REMEDIAL ACTION WORK PLAN
BROWNFIELDS CLEANUP PROGRAM

for
132 DINGENS ST., BUFFALO, NY
(Site #: C915263)

JULY 2015

Prepared for
132 Dingens St, LLC
Buffalo, NY

by
Iyer Environmental Group, PLLC
Orchard Park, NY 14127
# REPORT
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1.0 **INTRODUCTION**

This Remedial Action Work Plan (RAWP) follows up on the Remedial Investigation and Alternatives Analysis (see RI and AAR/RAWP Reports dated May 2015) completed by Iyer Environmental Group PLLC (IEG) for the 132 Dingens St. Site located in Buffalo, NY. On June 4, 2015 the NYSDEC issued a Decision Document presenting the selected remedy for the site. This RAWP provides specific details on the implementation of the remedy to meet the remedial objectives and in accordance with the NYSDEC’s DER-10 technical guidance document.

2.0 **SITE DESCRIPTION AND HISTORY**

This irregular shaped, 13-acre parcel located at 132 & 136 Dingens Street (see location on Figure 1 and Site layout on Figure 2) contained an 85,000-sf manufacturing and warehouse facility which burned down in a 2010 fire, leaving behind only the foundation. The existing site topography and layout are shown on Drawing 1.

This Site was used for food storage and distribution dating back to 1966. Most recently, one half of the warehouse was used for warehousing/distribution of household/office trash containers, and the other half for recycling and refurbishing wood pallets. An ammonia refrigeration system located in the pump-house building in the northwest section provided cold storage for the food warehouse. The property was previously also used for a fuel service station. Historically there had been numerous petroleum tanks, both above ground and below ground dating back to the 1930s. The warehouse also had pad-mounted transformers outside. The Site is surrounded by commercial properties and is zoned as such.

The debris from the warehouse fire was cleared by Pinto Construction Services. During the course of the BCP remedial investigation, Pinto continued to remove old refrigeration equipment from the pump-house building and the pad-mounted transformers outside, and process them for recycling. Drums containing various chemicals were also properly disposed off-site. The Site with its one remaining building is secured by a chain link fence surrounding the paved areas. Half the space in the pump-house building is currently rented out to a commercial business.

The ground surface slopes gently to the south, and surface water runoff from the Site is directed to numerous storm catch basins throughout the paved parking areas that discharge into the City of Buffalo’s municipal sewer system. The Site and its surrounding area contained numerous rail lines and yards dating back to 1917, and this area was built up to its current grade with various types of industrial fill. Soils on the Site are mapped by the Soil Conservation Service as “Urban Land” which can typically contain fill materials with little native soil conditions remaining. The nature
of the subsurface materials at the Site is shown on the geologic cross-sections in Appendix A.

No sensitive ecological receptors were identified in and around the Site. Potable water is supplied from Lake Erie by the City of Buffalo, and there are no drinking water wells in the area. The groundwater table is approximately 7 to 10 feet below ground surface. The local regional groundwater flow is generally to the south toward the Buffalo River, although extensive past construction activities in the area may have significantly altered localized groundwater flow patterns.

3.0 SUMMARY OF ENVIRONMENTAL CONDITIONS

Previous investigations at the Site included the following:

- Two Phase I ESAs (1997 by Acres International, and 2004 by Kay Ver Group)
- Two Phase II ESAs (2004 by Baron Associates, and 2011 by IEG).
- Remedial Investigation (2012/2013 by IEG)

The 2011 Phase II ESA and the 2012/2013 RI field work by IEG included:

- Collected soil samples from seventeen (17) test pit locations across unpaved, vegetated areas of the Site
- Collected soil samples from thirty one (31) borings,
- Installed permanent monitoring wells at eight (8) soil boring locations and developed them for sampling
- Analyzed soil samples from the test pits and borings for VOCs, SVOCs, PCBs, pesticides, total cyanides, TCLP lead, and landfill parameters.
- Completed two rounds of groundwater sampling at the eight monitoring wells and analyzed the samples for VOCs, SVOCs, PCBs, pesticides, metals and total cyanides
- Sampled and analyzed the contents of the chemical drums and transformer oil for disposal
- Sampled and pumped out water accumulated in the underground tunnel connecting between the pump-house and the old warehouse building

The site investigations revealed various types of industrial type fill that was used to elevate the ground surface to its present grade in and around the Site. The fill includes randomly deposited heterogeneous materials, construction debris (bricks, concrete and wood), trash (rubbish, glass and paper), oil soaked materials and sludge. The fill is underlain by various types of natural soils (clay, silt, sand and gravel). The thickness of the fills ranged from four feet along the southeastern boundary to twenty feet along the northern boundary.

Volatile organics, pesticides and cyanide were found only at trace levels in soil and groundwater and are therefore not of significance at this Site. No petroleum compounds of significance was found in any of the soil samples, even in the paved area northeast of the old building foundation that was the location of petroleum USTs.
The bulk of the contamination appears to be limited to the industrial fill material, while the underlying natural soil (clay, silt) appears to be minimally impacted. The highest levels of soil contamination exceeding SCOs for restricted commercial and industrial use appear to be in vegetated areas along the northern property boundary and the eastern section. Elevated levels were also found in the old UST area just northeast of the warehouse foundation. Relatively lower levels of contamination were found in the paved areas surrounding the old warehouse foundation, and even lower along the southeastern property boundary.

Of greater significance is soil contamination with several semi-volatile compounds, PCBs and a few metals which are listed in Table 1 along with the range of concentrations found in site soils during the Phase II and RI investigations. SVOC and metals contamination in the soil is widespread across the vegetated areas of the site. These two parameters are typically associated with the industrial type fill material making up the top four to twenty feet of the subsurface. Among the metals, lead is of the greatest concern since high concentrations of total lead (greater than 5,000 mg/Kg) can result in exceedance of its TCLP limit.

Based on the results of two rounds of sampling, groundwater does not appear to be adversely impacted at the site. Unfiltered groundwater samples from eight overburden monitoring wells straddling the fill materials were found to have low levels of contaminants consistent with the carryover of fine solids from the formation. Filtered groundwater samples from the first round and unfiltered samples from the second round were found to have only trace levels of semivolatile organics and metals typical of the area. These findings indicate that the site contaminants are not readily leaching from the fill materials into the groundwater.

4.0 NATURE AND EXTENT OF CONTAMINATION

4.1 Groundwater

Groundwater contamination is not a significant concern for this Site. Filtered groundwater samples from the first round and unfiltered samples from the second round were found to have only trace levels of semivolatile organics and heavy metals typical of the area. Groundwater is therefore not included in the remedy for the Site.

4.2 Soil

Table 1 lists the range of concentrations of various parameters from the remedial investigation, along with Part 375 commercial/industrial use SCOs (CSCOs/ISCOs). Six SVOC compounds, two PCBs and seven heavy metals exceed either just their corresponding commercial use SCOs or also the industrial use SCOs. Figures 3A, 3B and 3C show the distribution of SVOCs and metals in soil at three depth intervals (surface, 0’-4’ and 4’ – 12’ respectively), and Figure 3D shows the distribution of PCBs in the soil.

Semivolatile Organics are present at a wide range of concentrations (35 to 7,163 mg/Kg total SVOCs) in the fill layer. SVOC exceedances of the Part 375 restricted
commercial/industrial use SCOs occur predominantly in subsurface soils in the northern unpaved areas, with the highest SVOC concentrations found in two samples in the northwest portion of the Site.

PCBs, with totals ranging from 0.077 to 59 mg/Kg, were found mostly in surficial soils. Exceedances of the SCOs for PCBs occurred only in the northwest unpaved area of the Site, including one location with the highest PCB contamination.

The distribution of heavy metals in the soil is typical of industrial fill. Barium, copper and nickel represent heavy metals with exceedances of the Part 375 SCOs for restricted commercial use, while arsenic, lead, zinc and mercury also exceeded the industrial use SCOs. Among the heavy metals, lead is of primary concern because of potential exceedance of the RCRA Toxicity Characteristic Leaching Procedure (TCLP) limit at high concentrations. The data indicates that lead is not readily leachable from the fill material, and that only soil containing around 5,000 mg/Kg or more total lead has the likelihood of exceeding the TCLP limit of 5 mg/L.

The qualitative human health risk assessment identified dermal contact, ingestion and inhalation as the pathways for human exposure to contaminated soil at the Site under current/future conditions. Human exposure to the soil contaminants is limited because a relatively large area of the Site is paved, site access is restricted by security fencing, and the unpaved areas are mostly vegetated.

4.3 Area and Volume of Contaminated Soil

Proposed excavation threshold limits (PETLs) were developed for this Site by analyzing soil data using the USEPA’s ProUCL statistical software analysis, and based on the distribution of the parameters of concern across the Site, the feasibility of removing all soil exceeding the PETLs and intended Site use.

For remediation of this Site to Track 4, PETLs were established (see Table 2) for Total SVOCs, PCBs, arsenic, lead and mercury. These PETLs allow for the removal of meaningful quantities of contaminated soil/fill SVOCs and yet be protective of human health and the environment. The recommended soil cleanup level of 500 mg/Kg for total PAHs in the NYSDEC’s CP-51 Soil Cleanup Guidance is proposed as the PETL for Total SVOCs. For arsenic, the proposed PETL of 79 mg/Kg is the mean plus two standard deviations (excluding the outlier). In the case of lead, a soil cleanup level of 5,000 mg/Kg is proposed as the PETL for lead, based on a correlation between total lead and TCLP lead, instead of a statistically determined value. The PETL of 5.7 mg/Kg for mercury is set at its ISCO.

Table 2 also includes the range of observed concentrations and soil sample locations exceeding PETLs for one or more parameters. These soil sample locations are also highlighted on Figure 4 with tabulated data for individual locations that exceed one or more PETLs (some locations have multiple samples by depth). Of these soil sample locations, only two (2) locations have exceedances of the PETL for Total SVOCs and two (2) locations exceed the PETLS for PCBs. Five (5) locations exceed lead PETL, while arsenic and mercury PETLs are exceeded at two and three locations respectively. Only three locations exceed PETLs for two parameters.
Figure 5 shows the different areas of the Site based on surface features and contamination levels, as well as proposed hot spot areas that will be excavated due to PETL exceedances. The physical dimensions of these areas and the location of soil samples with exceedances of the PETLs were used to calculate the volumes of significantly impacted fill. Table 3 presents these excavation volumes by area.

An estimated 1,300 cubic yards of contaminated soil/industrial fill, which form the source area of concern will be excavated and disposed off-site at permitted facilities.

5.0 REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) are established to be protective of human health and the environment. The goal for remedial actions undertaken pursuant to NYSDEC’s DER-10 Technical Guidance is the restoration of the Site to pre-disposal/pre-release conditions to the extent feasible and authorized by law. At a minimum, the remedy should eliminate or mitigate all significant threats to public health and the environment presented by contaminants at the Site through the proper application of scientific and engineering principles.

Soil is the primary contaminated medium identified at the Site, with the potential to impact the underlying groundwater. The Site is currently vacant except for a commercial business renting one half of the old pump-house building. The area is surrounded by commercial properties. Groundwater is not adversely impacted at the Site and does not require long term monitoring. Taking these and the exposure assessment into consideration, the following RAOs were established for the Site:

- RAOs for Public Health Protection:
  Prevent ingestion/direct contact with contaminated soil

- RAOs for Environmental Protection:
  Prevent potential migration of contaminants that will result in groundwater contamination

6.0 STANDARDS, CRITERIA AND GUIDANCE (SCGs)

The Site is remediated through the Brownfield Cleanup Program, and is subject to requirements under 6 NYCRR Part 375 and DER-10 guidelines. The following SCGs are considered for implementation of the selected remedy for the Site:

**Soil SCGs:** The intent of this remedial effort is to clean up this property to Track 4 restricted commercial/industrial use. Any excavation and off-site disposal of the contaminated soils will be compliant with the Resource Conservation and Recovery Act (RCRA), the Toxic Substances Control Act (TSCA) and all other applicable regulations.

**Groundwater SCGs:** The Site groundwater is not used as a primary source of drinking water. Site groundwater does not appear to be adversely impacted by the fill material.
Action-Specific SCGs: Action-specific SCGs are technology or activity based requirements during remedy implementation. Potential remedial activities for this Site include excavation of soil/fill exceeding SCOs, off-site disposal as solid or hazardous waste depending on the chemical constituents, and backfill/restoration. These activities have to comply with New York State Land Disposal regulations (6 NYCRR 376), RCRA Treatment, Storage and Disposal Requirements (40 CFR Parts 262 and 264), OSHA regulations (29 CFR Parts 1904, 1910 and 1916), New York State Air Pollution Control regulations (6 NYCRR Chapter 3, Part 212), and Department of Transportation rules for transport of hazardous materials (49 CFR Parts 107, 171 and 712). In addition, groundwater encountered during excavation will be handled in accordance with the Buffalo Sewer Authority’s (BSA) requirements for permitting, treatment and discharge to the sewer.

7.0 DESCRIPTION OF REMEDY

The selected remedy is a Track 4: Restricted use with site-specific soil cleanup objectives remedy. The selected remedy is Excavation, Off-site Disposal & Cover. The elements of the remedy are shown on Figure 5 and described below.

**Excavation:** Areas with soil exceeding PETLs (approximately 14,000 sq. ft.) will be targeted for excavation. Referring to Figure 5, these areas include those with significantly high SVOCs, arsenic, lead and/or mercury (Areas A, B, D, E, F, I and L) or with elevated PCBs (Areas F and G) in the soil.

Confirmatory soil/fill samples will be collected from the excavations to determine the need for further excavation based on the PETLs, and to document residual contaminants levels in the remaining soil/fill. The PETLs or site-specific excavation objectives are as follows:

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<tr>
<th>PARAMETER</th>
<th>PETL (mg/Kg)</th>
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<tr>
<td>Total SVOCs</td>
<td>500</td>
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<tr>
<td>Total PCBs</td>
<td>1.0</td>
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<tr>
<td>Arsenic</td>
<td>79</td>
</tr>
<tr>
<td>Lead</td>
<td>5,000</td>
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<tr>
<td>Mercury</td>
<td>5.7</td>
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All excavated materials will be disposed off-site. Any excavated soil with potential to exceed the TCLP limit for lead will be stock piled and analyzed for TCLP lead to determine its suitability for disposal at a solid waste landfill. Any soil/fill exceeding the TCLP limit for lead will be disposed at a hazardous waste facility.

Excavation water, if any, will be pumped out for on-site treatment (bag filters and activated carbon drums) and discharged to the storm sewer with appropriate testing and permit from the Buffalo Sewer Authority.

The excavated areas will be backfilled with clean fill from a known source meeting the SCOs in DER-10 for at least restricted commercial use (preferably restricted residential).
**Cover System:** A cover system is required for commercial use of the Site. As shown on Drawing 2, the cover system for the Site will consist of either asphalt, concrete, gravel, floor slab, building or a soil cover in areas where the upper one foot of exposed surface soil exceed the PETLs.

The currently exposed vegetated areas will be regraded and covered by a delineating layer of geotextile. These will then be capped with a minimum 1-foot layer of crushed stone except along the property boundaries where they will be covered with a minimum 1-foot layer of clean back fill and a minimum 4” layer of topsoil to establish vegetative growth. The crushed stone, clean fill and top-soil will meet contaminant-specific SCOs as per DER-10 requirements for restricted commercial use at a minimum (preferably restricted residential use).

All clean soil from off-site to be used as fill on-site will be pre-tested at the frequency and for the parameters stipulated in DER-10. Areas with asphalt/concrete will be repaired and the existing gravel area west of the pump-house will be paved with asphalt.

**Institutional controls:** An institutional control in the form of an environmental easement will be implemented for the Site. As part of this institutional control, the Site owner will complete and submit to the NYSDEC a periodic certification of institutional and engineering controls in accordance with the BCP requirements:
- Allows the use and development of the controlled property for commercial and industrial uses as defined by Part 375-1.8(g), with subject to local zoning laws;
- Restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or Erie County DOH; and
- Requires compliance with the Department approved Site Management Plan

**Site Management Plan:** A Site Management Plan (SMP) will be prepared for NYSDEC/NYSFOH approval near the completion of Site remediation. The SMP will include:
- An Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the Site and details steps and media-specific requirements necessary to ensure the institutional (i.e. environmental easement) and engineering (i.e. soil cover) controls are in place;
- 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 groundwater use restrictions;
- Provisions for the management and inspection of the identified engineering controls;
- Maintaining site access controls and NYSDEC notification; and
- The steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.
8.0 MOBILIZATION AND STAGING

Pinto Construction Services will mobilize with necessary equipment and stage them at the site. The locations of various components for site mobilization and staging are shown on Figure 2. A staging area with a small office trailer will be set up in a clean area near the pump-house building for on-site personnel.

A decontamination pad (see Figure 6) will be set up in an area to the east of the pump-house building as it will be central to areas that will require excavation. The decontamination pad will include provisions for cleaning equipment and personnel before leaving the Site. Decon water will be collected in a sump and pumped to the storage/settling tank used for the excavation water. This will then be treated through a bag filter and activated carbon and discharged into the city sewer.

The source areas of concern (see Figure 5) targeted for excavation will be staked during mobilization along with the Phase II/RI soil samples that are associated with these areas and exceed the PETLs.

A sewer use permit will be obtained from the Buffalo Sewer Authority for the discharge of excavation water from a frac tank into a manhole at the Site.

Dust control measures (e.g., wetting of dry surfaces in the work areas) will be implemented to prevent off-site migration of contaminated airborne particulates. Pinto’s Standard Operating Procedures (SOP) for Spill Control and Contingency Measures included as Appendix B will be followed for any spills occurring at the Site during remediation activities. All field activities will follow the Health & Safety Plan in Appendix C.

9.0 SOIL EXCAVATION

Various types of industrial type fill were used to elevate the Site and the surrounding area to its present grade. This fill is underlain by natural soils (clay, silt, sand and gravel). The subsurface soil/fill was characterized through test pits and Geoprobe borings during the site investigations. Semivolatile organics and a few heavy metals are present at a wide range of concentrations within the fill layer. PCBs were found in surficial soils only in the northwest unpaved area of the Site. Groundwater is not adversely impacted at the Site.

The site-specific PETLs for Total SVOCs, PCBs, arsenic, lead and/or mercury were exceeded in mostly the unpaved areas of the Site highlighted on Figure 4 and delineated on Figure 5. Soil/fill with lead concentrations greater 5,000 mg/Kg has the likelihood of exceeding the TCLP limit of 5 mg/L. Site remediation entails the removal of soil/fill exceeding the site-specific PETLs.

9.1 Soil Excavation Procedure

The anticipated excavation areas with soil exceeding PETLS are shown on Figure 5. Additional areas will be included for excavation as necessary for site redevelopment so that all excavated fill/soil are disposed off-site appropriately.
All excavation will be carried out with a backhoe large enough to reach the required depth of industrial type fill at the Site. The walls of the excavation will be adequately sloped or stepped to prevent cave-ins and washouts, and to allow access for excavators into the excavation. To the extent possible and depending on access, the contaminated soils will be excavated and directly loaded on to dump trucks for off-site disposal. Otherwise the contaminated soils will be stockpiled near the excavation over a plastic liner, sampled and analyzed as necessary, and then loaded on to the dump truck. The dump trucks will be lined and covered during transport to the disposal facility. An HDPE liner will be placed in the stockpile areas before any soil placement.

All excavated soil will be disposed at a NY State permitted solid waste (and hazardous waste landfill if necessary) facility with approval from the landfill. Modern Landfill’s Model City facility will be utilized for the disposal of excavated soil considered non-hazardous, and Waste Management’s Niagara Falls facility for soil considered hazardous based on TCLP lead testing. Waste profiles will be completed for both the landfills based on the Phase II and RI data in order to obtain prior approval for disposal and establish procedures for characterization.

The drums of drill cuttings from the monitoring well installation during the BCP RI were staged within the fenced corner northeast of the pump-house. These drums have been characterized and will be disposed off-site along with the excavated materials during site remediation.

Soil from the source areas of concern will be sequentially excavated and the excavation will proceed in each area until confirmatory soil samples meet the site-specific excavation objectives (PETLs). The sequence of operation will be as follows:

A. An HDPE liner (minimum 10 mil) will be placed next to the source area for staging of excavated soil.
B. Fill/soil across the entire cross-section of the source area will be excavated initially to a depth of 4 feet.
C. The excavated soil will be staged on the HDPE liner next to the source area in piles of 100 CY to allow sampling to determine disposal options.
D. The excavated soil layers will be logged by depth intervals in accordance with the Unified Soil Classification System.
E. Confirmatory wall and bottom samples will be collected from the excavation at a frequency of at least 1 per 30 feet, and submitted for laboratory analysis for the parameter of concern identified for that area.
F. Composite soil samples will also be collected from the excavated soil stockpile at a frequency of 1 sample per 100 CY and submitted for laboratory analysis for TCLP Lead.
G. The results of the confirmatory soil samples will be used to determine the need for further excavation at each source area. Excavation will proceed in each source area until the confirmatory samples meet the PETLs.
H. Based on the results of the soil testing for TCLP lead, soil stockpiles with TCLP lead below the RCRA toxicity limit (5 mg/L) will be loaded on to waste haulers for disposal at a solid waste landfill.
I. Based on the results of the soil testing for TCLP lead, soil stockpiles with TCLP lead above the RCRA toxicity limit (5 mg/L) will be loaded on to waste haulers for disposal at a hazardous waste landfill.

J. Every effort will be made to stage the trucks so as to prevent excavation spoils from being tracked off-site. Also, any spills of contaminated materials during excavation will be immediately removed as outlined in Pinto’s SOP for Spill Control (Appendix B).

K. Water infiltrating into the excavation bottom will be pumped into a 20,000-gal frac tank to settle out suspended solids, and then discharged into the on-site sewer.

L. The excavated area will be progressively backfilled following confirmatory sampling of the wall and bottom. Only off-site fill meeting DER-10 requirements will be used for backfill.

M. The backfilled areas will be allowed to compact in lifts and graded as necessary.

N. The excavations will be surveyed and updated on the site map.

9.2 Confirmatory Soil Sampling

Confirmatory soil samples will be collected at the bottom of the excavations and from the side walls in accordance with NYSDEC requirements to determine the need for further excavation based on the PETLs for restricted commercial use, and to document residual levels of contaminants at the Site. Given the size of the anticipated excavation and the relative uniformity of historical industrial fill across this Site, post-excavation samples will be collected using a grid spacing of 30’x30’, subject to the approval of the NYSDEC’s field representative. A higher sampling frequency may be required by the NYSDEC for excavation side walls along the property boundary.

The confirmatory samples will be collected using the backhoe bucket (walls and bottom) and/or a trowel/shovel. All field sampling equipment will be rinsed with distilled water between samples. The soil samples will be analyzed for the parameters of concern associated with each source area of concern (see Figure 5) and in concurrence with the NYSDEC representative. Quality assurance and quality control protocols for the post-excavation sampling and analyses are discussed in Section 12 below.

The anticipated source areas targeted for excavation and their corresponding analytical parameters for confirmatory soil analysis are summarized below (see Figure 5 for locations):

<table>
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<tr>
<th>SOURCE AREAS TO BE EXCAVATION</th>
<th>PARAMETERS FOR CONFIRMATORY ANALYSIS</th>
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9.3 **Dust Control and Community Air Monitoring**

Air monitoring and dust control measures will be implemented in accordance with the NYSDOH Generic Community Air Monitoring Plan (CAMP; included as Appendix D). The purpose of this real-time air monitoring is to prevent the site workers and the surrounding community from potential exposure to airborne contaminants from the Site.

Particulates will be monitored upwind and downwind of the work areas during soil excavation and backfilling operations. Real-time air monitoring will include visual observations for fugitive dust and particulate measurements with a MIE Miniram PDM-3 (or similar equipment) around the excavation and Site perimeter. The PDM-3 with an audible alarm is capable of measuring particulates less than 10 micrometers in size (PM-10) and integrating over time for comparison to the airborne particulate action level.

Dust suppression (wetting of dry surfaces) will be activated if fugitive dust emissions are distinctly visible or downwind particulate level is at least 100 micrograms per cubic meter ($\mu$g/m$^3$) above background. Work stoppage may be required if downwind particulate levels remain 100 $\mu$g/m$^3$ above background.

Also, a power broom will be used to sweep around the truck loading area (if on asphalt or concrete) to minimize the spread of contaminated soil.

10.0 **GROUNDWATER MANAGEMENT**

10.1 **Excavation Water Handling**

Excavation of the soils to the known depths of hot-spot contamination may result in perched groundwater ex-filtrating into the excavation. At the Site, the water table appears to be around 8 feet below ground level.

The schematic for construction/excavation water handling is included as Figure 7. This excavation water will be pumped into a 20,000-gallon frac tank. The suspended solids will be allowed to settle and then the settled supernatant will be discharged to a sanitary sewer on site under a permit obtained from the Buffalo Sewer Authority. The settled solids will be disposed off-site along with excavated fill/soils. All treatment equipment will be washed and cleaned prior to demobilization from the Site.

10.2 **Monitoring Well Decommissioning**

Groundwater is not adversely impacted at the Site based on the results of two rounds of groundwater monitoring. All eight overburden wells installed during the RI will be decommissioned during Site remediation as they no longer be needed. The wells will be decommissioned in accordance with the NYSDEC’s CP-43, Groundwater Well Decommissioning Procedures. SVOCs and metal contaminants present in the overburden fill layer are not likely to spread. Taking into account these site conditions, the overburden wells will be decommissioned by grouting in-place followed by casing pulling, consistent with the selection process in CP-43.
11.0 COVER SYSTEM

11.1 Backfill

The excavated areas will be backfilled with clean fill from an off-site source, properly sampled and tested to ensure it meets DER-10 analytical parameter and frequency requirements for use at this Site.

All off-site clean soil for backfill, soil cover or topsoil will meet the 6NYCRR Part 375-6.7(d) requirements, and will be obtained from known sources that do not show evidence of disposal or release of hazardous substances or wastes. The backfill source will be required to provide backup analytical data to demonstrate acceptability, or will be sampled and analyzed (VOCs, SVOCs, metals, PCBs/pesticides and Cyanide) prior to acceptance and delivery to the Site, and will be subject to NYSDEC approval.

The following sources are tentatively identified:
- Soil backfill: From the Children’s Hospital construction site in Buffalo, NY. A BUD application with supporting data (source and analytical data from DER-10 sampling) has been submitted to the NYSDEC for approval.
- Topsoil: From construction excavation work at the St. Joseph Collegiate Institute in Tonawanda, NY and the Boulevard Mall in Amherst, NY. A memo with supporting data (source and analytical data from DER-10 sampling) for this topsoil source has been to the NYSDEC for approval.
- Crushed stone: From LaFarge’s Lockport quarry.

11.2 Demarcation Layer

The cover system across the existing vegetated areas will consist of a layer of geotextile over the existing ground surface (after grading) to delineate the subsurface soil/fill. The demarcation layer will also be placed in the excavations prior to backfilling.

The delineating layer will allow identification, segregation and proper handling of contaminated soil/fill that may be excavated during any intrusive work at the Site for redevelopment in the future.

11.3 One Foot of Clean Cover

The Site will have four types of cover systems as shown on Figure 5 to prevent exposure and be protective of human health:
- Soil cover, mostly along the property boundary
- Crushed stone cover for the eastern portion
- Asphalt cover for paved parking areas
- Concrete cover, including the warehouse foundation and building

Over most of the area that is currently vegetated, a minimum 1-foot layer of crushed stone will be placed above the demarcation layer. Before placement of stone, clean backfill will be used to bring up the grade in some areas, particularly the southeast section of the property.
Areas along property boundaries will be covered with a minimum 1-foot layer of clean fill and 4” of top-soil to establish vegetation.

The northwest section of the Site with gravel will be paved over with an asphalt cover. Areas that currently have asphalt/concrete will be repaired as necessary to render them suitable for use after Site redevelopment.

The crushed stone, clean fill and top-soil will be obtained from known sources and pre-characterized to confirm with DER-10 requirements for imports from off-site. This cover system will be maintained and repaired as necessary to provide the protective barrier to human contact that is a key element of the selected remedy.

11.4 Vegetation and Restoration

Exposed areas will be seeded and vegetated in a manner consistent with future development plans for the Site.

12.0 QUALITY ASSURANCE AND QUALITY CONTROL PROTOCOLS

12.1 Sampling Methods

Sampling locations and procedures are discussed in Section 8 above. The schedule of sampling and analysis is listed in Table 4A, and associated QA/QC, holding times and containers are included in Table 4B. All confirmatory soil sampling will include field duplicates, matrix spike/matrix spike duplicates (MS/MSD) and rinse blanks. Additional sample containers will be included at the required frequencies for site specific matrix spikes and matrix spike duplicates.

All samples will be analyzed by Test America (Amherst, NY), a NYSDOH ELAP certified analytical laboratory. Procedures for chain of custody, holding times, and laboratory analyses will be in accordance with NYSDEC ASP and the laboratory’s internal Quality Assurance Plan. Holding times will begin with validated time of sample receipt (VTSR) at the laboratory. The laboratory will meet the required detection limits for corresponding analytical methods.

12.2 Analytical Protocols

Analytical procedures for the media sampled and data deliverables (Category B deliverable) will meet the requirements in the most recent NYSDEC Analytical Services Protocol (ASP). Table 4B includes analytical methods for the source area parameters of concern. The laboratory will cleanup matrix interferences to the extent practicable. The data quality indicators of precision, accuracy, representativeness, comparability, and completeness will be measured during chemical analysis by the analytical laboratory.
12.3 Documentation

The analytical reports provided by the laboratory will be reviewed. The data validation will include a review of all holding times, completeness of all required deliverables, review of all QC results (surrogates, spikes, duplicates), and a 10% check of samples analyzed to ensure they were analyzed and quantified properly. A complete analytical data validation is not anticipated.

Data validation will follow the general guidelines presented in the USEPA Contract Laboratory Program (CLP) Organic Data Review, SOP Nos. HW-6, Revision #11, USEPA Evaluation of Metals Data for the Contract Laboratory Program based on 3/90, SOW, Revision XI. In addition, review of holding times will be in accordance with NYSDEC ASP, 10/95 edition, and review of organic calibration and QC criteria will be in accordance with NYSDEC ASP, 10/95 edition. Where possible, discrepancies will be resolved with the analytical laboratory. Data that do not meet NYSDEC ASP, 10/95 criteria will be qualified.

A Data Usability Summary Reports (DUSRs) will be generated in accordance with DER-10 requirements after completion of Site remediation and receipt of laboratory analytical reports.

13.0 Health & Safety

13.1 Health & Safety Plan

A site-specific Health & Safety Plan (HASP) is included as Appendix C for the protection of workers and other personnel on-site during the course of the remedial work. The HASP has been developed in accordance with 29CFR1910, and is based on site conditions, chemical hazards known or suspected, and anticipated construction activities.

13.2 NYSDOH Community Air Monitoring Plan

Ambient air quality monitoring will follow the NYSDOH’s Community Air Monitoring Plan. As outlined in Section 8.3 above, the remedial action will include real time air monitoring for particulates and contingency measures for addressing situations during excavation activities where dust levels exceed background levels.

14.0 REPORTING

During remedial activities, daily field reports will be prepared and maintained. Construction activities during construction will be summarized in monthly reports which will be submitted to the NYSDEC. The final remedy includes long-term maintenance and monitoring of the cover system which will be included in the Site Management Plan (SMP). Within 90 days after completion of the remedial work, a Final Engineering Report (FER) will be submitted with details of the implemented remedy and as-built drawings. The report and drawings will be certified by a professional engineer registered in New York State.
15.0 **PROJECT ORGANIZATION & SCHEDULE**

The project organization is shown on Figure 8.

The following schedule is anticipated for the remedial action:

- Remedial Action Work Plan: June 2015
- Site Work (excavation/backfill/restoration): July–September 2015
- Site Management Plan (SMP): December 2015
- Certificate of Completion: March 2016
- Site Redevelopment: Spring 2016

16.0 **INSTITUTIONAL CONTROLS**

Institutional controls (IC) will be established as required for the final remedy since this Site is anticipated to be cleaned up to Track 4, restricted commercial use. The institutional controls will restrict activities on the Site and protect current and future users from exposure to the residual environmental contamination at the Site. The following will be part of the IC:

- An environmental easement as per NYSDEC requirements in DER-10
- Limitations on site use based on the proposed remedial action

17.0 **SITE MANAGEMENT PLAN**

A Site Management Plan (SMP) will be prepared in accordance with DER-10 after the completion of the field work. The SMP will include the activities listed below that are necessary for the proper and effective management of the institutional controls and to monitor the effectiveness of the implemented remedy.

- Institutional and engineering control (IEC): Restrictions on site access and use will be described in detail in the IEC plan along with steps necessary for its implementation and periodic certification.
- Inspection: Regular inspections (at least monthly at the outset) to ensure the remedy, including the cover system, remains in place and is effective in preventing human exposure to site contaminants.
- Operation & Maintenance (O&M): The O&M plan will include procedures for routine maintenance requirements to minimize damage to or failure of the implemented remedy.
- Corrective Measures: Procedures for corrective measures such as repairs to/erosion of the soil cover or damages to the asphalt/concrete surfaces.
- Reporting: The results of all inspections, corrective actions and monitoring will be reported in the Periodic Review Report (PRR) for the Site.
FIGURE 1

132 DINGENS ST. SITE, BUFFALO, NY
SITE LOCATION MAP
FIGURE 3A

132 DINGENS ST. SITE, BUFFALO, NY

SURFACE SOIL SAMPLES - SVOCs/METALS EXCEEDING SCOs

LEGEND

- Exceed Commercial SCOs
- Exceed Industrial SCOs
- Geoprobe soil sample
- Test pit soil sample
- Monitoring well

SVOCs in μg/Kg; metals in mg/Kg
132 DINGENS ST. SITE, BUFFALO, NY
SOIL SAMPLES at 0’ to 4’ - SVOCs/METALS EXCEEDING SCOs

FIGURE 3B
FIGURE 3C

132 DINGENS ST. SITE, BUFFALO, NY
SOIL SAMPLES at 4’ to 12’ - SVOCs/METALS EXCEEDING SCOs

LEGEND
- Exceed Commercial SCOs
- Exceed Industrial SCOs
- Geoprobe soil sample
- Test pit soil sample
- Monitoring well

SVOCs in μg/Kg; metals in mg/Kg
LEGEND
- Exceed Commercial SCOs
- Exceed Industrial SCOs
- Geoprobe soil sample
- Test pit soil sample
- Monitoring well
PCBs in μg/Kg

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<th>GS#19</th>
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132 DINGENS STREET SITE, BUFFALO, NY
ALL SOIL SAMPLES - PCBs EXCEEDING SCOs
### Table: Soil Sample Locations Exceeding PETLs

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<tr>
<th>SAMPLE ID</th>
<th>SID</th>
<th>D.I.</th>
<th>PETL - 0' - 5'</th>
<th>PETL - 0' - 5'</th>
<th>PETL - 1' - 4'</th>
<th>PETL - 4' - 8'</th>
<th>PETL - 4' - 8'</th>
<th>PETL - 0' - 2'</th>
<th>PETL - 2' - 8'</th>
<th>PETL - 0' - 2'</th>
<th>PETL - 0' - 4'</th>
<th>PETL - 2' - 6'</th>
<th>PETL - 3'</th>
<th>PETL - 3'</th>
<th>PETL - 3'</th>
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<td>17.6</td>
<td>71.8</td>
<td>57.0</td>
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<td>3</td>
<td>11.1</td>
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<td>As</td>
<td>71</td>
<td>12.3</td>
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<td>11.3</td>
<td>21.8</td>
<td>20.6</td>
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<td>979</td>
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<td>1600</td>
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<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
</tbody>
</table>

### LEGEND

- Green circle: One or more SVOCs/Metals/PCBs exceed Proposed Excavation Threshold Limit (PETL)
- Red circle: Geoprobe soil sample
- Yellow triangle: Test pit soil sample
- Black square: Monitoring well
- ND: Not-detected; NA: Not analyzed

SVOCs, PCBs and metals in mg/Kg

---

**FIGURE 4**

**132 DINGENS ST., BUFFALO, NY**

SOIL SAMPLE LOCATIONS EXCEEDING PETLs
NOTE:
The cover system will consist of the following:
Vegetated areas: D, E, F, G (28,000 SF)
Asphalt/concrete areas: C, I, J, K, L, M (220,000 SF)
Gravel area: A, B (159,000 SF)
Pumphouse building: N (4,000 SF)
Warehouse foundation: H (80,000 SF)

Site Boundary
Proposed hot-spot areas to be excavated due to exceedance of PETLs for SVOCs/PCBs/As/Pb/Hg
Note: Decon pad is sloped to one corner with sump to collect wash water for treatment.
CONSTRUCTION/EXCAVATION WATER → FRAC TANK WATER STORAGE/SETTLING → DISCHARGE TO SEWER
OWNER/DEVELOPER
132 DINGENS ST, LLC
James Panepinto

QA/QC & H&S OFFICER
Fred Smith, Jr., CIH, CSP

PROJECT/TECHNICAL MANAGER
Dharmarajan Iyer, Ph.D., PE

KEY STAFF
Engineer – D. Iyer, Ph.D., PE
Technician – R. Allen

SUBCONTRACT
Laboratory – Test America

REMEDIAL CONTRACTOR
Pinto CS

NYSDEC Region 9

132 DINGENS ST., BUFFALO, NY
PROJECT ORGANIZATION CHART

FIGURE 8
IEG
LEGEND – COVER SYSTEM

- Asphalt cover (220,000 sf)
- Soil cover (28,000 sf)
- Crushed stone cover (159,000 sf)
- Concrete cover - Pumphouse building (4,000 sf)
- Concrete cover - Warehouse foundation (80,000 sf)

Asphalt Geotextile, 1-foot crushed stone

Geotextile, 1-foot soil, 4-inch topsoil, seed

Existing vegetative cover

Concrete Asphalt
TABLES
<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>PART 375 SCOs</th>
<th>RANGE of DETECTED CONCENTRATIONS IN SOIL</th>
<th>TOTAL NUMBER OF SAMPLES</th>
<th>NUMBER OF SAMPLES EXCEEDING COMMERCIAL USE SCOs</th>
<th>NUMBER OF SAMPLES EXCEEDING INDUSTRIAL USE SCOs</th>
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<tbody>
<tr>
<td></td>
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<td>MINIMUM</td>
<td>AVERAGE</td>
<td>MAXIMUM</td>
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<td>Semivolatile Organics (SVOCs, ug/Kg)</td>
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<td>Benzo(a)anthracene</td>
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<td>SEMIVOLATILE ORGANICS (SVOCs, ug/Kg)</td>
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## TABLE 3
132 DINGENS STREET SITE RAWP
NATURE/EXTENT OF SOIL CONTAMINATION AND CLEANUP QUANTITIES

<table>
<thead>
<tr>
<th>AREAS BY SITE FEATURES</th>
<th>LOCATION</th>
<th>TYPE/LEVEL OF EXCEEDENCE OF PROPOSED EXCAVATION THRESHOLD LIMIT (PETL)</th>
<th>DEPTH OF CONTAMINATED SOIL/FILL</th>
<th>AREA (sq.ft.)</th>
<th>ESTIMATED EXCAVATION VOLUME (CY)</th>
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<tbody>
<tr>
<td>Area A</td>
<td>Eastern vegetated portion</td>
<td>TS#9 &amp; MW-7 exceed PETL for Total SVOCs</td>
<td>8’ to 18’; 12’ average</td>
<td>125,000</td>
<td>200</td>
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<tr>
<td>Area B</td>
<td>Vegetated strip NE boundary</td>
<td>Second highest Pb at TS-4</td>
<td>10’ to 13’; 12’ average</td>
<td>34,000</td>
<td>120</td>
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<td>Area C</td>
<td>Paved, old UST area NE of foundation</td>
<td>No PETL exceedance</td>
<td>12’ to 16’; 14’ average</td>
<td>10,000</td>
<td>0</td>
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<tr>
<td>Area D</td>
<td>Area northeast of pump-house building</td>
<td>As &amp; Hb PETLs exceeded at MW-2</td>
<td>10’ to 12’; 11’ average</td>
<td>4,000</td>
<td>120</td>
</tr>
<tr>
<td>Area E</td>
<td>Area north of cell tower</td>
<td>SVOCs maximum at TS-5 (outlier) at &gt;4’ depth</td>
<td>10’ to 12’; 11’ average</td>
<td>10,000</td>
<td>250</td>
</tr>
<tr>
<td>Area F</td>
<td>Area NW of cell tower</td>
<td>Second highest SVOCs at TS-15 Highest PCB level at TS-15 PETL for PCBs also exceeded at GS-19</td>
<td>8’ to 11’; 10’ average</td>
<td>9,000</td>
<td>300</td>
</tr>
<tr>
<td>Area G</td>
<td>Strip on western end of property</td>
<td>PETL for PCB exceeded at GS-17</td>
<td>7’ to 12’; 10’ average</td>
<td>5,000</td>
<td>130</td>
</tr>
<tr>
<td>Area H</td>
<td>Warehouse building foundation</td>
<td>NOT SIGNIFICANT</td>
<td>16’ average</td>
<td>80,000</td>
<td>0</td>
</tr>
<tr>
<td>Area I</td>
<td>Paved area east of foundation</td>
<td>Pb exceeds PETL at GS-30</td>
<td>8’ to 15’; 12’ average</td>
<td>74,000</td>
<td>100</td>
</tr>
<tr>
<td>Area J</td>
<td>Paved area pump-house building</td>
<td>No PETL exceedance</td>
<td>10’ to 12’; 11’ average</td>
<td>104,000</td>
<td>0</td>
</tr>
<tr>
<td>Area K</td>
<td>Paved area west of foundation</td>
<td>No PETL exceedance</td>
<td>10’ to 16’; 13’ average</td>
<td>44,000</td>
<td>0</td>
</tr>
<tr>
<td>Area L</td>
<td>Gravel area west of pump-house building</td>
<td>Hg PETL exceeded at GS-21</td>
<td>8’ to 12’; 10’ average</td>
<td>62,000</td>
<td>100</td>
</tr>
<tr>
<td>Area M</td>
<td>Asphalt/concrete south of foundation</td>
<td>No PETL exceedance</td>
<td>8’ to 12’; 10’ average</td>
<td>10,000</td>
<td>0</td>
</tr>
<tr>
<td>Area N</td>
<td>Pump-house building</td>
<td>NONE</td>
<td>--</td>
<td>4,000</td>
<td>0</td>
</tr>
</tbody>
</table>

**TOTAL OF ALL AREAS** 575,000

**TOTAL HOT-SPOT AREAS (EXCEEDING PETLs, PROPOSED EXCAVATION THRESHOLD LIMITS)** 14,000 1,320

## DISTRIBUTION OF AREAS BY EXISTING SURFACE COVER

<table>
<thead>
<tr>
<th>DISTRIBUTION OF AREAS BY EXISTING SURFACE COVER</th>
<th>AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>VEGETATION: Areas D, E, F, G</td>
<td>28,000</td>
</tr>
<tr>
<td>ASPHALT/CONCRETE: Areas C, I, J, K, L, M</td>
<td>304,000</td>
</tr>
<tr>
<td>CRUSHED STONE: Areas A, B</td>
<td>159,000</td>
</tr>
<tr>
<td>BUILDING AREA: Areas H, N</td>
<td>84,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>575,000</td>
</tr>
<tr>
<td>SAMPLE MATRIX</td>
<td>BSA DISCHARGE PARAMETERS</td>
</tr>
<tr>
<td>---------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td></td>
<td>Method 8270C</td>
</tr>
<tr>
<td>SOIL CONFIRMATORY</td>
<td>--</td>
</tr>
<tr>
<td>SOIL LANDFILL</td>
<td>--</td>
</tr>
<tr>
<td>GROUNDWATER DISCHARGE</td>
<td>2</td>
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</tbody>
</table>

NOTES: (1) BSA Discharge parameters to be determined based on discharge permit
(2) Additional soil samples subject to results of confirmatory sampling
<table>
<thead>
<tr>
<th>ANALYTICAL PARAMETER</th>
<th>ANALYTICAL METHOD</th>
<th>QA/QC REQUIREMENTS</th>
<th>SAMPLE HOLDING TIMES</th>
<th>CONTAINER TYPE/# PER SAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>SOIL # OF SAMPLES</td>
<td>FIELD DUPLICATE</td>
<td>MS/MSD</td>
</tr>
<tr>
<td>Semivolatile Orgamics (SVOCs)</td>
<td>8270</td>
<td>10</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>PCBs</td>
<td>8082</td>
<td>15</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>TAL Metals As, Hg, Pb</td>
<td>6010/7470</td>
<td>30</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>TCLP Lead</td>
<td>SW8463/6010</td>
<td>13</td>
<td>1</td>
<td>--</td>
</tr>
<tr>
<td>BSA Discharge Parameters</td>
<td>various</td>
<td>5</td>
<td>1</td>
<td>--</td>
</tr>
</tbody>
</table>

NOTE: "NA" = not applicable