| | | | | |
| **Chlorinated Solvent Plume and Source** | | | | |
| Labor | $20,000.00 | lump sum | 1 | $ 20,000 |
| Geoprobe | $ 3,000.00 | day | 15 | $ 45,000 |
| Chemical Oxidant or Bioremediation Substrate | $ 10.00 | pounds | 10000 | $ 100,000 |
| Subtotal: | | | | $4,611,774 |
| **Annual Operations & Maintenance (10 years)** | | | | |
| **Groundwater Monitoring** | | | | |
| Sampling | $ 240.00 | round | 11 | $ 2,640 |
| Laboratory Services | $ 3,600.00 | round | 11 | $ 39,600 |
| Annual Report | $ 3,500.00 | lump sum | 10 | $ 35,000 |
| Subtotal: | | | | $ 77,240 |
| | | | Subtotal (w/o O&M) | $4,611,774 |
| | | | O&M | $ 77,240 |
| | | | Engineering (10% w/o O&M) | $ 461,177 |
| | | | Contingency (15% w/o O&M) | $ 691,765 |
| | | | **Total Estimate Costs (Rounded)** | **$5,842,000** |

| **Alternative 3 Cost Estimate by Parcel (Costs Allocated by Relative Acreage of Each Parcel)** | |
|---|---|
| **Parcel A** | $1,986,280 |
| **Parcel B** | $3,329,940 |
| **Parcel C** | $ 525,780 |
| **Total** | **$5,842,000** |

# Appendix B

# Health and Safety Plan

Former ALCO Site
Brownfield Cleanup Project

City of Schenectady
Schenectady County, New York

# Health and Safety Plan (HASP)

New York State
Brownfield Cleanup Program
Site Nos. C447042, C447043, and C447044

December 2013

Barton & Loguidice

Former ALCO Site
Brownfield Cleanup Project

City of Schenectady

# Health and Safety Plan
Site Nos. C447042, C447043, and C447044

December 2013

Prepared For:

Maxon ALCO Holdings, LLC
540 Broadway
Albany, New York 12207

Prepared By:

Barton & Loguidice, P.C.
Engineers • Environmental Scientists • Planners • Landscape Architects
10 Airline Drive, Suite 200
Albany, New York 12205

# Table of Contents

# Table of Contents – Continued

Section Page



## Tables



## Attachments

# 1.0 General Information

## 1.1 Introduction

This Health and Safety Plan (HASP) was prepared by Barton & Loguidice, Inc. (B&L) for future excavation work at the former ALCO site where the existing soils will be penetrated. The existing soils contain residual impacts from historic activities at the site. The impacts were characterized by the Remedial Investigation and Supplemental Remedial Investigation that were conducted at the site. A summary of the impacts is provided in this HASP

Please note that this site falls within the definition of a hazardous waste sites for the purposes of 29 CFR 1910.120, *Hazardous Waste Operations and Emergency Response*. Plan. This was prepared in accordance with 29 CFR 1910.120. This plan was prepared, and will be implemented, by a qualified person as defined under 29 CFR 1910.120; this is also in accordance with NYSDEC DER-10, *Technical Guidance for Site Investigation and Remediation.*

The purpose of this Health and Safety Plan for the Steel Treaters contaminant source removal IRM is to provide specific guidelines and establish procedures for the protection of personnel during the field investigation and site remediation activities. The Plan is based on the site information available at this time and anticipated conditions to be encountered during the different phases of work. This Plan is subject to modification as data are collected and evaluated.

All personnel conducting activities on-site must comply with all applicable Federal and State rules and regulations regarding safe work practices. Personnel conducting field activities must also be familiar with the procedures, requirements and provisions of this Plan. In the event of conflicting Plans and requirements, personnel must implement those safety practices that afford the highest level of protection.

This HASP is not intended to be used by any subcontractors, but it may be used as the basis for contractors to prepare their own plans. This HASP may not address the specific health and safety needs or requirements of subcontractors and should be viewed as the minimum requirement.

# 2.0 Project Information

## 2.1 Comprehensive Work Plan

This HASP is appended to the Site Remedial Work Plan (RWP) prepared by Barton & Loguidice, Inc., which describes the proposed remedial activities for the site.

## 2.2 Scope of Work

Remedial and/or development activities at the site may entail excavation into the existing in-place soils at the site.

## 2.3 Organization Structure

Barton & Loguidice, P.C.:
Program Manager – Scott Nostrand, P.E.

Site Manager – Andy Barber
Maxon ALCO Holdings, LLC (MAH):

Project Contact – Steve Luciano

The Site Manager is responsible for the day-to-day activities of the project and for coordinating between office and field personnel. The Site Manager will oversee the remedial activities. The Barton & Loguidice on-site field personnel will serve as the Site Safety and Health Coordinator (SSHC). The SSHC will establish operating standards and coordinate overall project safety and health activities for the site. The SSHC will review project plans and revisions to determine that safety and health procedures are maintained throughout the project. Specifically the responsibilities of the SSHC include:

a. Aiding the selection of protective clothing and equipment.

b. Periodically inspecting protective clothing and equipment.

c. Maintaining proper storage of protective clothing and equipment.

d. Monitoring the workers for signs of heat stress, cold stress, and fatigue.

e. Monitoring on-site hazards and conditions.

f. Conducting periodic surveillance to evaluate effectiveness of the Site-specific Health and Safety Plan.

g. Having knowledge of emergency procedures, evacuation routes, and the telephone numbers of the ambulance, local hospital, poison control center, fire department, and police department.

h. Providing handouts to all on-site personnel that contain directions to the hospital and the telephone numbers of the ambulance, local hospital, poison control center, fire department, and police department.

i. Notifying, when necessary, local public emergency officials.

j. Coordinating emergency medical care.

The Site Manager will be responsible for ensuring that the field personnel are familiar with the contents of this plan and the roles of the SSHC.

# 3.0 Health and Safety Risk Analysis

Table B-1 breaks down the hazard types that may be encountered for the site activities.

**Table B-1**
**Site Investigation Activity Hazard Evaluation**

| Activity | Hazard Type | | | | | |
|---|---|---|---|---|---|---|
| | **Mechanical** | **Electrical** | **Chemical** | **Physical** | **Biological** | **Temperature** |
| Excavation of Impacted Soils | Accidental injury from excavation equipment. Accidental injury from contact with excavated materials. | Overhead power lines. | Accidental inhalation, ingestions, skin absorption or eye contact with contaminants. Inhalation of equipment exhaust gases. | Collapse of excavation structure. Puncture from buried objects/nails. Excessive noise. Fall hazards. Falling objects. | Rodents, Bees and wasps. | Heat stress and frost bite. |

## 3.1 Chemical Hazards

Site soils have been impacted by historic industrial operations at the site. These impacts are largely related to the use of petroleum products and coal at the site. The contaminants that have been detected at the site are listed in Table B-2 and their properties are listed in Table B-3 (below).

# Table B-2 – Contaminants Detected in Soil

## Contaminants Detected in Surface Soils

| | Part 375 Residential | Part 375 Restricted Residential | Part 375 Commercial | SS-A1 | SS-A2 | SS-A3 | SS-A5 | SS-A6 | SS-A8 | SS-A9 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Parcel A** | | | | | | | | | | |
| 2-Methylnaphthalene | *410* | *NS* | *NS* | 57 J | **410 J** | 130 J | **700 J** | 3,500 U | **890 J** | **11,000 J** |
| Benzo(a)Anthracene | *1,000* | *1,000* | *5,600* | **1,300** | **6,000** | **5,500** | **4,500** | **1,800 J** | **24,000** | **160,000** |
| Benzo(a)Pyrene | *1,000* | *1,000* | *1,000* | **1,700** | **6,700** | **6,800** | **4,200** | **2,100 J** | **21,000** | **140,000** |
| Benzo(b)Fluoranthene | *1,000* | *1,000* | *5,600* | **3,100** | **12,000** | **14,000** | **6,700** | **4,400** | **25,000** | **170,000** |
| Benzo(G,H,I)Perylene | *100,000* | *100,000* | *500,000* | 600 J | 2,300 | 3,100 | 1,300 | 1,500 J | 14,000 | **98,000** |
| Benzo(k)Fluoranthene | *1,000* | *3,900* | *56,000* | **1,400** | **4,000** | **5,100** | **3,000** | **2,100 J** | **11,000** | **71,000** |
| Chrysene | *1,000* | *3,900* | *56,000* | **1,700** | **6,600** | **6,700** | **4,400** | **2,600 J** | **23,000** | **150,000** |
| Dibenzo(A,H)Anthracene | *330* | *330* | *560* | 210 J | **820 J** | **880 J** | **370 J** | 3,500 U | 4,900 U | 9,800 U |
| Dibenzofuran | *14,000* | *59,000* | *350,000* | 31 J | 710 J | 260 J | 1,100 | 3,500 U | 2,300 J | **22,000** |
| Fluoranthene | *100,000* | *100,000* | *500,000* | 1,800 | 11,000 | 8,700 | 9,900 | 2,700 J | 44,000 | **330,000** |
| Indeno(1,2,3-Cd)Pyrene | *500* | *500* | *5,600* | **570 J** | **2,200** | **2,800** | **1,200** | **1,400 J** | **11,000** | **84,000** |
| Phenanthrene | *100,000* | *100,000* | *500,000* | 600 J | 9,100 | 4,600 | 9,300 | 1,300 J | 35,000 | **290,000** |
| Pyrene | *100,000* | *100,000* | *500,000* | 1,700 | 8,800 | 7,100 | 7,400 | 2,200 J | 40,000 | **310,000** |

All units are in µg/Kg
Values shown in BOLD exceed the 6 NYCRR Part 375 Residential Soil Cleanup Objective
Values that are highlighted exceeds the 6 NYCRR Part 375 Commercial Soil Cleanup Objective
U = The compound was not detected at the indicated concentration.
J = Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL.

# Table B-2 – Contaminants Detected in Soil – Continued

## Contaminants Detected in Surface Soils

| | Part 375 Residential | Part 375 Restricted Residential | Part 375 Commercial | SS-B3 | SS-B4 | SS-B5 | SS-B6 | SS-B8 |
|---|---|---|---|---|---|---|---|---|
| **Parcel B** | | | | | | | | |
| 2-Methylnaphthalene | *410* | *NS* | *NS* | 18,000 U | **620 J** | 27 J | 12 J | 3,900 U |
| Benzo(a)Anthracene | *1,000* | *1,000* | *5,600* | **960 J** | **13,000** | 850 | **1,400** | **2,900 J** |
| Benzo(a)Pyrene | *1,000* | *1,000* | *1,000* | **1,000 J** | **15,000** | **1,100** | **1,500** | **4,100** |
| Benzo(b)Fluoranthene | *1,000* | *1,000* | *5,600* | 18,000 U | **20,000** | **1,300** | **3,900** | **5,000** |
| Benzo(k)Fluoranthene | *1,000* | *1,000* | *56,000* | 18,000 U | **6,800** | 480 | **1,500** | **2,800 J** |
| Chrysene | *1,000* | *1,000* | *56,000* | **1,000 J** | **13,000** | 890 | **2,100** | **3,300 J** |
| Indeno(1,2,3-Cd)Pyrene | *500* | *500* | *5,600* | 18,000 U | **7,700** | **550** | **1,600** | **2,100 J** |

All units are in µg/Kg
Values shown in BOLD exceed the 6 NYCRR Part 375 Residential Soil Cleanup Objective
Values that are highlighted exceeds the 6 NYCRR Part 375 Commercial Soil Cleanup Objective
U = The compound was not detected at the indicated concentration.
J = Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL.

# Table B-2 – Contaminants Detected in Soil – Continued

## Contaminants Detected in Surface Soils

| | Part 375 Residential | Part 375 Restricted Residential | Part 375 Commercial | SS-C1 | SS-C2 | SS-C4 | SS-C6 | SS-C9 |
|---|---|---|---|---|---|---|---|---|
| **Parcel C** | | | | | | | | |
| 2-Methylnaphthalene | *410* | *NS* | *NS* | 6,900 U | 7,000 U | **440 J** | 65 J | 2,000 U |
| Benzo(a)Anthracene | *1,000* | *1,000* | *5,600* | **1,500 J** | **4,600 J** | **49,000** | **3,900** | **1,500 J** |
| Benzo(a)Pyrene | *1,000* | *1,000* | *1,000* | **1,700 J** | **6,400 J** | **43,000** | **3,700** | **1,600 J** |
| Benzo(b)Fluoranthene | *1,000* | *1,000* | *5,600* | **2,000 J** | **9,600 J** | **50,000** | **4,500** | **2,000** |
| Benzo(k)Fluoranthene | *1,000* | *1,000* | *56,000* | **2,100 J** | **3,500 J** | **29,000** | **1,700 J** | **1,100 J** |
| Chrysene | *1,000* | *1,000* | *56,000* | **1,500 J** | **4,900 J** | **46,000** | **3,900** | **1,600 J** |
| Dibenzo(A,H)Anthracene | *330* | *330* | *560* | 6,900 U | 7,000 U | 9,500 U | **680 J** | 2,000 U |
| Indeno(1,2,3-Cd)Pyrene | *500* | *500* | *5,600* | **880 J** | **3,600 J** | **22,000** | **2,100** | **800 J** |

All units are in μg/Kg
Values shown in BOLD exceed the 6 NYCRR Part 375 Residential Soil Cleanup Objective
Values that are highlighted exceeds the 6 NYCRR Part 375 Commercial Soil Cleanup Objective
U = The compound was not detected at the indicated concentration.
J = Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL.

# Table B-2 – Contaminants Detected in Soil – Continued

## Contaminants Detected in Surface Soils

| | Arsenic | Copper | Lead |
|---|---|---|---|
| ***Part 375 Residential*** | *16* | *270* | *400* |
| ***Part 375 Restricted Residential*** | *16* | *270* | *400* |
| ***Part 375 Commercial*** | *16* | *270* | *1,000* |
| **Sample Location** | | | |
| **SS-A2** | **18.8** | **723 J** | **1530** |
| **SS-A3 / DUP-03** | **32.1 / 19.6 J** | 92.3 J/ 317 J | **897** / 298 |
| **SS-A9** | **15.6 J** | 67.3 | 95 |
| **SS-B3** | **79.7 J** | 15.7 | 16.4 |
| **SS-C7** | **24.5** | 37.9 | 8.8 |

J = Indicates an estimated value detected below the reporting limit.
Values shown in BOLD exceed the 6 NYCRR Part 375 Residential Soil Cleanup Objective
Values that are highlighted exceeds the 6 NYCRR Part 375 Commercial Soil Cleanup Objective
All units are in mg/Kg

# Table B-2 – Contaminants Detected in Soil – Continued

## Contaminants Detected in Subsurface Soils

| | **Part 375 Residential** | **Part 375 Restricted Residential** | **Part 375 Commercial** | SB-A1 | SB-A2 / DUP-03 | SB-A3 |
|---|---|---|---|---|---|---|
| **Parcel A** | | | | | | |
| 2-Methylnaphthalene | *410* | *NS* | *NS* | **3,200 J** | 48 J / 36 J | 150 J |
| Benzo(a)Anthracene | *1,000* | *1,000* | *5,600* | **14,000** | **2,000 J / 1,300 J** | **1,800** |
| Benzo(a)Pyrene | *1,000* | *1,000* | *1,000* | **14,000** | **1,900 J / 1,300 J** | **1,600** |
| Benzo(b)Fluoranthene | *1,000* | *1,000* | *5,600* | **17,000** | **2,500 J / 1,400 J** | **1,800** |
| Chrysene | *1,000* | *1,000* | *56,000* | **15,000** | **2,000 J / 1,300 J** | **1,700** |
| Dibenzo(A,H)Anthracene | *330* | *330* | *560* | **2,800 J** | **370 J /** 220 | 280 |
| Indeno(1,2,3-Cd)Pyrene | *500* | *500* | *5,600* | **8,400** | **1,100 J / 650 J** | **850** |

All units are in µg/Kg .
Values shown in BOLD exceed the 6 NYCRR Part 375 Residential Soil Cleanup Objective
Values that are highlighted exceeds the 6 NYCRR Part 375 Commercial Soil Cleanup Objective
J = Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL.

# Table B-2 – Contaminants Detected in Soil – Continued

## Contaminants Detected in Subsurface Soils

| | Part 375 Residential | Part 375 Restricted Residential | Part 375 Commercial | SB-B2 / | DUP-02-SB | SB-B3 |
|---|---|---|---|---|---|---|
| **Parcel B** | | | | | | |
| 2-Methylnaphthalene | *410* | *NS* | *NS* | **860 J /** | **890 J** | 55 J |
| Benzo(a)Anthracene | *1,000* | *1,000* | *5,600* | **13,000 /** | **13,000** | **3,800** |
| Benzo(a)Pyrene | *1,000* | *1,000* | *1,000* | **13,000 /** | **13,000** | **3,900** |
| Benzo(b)Fluoranthene | *1,000* | *1,000* | *5,600* | **14,000 /** | **15,000** | **5,600** |
| Chrysene | *1,000* | *1,000* | *56,000* | **12,000 /** | **13,000** | **5,000** |
| Dibenzo(A,H)Anthracene | *330* | *330* | *560* | **2,400 /** | **2,200** | 400 U |
| Indeno(1,2,3-Cd)Pyrene | *500* | *500* | *5,600* | **7,000 /** | **6,400** | **2,700** |

All units are in μg/Kg .
Values shown in BOLD exceed the 6 NYCRR Part 375 Residential Soil Cleanup Objective
Values that are highlighted exceeds the 6 NYCRR Part 375 Commercial Soil Cleanup Objective
U = The compound was not detected at the indicated concentration.
J = Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL.

# Table B-2 – Contaminants Detected in Soil – Continued

## Contaminants Detected in Subsurface Soils

| | Part 375 Residential | Part 375 Restricted Residential | Part 375 Commercial | SB-C3 |
|---|---|---|---|---|
| **Parcel C** | | | | |
| Benzo(a)Anthracene | *1,000* | *1,000* | *5,600* | **1,200 J** |
| Benzo(a)Pyrene | *1,000* | *1,000* | *1,000* | **1,200 J** |
| Benzo(b)Fluoranthene | *1,000* | *1,000* | *5,600* | **1,300 J** |
| Chrysene | *1,000* | *1,000* | *56,000* | **1,200 J** |
| Indeno(1,2,3-Cd)Pyrene | *500* | *500* | *5,600* | **700 J** |

All units are in μg/Kg .
Values shown in BOLD exceed the 6 NYCRR Part 375 Residential Soil Cleanup Objective
Values that are highlighted exceeds the 6 NYCRR Part 375 Commercial Soil Cleanup Objective
J = Data indicates the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than MDL.

**Table B-3 - Assessment of Detected Chemicals**

| Chemical Name (or class) | REL/PEL/TLV | Other Pertinent Limits (Specify) | Warning Properties – Odor Threshold | Potential Exposure Pathways | Acute Health Effects | Chronic Health Effects |
|---|---|---|---|---|---|---|
| #1 Fuel Oil (Kerosene) | 100 mg/m3 (NIOSH) | | Colorless to yellowish oily liquid with a strong characteristic odor | Inhalation, Ingestion, Contact | Eye, skin & respiratory irritation; dizziness, drowsiness, nausea, vomit, headache, abdominal pain | Eyes; skin; respiratory system; CNS |
| #2 Fuel Oil | 5 mg/m3 (OSHA) | | Colorless to yellowish oily liquid with a strong characteristic odor | Inhalation, Ingestion, Contact | Eye, skin & respiratory irritation; dizziness, drowsiness, nausea, vomit, headache, abdominal pain | Eyes; skin; respiratory system; CNS |
| #4 Fuel Oil | 5 mg/m3 (OSHA) | | Colorless to yellowish oily liquid with a strong characteristic odor | Inhalation, Ingestion, Contact | Eye, skin & respiratory irritation; dizziness, drowsiness, nausea, vomit, headache, abdominal pain | Eyes; skin; respiratory system; CNS |
| Polynuclear Aromatic Hydrocarbons (Coal components) | 0.1 mg/m3 (NIOSH)<br>0.2 mg/m3 (OSHA) | | Black, dark brown residue | Inhalation, Ingestion, Contact | Skin irritation | Respiratory system; skin, bladder; kidneys |
| Arsenic | | | | Inhalation, Ingestion, Contact | Skin irritation | Eyes; skin; respiratory system; CNS; kidneys; GI tract; repro system |
| Copper | 1 mg/m3 (OSHA, NIOSH) | | Reddish metal | Inhalation, Ingestion, Contact | Eye irritation | Eyes; skin; respiratory system; liver; kidneys; |
| Lead | 0.050 mg/m3 (OSHA, NIOSH) | | Gray metal | Inhalation, Ingestion, Contact | | Eyes; CNS; kidneys; GI tract; blood |

PEL = OSHA Permissible Exposure Limit; represents the maximum allowable 8-hr. time weighted average (TWA) airborne exposure concentration.
TLV = ACGIH Threshold Limit Value; represents the maximum recommended 8-hr. TWA exposure concentration.
STEL = OSHA Short-term Exposure Limit; represents the maximum allowable 15 minute TWA exposure concentration.
TLV-STEL = ACGIH Short-term Exposure Limit; represents the maximum recommended 15 minute TWA exposure concentration.

## 3.2 Physical Hazards

Physical hazards associated with the site are:

1. *Slip, Trip, and Fall During All Activities (Uneven Terrain):* The site contains numerous potential safety hazards such as pits, broken glass, slippery surfaces and fire debris. The work itself may be a potential safety hazard. Site personnel should constantly look out for potential safety hazards and should immediately inform the SSHC of any new hazards.
2. *Excavation Debris:* Excavation projects pose potential safety hazards from materials falling from the excavator as they are removed from the working excavation. The excavation work is a potential safety hazard and the SSHC will provide oversight during demolition activities.
3. *Moving Parts of Heavy Equipment:* Heavy equipment poses dangers though moving parts. Where feasible, access to moving parts will be guarded and equipment will be equipped with backup alarms.
4. *Noise from Heavy Equipment:* Work around large equipment often creates excess noise. Engineering controls and personal protective equipment will be used to protect employees' hearing.
5. *Electrical Hazards:* As in all site work, overhead power lines, buried power lines, electrical wires and cables, site electrical equipment, and lightning also pose a potential hazard to site workers. Site personnel should constantly look out for potential safety hazards and should immediately inform the SSHC of any new hazards.
6. *Biological Hazards (Insects, Poison Ivy, etc.):* Other biological hazards that may be present at the site include rodents and insects. PPE can reduce the potential for exposure. The SSHC can assist in determining the correct PPE for the hazard present.

## 3.3 Heat and Cold Stress

Workers will be routinely observed by the SSHC for symptoms of heat stress or cold exposure, as dictated by the weather conditions and work being conducted. Heat stress and cold exposure can be avoided by periodic, regular rest breaks.

Heat stress may be a potential hazard for personnel wearing PPE, particularly working in hot and humid conditions. Workers should take regular rest breaks within a shaded area, removing their PPE, and drink electrolyte replacing liquids and/or water. The SSHC is responsible for scheduling the amount of time each individual can work under the existing site conditions, and how often and how long they will break. Workers will be required to take their breaks in the clean zone after going through the decontamination area , or they may undergo partial decontamination and rest in a clean area within the decontamination area. Please refer to Section 7.2 (Site Control) of this HASP for a detailed description of the above referenced clean zone and decontamination area.

## 3.4 Confined Space Entry

Excavations do pose a potential confined space entry area. When an excavation becomes a confined space entry area (greater than 4 feet deep), then permit-required confined space entry procedures will be followed should the excavation need to be entered. In addition, air monitoring for oxygen deficiency, LEL, and organic vapors will be performed should the excavation be greater than 4 feet deep. Attempts will be made to collect samples from the excavation without entering the excavation (i.e., from excavator bucket, sampling rods, etc.).

# 4.0 Medical Surveillance Program

## 4.1 General

OSHA in 29 CFR 1910.120, the Hazardous Waste Operations regulations and in 1910.134, the Respiratory Protection regulations, requires medical examinations. The examination may include the OSHA required Medical Questionnaire, Respirator Suitability Form, a Medical Examination, Audiology Test, Pulmonary Function Test, and testing for complete blood count and chemistry profile.

These medical examinations and procedures are performed by or under the supervision of a licensed physician. The medical monitoring is provided to workers free of cost, without loss of pay and at a reasonable time and place. In addition, the need to implement a more comprehensive medical surveillance program will be re-evaluated after an apparent over-exposure incident.

Employees who wear, or may wear, respiratory protection will be provided respirators as regulated by 29 CFR 1910.134 before performing designated duties. Prior to issuance of a respirator, a medical professional must have medically certified the individual's ability to wear respiratory protection. Where the medical requirements of 29 CFR 1910.120 overlap those of 29 CFR 1910.134, the more stringent of the two will be enforced. It is not anticipated the respirator use will be required at the site.

## 4.2 Frequency

1. *Baseline Examinations:* Individuals who are assigned temporarily or permanently to fieldwork at hazardous waste sites or the use of a respirator will receive a baseline examination prior to job assignment.

2. *Periodic Examinations:* Individuals who are assigned temporarily or permanently to fieldwork at hazardous waste sites or the use of a respirator will receive periodic examinations as required.

3. *Termination Examinations:* Field employees permanently leaving the company who were in the medical surveillance program will receive an exit examination.

4. *Possible Exposure Examinations:* As soon as possible upon notification by an employee that the employee has developed signs or symptoms indicating possible overexposure to hazardous substances or health hazards, or that an employee has been injured or exposed above the permissible exposure limits in an emergency situation, that employee will be required to receive medical attention.

## 4.3 Examination Results

A letter must be received from the attending physician stating the parameters of the examination and whether or not the individual is able to work with or without restriction. This letter will be filed in the employee's file and a copy distributed to the employee. The examining physician makes a report to B&L of any medical condition that would place B&L employees at increased risk when wearing a respirator of other personal protective equipment. B&L maintains the medical records of personnel, as regulated by 29 CFR 1910.120 and 29 CFR 1910.1020, where applicable.

# 5.0 Training Program

## 5.1 Hazardous Waste Operations Health and Safety Training

Employees who are assigned to perform duties on hazardous waste sites will receive the OSHA initial 40-hour health and safety training prior to on-site activities, in accordance with 29 CFR 1910.120 (e). In addition, such personnel provide documentation of having received three (3) days of supervised field experience applicable to this site, or receive three (3) days of supervised field experience at this site. Applicable employees will receive yearly 8-hour refresher courses. On-site managers and supervisors who are directly responsible for or who supervise workers engaged in hazardous waste operations receive, in addition to the appropriate level of worker HAZWOPER training described above, 8 (eight) additional hours of specialized supervisory training, in compliance with 29 CFR 1910.120(e)(4).

Because this site is meets the definition of a hazardous waste site, employees who work during field activities are required to have completed HAZWOPER initial and refresher training.

## 5.2 Additional Training

As site activities change, supplemental training will be provided to employees to address changes in identified hazards, risks, operations procedures, emergency response, site control, and personal protective equipment. Specialty training will be provided as determined by task and responsibility.

Site-specific training will be provided to each employee and will be reviewed at safety briefings. Specialized training will be provided as dictated by the nature of site activities. Specialized training will be provided for activities such as the handling of unidentified substances. Employees involved in these types of activities will be given off-site instruction regarding the potential hazards involved with such activities and the appropriate health and safety procedures to be followed. Off-site instruction is meant to include any areas where employees will not be exposed to site hazards.

## 5.3 Other Required Training

Other training that may be required by workers that is in addition to required training described above is detailed below:

- Hazard communication, in accordance with 29 CFR 1910.1200
- Respirator use, in accordance with 29 CFR 1910.134
- Hearing conservation, in accordance with 29 CFR 1910.95
- Working safely around heavy equipment
- Heat and cold stress prevention
- Confined space entry, in accordance with 289 CFR 1910.146

## 5.4 Pre-Entry Briefing

A site-specific briefing will be provided to all individuals, including site visitors, who enter this site beyond the site entry point. For visitors, the site-specific briefing provides information about site hazards, the site lay-out including work zones and places of refuge, the emergency alarm system and emergency evacuation procedures, and other pertinent safety and health requirements as appropriate.

The SSHC will brief personnel as to the potential hazards likely to be encountered. Topics will include:

- Availability of this HASP.
- General site hazards and specific hazards in the work areas, including those attributable to the chemicals present.
- Selection, use, testing and care of the body, eye, hand and foot protection being worn, with the limitations of each.
- Decontamination procedures for personnel, their personal protective equipment, and other equipment used on the site.
- Emergency response procedures and requirements.
- Emergency alarm systems and other forms of notification, and evacuation routes to be followed.
- Methods to obtain emergency assistance and medical attention.

## 5.5 Training Records

Written certification of the successful completion of applicable training requirements for each worker will be maintained on-site during the course of the investigation. Written certificates have been given to each person so certified. Additionally, an employee sign off sheet indicating that each worker has reviewed a copy of this HASP and understands its contents is stored at the same location.

# 6.0 Health and Safety Field Implementation

## 6.1 Personal Protective Equipment Requirements

The requirements for personal protective equipment (PPE) are outlined in Table B-4. Level D protection will initially be worn for excavation activities. Level C protection may be used, based upon a sustained (five (5) minutes or more) readings above five (5) parts per million (ppm) measured with the photoionization detector (PID). The emissions from gasoline or diesel-powered excavation equipment may affect PID readings. At the start of work (excavation equipment in operation, but prior to exposing contaminated soils), an ambient PID reading will be established. This ambient PID reading will be subtracted from subsequent readings to evaluate PPE usage.

**Table B-4**
**Personal Protective Equipment (PPE) Requirements**

| Job Tasks | Level of Protection | PPE | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Suit | Gloves | Feet | Head | Eye | Ear | Respirator |
| Down-grade | Modified D | Std. | Neoprene or Nitrile | Steel + Booties | HH | Glasses/ Goggles | Plugs/ Muffs | N/A |
| All on-site | C | PE Tyvek | Neoprene or Nitrile | Steel + Booties | HH | N/A | Plugs/ Muffs | Full APR w/OV& N100 |

Personal Protective Equipment

SUIT:
Std = Standard Work Clothes
PE Tyvek = Polyethylene-coated Tyvek

FEET:
Steel = Steel-toe Boots
Booties = PVC or Latex Booties

HEAD:
HH = Hard Hat

EYE:
Glasses = Safety Glasses w/side shields
Goggles = Safety Goggles

Personal Protective Equipment

EAR:
Plugs = Ear Plugs
Muffs = Ear Muffs

RESPIRATOR:
APR = Air-purifying respirator
Full APR = Full-face APR
OV = Organic vapor cartridge
N100 = N100 particulate filters

## 6.2 Community Air Monitoring Plan

The Site Manager or designee will conduct air monitoring in accordance with the New York State Department of Health (NYSDOH) Community Air Monitoring Plan. Direct reading instruments will be calibrated in accordance with manufacturer's requirements and the results of the calibration will be documented.

This Community Air Monitoring Plan (CAMP) sets forth the procedures for performing real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area with respect to specific subsurface intrusive activities to be completed as part of the IRM. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses, and on-site or nearby workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

Continuous monitoring will be required for all subsurface intrusive excavation activities**.** The various field instruments that will be used by on-site personnel to perform the continuous air monitoring are listed in Table B-5 below. Subsurface intrusive activities include, but are not limited to, soil excavation and handling.

VOCs will be monitored at the downwind perimeter of the site, outside the existing building on a continuous basis with the use of a Photoionization detector (PID). Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions.

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

- If the organic vapor level is above 25 ppm at the perimeter of the site, activities must be shutdown.

All 15-minute readings will be recorded and made available for NYSDEC and NYSDOH personnel to review. Instantaneous readings, if any, used for decision making purposes will also be recorded.

Particulate concentrations will also be monitored continuously at the upwind and downwind perimeters of the exclusion zone or work area during the performance of the IRM. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities.

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

All readings will be recorded and made available for NYSDEC and NYSDOH personnel to review.

**Table B-5**
**Monitoring Protocols and Contaminant Action Levels**

| Contaminant/ Atmospheric Condition | Monitoring Equipment | Monitoring Protocol | Breathing Zone* Action Level Concentrations | |
|---|---|---|---|---|
| | | | Monitored Level For Mandatory Respirator Use** | Monitored Level For Mandatory Work Stoppages*** |
| VOCs | Photoionization detector (PID) with an 10.6 eV lamp | Initially readings will be recorded every 15 minutes. If no sustained readings are obtained in the breathing zone, readings will be recorded every 30 minutes. | 5 ppm above background | 25 ppm above background |

**Table B-5**
**Monitoring Protocols and Contaminant Action Levels**

| Contaminant/ Atmospheric Condition | Monitoring Equipment | Monitoring Protocol | Breathing Zone* Action Level Concentrations | |
|---|---|---|---|---|
| | | | Monitored Level For Mandatory Respirator Use** | Monitored Level For Mandatory Work Stoppages*** |
| Particulates | MiniRam or Dusttrak or Equivalent | Continuously during intrusive activities that can generate dust, e.g. monitoring well installation, test pits | | 150 ug/m3 at fence line (institute engineering controls to control dust) per NYSDEC TAGM 4031 |

* Monitoring performed in the breathing zone for sustained readings of 5 minutes or more. Monitor source first; if the source is near or above the action level concentration, monitor in the breathing zone.
** Monitored levels will require the use of approved respiratory protection specified in Table B-3.
*** Consult the Site manager.

## 6.3 Decontamination Procedures

Depending on the specific job task, decontamination may include personnel themselves, tools, and/or heavy equipment. The specified level of protection for a task (A, B, C, or D) does not itself define the extent of personal protection or equipment decontamination. For instance, Level C without dermal hazards will require less decontamination than Level C with dermal hazards. Heavy equipment will always require decontamination to prevent cross-contamination. The following sections summarize general decontamination protocols.

### *6.3.1 Heavy Equipment*

Heavy equipment will be decontaminated prior to personnel decontamination. Heavy equipment, drilling rods, augers and/or buckets will be steam cleaned after use at the designated decontamination area. In addition, containment systems will be set-up at the designated decontamination area for collection of decon fluids and materials.

### *6.3.2 Personnel*

In general, decontamination involves scrubbing with a non-phosphate soap/water solution followed by clean water rinses. Disposable items will be disposed of in a dry container.

Reusable protection will be washed with soap and clean potable water and air-dried prior to storage. Dirt, oil, grease or other foreign materials that are visible will be removed from surfaces. Scrubbing with a brush may be required to remove materials that adhere to the surfaces. Certain parts of contaminated respirators, such as harness assemblies and leather or cloth components, are difficult to decontaminate. If grossly contaminated, they may be discarded in a designated container. Rubber components can be soaked in soap and water and scrubbed with a brush.

The following decontamination protocol will be used, as appropriate to the level of PPE being used:

- Drop hand tools and equipment in the designated decontamination area.
- Either wash outer rubber boots or dispose of booties.
- Rinse outer boots.
- Wash and rinse outer gloves.
- Remove outer boots and gloves, dispose gloves if necessary in the container designated for PPE waste.
- Replace cartridges if required.
- Remove and dispose Tyvek coverall in the designated PPE waste container.
- Remove respirator, dispose cartridges as required in the container designated for PPE waste.
- Personnel should wash their respirator at the end of each workday.

### *6.3.3 Decontamination Wastes and Investigation Derived Wastes*

Decontamination wash and rinse waters and investigation derived wastes (IDW) will be managed according to applicable regulatory guidelines.

- Spent decon solutions may be required to be drummed and disposed of as hazardous waste and/or solvent solutions may be required to be segregated from water rinses.
- Decontamination shall be performed in a manner that minimizes the amount of waste generated.
- IDW may be required to be drummed and disposed of as hazardous waste.

# 7.0 Site Operating Procedures

These following guidelines comply with the established guidelines of the Barton & Loguidice, P.C., Corporate Health and Safety Program:

All field investigation activities must be coordinated through the Site Manager.

During any activity conducted on-site in which a potential exists for exposure to hazardous materials, accident or injury, at least two (2) persons must be present who are in constant communication with each other. At least two (2) persons must also be present during all demolition or excavation activities.

Samples obtained from areas known or suspected to contain contaminated substances or materials must be handled with appropriate personal protection equipment.

All equipment used to conduct the Site Investigation must be properly decontaminated and maintained in good working order. Equipment must be inspected for signs of defects and/or contamination before and after each use.

The discovery of any condition that would suggest the existence of a situation more hazardous than anticipated will result in the evacuation of the activity zone until a complete evaluation of the hazard can be performed.

## 7.1 Daily Operating Procedures

The following are the daily operating procedures that are to be followed by on-site personnel:

- Hold Tailgate Safety Meetings prior to work start and as needed thereafter (suggest daily; however, minimum of weekly).
- Use monitoring instruments and follow designated protocol and contaminant action levels.
- Use PPE as specified.
- Use hearing protection around heavy equipment.
- Remain upwind of operations and airborne contaminants, if possible.
- Establish a work/rest regimen when ambient temperatures and protective clothing create potential thermal hazards.
- Eating, drinking, applying cosmetics and smoking are prohibited in work areas.
- Refer to the SSHC for specific safety concerns for each individual site task.
- On-site personnel are encouraged to be alert to their own physical condition, as well as their co-workers.
- **All accidents, no matter how minor,** must be immediately reported to the SSHC.

## 7.2 Site Control

The purpose of site control is to minimize the exposure of site workers to potential contamination, protect the public from the site's hazards, and prevent vandalism. The degree of site control necessary depends on site characteristics and the surrounding community. At this time, there are no access restrictions to the site. During the field activities, Barton & Loguidice, P.C. (B&L), and Steel Treaters are requesting that personnel, subcontractors and visitors report to the on-site B&L supervisor prior to entering the work area.

Since there are no access restrictions to the Site, particular attention will be placed on the condition of the site regarding three (3) main work zone areas:

*Activity Zone*

This zone applies to the immediate work area and includes all materials, equipment, vehicles and personnel involved in the site activity. For example, during the installation of a monitoring well, the activity zone will encompass the borehole, drilling rig, monitoring well construction materials and equipment, sampling equipment, decontamination supplies, and drilling/well inspection personnel. Site control measures will include flagging the perimeter of the activity zone to clearly mark the limits of work and to warn passers-by and visitors of the site activity. In addition, the site supervisor will maintain communication with City personnel as the location of this zone (and the type of work being performed) changes throughout the project.

The required level of PPE in the activity zone can vary according to job assignment. This will allow a flexible, effective, and less costly operation, while still maintaining a high degree of safety.

This area will be limited to authorized personnel from B&L, regulatory agencies, and contractors/subcontractors to the B&L and/or Steel Treaters. Personnel entering this area will be required to comply with their own HASP that is at least as stringent as this HASP.

*Decontamination Zone*

In order to prevent incidental contact with contaminants on investigation equipment or in the wash water, activities within the decontamination area will be completed before subsequent site work or other activity begins. This includes:

- Complete removal of contaminants on all equipment used during the preceding phase of the investigation;
- Placement of the waste wash water and sediment in sealed drums;
- Storage of the drums in a secure and out-of-the-way place for future disposal;
- Proper labeling of drum contents;
- Cleanup (if necessary) of area outside of decontamination area; and

*Support Zone*

The support zone is the location of the administrative and other support functions needed to keep the operations in the activity and decontamination zone running smoothly. Any function that need not or cannot be performed in a hazardous atmosphere is performed here. Personnel may wear normal work clothes within this zone. Any potentially contaminated clothing, equipment and samples must remain in the decontamination zone until decontaminated. All emergency telephone numbers, change for the telephone (if necessary), evacuation route maps, and vehicle keys should be kept in the support zone.

The SSHC will establish a decontamination system and decontamination procedures appropriate to the site and the work that will prevent potentially hazardous materials from leaving the site. All personnel exiting the activity zone will be decontaminated prior to entering the support zone. The decontamination procedures will be reviewed at each daily safety briefing.

Personal hygiene facilities meeting at least the minimum requirements of 29 CFR Part 1910.120 will be provided nearby.

Upon completion of the day's activities, heavy machinery and equipment will be stored securely within the site, or at a location selected by the SSHC.

## 7.3 Buddy System

Most activities in a contaminated or otherwise hazardous area should be conducted with a partner who is able to:

- Provide his or her partner with assistance.
- Observe his or her partner for signs of chemical or heat exposure.
- Periodically check the integrity of his or her partner's protective clothing.
- Notify the SSHC if emergency help is needed.

## 7.4 Engineering Controls

Engineering controls and work practices are primarily for limiting exposure through application of engineered barriers. They will be applied to this project when and where they are practicable. The following engineering controls may be applied on this project: water spray, covering of materials, site preparation to facilitate operations and remove obvious physical hazards, and warning alarms/devices.

# 8.0 Emergency Response Procedures

## 8.1 Pre-Emergency Planning

Planning for emergencies is a crucial part of emergency response. The SSHC is responsible for training all employees in potential site hazards and the emergency response procedures.

## 8.2 Personnel Roles

The SSHC is responsible for responding to, or coordinating the response of, off-site personnel to emergencies. In the event of an emergency, the SSHC will direct all notification, response and follow-up actions. Contacts with outside response personnel (hospital, fire department, etc.) will be done at the direction of the SSHC.

Prior to the start of work on the site, the SSHC will:

1. Notify emergency contacts, and/or health care facilities of the potentially hazardous activities and potential wastes that may develop as a result of the activities performed on-site;
2. Confirm that the following safety equipment is available: eyewash and safety shower station, first aid supplies, air horn, and fire extinguishers;
3. Have a working knowledge of the safety equipment available; and
4. Confirm directions to the hospital are prominently posted with the emergency telephone numbers.

Employees who will respond to emergencies involving hazardous materials will be trained in how to respond to such emergencies.

The SSHC will check daily to see that the following safety equipment is available at the site: eyewash station, first aid supplies, and fire extinguisher.

The SSHC will be responsible for directing notification, response and follow-up actions and for contacting outside response personnel (ambulance, fire department or others) prior to and during an emergency. Upon notification of an exposure incident, the SSHC will call the Hospital and fire and police emergency response personnel for recommended medical diagnosis, treatment, if necessary, and transportation to the hospital.

The SSHC must conduct an investigation of the incident as soon as possible. The SSHC will determine whether and at what levels exposure actually occurred, the cause of such exposure, and the means to prevent similar incidents from occurring. The resulting report must be accurate, objective, complete and signed and dated.

## 8.3 Safe Distances and Places of Refuge

In case of an emergency, a designated off-site area will serve as the immediate place of refuge. Personnel in the exclusion zone should evacuate through the decontamination zone to the refuge location, both for their own personal safety and to prevent hampering response/rescue efforts. Following an evacuation, the SSHC will account for on-site personnel. If evacuation from the work site is necessary, the project vehicles will be used to transport on-site personnel to a place of refuge.

## 8.4 Emergency Communications

There will be a cellular telephone located in either the Site Manager's and/or SSHC's vehicle for emergency use. Emergency telephone numbers are listed in Attachment 7 of this HASP. There will be air horns, walkie-talkies, and/or other audible emergency signals located within the exclusion zone and decontamination area to signal others of an emergency. The SSHC should brief all personnel regarding audible emergency signals to be used during the site activities prior to starting the work. Site personnel will use the following hand signals to inform others of emergencies:

- Hand gripping throat - out of air, cannot breathe.
- Grip partner's wrist or both hands around waist - leave area immediately.
- Hands on top of head - need assistance.
- Thumbs up - everything's OK, or I understand.
- Thumbs down – No.

## 8.5 Emergency Procedures

The nature of work at a contaminated or potentially contaminated work site makes emergencies a continual possibility. Although emergencies are unlikely and occur infrequently, a contingency plan is required to assure timely and appropriate response actions. The contingency plan is reviewed at tailgate safety meetings.

### *8.5.1 Incident Procedures*

If an emergency incident occurs, the following actions will be taken:

1. Size-up the situation based upon available information.
2. Notify the SSHC.
3. Only respond to an emergency if personnel are sufficiently trained and properly equipped.
4. As appropriate, evacuate site personnel and notify emergency response agencies, e.g., police, fire, etc.

5. As necessary, request assistance from outside sources and/or allocate personnel and equipment resources for the response.
6. Consult the posted emergency telephone list and contact key project personnel.
7. Prepare an incident report.

All site personnel should be aware of the location of fire fighting equipment. Personnel shall only extinguish minor fires. Large fires will require contacting the local fire department and allowing them to handle the fire. The local fire department will be contacted prior to initiating site activities to inform them of the potential hazardous materials that could be encountered in an emergency.

### *8.5.2 Medical Emergencies*

In the event of an accident or injury, workers will immediately implement emergency decontamination and isolation measures to assist those who have been injured or exposed and to protect others from the hazards. Upon notification of an exposure incident, the SSHC will contact the emergency response personnel who can provide medical diagnosis and treatment. If necessary, immediate medical care will be provided by trained personnel competent in first aid procedures. Trained personnel competent in such matters will only provide other on-site medical and/or first aid response to an injury or illness.

If an individual is transported to a hospital or doctor, a copy of this HASP will accompany the individual.

The SSHC will be notified when an accident or incident occurs and will respond according to the seriousness of the incident. The SSHC will investigate facility/site conditions to determine whether and at what levels exposure actually occurred, the cause of such exposure and the means to be taken to prevent the incident from recurring.

The SSHC and the exposed individual will complete an exposure-incident investigation. The SSHC will prepare a signed and dated report documenting the investigation. The SSHC and the exposed individual will also complete an exposure-incident reporting form. The form will be filed with the employee's medical and safety records to serve as documentation of the incident and the actions taken.

Emergency first aid may include taking care of minor scrapes to performing CPR. All site personnel should be familiar with the location of the site first aid kits. The site safety officer should be trained in first aid and CPR. Contacting hospital and/or emergency agencies shall be made on a case by case basis depending on the severity of the injury. If an off-site emergency agency is contacted, all the details relating to the injury should be relayed to that agency. All site injuries should be documented. The following actions should be taken if someone requires first aid:

1. Survey the scene to determine if it is safe to reach the injured person.

2. Ask the injured person what happened. If the person is unconscious, look for signs as to what may have occurred.
3. See if there are others injured.
4. Reassure the victim. Contact others for help; tell them to call the appropriate emergency agency.
5. If it is safe to move the victim, return them back to the field office.

Only trained personnel should perform CPR or rescue breathing on an unconscious victim.

Personnel who experience heat stress or frost bite should be attended to in the following manner:

Heat Stress - Symptoms include cool, pale and moist skin, heavy sweating, headache, and nausea. This person should be removed from the hot environment immediately, and allowed to lie on their back. Apply cold packs or make sure they are in an air-conditioned room. Give them plenty of water and/or electrolyte-replacing fluids. Should a victim experience heat stroke (high body temperature, red skin) the body must be cooled down quickly and receive medical attention immediately. Persons experiencing heat stress or heat stroke should be attended to until the situation has been remedied.

Frostbite - Symptoms include slightly flushed skin that becomes white, pain at extremities in early stages. Get a victim experiencing frostbite to a warm area and put the frostbitten parts in warm (100-105º F) water. Loosely bandage injured parts after soaking.

Hypothermia - Under conditions of cold temperatures and high winds, there is the potential for workers experiencing hypothermia. Signs of hypothermia include: shivering, dizziness, numbness, confusion, or drowsiness. Warm up this person's body with dry clothes and a blanket, if available. Call the appropriate emergency agency or take this person to the hospital.

## 8.6 Emergency Routes

Should an emergency signal be sounded, on-site personnel should immediately stop what they are doing, and return to the decontamination area. Personnel in the decontamination area and the support zone should evaluate the emergency and contact the appropriate off site emergency personnel. Once on site personnel return to the decontamination area, there will be someone there to direct them as to what to do. It is imperative that the SSHC or designated alternate account for all site personnel. The SSHC should direct all personnel to the nearest safe refuge.

**The hospital route is included as an attachment.**

If the emergency event threatens the surrounding community, it is important that the local police and fire departments be contacted immediately regarding the potential danger.

## 8.7 Spill Control

A major spill is not anticipated at the site. Should a spill of any type occur, the employee should report it immediately to the SSHC, who will make arrangements for the proper cleanup of the spill. These arrangements will include diking and ditching, as necessary, as well as the use of absorbents such as vermiculite or Speedi Dry. The emergency response personnel will be contacted immediately by SSHC in the event that on-site materials can not immediately contain the spill.

## 8.8 Personal Protective and Emergency Equipment

There will be suitable equipment on site for small emergency events such as additional PPE, fire extinguishers and first aid kits. In the event of a major emergency event, off-site personnel will be contacted immediately.

## 8.9 Decontamination Procedures

The extent of emergency decontamination depends on the severity of the injury or illness and the nature of the contamination. Minimum decontamination will consist of detergent washing, rinsing, and removal of contaminated outer clothing and equipment. If time does not permit the completion of all of these actions, it is acceptable to remove the contaminated clothing without washing it. If the situation is such that the contaminated clothing cannot be removed, the person should be given required first aid treatment, and then wrapped in plastic or a blanket prior to transport to medical care. If heat stress is a factor in the victim's illness/injury, the outer protective garment will be removed immediately.

## 8.10 Evacuation Routes

Unless otherwise directed, evacuation will be made through the decon area to the designated refuge location for a head count.

## 8.11 Response Critique

Should an incident on-site occur, the SSHC will analyze the response efforts in order to continually improve on-site conditions and procedures. The SSHC must complete follow-up activities before on-site work is resumed following an emergency. Used emergency equipment must be recharged, refilled or replaced. Government agencies must be notified as required in their regulations.

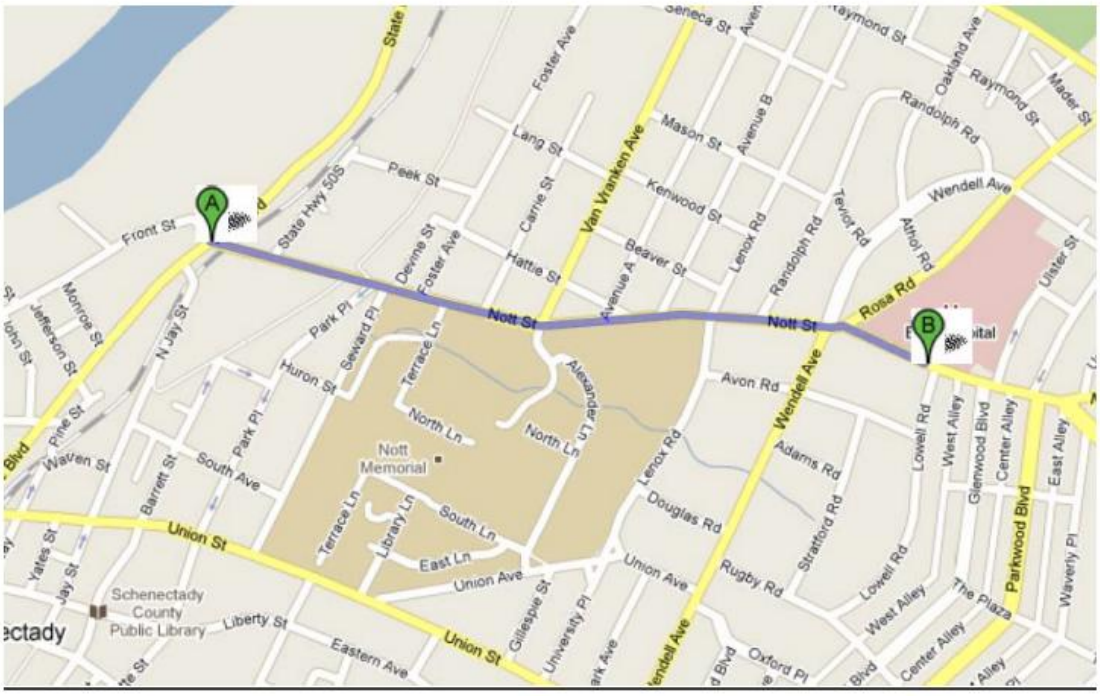
# Attachment 1

**Driving directions to Ellis Hospital**
**1.0 mi** – about **2 mins**

A 301 Nott St
Schenectady, NY 12305

1. Head **east** on **Nott St** toward **Erie Blvd/Maxon Rd** 1.0 mi
Destination will be on the left

B Ellis Hospital
1101 Nott St
Schenectady, NY




(This should be posted at a conspicuous location at the site.)

# Attachment 2

## Emergency Contacts
## (To Be Posted)

| Contact | Person or Agency | Phone Number |
|---|---|---|
| Maxon-ALCO Holdings LLC | Steve Luciano | (518) 356-4445 |
| NYSDEC Region 4 Project Manager | John Strang | (518) 357-2390 |
| Law Enforcement | (C) Schenectady PD | 911 |
| Fire Department | (C) Schenectady FD | 911 |
| Confined Space Rescue (Fire Department) | (C) Schenectady FD | 911 |
| Ambulance | | 911 |
| Hospital - Emergency | Ellis Hospital | (518) 243-4000 |
| B&L Site Manager/Site Safety Officer | Andrew J Barber | (518) 218-1801 |
| B&L Officer-in-Charge | Scott D. Nostrand, P.E. | (315) 457-5200 |

# Appendix C

# IRM Work Plan

Former ALCO Site
Brownfield Cleanup Project

City of Schenectady
Schenectady County, New York

# Interim Remedial Measures Work Plan (IRM-WP)

New York State
Brownfield Cleanup Program
Site Nos. C447042, C447043, and C447044

February 2014

Barton & Loguidice

Former ALCO Site
Brownfield Cleanup Project

City of Schenectady

# Interim Remedial Measures Work Plan
Site Nos. C447042, C447043, and C447044

January 2014

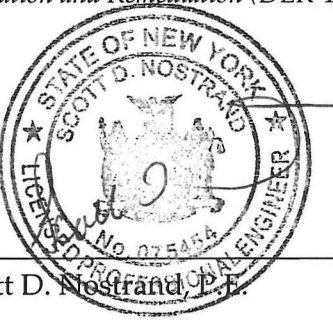
Prepared For:

Maxon ALCO Holdings, LLC
540 Broadway
Albany, New York 12207

Prepared By:

Barton & Loguidice, D.P.C.
Engineers • Environmental Scientists • Planners • Landscape Architects
10 Airline Drive, Suite 200
Albany, New York 12205

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




Scott D. Nostrand, P.E.

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# 1.0 Introduction

Maxon ALCO Holdings, LLC (MAH) entered into Brownfield Cleanup Agreements (BCA) through the New York State Department of Environmental Conservation's (NYSDEC) Brownfield Cleanup Program (BCP) for the property located at 301 Nott Street in Schenectady, New York, identified as the ALCO Site (Property or Site) and historically known as the Nott Street Industrial Park (Park). In 2010, after purchasing the property, the Volunteer (Maxon-ALCO Holdings) divided the Property into three parcels: Parcel A, Parcel B and Parcel C (Site Nos. C447042, C447043, and C447044, see Figure 1) and each Parcel was deemed eligible for the BCP and subject to separate BCAs. In November of 2013, MAH proposed the reconfiguration of Parcels B and C to NYSDEC to more efficiently proceed with potential Interim Remedial Measures and redevelopment planning; the proposed reconfiguration was approved by NYSDEC by letter dated December 23, 2013.

The purpose of the BCP is to encourage voluntary remediation of brownfield sites for reuse and development. This includes conducting a complete characterization of the Site by performing a Remedial Investigation (RI). The primary objective of the RI is to identify environmental concerns and to provide the basis for evaluating remedial alternatives, if necessary. The RI was completed in the first half of 2012, and the RI Report (prepared by CHA) was submitted to NYSDEC in August 2012. Though a separate Work Plan was prepared for each Parcel, the Remedial Investigation (RI) Report covered the entire Site since remedial decision making will include activities that involve multiple parcels on the ALCO Site.

Specifically, the objectives of the RI were to:

- Supplement the historic investigations that have been conducted on the Site,
- Further identify source(s) of contamination,
- Define the nature and extent of that contamination,
- Assess the impact of contamination on public health or the environment, and
- Provide information for the development and selection of a remedial work plan across all parcels (A, B, and C) that make up the Alco property.

The RI Report also provided a qualitative human health exposure assessment. An exposure pathway is complete when all five elements of an exposure pathway are documented; a potential exposure pathway exists when any one or more of the five elements comprising an exposure pathway is not documented.

The results of the exposure assessment indicated that there is currently one complete potential exposure pathway.

- Potential exposure of current tenants of Buildings 306 and 330 to VOCs in indoor air through inhalation.

The following potential exposure pathways were identified:

- Exposure of future on-Site workers, residents, site occupants to soil, groundwater, soil vapor or LNAPL that may be contaminated with VOCs, SVOCs, and/or metals during future intrusive activities at the Site. Routes of exposure to future on-Site workers could include inhalation, ingestion, dermal contact, eye contact, and puncture/injection.
- Exposure to groundwater that may be contaminated with VOCs, SVOCs, and/or metals if groundwater wells are installed and used for drinking water, etc.

By letter dated December 14, 2012, NYSDEC provided comments on the RI Report; general comments were provided for site-wide issues, and comments specific to each parcel were also provided. The comment letter indicated that no further investigation was required for a majority of the areas/issues that were addressed by the RI. Finally, the comment letter requested additional data collection activities to follow-up on and/or reserve some specified issues to finalize the RI.

In January 2013 Barton & Loguidice prepared a Supplemental Remedial Investigation Work Plan (SRI-WP) to provide the procedures for conducting the requested follow-up work. In follow-up discussions with the NYSDEC, there was concurrence that the design investigation tasks proposed in the Remedial Work Plan (RWP) should be combined with the requested follow-up RI work, as the tasks were 1) similar in nature, and 2) needed to be performed prior to the Remedial Design (RD). The tasks performed during the Supplemental Remedial Investigation are summarized below:

Tasks Requested in the NYSDEC 12/14/12 Letter and Follow-up Discussion:

- Follow-up investigation on the geophysical investigation in identified areas
- Soil Vapor Intrusion investigation in the identified buildings
- Installation of three monitoring wells between Buildings 306-320
- Inspection of Buildings 308 Trench
- Borings in the MW-36 Area (AOC 1A)

Tasks Proposed in the Remedial Work Plan (RWP):

- Chlorinated Solvent Plume Source Investigation (AOC 2)
- Chlorinated Solvent Plume Delineation (monitoring wells) (AOC 2)
- Monitoring well in the MW-45 Area (AOC 1B)

The SRI activities included the installation of soil borings, monitoring wells, soil vapor monitoring points, and test pits along with the collected of subsurface soil, soil vapor, and groundwater to further characterize the site. The planned scope of SRI activities consisted of the following:

- Installation of three (3) monitoring wells between Buildings 306-320 screening the water table and the collection of groundwater samples for VOCs analysis.
- Installation of three (3) monitoring wells screening the water table near MW-45 to determine the approximate extent of previously documented LNAPL at this location.
- Installation of 12-15 Geoprobe borings around MW-36 to assess the extent of previously documented LNAPL at this location.
- Advancement of approximately 30 membrane interface probe (MIP) borings near SV-C9 and MW-19 to determine the source of the previously documented chlorinated solvent plume.
- Collect subsurface soil samples from the MIP borings for VOCs analysis.
- Installation of four (4) monitoring wells to delineate the chlorinated solvent plume and determine an effective means for mitigation.
- Collection of groundwater samples from the four (4) newly installed chlorinated solvent plume delineation wells along with seven (7) existing plume delineation wells to be analyzed for VOCs.
- Installation of test pits around Ground Penetrating Radar (GPR) area 2, 6, and 8 as a follow-up to the geophysical survey performed during the 2012 Remedial Investigation by CHA.
- Installation of six (6) subsurface soil vapor points in Buildings 300, 306, and 330.
- Inspection and confirmation of filling of the former Building 308 trench system.

The Supplemental RI activities were completed during the period from May through August 2013. Field activities were conducted in general accordance with NYSDEC protocols (including DER-10), the Remedial Action Work Plan (Kleinfelder, Inc., 2010), and the Supplemental Remedial Investigation Work Plan (Barton & Loguidice, P.C., 2013). Deviations from these plans are summarized below.

- Due to the presence of a thick concrete slab in the area surrounding SV-C9 and MW-19 the MIP could not be advanced. Instead, a Geoprobe was utilized to advance the MacroCore and a photoionization detector (PID) and field Gas Chromatograph (GC) were used to screen select samples in the field before submitting to the lab for analysis.
- Monitoring well MW-50 was sampled during the RI and was scheduled for re-sampling, but could not be located and was not sampled.

- The NYSDEC and NYSDOH indicated in a phone call on 5/31/13 that soil vapor samples were not required in Building 300 due to extensive mold in the basement and the building's current unoccupied status. SVI sampling will be required if the building is to be occupied.

Under contemplated future land use, the objective of the selected remedial alternative would be to prevent exposure to contaminated soil, groundwater, and soil vapor.

The Alternatives Analysis Report (AAR) is the next step in the BCP process; the AAR was prepared and revised by Barton & Loguidice, Inc., and was submitted to NYSDEC in December 2013. As part of the AAR, three areas of concern (AOCs) were identified based on the findings of the RI and the Exposure Assessment:

1. Historic aged, Light Non-Aqueous Phase Liquid (LNAPL- free-phase petroleum) on the water table around monitoring well MW-36 and MW-45 (AOCs 1A and 1B) and existing underground storage tanks (USTs) that were not properly closed (AOC 1C) ;
2. A chlorinated solvent plume in a narrow area of the eastern portion of the Site that extends from the vicinity of MW-19 toward the Mohawk River (AOC 2); and
3. Soil impacts from polynuclear aromatic hydrocarbons (PAHs) (AOC 3).

## 1.1 Purpose of Report

This work plan (WP) has been prepared to presents the procedures for remediating AOCs 1A, 1B and 1C as Interim Remedial Measures (IRMs). The use of IRMs to address discrete AOCs such as USTs and LNAPL accumulations is specifically discussed in DER-10 Section 1.11. Methods for remediating AOCs 2 and 3 are presented in the AAR and Remedial Work Plan (RWP), which are under review by NYSDEC. This IRM-WP has been prepared in accordance with DER-10, 6 NYCRR Part 375, and the Brownfield Cleanup Program Guidelines.

### *1.1.1 Report Organization*

This report is organized into three sections (including this introduction section), with appropriate subsections within each division. Figures are located following the text, prior to the appendix in the back of the document.

## 1.2 Site Background

### *1.2.1 Site Description*

The Schenectady Locomotive Engine Manufactory initially developed a portion of the existing Park in 1849. In 1851, the company changed its name to Schenectady Locomotive Works (Works) and continued to develop the Site. In 1901, the Works merged with several other companies to form the American Locomotive Company (ALCO). ALCO operated the Site until 1969. Schenectady Industrial Corporation (SIC) purchased the Park in 1971, with General Electric Company (GE) occupying the Park from 1971 to 1985. Small industrial, manufacturing

and fabrication companies have occupied various buildings within the Park since 1985, when occupancy of buildings was returned to SIC.

During April 1992, Coyne Textile Services (CTS), with operations on Front Street, adjacent to the ALCO Site, had a fuel oil release that partially leaked into the municipal storm drain sewer system which flows under the Site, discharging to the Mohawk River at the College Creek Outfall. During inspection of this release, the NYSDEC reportedly observed petroleum seeping from riprap along the bank of the Mohawk River adjacent to Buildings 320 and 324. The NYSDEC requested that a subsurface investigation be performed onshore adjacent to the petroleum seep areas. Following this release, Schenectady Industrial Corporation (SIC) entered into an Order on Consent (OC), (Index No. R4-1338-92-05), with the NYSDEC .

In 1992, SIC performed a subsurface investigation that included advancing a series of five hand-excavated test pits, (TP-A1 through TP-E1), along the riverbank. Soil analytical results indicated total petroleum hydrocarbon (TPH) concentrations up to 12,000 parts per million (ppm). Following these results, two deep soil borings and five shallow soil borings were advanced adjacent to the test pits. The five shallow soil borings were completed at groundwater monitoring wells. Free-phase petroleum was found in two wells and the free-phase petroleum in one well was found to contain trace levels of polychlorinated biphenyls (PCBs). Groundwater analytical results indicated TPH concentrations ranging from 4.6 ppm to 32,200 ppm. Volatile organic compound (VOC) concentrations were detected.

Historically there have been many environmental investigations completed at the former ALCO Site since the initial investigation in 1992. These investigations, some of which were conducted in conjunction with NYSDEC oversight, have taken place across the ALCO-Maxon Site, which has been separated into Parcels A, B and C. In addition to the environmental investigations conducted throughout the former ALCO Industrial property, underground storage tank (UST) removals and remedial activities have been completed on the ALCO-Maxon Site parcels. Summaries of the investigations, UST removals and remedial activities are provided in Section 4.0.

Due to the historic industrial impacts identified on the ALCO Site and subsequent to the execution of a BCA, three Remedial Investigation Work Plans (one for each parcel) were prepared by Kleinfelder, Inc. (KLF) and submitted to NYSDEC on May 24, 2010. The Work Plan outlined the procedures and protocols that were to be utilized to conduct a full-scale remedial investigation that would provide the necessary field data to further delineate the nature and extent of contamination at the subject Site. The Work Plan was prepared to conform to the Draft DER-10 *Technical Guidance for Site Investigation and Remediation* issued by the Division of Environmental Remediation (December 2002). The RI Work Plans for Parcels B and C were subsequently approved by the NYSDEC on June 23, 2011. One of the comments received by the NYSDEC was a request for sampling of both the riverbank and Mohawk River sediments adjacent to the Site. Following the submission of a Work Plan Addendum on January 10, 2012, the RI Work Plan for Parcel A was approved by the NYSDEC on January 23, 2012.

### *1.2.2 Remedial Investigation Findings*

#### *1.2.2.1 Geology/Hydrogeology*

The Site is underlain by a unit of fill that is present across much of the Site, varying from a minimum depth of 2 feet to a maximum depth observed during the RI of 12.4 feet. In general, the fill material consists of reworked soil (e.g., silt, sand, gravel, and clay) with lesser amounts of brick, concrete, ash/cinders, slag, metal, wood/organics, and glass. In locations where the fill unit is generally thinner, a fine to coarse grained sand unit of limited thickness is present beneath the fill. Based on the groundwater contours, as presented in Figure 6, it is apparent that groundwater flow across the majority of the subject Site is to the North towards the Mohawk River. The horizontal hydraulic gradient from south to north across the Site (i.e. from MW-19 to MW-25D) is approximately 0.006 ft/ft.

#### *1.2.2.2 Surface Soil*

The analytical results from this RI indicate that there are no VOC or PCB impacts to surface soil at the Site. These results are generally consistent with results from previous investigations. There are relatively widespread SVOC detections in surface soils at concentrations below Part 375 SCOs, and only limited areas that exceed Part 375 SCOs. The presence of certain VOC and SVOC Tentatively Identified Compounds (TICs) suggest that degradation/breakdown of historic aged petroleum has and/or is occurring across the Site. Lastly, there are limited, isolated areas of arsenic, lead, and/or mercury that slightly exceed Part 375 SCOs.

#### *1.2.2.3 Subsurface Soil*

Analytical results for samples collected from the upper fill/sand unit suggest that there are no significant VOC impacts and only limited SVOC impacts to unsaturated soils. Within the unsaturated zone, the area of highest SVOC concentrations is present in the area just west of Building 308, the area located just south of Building 320, beneath the slab of Building 320, and the area between Buildings 316 and 332.

Based on the analytical results for soil samples that were collected from test pits as part of the current RI and from previous investigations, there is no evidence of any PCB or metal impacts to subsurface soils across the Site.

#### *1.2.2.4 Groundwater*

The results obtained during this RI confirm the detection of a historic chlorinated solvent plume, which appears to originate upgradient from or in the vicinity of MW-19 and extends over 1,200 feet in length towards the Mohawk River. The plume appears to be relatively narrow and is well-delineated to the east, south and west. The depth of the plume is relatively shallow (~20 feet bgs) in the vicinity of monitoring well MW-19 and temporary monitoring well TMW-19C and deepens to approximately 50 to 70 feet bgs along the length of the plume. The data confirms that natural degradation is occurring based on the presence of PCE and TCE breakdown products.

The only other areas with impacts to groundwater are those with relatively localized SVOC (PAH) detections that are generally associated with former UST areas or free product recovery areas. However, a comparison of analytical results from this and from previous investigations suggests that contaminant concentrations have generally decreased, with few exceptions. The presence of TICs in most wells across the Site, consisting primarily of petroleum-related compounds, suggest that degradation/breakdown of historic, aged petroleum has occurred in groundwater across the Site.

#### *1.2.2.5 Soil Vapor Summary*

The most apparent impacts to subsurface vapor are present at the southern edge of the Site located just north of Erie Boulevard. The subsurface in this area is primarily impacted by chlorinated VOCs that appear to be related to the underlying chlorinated solvent groundwater plume. Chlorinated VOC impacts extend to the north/northeast and generally follow the direction of the groundwater plume. There are also chlorinated VOC impacts to subsurface soil vapor in a limited area between Buildings 346 and 324 and in the southwestern-most portion of the Site between Buildings 306 and 308. There are various but minor impacts to subsurface soil vapor from petroleum-related compounds; however, the detections do not appear to indicate the presence of any significant petroleum source for soil vapor contamination.

#### *1.2.2.6 Riverbank Soil Summary*

The analytical results from this RI indicate that there are no VOC or PCB impacts to soils on the bank of the Mohawk River that runs parallel to the Site, generally consistent with results from previous investigations. Impacts from SVOCs to the riverbank of the Mohawk River associated with the Site are generally limited to areas where historic operations took place, in the immediate vicinity of Buildings 326, 324 and 322.

Based on the results obtained during this RI and the previous remedial measures undertaken, minor detections of inorganics (mainly iron, arsenic, mercury and lead) in riverbank soils appear to also be limited to the western portion of the riverbank that runs parallel to the Site (west of College Creek Outfall). The eastern portion of the riverbank has only limited detections of metals (arsenic and lead) slightly above Part 375 SCOs in the area north of Building 346.

#### *1.2.2.7 River Sediment Summary*

Collectively, the RI noted detectable concentrations of contaminants present in Mohawk River sediments both adjacent to the Site and upstream from the Site. The data indicate that an up-gradient source of chlorinated VOCs impacted up-gradient river sediments, but the impacts are relatively localized. There do not appear to be any VOC impacts to sediment immediately adjacent to the site. SVOC impacts are most evident upstream and adjacent to the western-most portion of the site (i.e. in the Building 320 area to the east) and suggest that, in addition to limited contribution from the Site itself, an up-gradient SVOC source is, or was, also present. There are no PCB impacts to the river sediments. The results also indicate that sediments both

adjacent to the Site and upstream from the Site have detectable concentrations of metals. It does not appear that the Site is causing significant adverse inorganic impacts to river sediments.

### *1.2.3 Supplemental Remedial Investigation Findings*

The additional activities implemented as part of the SRI provided further delineation and identification of historic industrial conditions at the former industrial property. The data gathered was consistent with prior site investigation information.

#### *1.2.3.1 Parcel A*

- NAPL was detected in two of the three monitoring wells installed around MW-45; NAPL thicknesses varied from roughly one inch in MW-47 to roughly one foot in MW-48.
- Concentrations of chlorinated VOCs in Parcel A monitoring wells sampled ranged from 136 ug/L to 3082 ug/L.

#### *1.2.3.2 Parcel B*

- Follow-up on the geophysical study Area 2 identified an underground vault.
- Follow-up on the geophysical study Area 6 identified a former concrete building wall with re-bar.
- Concentrations of petroleum-related VOCs were detected in one of the three wells installed between Building 306 and former Building 320; concentrations did not exceed 22 ug/L.
- Concentrations of chlorinated VOCs in Parcel B monitoring wells sampled ranged from ND to 178 ug/L.

#### *1.2.3.3 Parcel C*

- Follow-up on the geophysical study Area 8 identified two underground storage tanks that had been used for petroleum products. The tanks did not appear to have been abandoned or backfilled.
- SVI results in Buildings 306 and 330 detected contaminants both in sub-slab soil vapor and in ambient air above guidance concentrations, but there was not a large degree of correlation between the contaminants detected in sub-slab versus ambient air samples.
- LNAPL was detected in one of the ten boring locations around to MW-36; the one location where LNAPL was detected was roughly five feet from MW-36.

- SVI results in Buildings 306 and 330 detected contaminants both in sub-slab soil vapor and in ambient air above guidance concentrations, but there was not a large degree of correlation between the contaminants detected in sub-slab versus ambient air samples.
- LNAPL was detected in one of the ten boring locations around to MW-36; the one location where LNAPL was detected was roughly five feet from MW-36.

#### *1.2.3.4 Site-Wide Groundwater Quality*

- Monitoring wells installed on Parcels A, B and C provided further delineation of the chlorinated solvent plume, which migrates across the three parcels along the established groundwater flow gradient.
- The source area for the chlorinated solvent plume was identified and delineated in an area of Parcel C around soil vapor point SV-C9.

### *1.2.4 Current and Intended Use*

The City of Schenectady adopted its new Zoning Ordinance (Chapter 264) on March 24, 2008. The ALCO Site is zoned C-3 Waterfront Development District. The purpose of the C-3 district is to provide unique opportunities for the development and maintenance of water-oriented uses within certain areas of the City adjacent to the Mohawk River. The C-3 District permits certain recreational, open space, business, and residential uses which will generally benefit from and enhance the unique aesthetic, recreational, and environmental qualities of the waterfront areas.

The former industrial site is serviced by municipal water and sewer and currently has commercial tenants on a limited portion of the property along Front Street and is otherwise unoccupied with the vacant structures being demolished in 2011. The intended future use of Parcel A is restricted-residential. The intended future use of Parcels B and C is commercial.

# 2.0 Supplemental Remedial Investigation Findings

This section discussed the findings of the Supplemental Remedial Investigation for the three areas to be addressed as IRMs. The three areas are shown on the Site Location Map (Figure 1).

## 2.1 MW-36 Area (AOC 1A – Parcel B)

Recovery of Light Non-Aqueous Phase Liquid (LNAPL) in the MW-36 series wells was begun by Kleinfelder in 2008, and efforts were continued when site demolition work was initiated in 2011, when electrical power was unavailable. During 2011 to mid-2012, LNAPL thicknesses were measures and the accumulated LNAPL was manually removed from the wells in the MW-36 area. LNAPL thicknesses were typically in the range of three feet and the amount of LNAPL removed was typically in the range of one to three quarts per event. A battery-operated belt skimmer was installed in mid-2012 to address the only well with remaining LNAPL, MW-36C, which is effectively surrounded by monitoring wells that do not contain LNAPL.

During the SRI, a total of ten borings (B-BL1 through B-BL10) were advanced in the vicinity of MW-36C and screened with a PID and visually examined for the presence of LNAPL. The borings were advanced to total depths ranging from 10 to 15 feet, or where the water table was encountered. PID readings ranged from 1.5 to 170 ppm (parts per million) with a majority of the contamination noted from 8 to 10 feet. Soils in this area generally consisted of approximately five feet of fill material overlain on sand with some fine to medium gravel.

During the investigation, the presence of LNAPL saturation was noted on the MacroCore sleeve at boring location B-BL2 (located approximately 5 feet northwest of MW-36C). A 10-foot section of 1-inch PVC was installed at this location with a screen interval at 5 to 10 feet. The product monitoring point was observed over time; product thicknesses ranged from 0 to 1.5 inches over a 30 day timeframe. Remaining boring locations did not contain evidence of LNAPL saturation during the investigations and borings were subsequently backfilled.

## 2.2 MW-45 Area (AOC 1B – Parcel A)

LNAPL was detected in monitoring well MW-45 during the 2012 Remedial Investigation conducted by CHA. Subsequent monitoring and LNAPL removal was conducted on a roughly monthly basis for six months. LNAPL thickness ranged from approximately three feet to less than one foot; LNAPL recovery ranged from roughly three quarts to one pint. Both the LNAPL thickness and recovery decreased with time.

During the SRI, three new monitoring wells were installed in the vicinity of MW-45 for the purpose of delineating the extent of previously detected in MW-45, and were monitored to determine if there was any LNAPL accumulation. Since installation, approximately five gallons of LNAPL was manually removed from MW-58 and placed in a designated on-site storage container. Approximately 1-inch of LNAPL product was also noted in MW-57 and removed. The presence of LNAPL in MW-59 was not observed during monitoring.

## 2.3 Geophysical Study GPR Area 8 (AOC 1C – Parcel B)

The Geophysical Survey work performed during the RI identified two possible underground storage tanks (USTs) in GPR Area 8. The possible USTs had areal dimensions of 7 feet by 22 feet and 16 feet by 18 feet. Additional work was conducted during the SRI to help determine whether the status of the tanks (i.e. – whether they had been filled with inert material).

The tank area was covered by a concrete slab, which was cleaned off to expose the top of the tank. The tanks were physically inspected to determine whether they were closed by being filled with inert material (sand or concrete). The filling appurtenances for the tanks were contained in a metal vault roughly 3 feet in diameter, which had been filled with concrete. The tanks themselves were accessed through two standpipes by lowering a water-level probe; the probe was lowered to the apparent bottom of each tank (roughly 11 feet below the top of the concrete slab). The tanks did not appear to have been backfilled, so in accordance with the SRI work plan, these tanks have been identified as AOC 1C and will be removed as part of this IRM program.

## 2.4 Soil Hot Spots (Parcels A and B)

There are limited, isolated areas of arsenic, lead, and/or mercury that slightly exceed Part 375 SCOs; these locations (sample locations RB-6 and SS-A3 on Parcel A and sample location SS-B3 on Parcel B) were identified in the NYSDEC letter of 12/14/12 and will be subject to individual removal actions.

# 3.0 IRM Methodology

This section provides the methodology for performance of the IRMs. The use of IRMs is discussed in DER-10 Section 1.11, which indicates that IRMS are a preferred method for addressing discrete AOCs such as USTs and LNAPL accumulations.

A Health & Safety Plan (HASP) for Barton & Loguidice, Inc. personnel is provided in Appendix A of this IRM-WP. The HASP was developed in accordance with 29 CFR 1910.120. Other companies (contractors) who will be working on these IRMs can adopt the B&L HASP or provide their own HASP; in either case, safety for personnel of companies other than B&L is the responsibility of that company, pursuant to OSHA regulations.

## 3.1 AOC 1A (Parcel B) and AOC 1B (Parcel A)

Each of these AOCs is of similar size and the same type of remedial issue – LNAPL floating on the water table surface, so the basic remedial approach will be the same.

A backhoe will be used to begin excavating at the monitoring well where LNAPL has been observed. Soils will be field-screened with a photoionization detector (PID) as they are removed from the excavated hole. Soils which do not evidence staining, odors and/or elevated PID readings will be stockpiled on plastic sheeting to allow for further inspection and/or sampling, as needed. It is anticipated that much of the overlying soils will not be impacted and will be able to be re-used on-site, subject to NYSDEC approval.

As impacted soils are encountered (evidenced by staining, odors and/or elevated PID readings), they will be removed from the excavation and stockpiled on a separate soil storage area that is lined with plastic sheeting and bermed to prohibit run-off. In the event that LNAPL is present in the excavation, efforts will be made to recover as much as feasible. Small amounts will be soaked up using oleophilic pads, boom or similar. If greater amounts are present, a temporary large diameter (e.g. – 6 inch diameter) well casing will be installed vertically in the bottom of the excavation with a belt skimmer to recover the free-phase LNAPL.

Excavation will be continued vertically and laterally until the impacted soils have been removed. After completion of the excavation, confirmatory samples will be collected from the sides and bottom of the excavation hole. The final number of samples will be determined in accordance with DER-10, and will be subject to concurrence in the field with NYSDEC. Confirmatory samples will be analyzed for volatile organic compounds (VOCs) by USEPA Method 8260B.

Stockpiled impacted soils will be sampled, with the number of samples and analytical parameters dictated by the soil disposal facility. Impacted soils will remain on the soil storage pad and will be covered with plastic sheeting while awaiting disposal approval. Once the soils are approved for disposal, they will be loaded with a front-end loader onto transports (dump trucks, roll-off boxes). Transports will have the necessary approvals, permits and licenses for

transport of petroleum-impacted soils in NYS, and will be placarded in accordance with NYDEC and NYSDOT regulations.

## 3.2 AOC 1C (Parcel B)

The USTs that compromise AOC 1C will be removed in accordance with 6NYCRR Parts 611-612 and DER-10 Section 5.5. The following steps will be used for tank removal.

- Break up and remove the concrete pad overlying the tanks.
- Excavate around the tanks to expose their full length and width. Screen soil as it is removed and place stockpiled soil on a plastic sheet.
- Measure vapor concentrations in the tank with a portable meter capable of measuring the specific petroleum vapors in the range of the Lower Explosive Limit (LEL). No cutting will begin until vapor concentrations are below 10% of the LEL. If needed, the tank will be ventilated to reach the necessary limit. .
- Cut tanks into workable sections.
- Remove tank sections from the excavation and clean as needed; contain rinseate.
- Transport tank sections to local scrap yard following NYSDEC inspection and approval.
- Inspect the excavation for indications of tank leakage.
- If impacted soils are encountered, excavate and stockpile impacted soils on a separate soil storage area that is lined with plastic sheeting and bermed to prohibit run-off.
- Excavation will be continued vertically and laterally until the impacted soils have been removed.
- After completion of the excavation, confirmatory samples will be collected from the sides and bottom of the excavation hole. The final number of samples will be determined in accordance with DER-10, and will be subject to concurrence in the field with NYSDEC. Confirmatory samples will be analyzed for volatile organic compounds (VOCs) by USEPA Method 8260B.
- Backfill the excavation with approved on-site fill.

## 3.3 Soil Hot Spots (Parcels A and B)

There are limited, isolated areas of arsenic, lead, and/or mercury that slightly exceed Part 375 SCOs; these locations (sample locations RB-6 and SS-A3 on Parcel A and sample location SS-B3 on Parcel B) were identified in the NYSDEC letter of 12/14/12 and will be subject to individual removal actions as described below:

- Stake each location.
- Remove soil at each location from an area roughly 2 feet by 2 feet, to a depth of approximately 2 feet; place soil into a DOT-approved open-head drum.
- Collect a confirmatory soil sample from the bottom of each location; analyze the sample for the metal(s) for which there was an exceedance: RB-6 – arsenic, lead; SS-A3 – mercury; SS-B-3 – arsenic.
- Collect a sample from each drum of soil – soil collection procedures and parameters to be dictated by the proposed disposal facility.
- Move drummed soil to the on-site drum-staging area; label drums as appropriate.
- Dispose of drummed soil after receiving approval from receiving facility, notifying NYSDEC.

# Figure 1

# Site Location Map Showing Areas of Concern

SS-B3

SS-A3

RB-06

MW-45 AREA (AOC-1B)

SITE-WIDE SOIL (AOC 3)

CHLORINTED SOLVENT PLUME (AOC 2)

FLOOD PLAIN ELV. 229

39.49-2-1.311

OUTFALL D42

OUTFALL A43

COLLEGE CREEK OUTFALL

PARCEL A-2

PARCEL B

PARCEL C

346

39.41-1-1

324

39.41-1-3

244

GPR AREA 2

GPR AREA 8 (AOC-1C)

MW-36 AREA BORINGS (AOC-1A)

CHLORINATED SOLVENT PLUME SOURCE AREA (AOC 2)

FORMER BUILDING LOCATIONS 312 & 314

316

39.49-2-7

308

39.49-2-5

306

39.49-2-6

304

39.49-2-8

300

39.49-2-1.2

39.49-2-1.311

MW-54 MW-55 MW-56 MW-57 MW-58 MW-59 MW-60 MW-61 MW-62 MW-63

BUILDING 346 BUILDING 324 BUILDING 326 BUILDING 332 BUILDING 316 BUILDING 308 BUILDING 306 BUILDING 304 BUILDING 300 BUILDING 338 BUILDING 334

STOCK TRAILER

*INSTALL NEW TEE AND VALVE

**LEGEND**

- PROPERTY BOUNDARY
- BCP SITE BOUNDARY
- MANHOLE WITH DRAINAGE STUCTURE NUMBER
- CATCH BASIN WITH DRAINAGE STRUCTURE NUMBER
- LIFT STATION WITH DRAINAGE STRUCTURE NUMBER
- MANHOLE (M.H.)
- CATCH BASIN (C.B.)
- MONITORING WELL (MW)
- TEMPORARY MONITORING WELL (TMW)
- RECOVERY WELL
- PIEZOMETER
- GEOPROBE BORING
- SURFACE SOIL SAMPLE LOCATION (SS)
- SOIL BORING LOCATION

**AREA DEFINITIONS**

- BUILDING/STRUCTURES
- FORMER BUILDINGS (PREVIOUSLY DEMOLISHED)
- "EVF" PARCEL
- "IEPF" PARCEL
- OTHER PROPERTIES NO PART OF S
- REMEDIATION AREA
- FORMER USTIABY LOCATIONS

MW-63 MONITORING WELL (SRI INVESTIGATION 2013)

MAP REFERENCE:

1) "SURVEY OF LANDS, ALCO LOCOMOTIVE, INC., CITY OF SCHENECTADY, COUNTY OF SCHENECTADY", DATED MARCH 1970, AS PREPARED BY C.T. MALE ASSOCIATES.

2) "A SUBDIVISION OF A PORTION OF LANDS OF SCHENECTADY INDUSTRIAL CORPORATION", DATED JUNE 30, 1988, AS PREPARED BY THE ENVIRONMENTAL DESIGN PARTNERSHIP.

3) "SITE PLAN, PROPOSED C & D RECYCLING FACILITY, NOTT STREET INDUSTRIAL PARK", DATED FEBRUARY 1998, AS PREPARED BY INGALLS SMART ASSOCIATES.

SOURCE:

1) ABD ENGINEERS AND SURVEYORS FEBRUARY 1998, REVISED NOVEMBER 1999.

2) HISTORIC BUILDING (HB) LOCATIONS BASED ON A "FUEL OIL PIPING" PLAN, PREPARED FOR AMERICAN LOCOMOTIVE CO., REVISED AUGUST 22,195.

Barton & Loguidice, D.P.C.

MAXON ALCO HOLDINGS, LLC
INTERIM REMEDIAL MEASURES WORK PLAN

**SITE PLAN**

CITY OF SCHENECTADY, NEW YORK

Figure 1
Project No. 1368.001.001
Date 1/9/2014

Z:\BL-Vault\ID218217AD2-1C71-4823-8927-99D5C4054147\0\531000-531999\531982\LU\1368001 SRI Interim Work Plan 2014-02-20 (ID 531982).dwg, 2/26/2014 6:13:50 AM

# Appendix A

# Health and Safety Plan